

**PFAS WASTE SOURCE TESTING REPORT**  
**NEW ENGLAND WASTE SERVICES OF VERMONT, INC.**

*Coventry, Vermont*  
*Solid Waste ID No. OL510*

*Prepared for New England Waste Services of Vermont, Inc.*  
*File No. 4536.00*  
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## EXECUTIVE SUMMARY

Pursuant to the requirements of Permit Conditions 74 and 85 of the October 12, 2018 Solid Waste Management Facility Certification for the New England Waste Services of Vermont, Inc. (NEWSVT) Landfill in Coventry, Vermont, NEWSVT contracted a study of potential per- and polyfluoroalkyl substance (PFAS) sources in waste streams disposed at the NEWSVT Landfill.

On behalf of NEWSVT, Sanborn, Head & Associates, Inc. (Sanborn Head) implemented a waste testing program that was conducted between April 3, 2019 and August 19, 2019 in accordance with the Testing Plan approved by the Vermont Department of Environmental Conservation (VTDEC) on February 5, 2019.

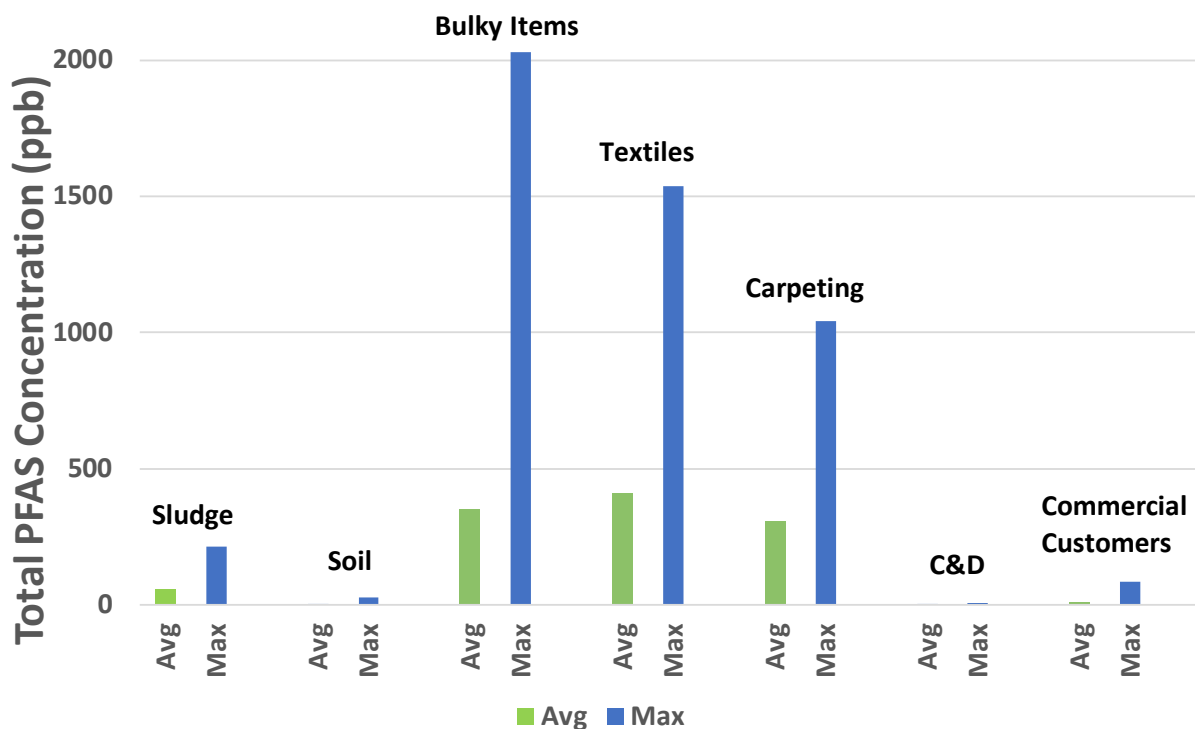
Sanborn Head collected 100 samples from waste streams suspected to contain PFAS compounds, including sludges from municipal wastewater treatment plants (WWTPs) and other industrial sources, sewer grit, contaminated soil, textiles from bulky wastes, carpeting and other construction and demolition (C&D) waste, and targeted wastes from commercial customers such as food packaging. The samples were analyzed by Alpha Analytical of Mansfield, Massachusetts for both linear and branched PFAS isomers using a modified U.S. Environmental Protection Agency (USEPA) Method 537 with isotope dilution for a 24-compound analyte list. Waste materials that were considered unlikely or not known to contain PFAS compounds were not included in the sampling program. In addition, Municipal Solid Waste (MSW) from residential sources was also not included in the sampling program.

PFAS compounds were detected in 95 percent of the waste samples at concentrations ranging over many orders of magnitude, from approximately 0.043 to 2,030 parts per billion (ppb) of total PFAS. The highest concentrations were measured in samples collected from bulky items, textiles, and carpeting. Results for WWTP sludge samples ranged from approximately 20 to 214 ppb of total PFAS, which is generally consistent with sludge testing conducted by the VTDEC in 2018<sup>1</sup>. Exhibit ES-1 presents the results of the average and maximum total PFAS concentrations by waste type.

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<sup>1</sup> "Wastewater Treatment Facility and Landfill Leachate PFAS Sampling, Various Locations, Northern Vermont", prepared for VTDEC by Weston and Sampson and dated May 3, 2018.

### Exhibit ES-1 – Average and Maximum Total PFAS Concentrations by Waste Type



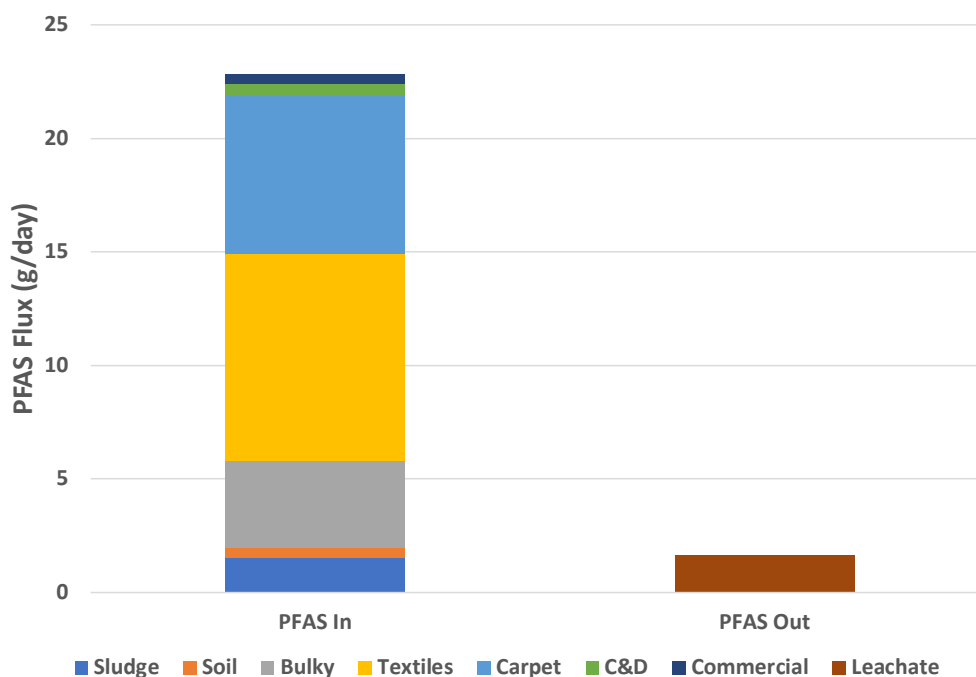
A preliminary data evaluation for this testing program was performed to support ranking (by PFAS concentration and mass of waste accepted by NEWSVT) the waste streams with the highest potential to contribute PFAS to the NEWSVT leachate. While there is uncertainty with respect to the mass disposal rate of certain PFAS waste streams (e.g., bulky waste textiles), a mass flux evaluation (i.e., an evaluation of the PFAS mass input to the landfill) using 2018 waste characterization data from the VTDEC indicates that textiles and carpeting potentially contribute the largest PFAS mass influxes to the NEWSVT Landfill (of the wastes included in the study)<sup>2</sup>. There may be other sources, such as residential MSW, that also contribute a significant amount of PFAS to the landfill.

To help evaluate what fractions of the PFAS compounds potentially leach from the waste materials versus what is sequestered (i.e., what is held on to) in the landfill, the mass flux results were used to derive an estimate of PFAS influxes for comparison of PFAS waste input to PFAS leachate output. Comparison of the mass of PFAS leaving the landfill in leachate (estimated with data from leachate sampling conducted by the VTDEC in 2018 and NEWSVT in 2019 and leachate generation data provided by NEWSVT) and the mass of PFAS entering the landfill in wastes indicates a mass *imbalance*. This imbalance consists in aggregate of less PFAS mass leaving the landfill in leachate compared to the PFAS mass entering the landfill in waste streams that were sampled as part of this study; **therefore, the data indicate that a small fraction of the PFAS entering the landfill in wastes leave it in leachate.** Exhibit E-

<sup>2</sup> “2018 Vermont Waste Characterization”, prepared for VTDEC by DSM Environmental Services, Inc. and dated December 14, 2018.

2 presents the estimated total PFAS mass flux into the landfill for each waste category from the study and the estimated PFAS mass flux out of the landfill in leachate.

### Exhibit ES-2 – Estimated Total PFAS Mass Flux In and Out of the Landfill



It should be noted that the imbalance also consists of differing PFAS compounds being detected in the wastes sampled and the leachate. Based on the mass balance estimates, approximately 89 percent of the mass of PFHpA, 88 percent of the mass of PFHxS, 94 percent of the mass of PFOA, 95 percent of the mass of PFNA, and 99 percent of the mass of PFOS (the five PFAS compounds included in the Vermont Health Advisory for Drinking Water) that enters the landfill in accepted wastes appears to be sequestered in the landfill, while sampled wastes could account for (at most) approximately 50 percent of the PFBA and 37 percent of the PFBS in the leachate flux. Longer-chain PFAS are more prevalent in the wastes sampled in this study and appear by compound-specific imbalances between waste influx and leachate outflux to be less prone to release and leaching from MSW. The apparent sequestration of these longer-chain PFAS is consistent with their generally lower aqueous solubilities and higher organic carbon-water partition coefficients relative to shorter-chain PFAS. This imbalance suggests that (1) landfills sequester a large fraction of PFAS loadings from various wastes included in the study, and (2) there are other sources, such as residential MSW, that are responsible for the PFAS in leachate that were not accounted for by the wastes sampled during this study, particularly for the short-chain PFAS that are detected in leachate. Also, since all wastes were not sampled as part of the study, the PFAS inputs to the landfill (left side of Exhibit ES-2) are likely higher than indicated.

There are considerable uncertainties inherent in the estimates of PFAS mass fluxes, including variability in sample results, necessary assumptions concerning waste disposal rates and composition, and the impracticality of sampling all types of wastes. Although mass flux into

the air has not been considered in this analysis, the contribution is assumed to be small to negligible. Even so, the results of the study suggest numerous sources of PFAS to the NEWSVT Landfill, and that the landfill retains most of the PFAS that enters it, especially the longer-chain compounds such as PFOA and PFOS that are subject to regulation in Vermont.

## 1.0 INTRODUCTION

This PFAS Waste Source Testing Report (“Testing Report”) describes testing performed for per- and polyfluoroalkyl substance (PFAS) sources in waste streams disposed at the New England Waste Services of Vermont, Inc. (NEWSVT) Landfill in Coventry, Vermont (Solid Waste ID No. OL510). At the request of NEWSVT, Sanborn Head prepared the Testing Report pursuant to the requirements of Permit Conditions 74 and 85 of the October 12, 2018 Solid Waste Management Facility Certification. To meet the condition requirements, this Testing Report summarizes the findings of the testing program that was implemented in accordance with the PFAS Waste Source Testing Plan, dated December 28, 2018 and the supplemental materials dated January 8, 2019 (“Testing Plan”), which was approved by the Vermont Department of Environmental Conservation (VTDEC) in a letter dated February 5, 2019. The Testing Plan is included in Appendix A.

The testing included a phased program of sample acquisition and laboratory analysis of targeted waste streams disposed at the NEWSVT Landfill. The study focused on two primary waste streams: 1) commercial customer waste streams from activities/industries suspected to potentially use substantive levels of PFAS compounds; and 2) non-municipal solid waste (MSW)<sup>3</sup> streams. Waste streams were selected for sampling based in part on the suspected presence of PFAS based on previous sampling, communications with VTDEC, and products and materials known to contain PFAS.

## 2.0 PFAS WASTE SOURCE TESTING

As described in the Testing Plan, testing was performed on sources that were identified as containing potentially high concentrations of PFAS based on the types of wastes historically accepted by NEWSVT. Because many of the materials of interest are not media for which there are established PFAS sampling/analysis methods, the testing program was employed in a phased approach to allow results from early phases to inform subsequent phases of work. The testing was implemented in sequential phases of sample acquisition and analysis as described in Exhibit 1.

### Exhibit 1 - Summary of Testing Phases

<b>Phase 1A</b>	Sample acquisition of wastewater treatment plant (WWTP) sludges, paper mill sludges, industrial sludges, and contaminated soil at the NEWSVT Landfill.
<b>Phase 1B</b>	Sample acquisition of construction and demolition (C&D) waste and textile covered bulky waste (e.g. couches, chairs, mattresses) at Casella transfer stations throughout Vermont.
<b>Phase 2</b>	Sample acquisition of materials requiring coordination with commercial disposal customers.
<b>Phase 3</b>	Targeted follow-up sampling of materials identified based on the results of Phases 1 and 2 and communications with VTDEC.

<sup>3</sup> For the purposes of this Testing Report, non-MSW will be defined as waste other than household MSW accepted at the NEWSVT Landfill.

Sample acquisition and analysis was performed in accordance with the PFAS Laboratory Requirements, quality assurance/quality control (QA/QC), and Sampling Protocol dated March 20, 2019 and Addendum No. 1 dated May 13, 2019 (“Testing Protocols”), which were approved by VTDEC in emails dated March 27, 2019 and May 20, 2019, respectively. The Testing Protocols describe the laboratory requirements, field QA/QC requirements, allowable and prohibited sampling-related items (to avoid sample contamination), field equipment decontamination procedures, and sample collection procedures for: sludge, soil, C&D, textile covered bulky waste, food packaging, and other miscellaneous bulk waste. The Testing Protocols are included in Appendix A.

Sanborn Head performed the sampling between April 3, 2019 and August 19, 2019 which included collection of 100 field samples, 21 field duplicate samples, 11 Synthetic Precipitation Leaching Procedure (SPLP) samples, 6 equipment blank samples, and 6 field blank samples, as outlined in Exhibit 2.

**Exhibit 2 – Sample Collection Summary**

Testing Phase	Number of Sample Type				
	Field Sample	Field Duplicate	SPLP	Equipment Blank	Field Blank
Phase 1A	36	7	3	2	2
Phase 1B	32	7	3	2	2
Phase 2	26	6	3	2	2
Phase 3	6	1	2	0	0
<b>Total</b>	100	21	11	6	6

**Note:** The Phase 3 samples were collected as targeted follow-up to sludge samples collected during Phase 1A.

As described in the Testing Plan, the samples were analyzed by Alpha Analytical of Mansfield, Massachusetts (Alpha) for both linear and branched PFAS isomers using a modified U.S. Environmental Protection Agency (USEPA) Method 537 with isotope dilution for a 24-compound analyte list<sup>4</sup>. Additional information regarding each testing Phase is included in the following sections.

## 2.1 Phase 1A Testing

During the period between February 5, 2019 (when the Testing Plan was approved) and July 15, 2019 (the targeted end date for Phase 1 sampling), NEWSVT received waste from approximately 40 contaminated soil sources, 24 WWTP sludge sources, 3 industrial sludge sources, 2 paper sludge sources, and 6 sewer grit sources. In accordance with the Testing

<sup>4</sup> The Testing Plan indicated that the samples would be analyzed for 28 PFAS compounds; however, Alpha had not yet completed method verification for four compounds including HFPO-DA, ADONA, PFHxDA, and PFODA at the start of the testing, therefore, these compounds were excluded from the analyses with VTDEC acknowledgment.



Plan, Sanborn Head sampled the majority of the sludges that entered the landfill and a representative fraction of the contaminated soils received during the testing period. Exhibit 3 includes the number of sources sampled per waste type along with the corresponding waste tonnages.

**Exhibit 3 - Phase 1A Sample Collection Summary**

Waste Type	Total Sources	Sources Sampled	Approx. Tonnage for Total Sources (tons)	Approx. Tonnage for Sources Sampled (tons)	% of Total Tonnage Sampled
<b>WWTP Sludge</b>	24	18	21,818	21,533	98.7
<b>Industrial Sludge</b>	3	3	1,687	1,687	100
<b>Paper Sludge</b>	2	2	1,751	1,751	100
<b>Sewer Grit</b>	6	3	375	309	82.3
<b>Contaminated Soil</b>	40	10	22,041	6,897	31.3

**Note:** The total number of sources and the corresponding waste tonnages shown are for the period from February 5, 2019 to July 15, 2019 and should be considered approximate.

Analytical results are tabulated in Tables 1 (Sludge and Sewer Grit) and 2 (Contaminated Soil)<sup>5</sup> and plotted on stacked column charts labeled as Figures 1A and 1B (Sludge and Sewer Grit, Parts 1 and 2) and Figure 2 (Contaminated Soil). Results for the five PFAS compounds included in the Vermont Health Advisory for Drinking Water (PFHpA, PFHxS, PFOA, PFNA, and PFOS) are plotted on Figures 3A and 3B (Sludges and Sewer Grits), and 4 (Contaminated Soils).

## 2.2 Phase 1B Testing

The second part of Phase 1 testing consisted of collecting samples from C&D and bulky waste materials disposed at the NEWSVT Landfill. The sampling occurred between May 29, 2019 and August 8, 2019 and included collection of 19 bulky waste samples and 13 C&D samples from solid waste transfer stations located throughout Vermont. The Testing Plan indicated that NEWSVT would collect samples from a minimum of 25 percent of these waste materials; however, as Sanborn Head found through the sampling process, these types of wastes are ubiquitous in the waste stream and cannot be tracked by source (unlike sludges and contaminated soil). Therefore, as an alternative measure, and as approved by VTDEC in a July 11, 2019 email, Sanborn Head collected a minimum of 5 samples from 25 percent of Casella’s transfer stations in Vermont that serve the NEWSVT Landfill (i.e., 5 or more samples from each of 5 transfer stations, to exceed a minimum of 25 samples of C&D and bulky waste combined). Exhibit 4 includes the number of bulky waste and C&D samples collected at each facility, which totaled 32 (including 2 samples collected from the NEWSVT Landfill).

<sup>5</sup> Contaminated soils were not known or suspected to contain PFAS, but were slated for disposal due to the presence of other contaminants.

**Exhibit 4 - Phase 1B Sample Collection Summary**

<b>Transfer Station</b>	<b>Bulky Waste Samples</b>	<b>C&amp;D Samples</b>	<b>Total Samples</b>
<b>All Cycle Williston, VT</b>	6	3	9
<b>CV East Montpelier, VT</b>	3	3	6
<b>Rutland, VT</b>	2	3	5
<b>Hyde Park, VT</b>	3	2	5
<b>Arlington, VT</b>	4	1	5
<b>NEWSVT Landfill</b>	1	1	2

Analytical results are tabulated in Tables 3 (Bulky Waste) and 4 (C&D Waste) and plotted on Figures 5 (Bulky Waste) and 6 (C&D Waste). Results for the five PFAS compounds included in the Vermont Health Advisory for Drinking Water (PFHpA, PFHxS, PFOA, PFNA, and PFOS) are plotted on Figures 7 (Bulky Waste and Textiles) and 8 (C&D Waste and Carpeting).

**2.3 Phase 2 Testing**

Prior to commencing Phase 2 testing, Sanborn Head performed a qualitative evaluation of NEWSVT/Casella commercial customer waste streams for possible PFAS-containing materials to identify potential sources of PFAS-containing waste disposed at the NEWSVT Landfill. This evaluation included review of NEWSVT’s/Casella’s commercial waste disposal customer list and prioritization of customers for testing based on the possible presence of PFAS in the types of wastes generated and the mass/volume of waste generated by customers. Based on the results of the evaluation and general waste disposal practices, including information contained in VTDEC’s July 2018 PFAS Contamination Status Report and July 2019 PFAS Sampling Plan<sup>6</sup>, Sanborn Head and NEWSVT/Casella generated a prioritized list of customers to sample, which targeted wastes associated with the following types of businesses or processes:

- Wire coating
- Injection molding
- Cosmetic manufacturing
- Car washes
- Electroplating
- Specialty coatings
- Printing
- Plastic manufacturing
- Food packaging/fast food restaurants

<sup>6</sup><https://dec.vermont.gov/sites/dec/files/documents/PFAS%20Sampling%20Report%2007.10.18%20FINAL.pdf>  
[https://anrweb.vt.gov/PubDocs/DEC/PFOA/2019%20Statewide%20Sampling%20Plan/PFAS%20sampling%20plan%2007162019\\_Final.pdf](https://anrweb.vt.gov/PubDocs/DEC/PFOA/2019%20Statewide%20Sampling%20Plan/PFAS%20sampling%20plan%2007162019_Final.pdf)

- Waterproof coatings
- Packaging
- Clothing/textiles

In accordance with the Testing Plan, Sanborn Head and NEWSVT/Casella selected 20 customers from the Phase 2 list and collected samples from waste generated by each customer. Sanborn Head performed the sampling between July 11, 2019 and August 19, 2019 at seven waste transfer stations and collected a total of 26 composite field samples in accordance with the sampling procedures in the Testing Protocols.

Analytical results for commercial customer waste samples are tabulated in Table 5 and plotted on Figure 9. Results for the five PFAS compounds included in the Vermont Health Advisory for Drinking Water (PFHpA, PFHxS, PFOA, PFNA, and PFOS) are plotted on Figure 10.

### 2.4 Phase 3 Testing

As requested by VTDEC, follow up sampling was performed on six sludge sources. The analytical results are presented in Table 1 and on Figures 1A and 3A.

### 2.5 SPLP Testing

As proposed in the Testing Plan and Testing Protocols, approximately 10 percent of the field samples were analyzed in accordance with the Synthetic Precipitation Leaching Procedure (SPLP) and EPA Method 537, isotope dilution, adapted to non-drinking water matrix. Sanborn Head collected 11 SPLP samples as summarized by waste type in Exhibit 5.

**Exhibit 5 – SPLP Sample Collection Summary**

<b>Waste Type</b>	<b>SPLP Samples</b>
<b>Sludge</b>	4
<b>Contaminated Soil</b>	1
<b>Bulky Waste</b>	1
<b>C&amp;D Waste</b>	2
<b>Commercial Customer</b>	3

The SPLP analytical results are presented in Tables 1 through 5 and are identified with “SPLP” at the beginning of the sample name; the leachate extract concentration results immediately follow the concentration in waste results for the field sample with which it is associated. Figure 11 presents the SPLP results and Figure 13 presents a paired comparison of the PFAS concentrations in waste and the SPLP leachate extract concentrations. Results for the five PFAS compounds included in the Vermont Health Advisory for Drinking Water (PFHpA, PFHxS, PFOA, PFNA, and PFOS) are shown on Figures 12 and 14. Figures 13 and 14 also provide an estimate of the PFAS in the sample that theoretically leached out of the

sample into the extract. Generally, similar compounds are observed in the paired samples and SPLP extracts (allowing for the influence of detection limits). We believe that the SPLP is a potentially aggressive test of leachability for PFAS because it involves sample saturation, which may tend to solubilize PFAS to greater degrees than under in situ conditions in a landfill where air-water interfaces may favor surfactant-like behavior. Interestingly, the highest degree of leaching is indicated for the food packaging sample (CC-04), which is consistent with a recent study of PFAS leaching in simulated landfill material that found PFAS was readily released from the degradation of paper (cellulose) (Allred *et al.*, 2015).

### 3.0 DATA EVALUATION

The data evaluation for this testing program was performed to support ranking (by PFAS concentration and mass of waste accepted by NEWSVT) of the waste streams with the greatest potential of contributing PFAS to the NEWSVT leachate. For the waste types included in the study, Sanborn Head identified seven categories for which either waste mass disposal data were available from NEWSVT/Casella, or estimated disposal rates were available from the “2018 Vermont Waste Characterization” report, prepared for VTDEC by DSM Environmental Services, Inc. (VTDEC Waste Characterization Report). The waste mass disposal rates and PFAS concentrations were used together to develop estimates for PFAS mass flux into the landfill for each waste category. The waste categories along with the source of the waste disposal rate information are presented in Exhibit 6.

**Exhibit 6 - Waste Categories for PFAS Mass Flux Evaluation**

Waste Category	Description	Source of Waste Disposal Rate Information
Sludge	WWTP, Industrial, Paper, & Sewer Grit	NEWSVT/Casella
Contaminated Soil	Soils contaminated with petroleum, PAH, PCB, and tire fire residue	NEWSVT/Casella
Furniture/Bulky Items	Textiles from mattresses, furniture, and other bulky items	VTDEC
Textiles and Leather	Clothing and miscellaneous textiles	VTDEC
Carpet	Mixed carpet	VTDEC
C&D	C&D waste materials other than carpet (e.g., roofing shingles, vinyl siding, flooring, fiberglass insulation, drywall)	VTDEC
Commercial Customers	Waste materials from 20 customers	NEWSVT/Casella and VTDEC

**Note:** VTDEC indicates the “2018 Vermont Waste Characterization” report, prepared for VTDEC by DSM Environmental Services, Inc.

The mass flux results were used to derive an estimate of PFAS loadings for comparison of waste input to leachate output (estimated with sampling data from VTDEC and NEWSVT and leachate production data provided by NEWSVT). The results of the mass flux evaluation are presented in Figures 15 and 16 (for all 24 PFAS analytes and the 5 PFAS in the Vermont Health Advisory for Drinking Water, respectively). Note that Figure 15 includes two mass

flux estimates for leachate output based on the two PFAS concentration data sets (537 Modified and MLA 110) for samples collected at NEWSVT on January 10, 2018 with results presented in the document titled “Wastewater Treatment Facility and Landfill Leachate PFAS Sampling, Various Locations, Northern Vermont”, prepared for VTDEC by Weston & Sampson and dated May 3, 2018 (VTDEC 2018 Sludge and Leachate Sampling Results). Figure 16 includes a third leachate output mass flux estimate based on the results for leachate samples collected at NEWSVT on May 2, 2019 by Waite-Heindel Environmental Management (this data set includes results for 12 PFAS compounds, therefore it was not presented on Figure 15, which presents results for 24 PFAS compounds).

The calculation methodologies and assumptions specific to each waste category are discussed in the following sections. To provide comparability, PFAS mass fluxes have been estimated on an average daily basis. As a caution, these calculations should be treated as preliminary estimates with varying degrees of uncertainty due to potential limitations in PFAS waste characterization and the corresponding assumptions regarding disposal rates. No mass flux contributions to air or landfill gas have been included in these estimates.

### **3.1 Sludge and Contaminated Soil Categories**

The methodology used to calculate PFAS mass flux for the Sludge and Contaminated Soil categories involved calculating PFAS mass flux for each source tested during the study, summing the results of individual sources, and scaling the combined result to account for the total mass of waste disposed for each category (i.e., accounting for waste mass from sources that were not tested). The mass flux for each source was calculated by multiplying the PFAS concentration (on a dry weight basis) by the mass of waste disposed, adjusted for percent total solids. For sources that were tested more than once, or for which duplicate samples were collected, the average PFAS concentration was used. Waste mass disposal data provided by NEWSVT and percent total solids results are included in Tables 1 (Sludge) and 2 (Contaminated Soil).

### **3.2 Furniture/Bulky Items Category**

The PFAS mass flux estimate for the Furniture/Bulky Items category was calculated by multiplying the average concentration for 14 samples (from mattresses and box springs, indoor and outdoor furniture, and other bulky items) by the estimated mass of bulky waste materials disposed. The waste disposal tonnage estimate is the value presented in Table 11 (“Aggregate Composition of MSW Disposed”) for “Furniture/Bulky Items” (38,298 tons) from the VTDEC Waste Characterization Report with a factor of 0.1 applied. Based on a professional judgement estimate, the textile covering of a typical three-cushion couch is on the order of 10 percent of the total weight of the couch. Given the complexity of trying to quantify the fraction of textile mass associated with each different waste material in the category, Sanborn Head used a simplified approach and applied the 10 percent fraction to the whole Furniture/Bulky Items category to estimate the tonnage of textiles disposed. We have assumed the remaining 90 percent of the waste materials in the category are non-textile materials (e.g., structural components of furniture that are made of wood, metal, plastic, etc.) containing negligible PFAS levels, and excluded this mass fraction from the PFAS mass flux ranking evaluation.

### 3.3 Textiles and Leather Category

The PFAS mass flux estimate for the Textiles and Leather category was calculated by multiplying the average concentration for four samples from clothing and other textiles by the estimated mass of textile waste materials disposed. The waste disposal tonnage estimate is the value presented in Table 11 (“Aggregate Composition of MSW Disposed”) for “Textiles and Leather” (17,830 tons) from the VTDEC Waste Characterization Report with a factor of 0.5 applied to account for a potential sampling bias in selecting the materials to sample (based on professional judgement).

During the testing program, textile wastes were targeted for sampling to some degree based on their likelihood of containing PFAS compounds (e.g., water resistant clothing); therefore, the average concentration for the four samples is likely skewed high and not representative of the whole category. As a simplified approach to try to offset the sampling bias, Sanborn Head, as described above, assumed that 50 percent of the textile mass in the category does not contain PFAS compounds and excluded the mass from the PFAS mass flux estimate for the category.

### 3.4 Carpet Category

The PFAS mass flux estimate for the Carpet category was calculated by multiplying the average concentration for six carpet waste samples by the estimated mass of carpet waste disposed. Carpet waste disposal tonnage estimates were based on the results for “Carpet and Carpet Padding” from the VTDEC Waste Characterization Report. The tonnage for Carpet is the sum of the values in Tables 11 (“Aggregate Composition of MSW Disposed”) and 14 (“Estimated Composition of C&D Waste”) (12,918 + 642 + 331 tons) with a factor of 0.66 applied. Table 14 included “Carpet” and “Carpet Padding” as separate categories with an approximate ratio of 66/34 of carpet to carpet padding which we have assumed is representative for the whole category. Sanborn Head excluded the estimated tonnage for Carpet Padding from the PFAS mass flux evaluation because the testing program did not specifically evaluate this material as a suspected source of PFAS. This assumption is supported by the results for samples where carpet padding was included in the composite (CDW-01\_20190529 and CDW-04\_20190606), which were low in PFAS concentrations relative to some of the samples that contained only carpet materials (CDW-03\_20190606 and CDW-05\_20190618).

### 3.5 C&D Category

The PFAS mass flux estimate for the C&D category was calculated by multiplying the average concentration for seven samples from C&D waste materials (e.g., roofing shingles, vinyl siding, flooring, fiberglass insulation, drywall) by the estimated mass of C&D waste disposed. The waste disposal tonnage estimate is the value presented in Table E.1 (“Final Allocation of Disposed Waste by Generator and Material Type”) for “C&D, All Other Facilities” (78,872 tons) from the VTDEC Waste Characterization Report. The tonnage estimate excludes C&D waste that was processed to remove recyclables at the BATS and Myers facilities.



### 3.6 Commercial Customers Category

Similar to the calculation methodology for the Sludge and Contaminated Soil categories, PFAS mass flux was calculated for each of the 20 customers tested during the study, and the sum of the results was scaled to account for the estimated total mass of commercial waste disposed (i.e., accounting for waste mass from customers that were not tested). The mass flux for each customer was calculated by multiplying the PFAS concentration (on an as received basis) by the mass of waste disposed by that customer on an annual basis, adjusted for the approximate fraction of materials tested (e.g., if the sample represented approximately 50 percent of the waste materials in the load being tested, the mass of waste disposed for that customer was multiplied by 0.5 and then multiplied by the PFAS concentration). For customers for which duplicate samples were collected, the average PFAS concentration was used. Waste mass disposal data provided by NEWSVT/Casella and the estimated fractions of materials represented by the sample results are included in Table 5.

The study focused on sampling waste from commercial entities suspected to have substantial PFAS in products, which amounted to a small fraction of the estimated disposal tonnage of commercial waste being sampled. To conservatively account for the possibility of missed sources, the PFAS mass flux results for the 20 customers tested during the study were scaled by a factor of 77.5 (185,251/2,391) based on the value presented in Table 9 (“Composition of Institutional/Commercial/Industrial [ICI] MSW, Vermont, 2018”) from the VTDEC Waste Characterization Report for total annual ICI MSW disposed (185,251 tons) divided by the approximate total annual mass disposed by the customers tested during the study (2,391 tons). Although the scaling methodology is a simplified approach to estimate the total PFAS mass flux for the commercial customer category, it is judged to be reasonably conservative based on the data that are available, as customer sampling was biased toward suspected PFAS sources.

### 4.0 QUALITY ASSURANCE/QUALITY CONTROL

In accordance with the Testing Protocols, Sanborn Head collected field QA/QC samples throughout the testing program. Field duplicate samples were collected at a frequency of 1 per 5 field samples. Aqueous equipment rinsate blank samples and aqueous field blank samples were collected at a frequency of 1 per 20 field samples. As summarized in Exhibit 2, Sanborn Head collected 21 field duplicate samples, 6 equipment blank samples, and 6 field blank samples in conjunction with the 100 field samples collected during the testing program.

The field duplicate analytical results are presented in Tables 1 through 5 and are identified with “FD” at the beginning of the sample name. The field duplicate results immediately follow the results for the field sample with which it is associated. Exhibit 7 presents the results of a precision/variability analysis including the minimum, maximum, and median values for percent difference between the total PFAS concentration measured in each field sample and its associated field duplicate sample. Exhibit 7 also includes the median difference values in parts per billion (ppb) for comparison.



**Exhibit 7 – Field Duplicate Sample Precision/Variability Analysis**

<b>Waste Type</b>	<b>Field Duplicate Samples</b>	<b>Minimum Difference (%)</b>	<b>Maximum Difference (%)</b>	<b>Median Difference (%)</b>	<b>Median Difference (ppb)</b>
<b>Sludge</b>	6	1	55	12	3.4
<b>Contaminated Soil</b>	2	57	99	78	2.9
<b>Bulky Waste</b>	5	7	47	23	0.9
<b>C&amp;D Waste</b>	2	14	65	39	2.5
<b>Commercial Customer</b>	6	1	75	39	0.7

The results indicate that the sludge matrix had the highest sampling precision (or lowest variability), likely due to the material being relatively homogenous. The sampling precision was lower (or variability higher) for the bulky, C&D, and commercial waste types likely due to the difficulty of homogenizing these matrices in the field. Although the contaminated soil category had the lowest sampling precision, it had the lowest total PFAS concentration of the five waste types with many of the compounds detected below the laboratory reporting limit and above the laboratory method detection limit; therefore, the precision for this waste category may be impacted more by the laboratory reporting limits than by the heterogeneity of the matrix.

The equipment blank and field blank analytical results are included in the laboratory analytical reports in Appendix B; “EB” or “FB” at the beginning of the Client ID indicates that the sample is an Equipment Blank or a Field Blank, respectively. Three equipment blank samples and three field blank samples were collected at the NEWSVT Landfill during collection of sludge and grit samples, contaminated soil samples, bulky waste samples, and C&D samples. In addition, a total of three equipment blank samples and three field blank samples were collected at five different waste transfer facilities during collection of bulky waste samples, C&D samples, and commercial customer waste samples.

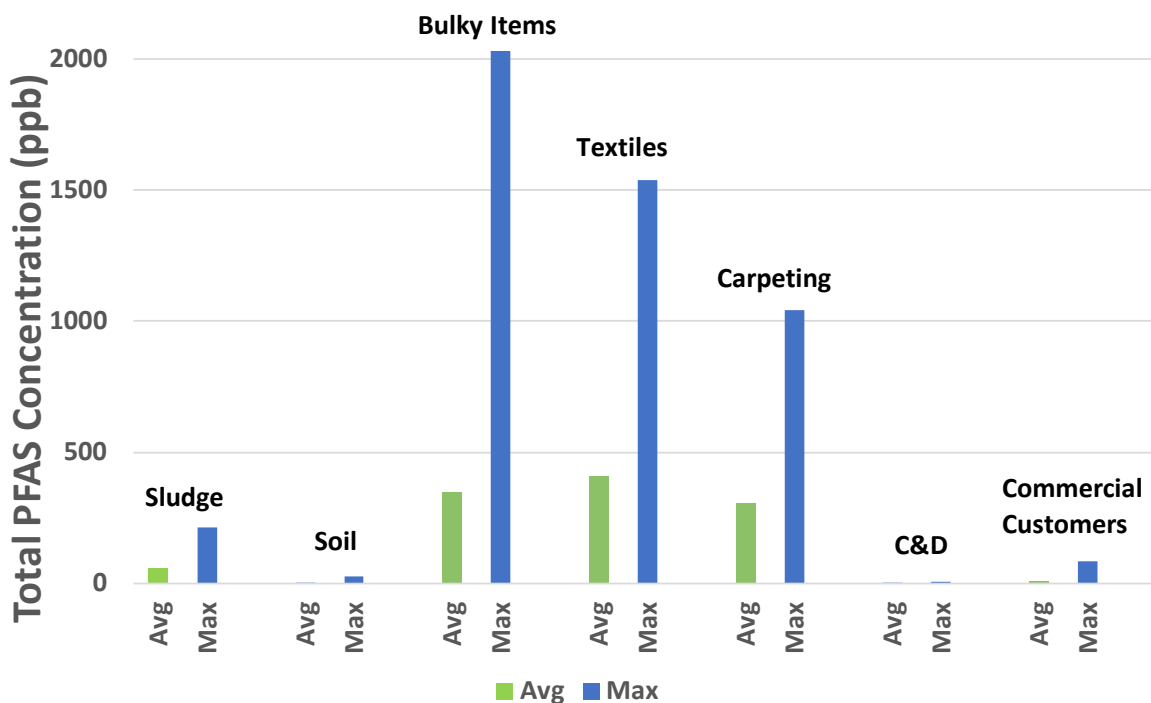
PFAS compounds were not detected in three of the six equipment blank samples and two of the six field blank samples. PFAS compounds were measured in the other seven samples at concentrations ranging from approximately 0.5 to 6.3 nanograms per liter (ng/l), or 0.0005 to 0.0063 ppb, of total PFAS. These levels are very low compared to the concentrations measured in the waste samples (approximately 0.043 to 2,030 ppb of total PFAS); therefore, potential sample contamination from field and/or lab procedures does not appear to be significant. Given that many of the QA/QC samples for this study were collected at or near active waste handling locations (i.e., active landfill cell or waste transfer facility tipping floor) it is not surprising to see some low-level PFAS detections in the samples.

**5.0 DISCUSSION OF RESULTS**

PFAS compounds were detected in 95 percent of the waste samples at concentrations ranging over many orders of magnitude, from approximately 0.043 to 2,030 ppb of total

PFAS. The highest concentrations were measured in samples collected from bulky items, textiles, and carpeting. Results for WWTP sludge samples ranged from approximately 16 to 214 ppb of total PFAS, which is generally consistent with results presented in the VTDEC 2018 Sludge and Leachate Sampling Results. Exhibit 8 presents the results of the average and maximum total PFAS concentrations by waste type.

**Exhibit 8 – Average and Maximum Total PFAS Concentration by Waste Type**



A preliminary data evaluation for this testing program was performed to support ranking (by PFAS concentration and mass of waste accepted by NEWSVT) of the waste streams with the highest potential to contribute PFAS to the NEWSVT leachate. While there is uncertainty with respect to the mass disposal rate of certain PFAS waste streams (e.g., bulky waste textiles), a mass flux evaluation using waste composition data from the VTDEC Waste Characterization Report indicates that textiles and carpeting potentially contribute the largest PFAS mass influxes to the NEWSVT Landfill (of the wastes included in the study).

To help evaluate PFAS leachability for the wastes included in the study, the mass flux results were used to derive an estimate of PFAS influxes for comparison of PFAS waste input to PFAS leachate output. For comparison, mass flux estimates in landfill leachate have also been included on Figures 15 and 16. Comparison of the landfill leachate mass flux out of the landfill (estimated with data from the VTDEC 2018 Sludge and Leachate Sampling Results and leachate generation data provided by NEWSVT) and the mass fluxes into the landfill due to wastes collected during this study indicates a mass *imbalance* between the PFAS leaving and entering the landfill in leachate and studied wastes, respectively. The estimates indicate there is a greater amount of PFAS entering the landfill in wastes than leaving it in leachate, and there is a disparity in the specific PFAS that enter in wastes and leave in leachate. This imbalance suggests that (1) landfills sequester a large fraction of PFAS loadings from various

wastes included in the study, and (2) there are other sources, such as residential MSW, that are responsible for the PFAS in leachate that were not accounted for by the wastes sampled during this study, particularly for the short-chain PFAS that are detected in leachate.

The phase-out of use of the C8 compounds PFOA and PFOS was accompanied by a shift toward use of shorter-chain PFAS as substitutes in products. Shorter-chain PFAS such as PFBS have received extensive use in waterproof coatings and food packaging (DMoE, 2015), and these consumer products may be responsible for the greater prevalence in leachate if PFAS are derived from recently disposed MSW. Moreover, a recent study of waste decomposition suggests that certain products, such as coated papers, may break down more rapidly in landfills and release PFAS to leachate (Allred *et al.*, 2015).

In the VTDEC 2018 Sludge and Leachate Sampling Results, perfluoroalkyl carboxylic acids (PFCAs) with 4-14 carbon chain length and perfluoroalkyl sulfonic acids (PFSAs) of most even chain length from C4-C10 were found at the greatest prevalence in leachate. Furthermore, PFCA and PFSA precursors were detected in the VTDEC study and have been identified in other studies. Interestingly, the PFAS compounds found in leachate samples were similar among landfills and favored short-chain PFAS compounds such as PFBA. Largely absent from leachate was PFOS and some other longer-chain homologues. Longer-chain PFAS are more prevalent in the wastes sampled in this study and appear by compound-specific imbalances between waste influx and leachate outflux to be less prone to release and leaching from MSW. The apparent sequestration of these longer-chain PFAS is consistent with their generally lower aqueous solubilities and higher organic carbon-water partition coefficients relative to shorter-chain PFAS.

Further, comparison of the VTDEC 2018 Sludge and Leachate Sampling Results for PFAS concentration data of landfill leachate and wastewater treatment plant sludges indicates a similar disparity between the specific PFAS prevalent in each category. These differences also suggest that (1) landfills in a large part sequester long-chain PFAS more amenable to binding to solids, and (2) sources other than sludges are responsible for the short-chain PFAS that are detected in leachate. Note, for example, that PFOS, a long-chain compound that readily binds to solids, is absent from leachate, and PFBA, prevalent in leachate, is largely absent from sludges.

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## TABLES





**Table 2: Summary of PFAS Analytical Results for Contaminated Soil  
NEWSVT Landfill  
Coventry, Vermont**

Sample Name	Collection Date	Lab ID	Description	Units	Perfluorobutanoic Acid (PFBA)	Perfluoropentanoic Acid (PFPeA)	Perfluorobutanesulfonic Acid (PFBS)	1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	Perfluorohexanoic Acid (PFHxA)	Perfluoropentanesulfonic Acid (PFPeS)	Perfluorooheptanoic Acid (PFHpA)	Perfluorohexanesulfonic Acid (PFHxS)	Perfluorooctanoic Acid (PFOA)	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Perfluorooheptanesulfonic Acid (PFHpS)	Perfluorononanoic Acid (PFNA)	Perfluorooctanesulfonic Acid (PFOS)	Perfluorodecanoic Acid (PFDA)	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	Perfluorononanesulfonic Acid (PFNS)	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	Perfluoroundecanoic Acid (PFUnA)	Perfluorodecanesulfonic Acid (PFDS)	Perfluorooctanesulfonamide (FOSA)	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTDA)	Perfluorotetradecanoic Acid (PFTA)	PFOA+PFOS, Total	PFAS 5, Total	Solids, Total	Tons of Waste Material Accepted at NEWSVT Landfill from 1/1/2019 through 7/17/2019	Percentage of Total Contaminated Soil Accepted at NEWSVT Landfill 1/1/2019 through 7/17/2019			
CSC-01_20190514	5/14/2019	L1920614-05	Contaminated Soil - PAH	µg/kg	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	0.046 J	<0.522	<0.522	<0.522	0.661	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	<0.522	0.707 J	0.707 J	89	109	0.5		
CSC-02_20190515	5/15/2019	L1920614-06	Contaminated Soil - Petroleum	µg/kg	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	0.054 J	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	<0.520	0.054 J	0.054 J	90	120	0.5	
CSC-03_20190513	5/13/2019	L1920614-07	Contaminated Soil - PAH	µg/kg	<0.493	<0.493	<0.493	<0.493	<0.493	<0.493	<0.493	0.087 J	<0.493	<0.493	0.070 J	0.494	0.066 J	<0.493	<0.493	<0.493	<0.493	0.035 J	0.081 J	<0.493	<0.493	<0.493	<0.493	<0.493	<0.493	<0.493	0.581 J	0.651 J	90	1,418	6.2	
CSC-04_20190521	5/21/2019	L1922110-02	Contaminated Soil - Petroleum	µg/kg	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	0.081 J	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	<0.605	0.367 J	0.448 J	81	94	0.4	
CSC-05_20190604	6/4/2019	L1924538-10	Contaminated Soil - PAH	µg/kg	0.023 J	0.041 J	<0.850	<0.850	0.046 J	<0.850	0.046 J	<0.850	0.238 J	24.4	<0.850	0.101 J	1.07	0.105 J	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	<0.850	1.31 J	1.46 J	89	964	4.2	
FD_CSC-05_20190604	6/4/2019	L1924538-11	Contaminated Soil - PAH	µg/kg	0.023 J	0.057 J	<0.911	<0.911	0.057 J	<0.911	0.060 J	<0.911	0.246 J	3.63	<0.911	<0.911	1.04	0.123 J	<0.911	<0.911	<0.911	0.055 J	<0.911	<0.911	<0.911	<0.911	<0.911	<0.911	<0.911	<0.911	1.29 J	1.35 J	83	964	4.2	
CSC-06_20190611	6/11/2019	L1925459-03	Contaminated Soil - PAH	µg/kg	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	0.043 J	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	<0.826	91	123	0.5
CSC-07_20190625	6/25/2019	L1928945-01	Contaminated Soil - PCB	µg/kg	0.195 J	0.209 J	<1.50	<1.50	0.132 J	<1.50	0.124 J	<1.50	0.584 J	<1.50	<1.50	0.227 J	3.66	0.368 J	<1.50	<1.50	<1.50	0.177 J	0.326 J	<1.50	<1.50	0.194 J	<1.50	<1.50	0.194 J	<1.50	0.088 J	4.24 J	4.60 J	63	1,460	6.4
CSC-08_20190625	6/25/2019	L1928945-03	Contaminated Soil - Petroleum	µg/kg	<1.17	0.104 J	<1.17	<1.17	0.098 J	<1.17	0.091 J	0.165 J	0.448 J	<1.17	<1.17	<1.17	1.42	0.208 J	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	0.118 J	<1.17	0.071 J	1.87 J	2.12 J	82	2,474	10.8	
SPLP_CSC-08_20190625	6/25/2019	L1928945-03	Contaminated Soil - Petroleum	ng/L	<1.80	3.58	<1.80	<1.80	3.02	<1.80	2.81	2.77	12.8	<1.80	<1.80	0.906 J	18.2	2.04	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	<1.80	31.0	37.5 J	N/A	N/A	N/A	
CSC-09_20190701	7/1/2019	L1928945-06	Contaminated Soil - Tire Fire Residue	µg/kg	0.130 J	0.904 J	<1.10	<1.10	0.495 J	<1.10	0.170 J	<1.10	0.057 J	2.29	<1.10	<1.10	0.809 J	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	<1.10	0.866 J	1.04 J	83	60	0.3	
CSC-10_20190709	7/9/2019	L1930748-01	Contaminated Soil - Petroleum	µg/kg	0.065 J	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	0.154 J	<1.22	<1.22	0.109 J	0.406 J	0.090 J	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	<1.22	0.560 J	0.669 J	72	74	0.3	
FD_CSC-10_20190709	7/9/2019	L1930748-02	Contaminated Soil - Petroleum	µg/kg	0.083 J	0.068 J	<1.23	<1.23	<1.23	<1.23	0.073 J	<1.23	0.219 J	<1.23	<1.23	0.121 J	0.566 J	0.102 J	<1.23	<1.23	<1.23	0.061 J	<1.23	<1.23	<1.23	<1.23	<1.23	<1.23	<1.23	0.785 J	0.979 J	70	74	0.3		

Notes:

- Samples were collected by Sanborn Head employees on the dates indicated and submitted to Alpha Analytical for analysis of per- and polyfluorinated alkyl substances (PFAS) by United States Environmental Protection Agency (USEPA) Method 537 (modified) with isotope dilution. Samples with "SPLP" designation were replicates of the primary sample which were prepared by USEPA Method 1312 Synthetic Precipitation Leaching Procedure prior to analysis by USEPA Method 537 with isotope dilution.
- Results are reported in micrograms per kilogram (µg/kg) on a dry weight basis. SPLP results are reported in nanograms per liter (ng/L). Total solids are reported in percent (%).
- Symbols and abbreviations are defined as follows:
  - "<" indicates not detected at the indicated laboratory reporting limit.
  - "J" indicates an estimated result reported below the laboratory reporting limit and above the laboratory method detection limit.
  - "FD" in the Sample Name indicates that the sample is a field duplicate.
  - "SPLP" in the Sample Name indicates that the sample was prepared by USEPA Method 1312 Synthetic Precipitation Leaching Procedure prior to analysis by USEPA Method 537 with isotope dilution.
  - "PFOA+PFOS, Total" indicates the sum of detected concentrations of PFOA and PFOS, as reported by the laboratory.
  - "PFAS 5, Total" indicates the sum of detected concentrations of PFHpA, PFHxS, PFOA, PFNA, and PFOS, as reported by the laboratory.
  - "N/A" indicates not applicable.
- Green shaded cells indicate compounds included in the Vermont Health Advisory for Drinking Water.
- Waste disposal tonnage data were provided by New England Waste Services of Vermont, Inc.



**Table 3: Summary of PFAS Analytical Results for Bulky Waste and Textiles  
NEWSVT Landfill  
Coventry, Vermont**

Sample Name	Collection Date	Lab ID	Description	Units	Perfluorobutanoic Acid (PFBA)	Perfluoropentanoic Acid (PFPeA)	Perfluorohexanoic Acid (PFHxA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorooctanoic Acid (PFOA)	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Perfluorooctanoic Acid (PFOS)	Perfluorononanoic Acid (PFNA)	Perfluorodecanoic Acid (PFDA)	1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	Perfluorodecanoic Acid (PFDS)	N-Methyl Perfluorodecanesulfonamide (NMeFOSAA)	Perfluoroundecanoic Acid (PFUnA)	Perfluorododecanesulfonic Acid (PFDS)	Perfluorooctanesulfonamide (FOSA)	N-Ethyl Perfluorooctanesulfonamide (NEtFOSAA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTTrDA)	Perfluorotetradecanoic Acid (PFTA)	PFOA+PFOS, Total	PFAS 5, Total						
BW-01_20190529	5/29/2019	L1923119-01	4 couches, 2 mattresses, 1 mattress pad	µg/kg	1.15 J	0.393 J	0.212 J	<1.29	1.95	0.145 J	1.31	3.87	6.71	1.55	0.180 J	0.865 J	10.1	2.58	1.12 J	<1.29	0.960 J	0.391 J	0.268 J	<1.29	1.85 J	8.35	1.09 J	0.417 J	0.441 J	16.8	22.9 J
BW-02_20190529	5/29/2019	L1923119-02	8 mattresses, 1 box spring	µg/kg	1.04 J	0.396 J	1.73 J	<2.56	3.14	0.247 J	1.08 J	1.85 J	6.16	1.79 J	<2.56	0.512 J	13.6	1.82 J	1.02 J	<2.56	<2.56	0.237 J	<2.56	1.85 J	3.98	0.826 J	<2.56	0.438 J	19.8	23.2 J	
FD_BW-02_20190529	5/29/2019	L1923119-03	8 mattresses, 1 box spring	µg/kg	0.781 J	0.242 J	1.42 J	<2.56	2.43 J	<2.56	0.763 J	1.83 J	5.98	1.02 J	<2.56	0.487 J	9.44	2.15 J	1.24 J	<2.56	<2.56	0.212 J	<2.56	1.31 J	1.88 J	0.717 J	<2.56	0.350 J	15.4	18.5 J	
BW-03_20190529	5/29/2019	L1923119-04	3 mattresses, 2 box springs, 2 couches, 1 chair	µg/kg	10.4	14.0	10.4	<1.11	88.0	8.26	79.7	33.4	276	1.44	13.6	7.10	486	3.56	1.82	<1.11	156	2.30	2.29	3.14	13.6	1.89	1.70	0.731 J	762	882	
BW-04_20190529	5/29/2019	L1923119-06	4 couches, 1 headboard, 1 carpet	µg/kg	8.16	12.7	1.30 J	<2.34	32.6	<2.34	46.2	1.22 J	55.8	1.66 J	<2.34	54.4	16.4	36.8	3.45	<2.34	2.55	24.6	1.14 J	<2.34	1.97 J	22.0	19.7	14.7	72.2	174 J	
BW-05_20190606	6/6/2019	L1924538-03	3 couches, 1 chair, 1 recliner	µg/kg	4.83	9.33	3.77	0.086 J	55.9	4.68	64.8	13.2	268	4.15	5.34	12.5	299	25.5	5.05	<1.23	111	6.10	0.401 J	18.6	9.92	15.2	10.3	8.42	567	658	
BW-06_20190606	6/6/2019	L1924538-04	5 mattresses	µg/kg	0.452 J	<2.24	<2.24	<2.24	1.20 J	<2.24	0.797 J	0.961 J	3.40	1.01 J	<2.24	0.305 J	16.6	0.672 J	0.874 J	<2.24	2.35	<2.24	1.43 J	2.73	2.07 J	0.536 J	<2.24	0.248 J	20.0	22.1 J	
FD_BW-06_20190606	6/6/2019	L1924538-05	5 mattresses	µg/kg	0.636 J	<2.37	<2.37	<2.37	1.27 J	<2.37	0.830 J	0.935 J	3.92	0.794 J	<2.37	0.312 J	17.1	0.758 J	0.769 J	<2.37	1.02 J	<2.37	0.770 J	1.35 J	1.98 J	0.559 J	<2.37	0.240 J	21.0	23.1 J	
BW-07_20190606	6/6/2019	L1924538-08	1 luggage, 1 bean bag, 1 outdoor chair, 1 tarp	µg/kg	0.054 J	<1.17	<1.17	<1.17	0.113 J	<1.17	0.081 J	0.227 J	0.288 J	<1.17	<1.17	<1.17	0.491 J	0.095 J	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	0.779 J	1.09 J
BW-08_20190618	6/18/2019	L1927149-02	2 leather jackets, 2 rain jackets, 1 cloth jacket, 1 vest	µg/kg	7.05 J	3.83 J	<7.69	<7.69	14.1	<7.69	13.7	<7.69	33.3	1.38 J	<7.69	7.23 J	1,400	4.43 J	4.27 J	<7.69	<7.69	3.45 J	<7.69	1.15 J	32.5	2.40 J	6.10 J	4.45 J	1,430	1,454 J	
BW-09_20190618	6/18/2019	L1927149-03	3 tarps, 1 pool	µg/kg	4.35	<4.00	3.81 J	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00
BW-10_20190620	6/20/2019	L1927149-11	5 camping chairs	µg/kg	0.368 J	0.174 J	0.197 J	<1.10	0.484 J	<1.10	0.274 J	<1.10	0.921 J	0.396 J	<1.10	0.367 J	0.145 J	0.396 J	<1.10	<1.10	<1.10	0.207 J	<1.10	<1.10	<1.10	0.194 J	<1.10	0.095 J	1.07 J	1.71 J	
BW-11_20190620	6/20/2019	L1927149-13	3 hot tub covers	µg/kg	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	0.159 J	1.09 J	<1.31	<1.31	0.184 J	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	<1.31	0.343 J	0.343 J
FD_BW-11_20190620	6/20/2019	L1927149-14	3 hot tub covers	µg/kg	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	0.073 J	1.06 J	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	0.073 J	0.073 J
BW-12_20190709	7/9/2019	L1930748-04	2 leather couches, 2 leather chairs	µg/kg	0.685 J	0.378 J	0.481 J	<1.09	1.88	0.403 J	0.876 J	1.64	57.6	17.8	<1.09	0.410 J	11.3	0.794 J	6.27	<1.09	<1.09	<1.09	<1.09	<1.09	0.326 J	3.48	0.350 J	0.261 J	0.148 J	68.9	71.9 J
BW-13_20190729	7/29/2019	L1934516-06	2 air mattress, inflatable toy	µg/kg	<1.29	<1.29	<1.29	<1.29	0.071 J	<1.29	<1.29	<1.29	0.079 J	0.940 J	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	<1.29	0.079 J	0.079 J
FD_BW-13_20190729	7/29/2019	L1934516-07	2 air mattress, inflatable toy	µg/kg	<1.17	<1.17	<1.17	<1.17	0.101 J	<1.17	0.088 J	<1.17	0.209 J	<1.17	<1.17	<1.17	0.175 J	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	<1.17	0.384 J	0.472 J
BW-14_20190729	7/29/2019	L1934516-08	2 fake leather computer chairs	µg/kg	1.72	0.628 J	1.10 J	<1.21	1.65	<1.21	0.879 J	15.2	5.34	3.57	<1.21	0.260 J	62.2	1.10 J	1.98	<1.21	<1.21	0.119 J	3.89	<1.21	<1.21	0.132 J	<1.21	0.309 J	67.5	83.9 J	
BW-15_20190729	7/29/2019	934516-09 &	1 tent cover, 1 tent, 1 umbrella, 1 life jacket	µg/kg	3.11	2.60	18.9	<1.18	17.7	19.7	44.8	77.2	508	<1.18	34.4	19.1	810	6.68	0.395 J	2.00	172	4.56	0.854 J	95.6	177	4.17	7.98	3.12	1,320	1,459	
BW-16_20190808	8/8/2019	L1935885-01	9 fabric swatches	µg/kg	<1.19	<1.19	<1.19	<1.19	0.326 J	<1.19	<1.19	<1.19	1.64	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19
FD_BW-16_20190808	8/8/2019	L1935885-02	9 fabric swatches	µg/kg	<1.18	<1.18	<1.18	<1.18	0.231 J	<1.18	<1.18	<1.18	<1.18	2.65	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18
BW-17_20190808	8/8/2019	L1935885-03	4 boots/shoes, 2 hats, 2 gloves, 1 golf bag	µg/kg	1.28 J	1.36 J	<6.10	<6.10	6.31	<6.10	4.87 J	1.58 J	16.5	6.36	<6.10	3.67 J	4.75 J	7.96	<6.10	<6.10	<6.10	1.62 J	<6.10	1.66 J	27.6	3.01 J	<6.10	1.36 J	21.3 J	31.4 J	
SPLP_BW-17_20190808	8/8/2019	L1935885-03	4 boots/shoes, 2 hats, 2 gloves, 1 golf bag	ng/L	19.5	12.7 J	16.3 J	<17.5	45.5	39.2	30.3	<17.5	92.2	15.3 J	<17.5	15.7 J	<17.5	9.61 J	<17.5	<17.5	<17.5	<17.5	<17.5	<17.5	<17.5	<17.5	<17.5	<17.5	<17.5	92.2	138 J
BW-18_20190808	8/8/2019	L1935885-05	1 fake christmas tree	µg/kg	<1.20	<1.20	<1.20	<1.20	0.065 J	<1.20	<1.20	<1.20	0.075 J	0.658 J	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	0.075 J	0.075 J
BW-19_20190808	8/8/2019	L1935885-06	1 gel ice pack	µg/kg	<1.28	<1.28	<1.28	<1.28	0.072 J	<1.28	<1.28	<1.28	<1.28	2.87	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28	<1.28

Notes:

- Samples were collected by Sanborn Head employees on the dates indicated and submitted to Alpha Analytical for analysis of per- and polyfluorinated alkyl substances (PFAS) by United States Environmental Protection Agency (USEPA) Method 537 (modified) with isotope dilution. Samples with "SPLP" designation were replicates of the primary sample which were prepared by USEPA Method 1312 Synthetic Precipitation Leaching Procedure prior to analysis by USEPA Method 537 with isotope dilution.
- Results are reported in micrograms per kilogram (µg/kg) on an "As Received" basis. SPLP results are reported in nanograms per liter (ng/L).
- Symbols and abbreviations are defined as follows:
  - "<" indicates not detected at the indicated laboratory reporting limit.
  - "J" indicates an estimated result reported below the laboratory reporting limit and above the laboratory method detection limit.
  - "FD" in the Sample Name indicates that the sample is a field duplicate.
  - "SPLP" in the Sample Name indicates that the sample was prepared by USEPA Method 1312 Synthetic Precipitation Leaching Procedure prior to analysis by USEPA Method 537 with isotope dilution.
  - "PFOA+PFOS, Total" indicates the sum of detected concentrations of PFOA and PFOS, as reported by the laboratory.
  - "PFAS 5, Total" indicates the sum of detected concentrations of PFHpA, PFHxS, PFOA, PFNA, and PFOS, as reported by the laboratory.
  - "N/A" indicates not applicable.
- Green shaded cells indicate compounds included in the Vermont Health Advisory for Drinking Water.
- Blue shaded cells indicate samples that were included in the Furniture/Bulky Items category of the mass flux evaluation.
- Orange shaded cells indicate samples that were included in the Textiles and Leather category of the mass flux evaluation.
- Sample BW-19\_20190808 was excluded from the PFAS Mass Flux Evaluation as the waste material sampled did not fall under either the "Furniture/Bulky Items" or "Textiles and Leather" categories.

**Table 4: Summary of PFAS Analytical Results for Construction and Demolition Waste and Carpeting  
NEWSVT Landfill  
Coventry, Vermont**

Sample Name	Collection Date	Lab ID	Description	Units	Perfluorobutanoic Acid (PFBA)	Perfluoropentanoic Acid (PFPeA)	Perfluorobutanesulfonic Acid (PFBS)	1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	Perfluorohexanoic Acid (PFHxA)	Perfluoropentanesulfonic Acid (PFPeS)	Perfluoroheptanoic Acid (PFHpA)	Perfluorohexanesulfonic Acid (PFHxS)	Perfluorooctanoic Acid (PFOA)	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	Perfluoroheptanesulfonic Acid (PFHpS)	Perfluorononanoic Acid (PFNA)	Perfluorooctanesulfonic Acid (PFOS)	Perfluorodecanoic Acid (PFDA)	1H,1H,2H,2H-Perfluorodecane sulfonic Acid (8:2FTS)	Perfluorononanesulfonic Acid (PFNS)	N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	Perfluoroundecanoic Acid (PFUnA)	Perfluorodecane sulfonic Acid (PFDS)	Perfluorooctanesulfonamide (FOSA)	N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTrDA)	Perfluorotetradecanoic Acid (PFTA)	PFOA+PFOS, Total	PFAS 5, Total	
CDW-01_20190529	5/29/2019	L1923119-05	3 carpets, 2 carpet pads	µg/kg	0.329 J	0.232 J	<2.57	<2.57	1.16 J	<2.57	0.341 J	<2.57	1.33 J	1.83 J	<2.57	0.204 J	2.62	0.451 J	1.35 J	<2.57	<2.57	<2.57	<2.57	5.39	0.824 J	0.264 J	<2.57	<2.57	3.95 J	4.50 J	
CDW-02_20190606	6/6/2019	L1924538-01	4 carpets	µg/kg	0.278 J	0.355 J	0.170 J	<1.15	1.77	<1.15	0.948 J	0.411 J	1.96	0.363 J	<1.15	0.273 J	4.26	0.740 J	<1.15	<1.15	0.232 J	0.139 J	1.30	0.327 J	0.746 J	0.568 J	0.357 J	0.354 J	6.22	7.85 J	
SPLP_CDW-02_20190606	6/6/2019	L1924538-02	4 carpets	ng/L	7.57	7.40	3.80	<1.84	44.0	<1.84	19.5	21.9	31.6	8.44 B	<1.84	3.42	36.2	7.53	3.24	<1.84	2.62	0.804 J	<1.84	0.845 J	7.73	2.12	0.782 J	1.69 J	67.8	113	
CDW-03_20190606	6/6/2019	L1924538-06	5 carpets	µg/kg	4.26	2.97	5.20	<2.16	38.5	2.12 J	45.1	19.4	148	0.789 J	6.83	2.32	513	0.679 J	<2.16	<2.16	236	0.251 J	1.64 J	14.5	1.05 J	<2.16	<2.16	0.125 J	661	728	
CDW-04_20190606	6/6/2019	L1924538-07	4 carpets, 1 carpet pad	µg/kg	0.898 J	0.191 J	1.76	<1.23	1.68	<1.23	0.169 J	0.167 J	0.364 J	<1.23	<1.23	0.129 J	1.18 J	0.140 J	<1.23	<1.23	0.709 J	<1.23	<1.23	<1.23	<1.23	<1.23	<1.23	<1.23	<1.23	1.54 J	2.01 J
CDW-05_20190618	6/18/2019	L1927149-01	5 carpets	µg/kg	3.14 J	3.47 J	3.71 J	<7.21	19.1	3.66 J	21.4	21.0	127	1.69 J	3.16 J	1.57 J	441	1.90 J	<7.21	<7.21	35.6	0.602 J	3.48 J	20.4	3.91 J	1.08 J	<7.21	0.587 J	568	612 J	
CDW-06_20190618	6/18/2019	L1927149-04	2 shingles	µg/kg	0.147 J	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	0.124 J	<1.14	<1.14	0.178 J	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	<1.14	0.302 J	0.302 J
FD_CDW-06_20190618	6/18/2019	L1927149-05	2 shingles	µg/kg	0.156 J	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18	<1.18
CDW-07_20190620	6/20/2019	L1927149-10	2 vinyl siding	µg/kg	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	<1.20	0.625 J	<1.20	<1.20	<1.20	0.139 J	<1.20	<1.20	<1.20	<1.20	0.218 J	0.414 J	0.522 J	<1.20	<1.20
CDW-08_20190620	6/20/2019	L1927149-12	2 wood flooring	µg/kg	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	0.586 J	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	<11.8	4.51 J	<11.8	<11.8	<11.8	0.586 J
SPLP_CDW-08_20190620	6/20/2019	L1927149-12	2 wood flooring	ng/L	<1.82	<1.82	0.540 J	<1.82	1.65 J	<1.82	1.07 J	0.850 J	7.65	3.14	<1.82	<1.82	6.29	<1.82	3.52	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	<1.82	13.9	15.9 J
CDW-09_20190709	7/9/2019	L1930748-05	4 carpets	µg/kg	<1.23	<1.23	<1.23	<1.23	0.688 J	<1.23	0.640 J	<1.23	3.09	<1.23	<1.23	0.227 J	10.6	0.193 J	<1.23	<1.23	1.44	0.208 J	5.80	0.458 J	11.1	0.272 J	<1.23	0.128 J	13.7	14.6 J	
FD_CDW-09_20190709	7/9/2019	L1930748-06	4 carpets	µg/kg	<1.31	<1.31	<1.31	<1.31	0.603 J	<1.31	<1.31	<1.31	2.86	0.275 J	<1.31	0.225 J	7.18	0.208 J	<1.31	<1.31	1.33	0.201 J	5.46	0.422 J	11.0	0.194 J	<1.31	0.175 J	10.0	10.3 J	
CDW-10_20190717	7/17/2019	L1931976-03	fiberglass insulation, drywall, wood fiberboard, drop ceiling panel	µg/kg	<1.19	<1.19	0.053 J	<1.19	0.063 J	<1.19	<1.19	<1.19	0.196 J	3.17	<1.19	<1.19	0.156 J	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	<1.19	0.352 J	0.352 J
CDW-11_20190726	7/26/2019	L1934516-04	2 linoleum tile	µg/kg	0.103 J	<1.24	<1.24	<1.24	0.304 J	<1.24	<1.24	<1.24	0.198 J	<1.24	<1.24	<1.24	0.631 J	<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	<1.24	0.829 J	0.829 J
CDW-12_20190729	7/29/2019	L1934516-05	2 plastic straps	µg/kg	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	0.485 J	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21	<1.21
CDW-13_20190808	8/8/2019	1935885-04 R	1 fiberboard siding	µg/kg	0.252 J	<6.01	<6.01	<6.01	1.32 J	<6.01	<6.01	<6.01	0.670 J	2.89 J	<6.01	<6.01	0.853 J	<6.01	<6.01	<6.01	<6.01	<6.01	<6.01	<6.01	<6.01	<6.01	<6.01	<6.01	1.52 J	1.52 J	

Notes:

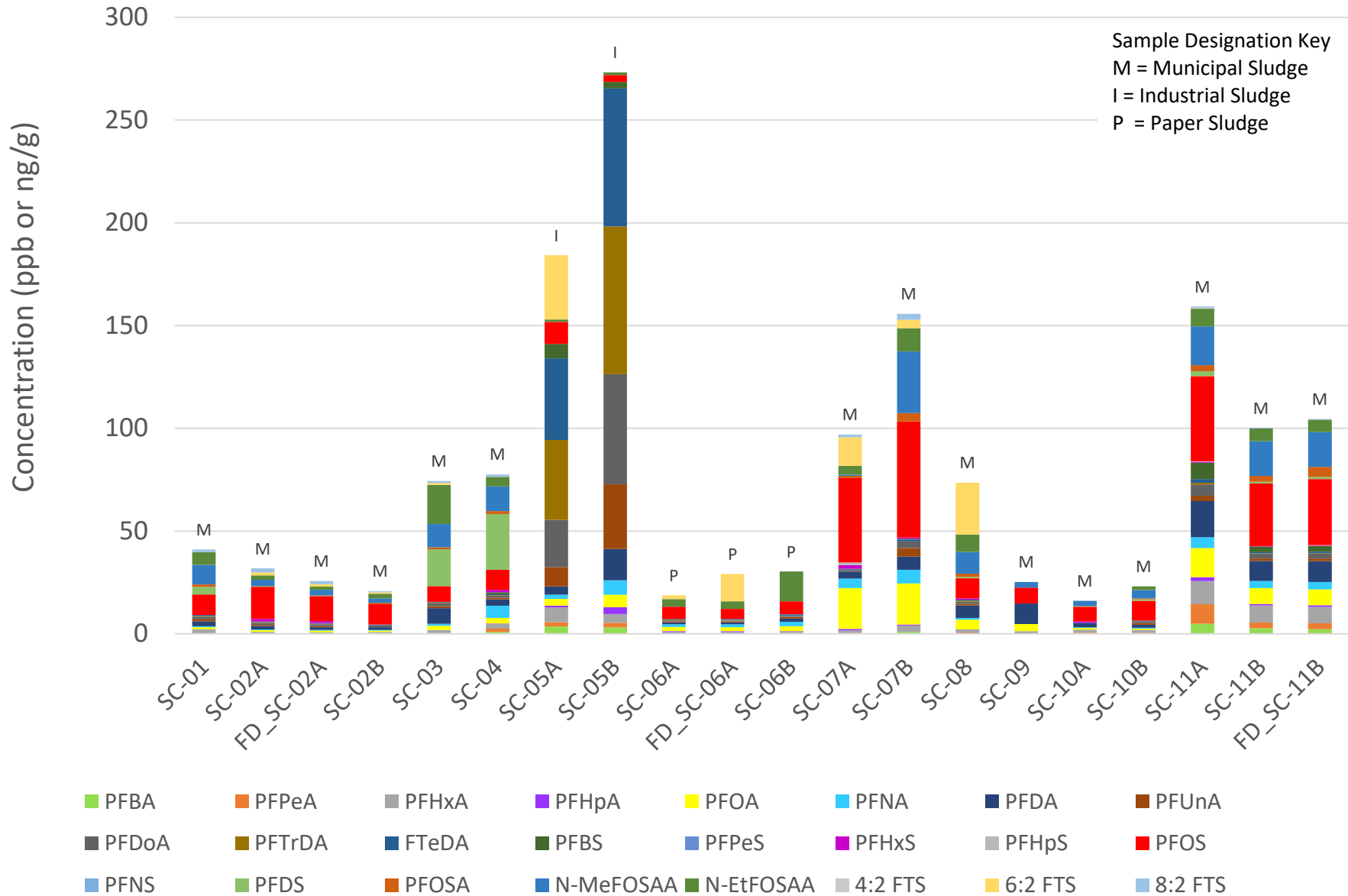
1. Samples were collected by Sanborn Head employees on the dates indicated and submitted to Alpha Analytical for analysis of per- and polyfluorinated alkyl substances (PFAS) by United States Environmental Protection Agency (USEPA) Method 537 (modified) with isotope dilution. Samples with "SPLP" designation were replicates of the primary sample which were prepared by USEPA Method 1312 Synthetic Precipitation Leaching Procedure prior to analysis by USEPA Method 537 with isotope dilution.
2. Results are reported in micrograms per kilogram (µg/kg) on an "As Received" basis. SPLP results are reported in nanograms per liter (ng/L).
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  - f) "PFAS 5, Total" indicates the sum of detected concentrations of PFHpA, PFHxS, PFOA, PFNA, and PFOS, as reported by the laboratory.
  - g) "N/A" indicates not applicable.
4. Green shaded cells indicate compounds included in the Vermont Health Advisory for Drinking Water.
5. Blue shaded cells indicate samples that were included in the Carpet category of the mass flux evaluation.
6. Orange shaded cells indicate samples that were included in the C&D category of the mass flux evaluation.



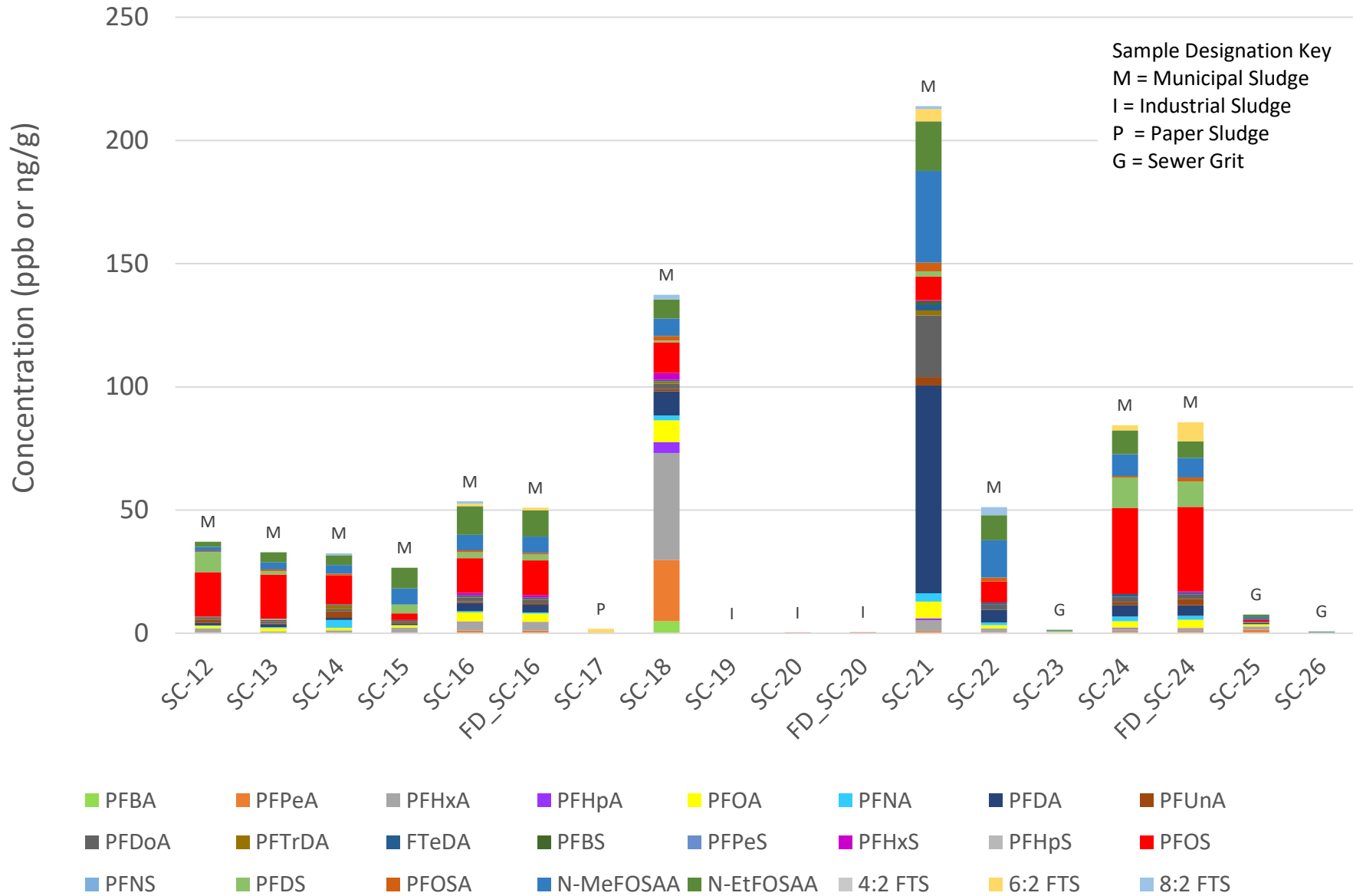


## FIGURES

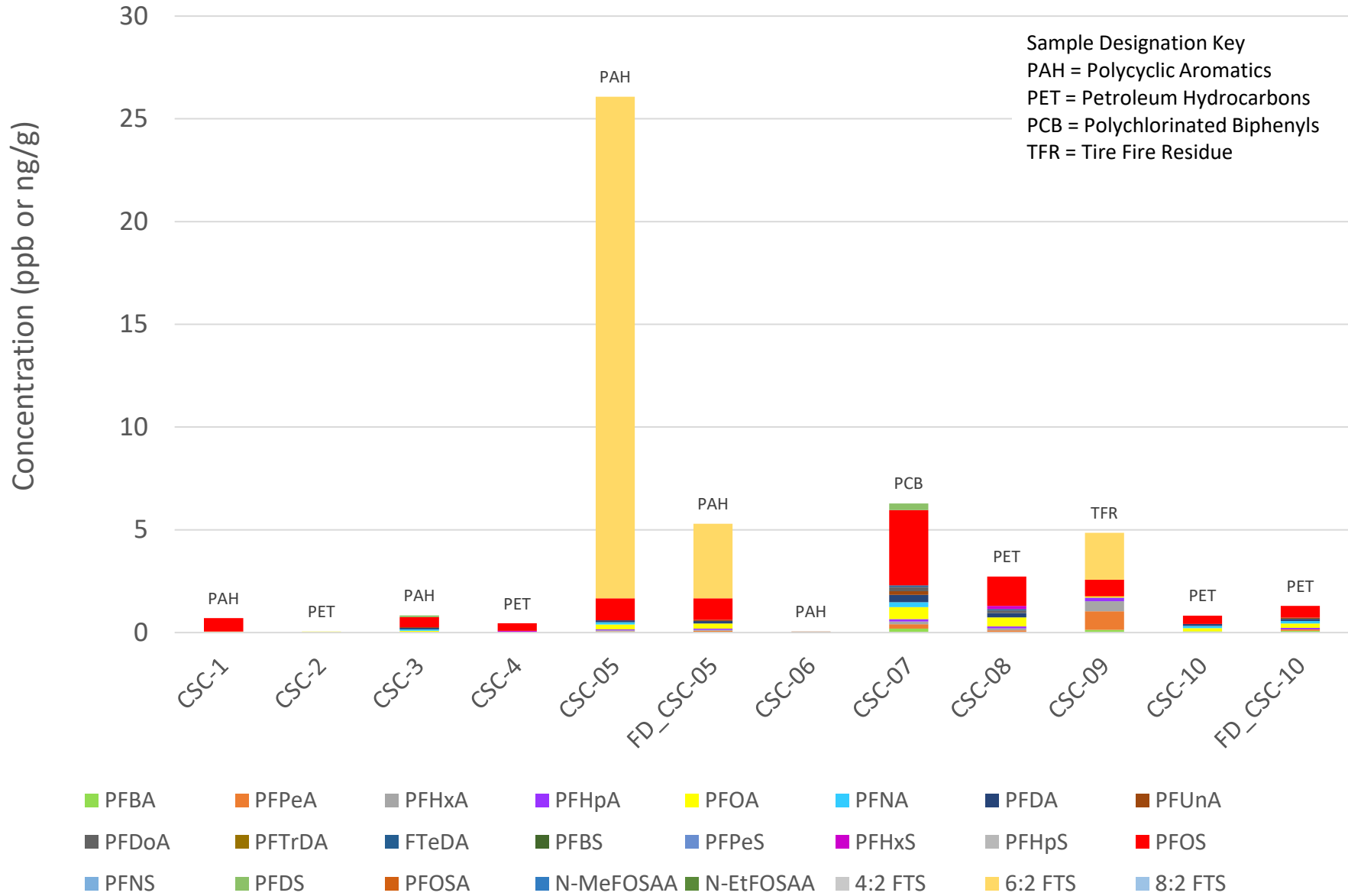
**Figure 1A: Sludge and Sewer Grit, Part 1 (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



**Figure 1B: Sludge and Sewer Grit, Part 2 (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**

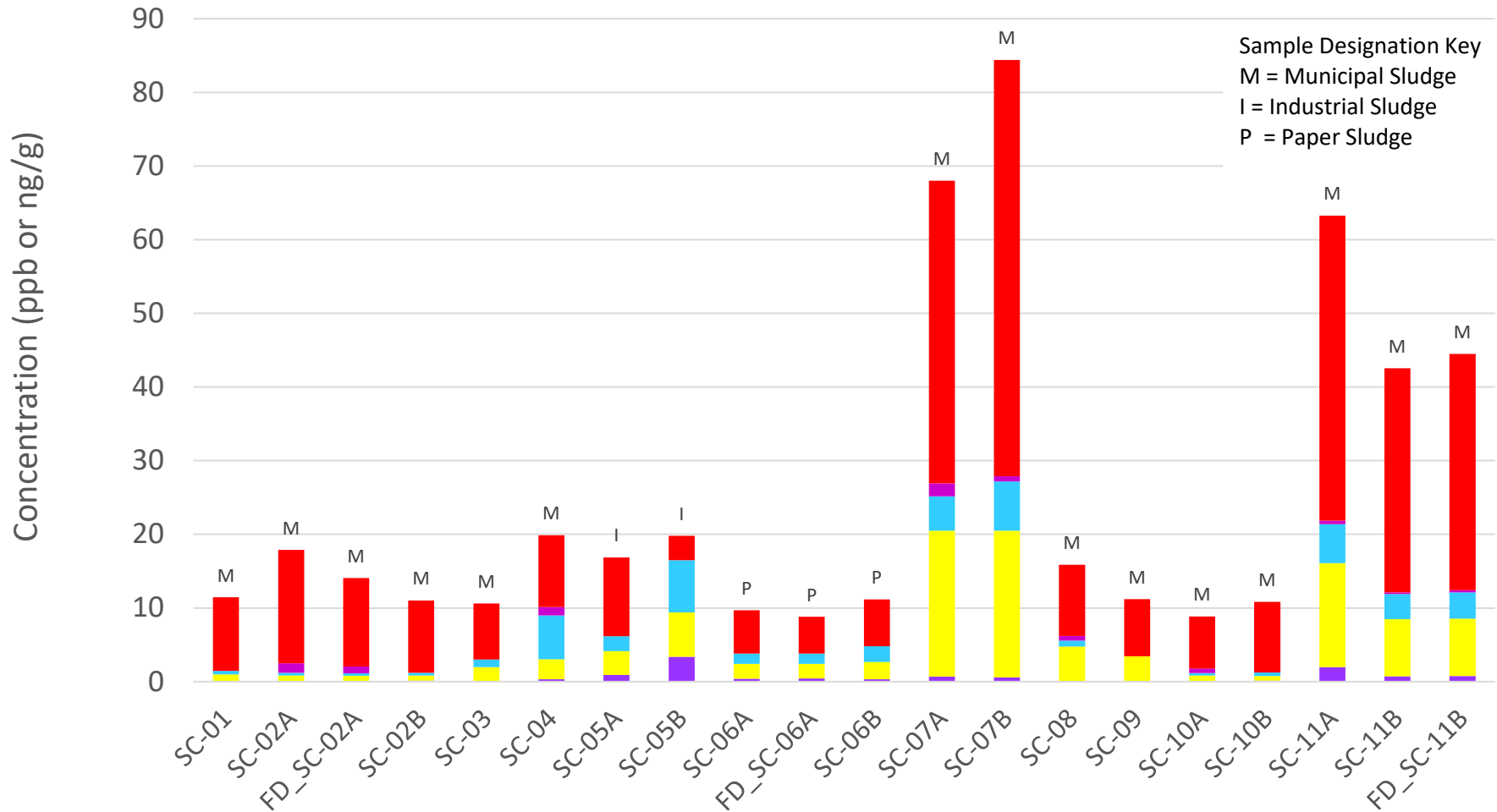


**Figure 2: Contaminated Soil (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**





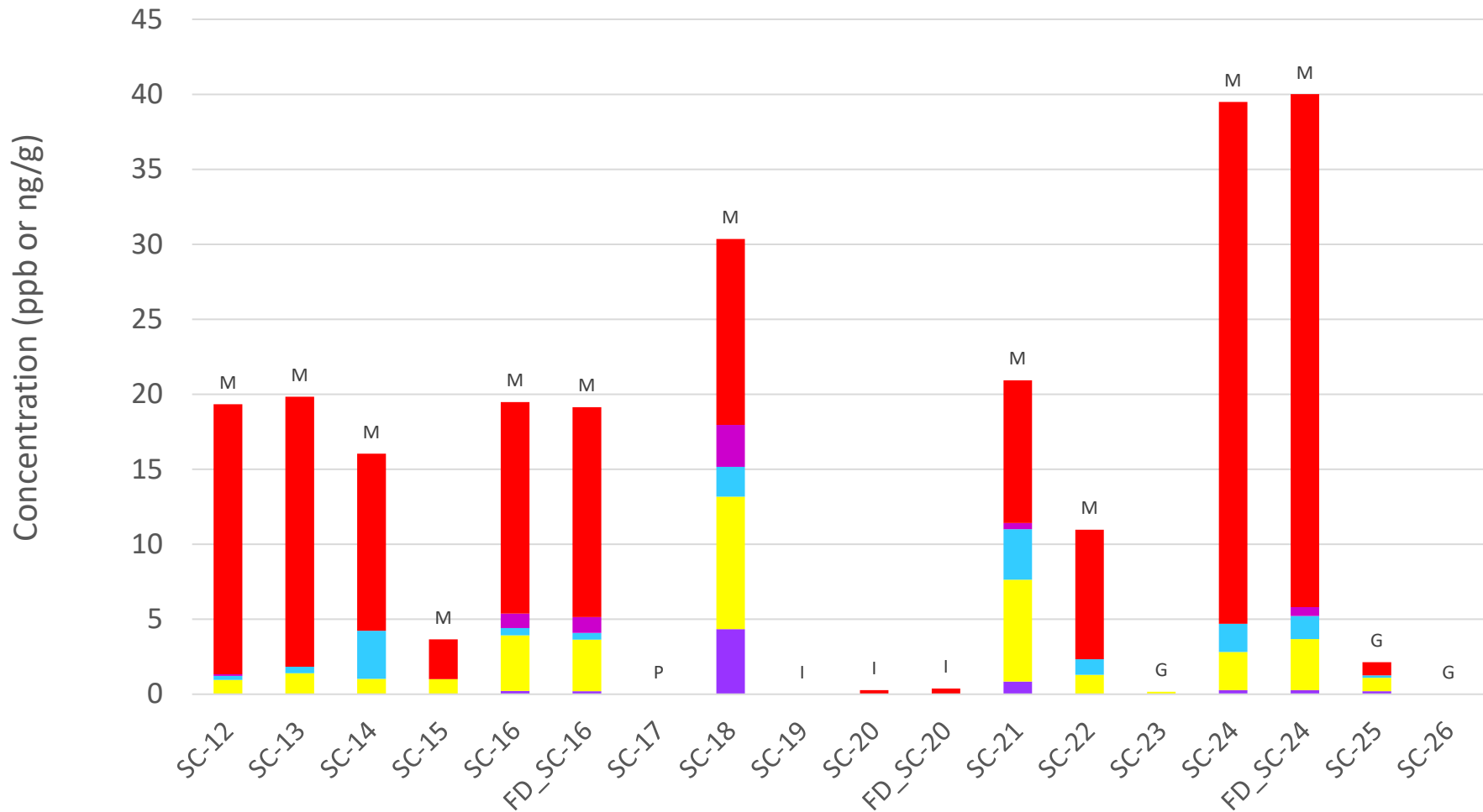
**Figure 3A: Sludge and Sewer Grit, Part 1 (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



This figure presents the results from Figure 1A with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA ■ PFOA ■ PFNA ■ PFHxS ■ PFOS

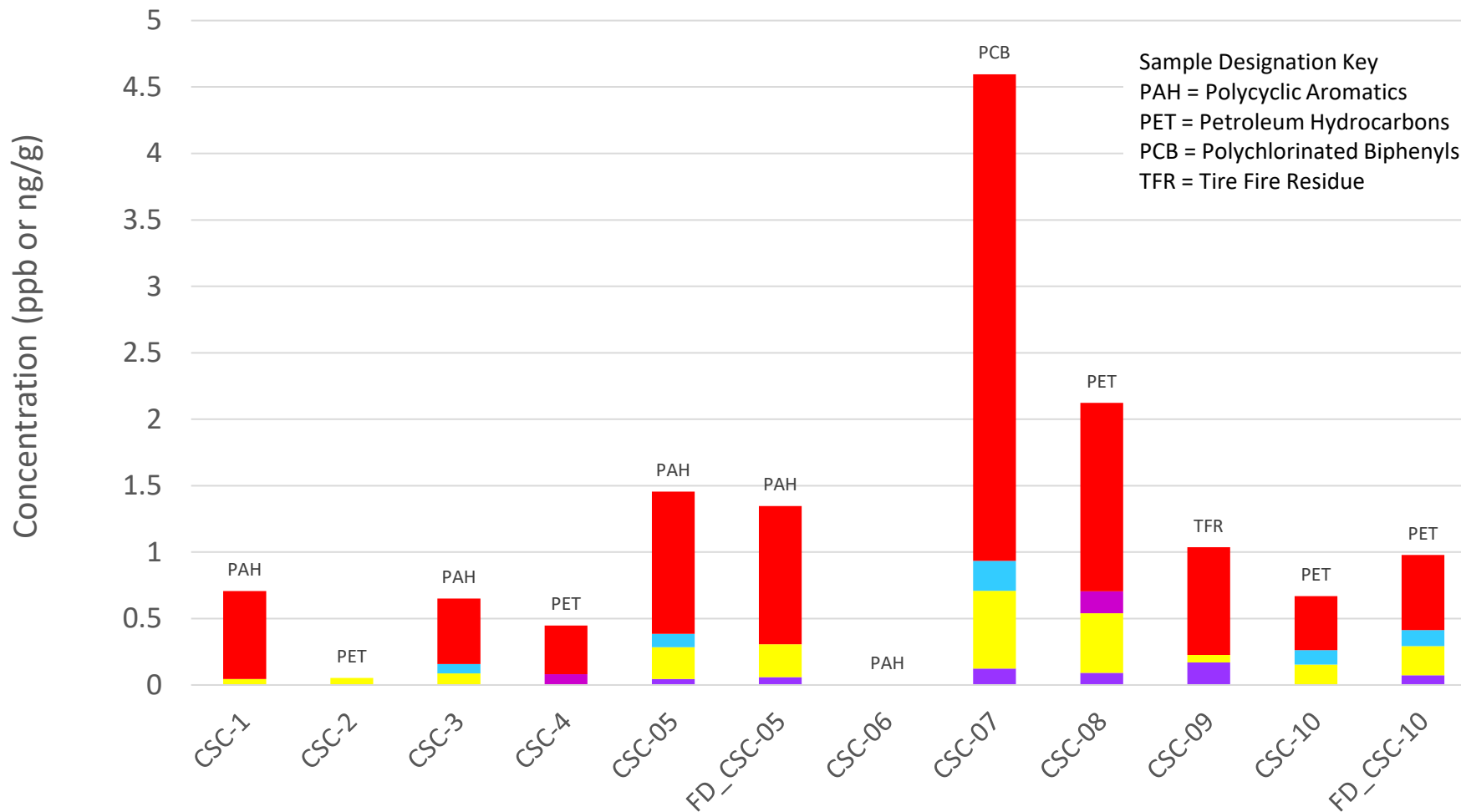
**Figure 3B: Sludge and Sewer Grit, Part 2 (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



This figure presents the results from Figure 1B with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA   
 ■ PFOA   
 ■ PFNA   
 ■ PFHxS   
 ■ PFOS

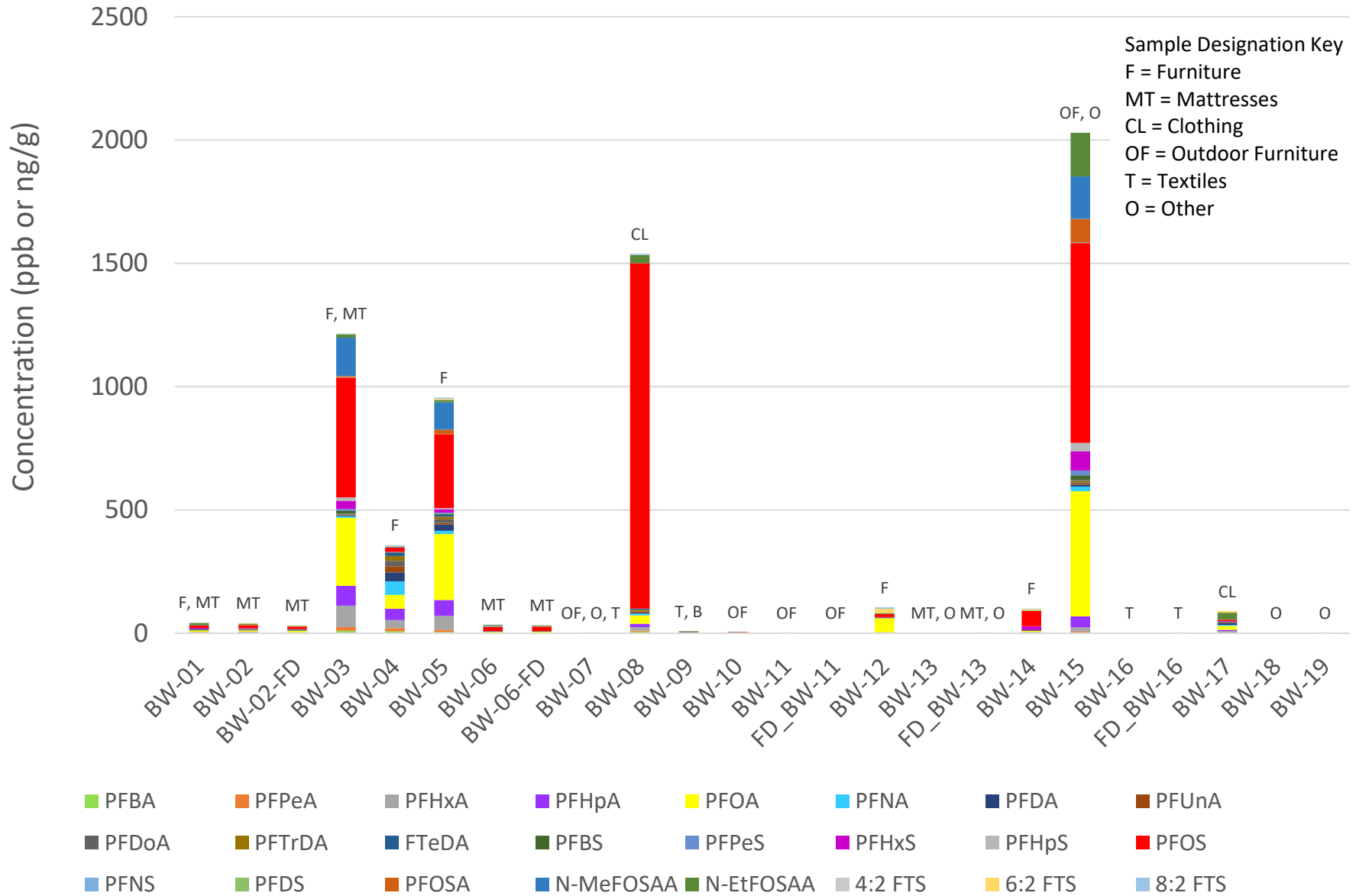
**Figure 4: Contaminated Soil (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



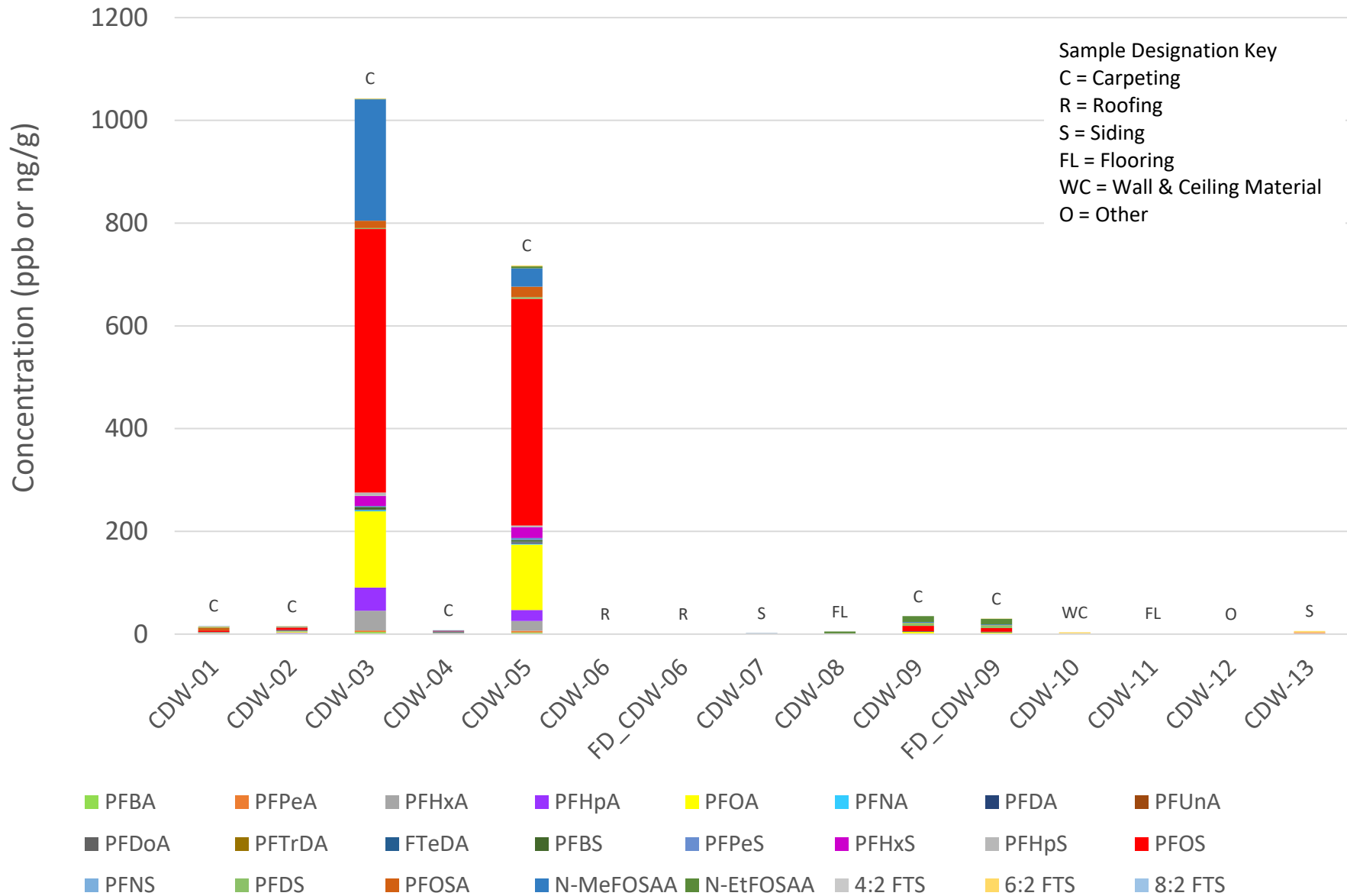
This figure presents the results from Figure 2 with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA   
 ■ PFOA   
 ■ PFNA   
 ■ PFHxS   
 ■ PFOS

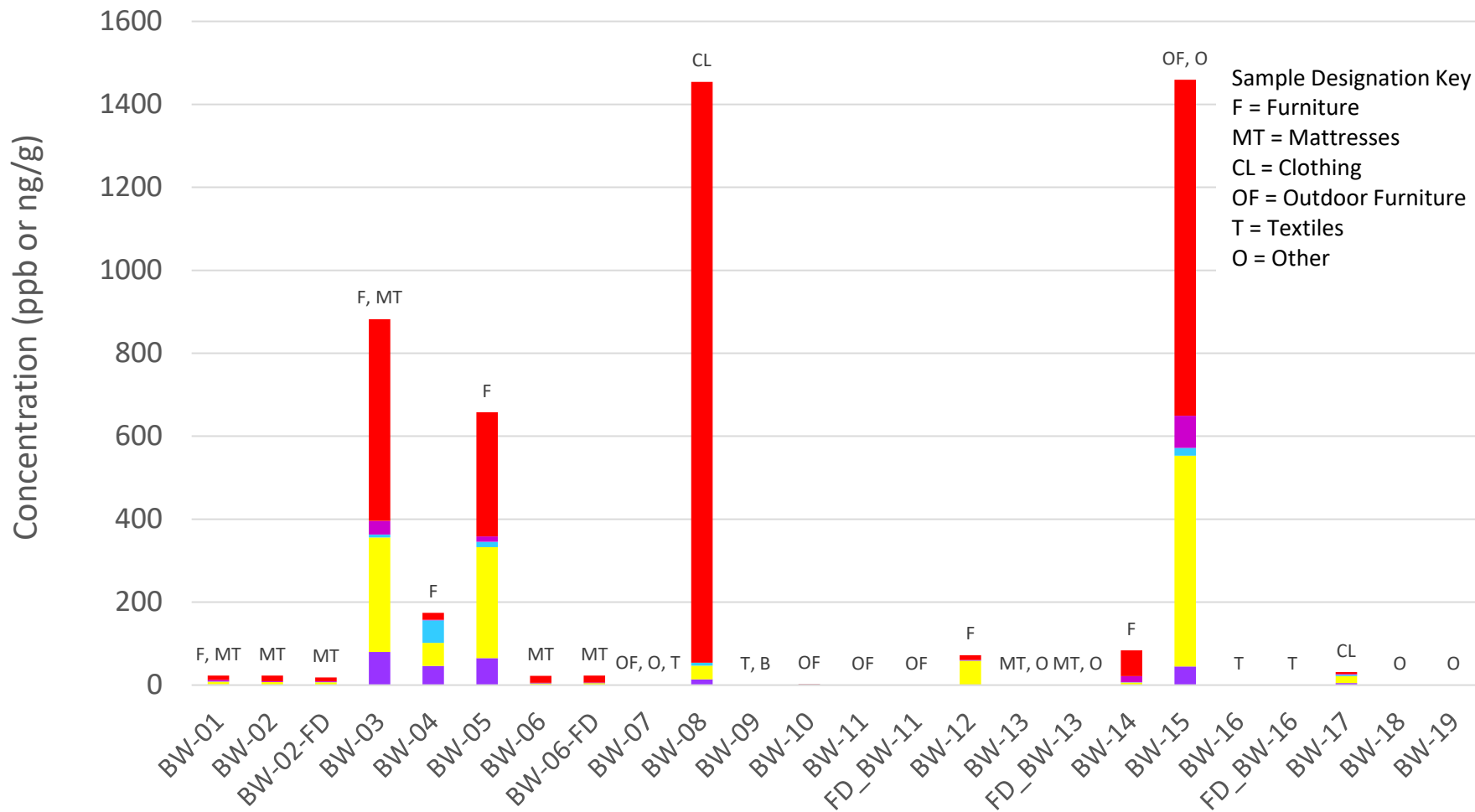
**Figure 5: Bulky Waste and Textiles (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



**Figure 6: C&D Waste and Carpeting (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



**Figure 7: Bulky Waste and Textiles (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**

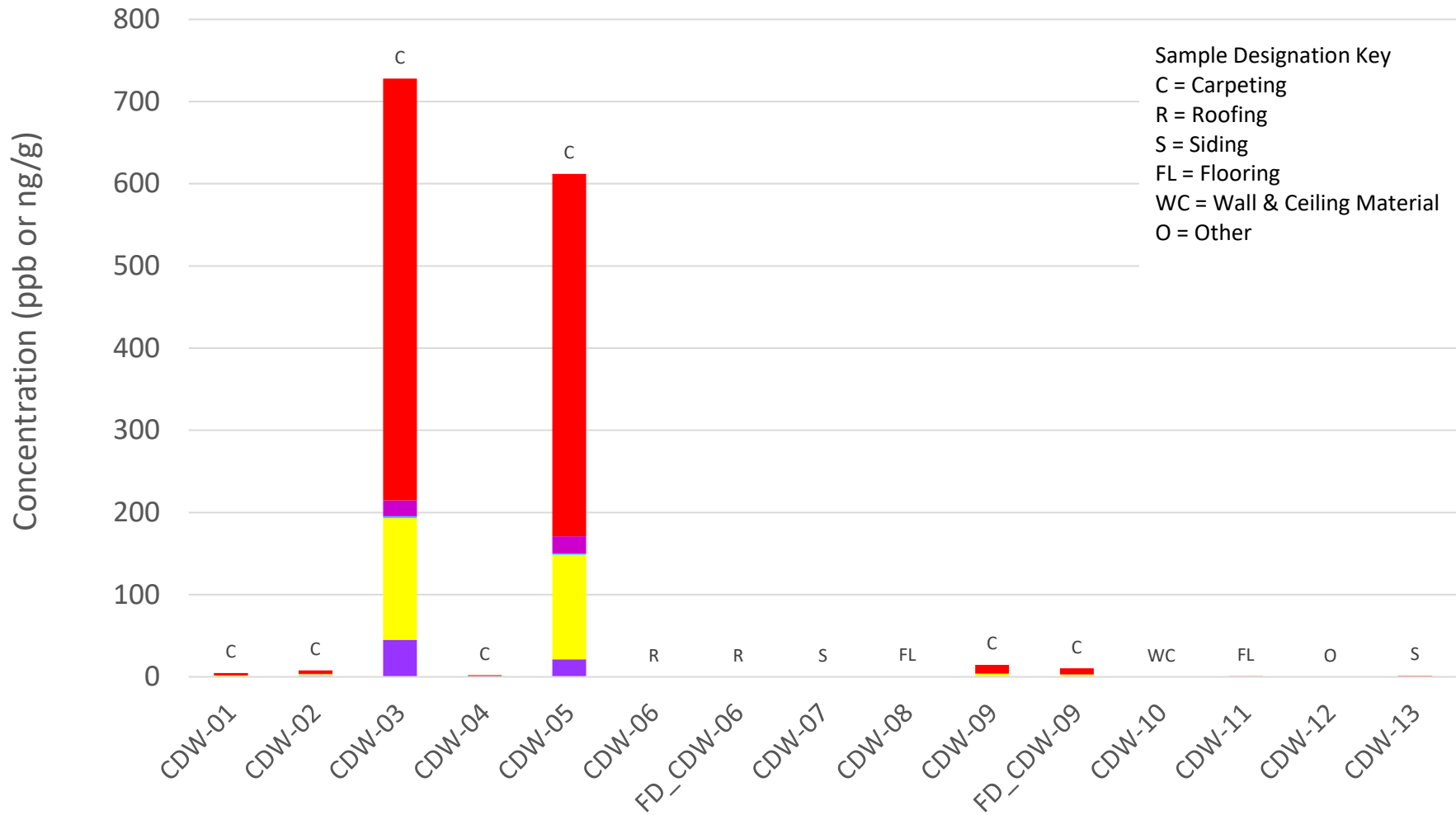


This figure presents the results from Figure 5 with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA   
 ■ PFOA   
 ■ PFNA   
 ■ PFHxS   
 ■ PFOS



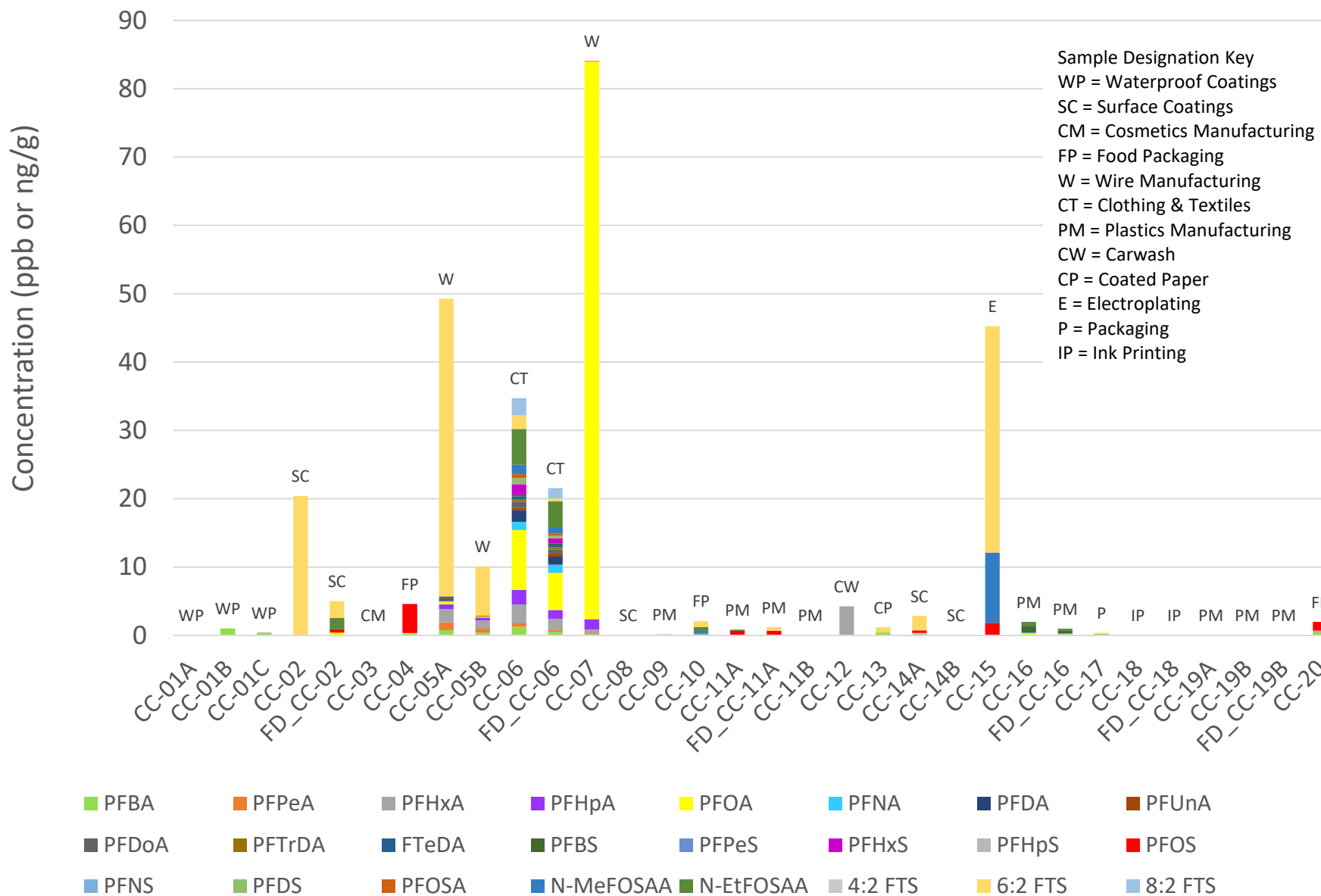
**Figure 8: C&D Waste and Carpeting (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



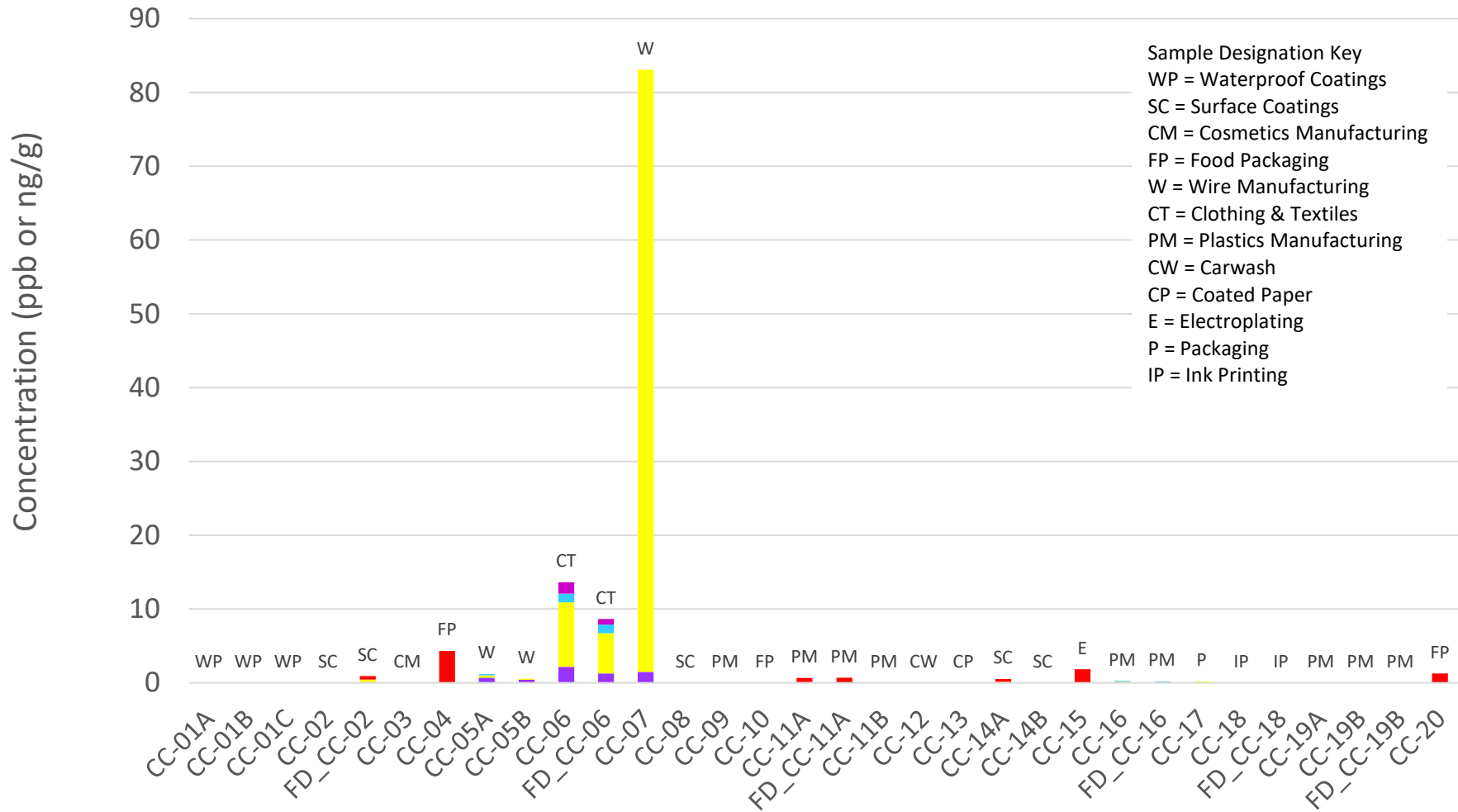
This figure presents the results from Figure 6 with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA   
 ■ PFOA   
 ■ PFNA   
 ■ PFHxS   
 ■ PFOS

**Figure 9: Commercial Customer Waste (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



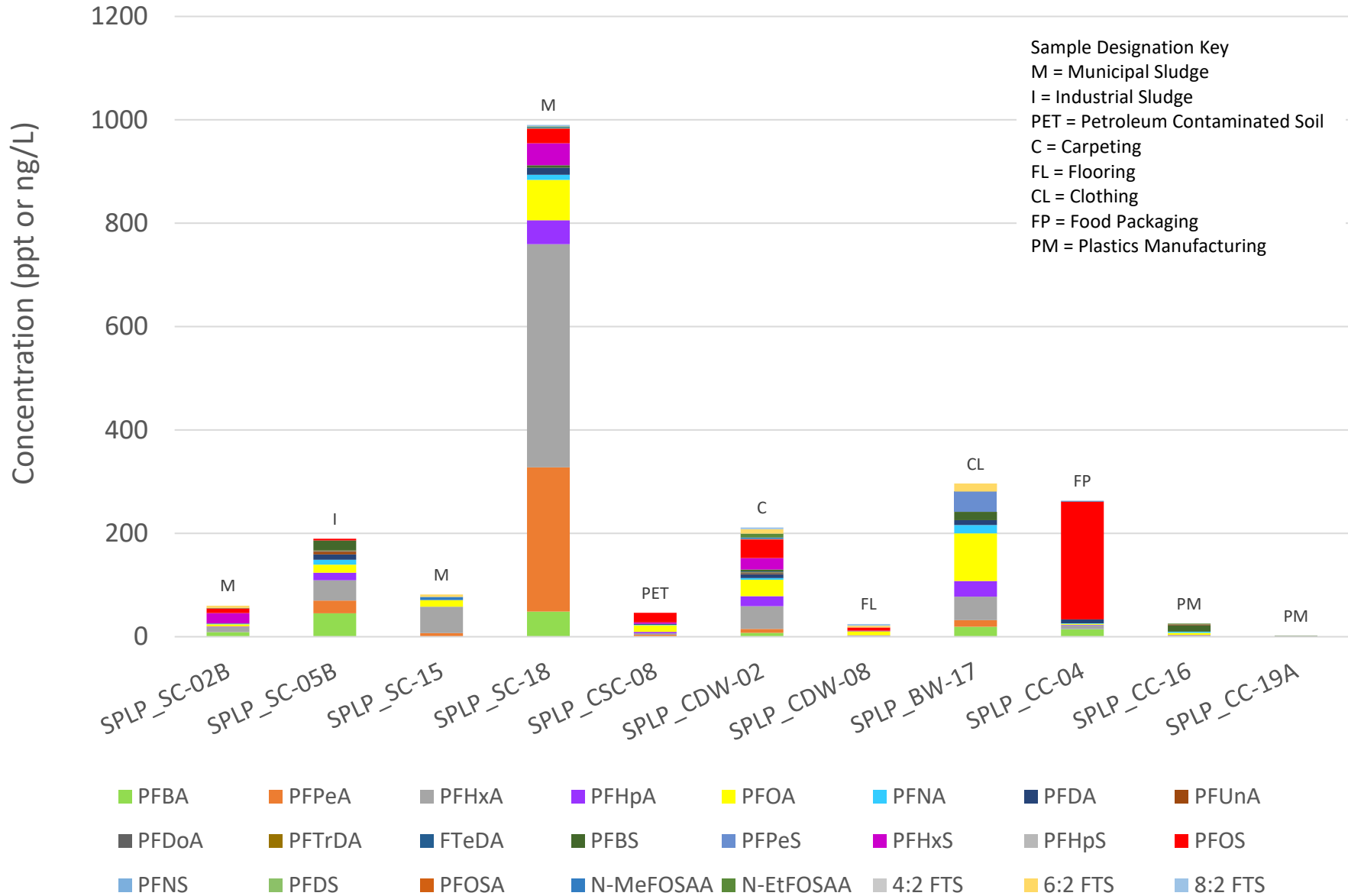
**Figure 10: Commercial Customer Waste (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



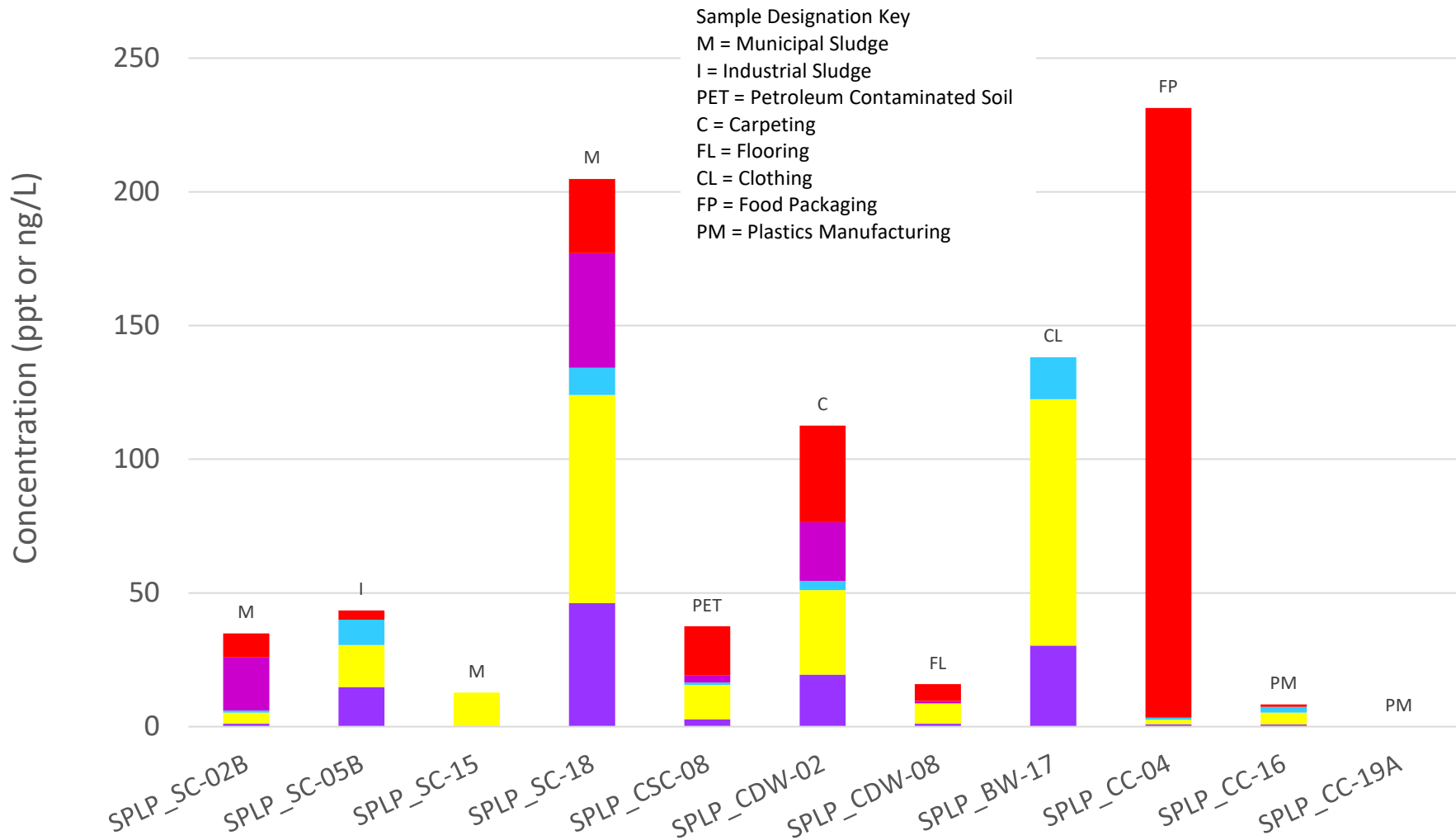
This figure presents the results from Figure 9 with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA ■ PFOA ■ PFNA ■ PFHxS ■ PFOS

**Figure 11: Synthetic Precipitation Leaching Procedure Sample Results (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



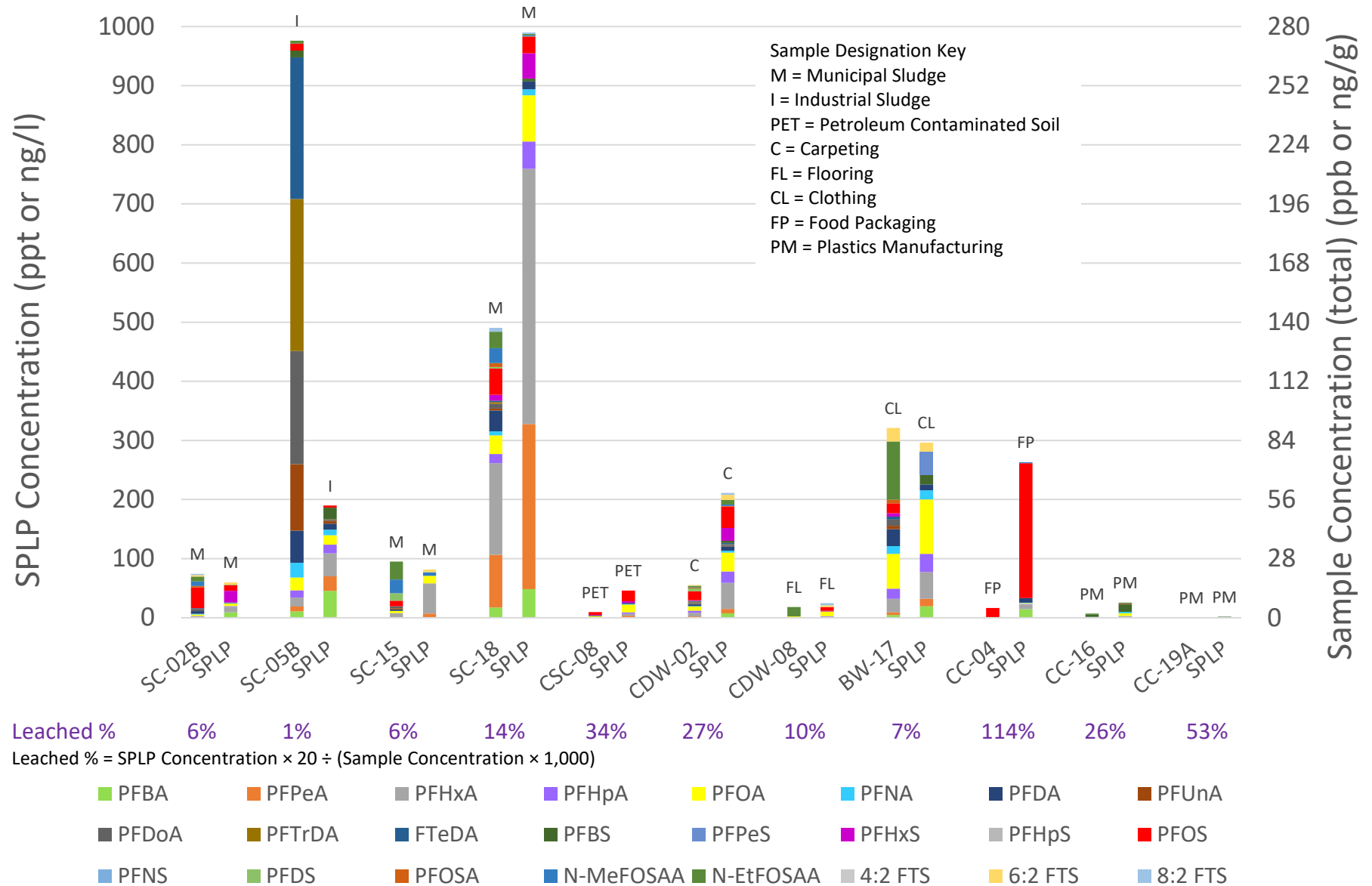
**Figure 12: Synthetic Precipitation Leaching Procedure Sample Results (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



This figure presents the results from Figure 11 with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

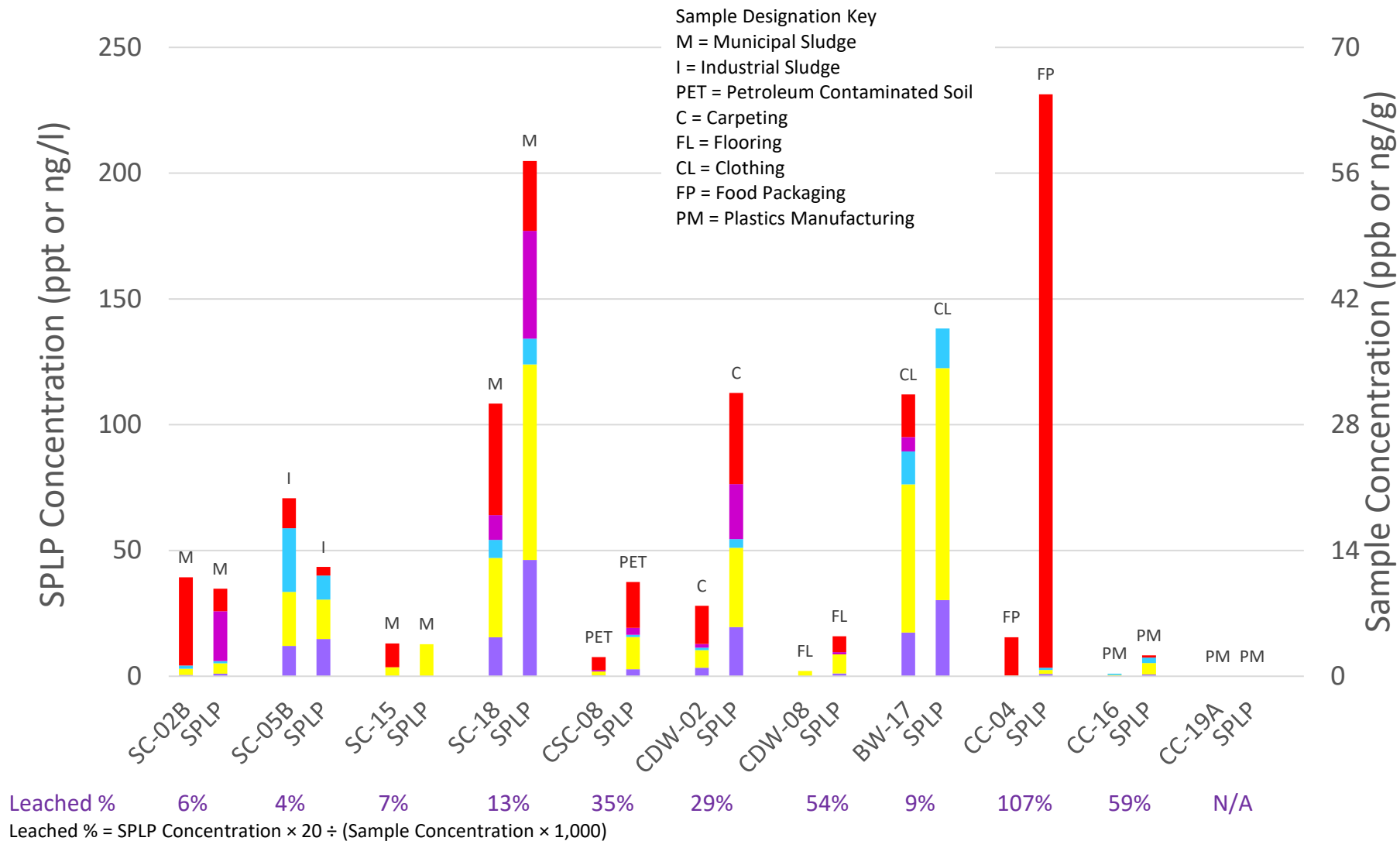
■ PFHpA ■ PFOA ■ PFNA ■ PFHxS ■ PFOS

**Figure 13: Paired Comparison, PFAS Content and SPLP (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**





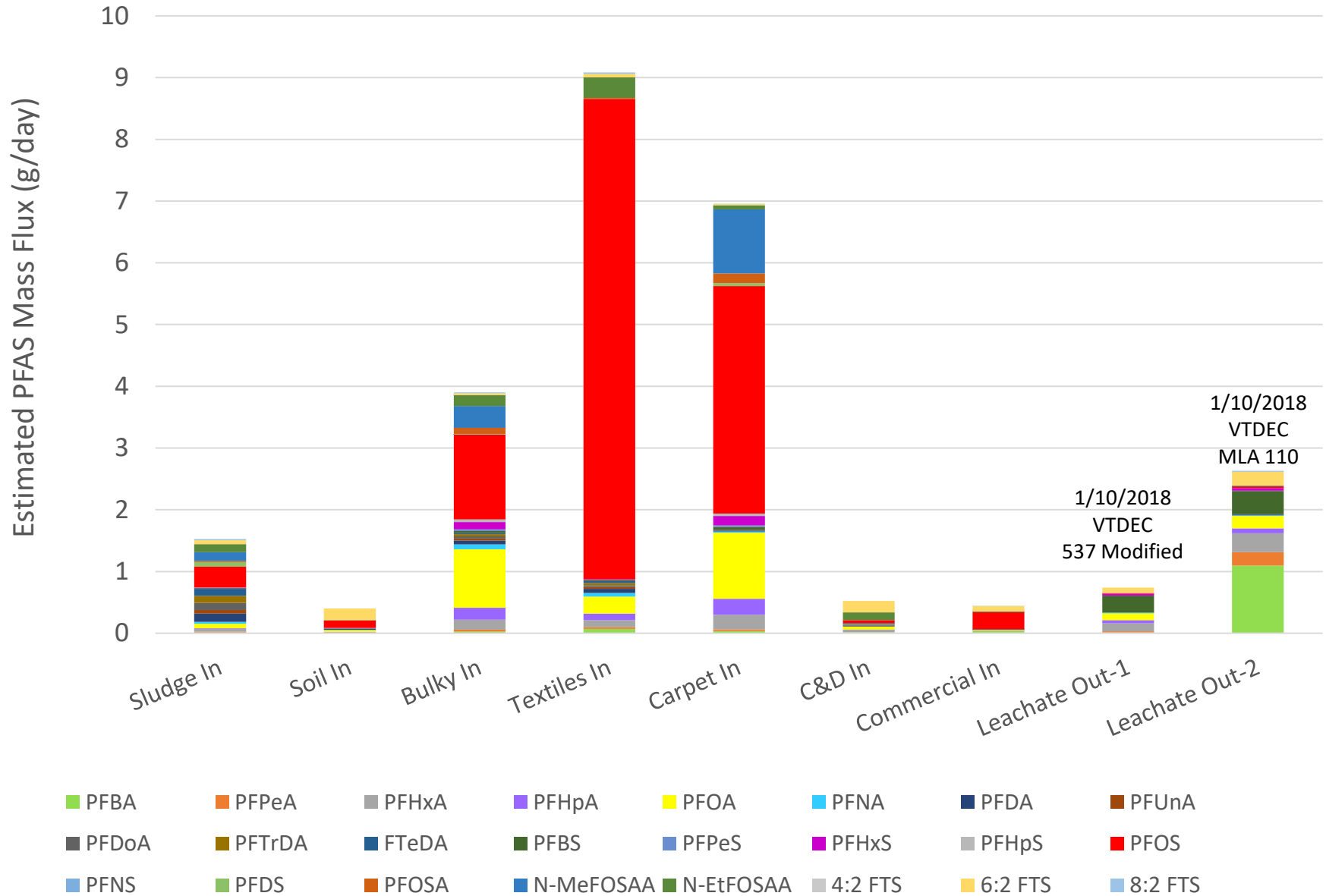
**Figure 14: Paired Comparison, PFAS Content and SPLP (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



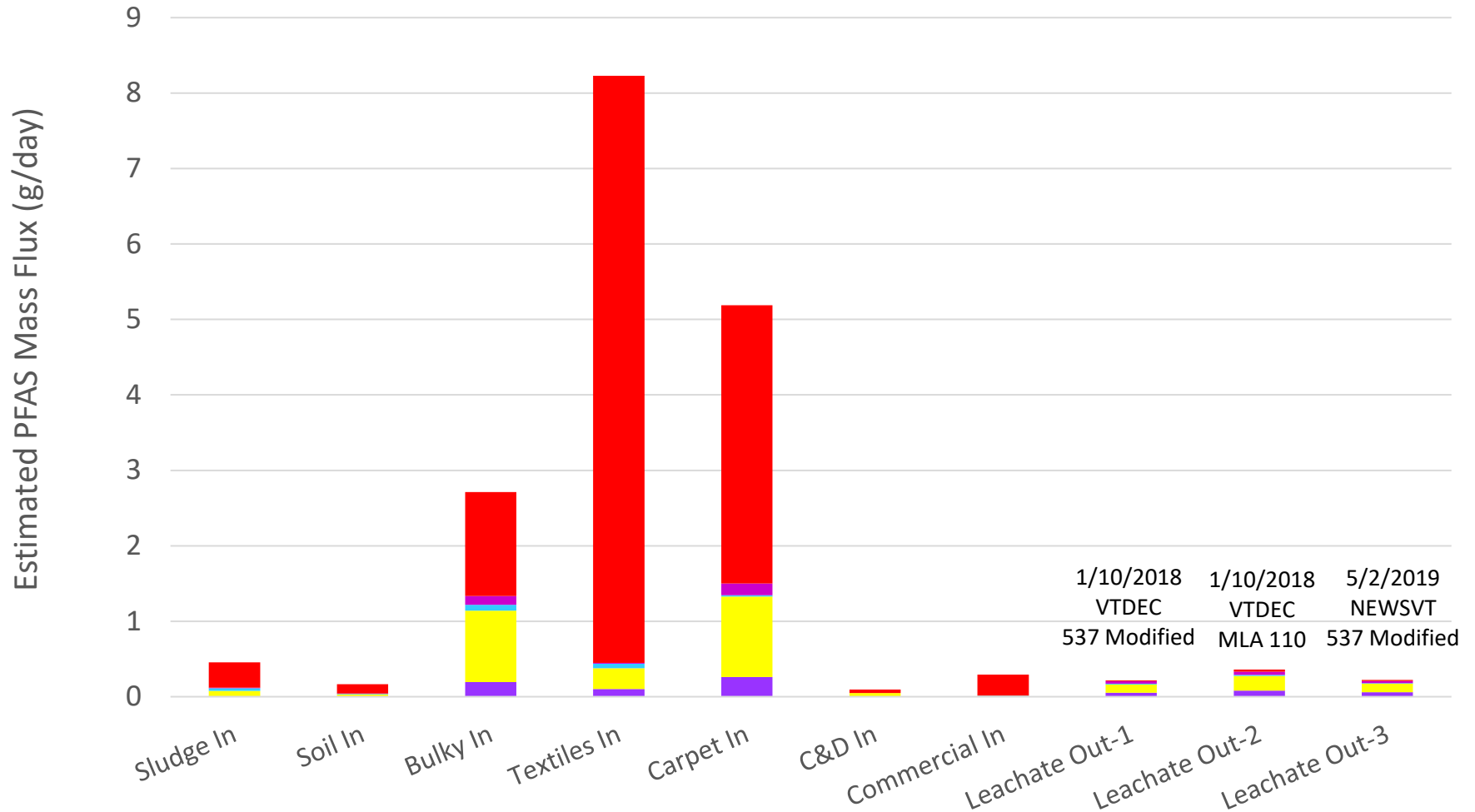
This figure presents the results from Figure 13 with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA ■ PFOA ■ PFNA ■ PFHxS ■ PFOS

**Figure 15: PFAS Mass Flux Comparison (24 PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



**Figure 16: PFAS Mass Flux Comparison (Five PFAS Compounds)  
NEWSVT Landfill  
Coventry, Vermont**



This figure presents the results from Figure 15 with only the five PFAS compounds from the Vermont Health Advisory for Drinking Water.

■ PFHpA ■ PFOA ■ PFNA ■ PFHxS ■ PFOS

**APPENDIX A**  
**TESTING PLAN AND PROTOCOLS**

**PFAS WASTE SOURCE TESTING PLAN**  
**NEW ENGLAND WASTE SERVICES OF VERMONT, INC.**

*Coventry, Vermont*  
*Solid Waste ID No. OL510*

*Prepared for New England Waste Services of Vermont, Inc.*  
*File No. 2280.18*  
*December 2018*

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## TABLES

### *In document text*

Table 1 Manufacturing History of Select PFAS, as Reproduced from the ITRC PFAS History and Use Factsheet

### *Attached*

Table 2 Summary of Proposed Matrices, Samples, and Analyses

## 1.0 INTRODUCTION

This PFAS Waste Source Testing Plan (“Testing Plan”) describes proposed testing for per- and polyfluoroalkyl substance (PFAS) sources in waste streams disposed at the New England Waste Services of Vermont, Inc. (NEWSVT) Landfill in Coventry, Vermont (Solid Waste ID No. OL510). At the request of NEWSVT, Sanborn Head has prepared the Testing Plan pursuant to the requirements of Permit Conditions 74 and 85 (presented in Section 1.2 below) of the October 12, 2018 Solid Waste Management Facility Certification. To meet the condition requirements, this Testing Plan describes a phased program of sample acquisition and laboratory analysis of targeted waste streams disposed at the NEWSVT Landfill, with reporting of results by October 15, 2019.

The sampling plan will focus on two primary waste streams disposed at the landfill: 1) commercial customer waste streams from activities/industries suspected to involve substantive levels of PFAS compounds; and 2) “special waste”<sup>1</sup> streams. Waste streams will be selected for sampling based in part on the inferred likelihood of leaching PFAS into NEWSVT leachate. Based on communications with Vermont Department of Environmental Conservation (VTDEC), we understand the results of the PFAS sampling will be used to develop information useful for evaluating future PFAS waste management.

### 1.1 Background: Potential Sources of PFAS in Solid Waste

Information available from the Interstate Technology Regulatory Council (ITRC, 2018) indicates that PFAS have been in commercial production since the 1940s.

#### Manufacturing History of Select PFAS, as Reproduced ITRC (2018)

PFAS <sup>1</sup>	Development Time Period							
	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s
PTFE	Invented	Non-Stick Coatings			Waterproof Fabrics			
PFOS		Initial Production	Stain & Water Resistant Products	Firefighting foam				U.S. Reduction of PFOS, PFOA, PFNA (and other select PFAS <sup>2</sup> )
PFOA		Initial Production	Protective Coatings					
PFNA					Initial Production	Architectural Resins		
Fluoro-telomers					Initial Production	Firefighting Foams		Predominant form of firefighting foam
Dominant Process <sup>3</sup>		Electrochemical Fluorination (ECF)						Fluoro-telomerization (shorter chain ECF)
Pre-Invention of Chemistry /		Initial Chemical Synthesis / Production			Commercial Products Introduced and Used			
<b>Notes:</b> 1. This table includes fluoropolymers, PFAAs, and fluorotelomers. PTFE (polytetrafluoroethylene) is a fluoropolymer. PFOS, PFOA, and PFNA (perfluorononanoic acid) are PFAAs. 2. Refer to Section 3.4. 3. The dominant manufacturing process is shown in the table; note, however, that ECF and fluorotelomerization have both been, and continue to be, used for the production of select PFAS.								
<b>Sources:</b> Prevedouros et al. 2006; Concawe 2016; Chemours 2017; Gore-Tex 2017; US Naval Research Academy 2017								

<sup>1</sup> For the purposes of this Testing Plan, “special waste” will be defined as waste other than mixed municipal solid waste (MSW) accepted at the NEWSVT Landfill.



PFAS have been utilized in commercial and consumer products (ITRC, 2018) that could be found in the waste stream, including:

- paper and packaging
- clothing and carpets
- outdoor textiles and sporting equipment
- ski and snowboard waxes
- non-stick cookware
- cleaning agents and fabric softeners
- polishes and waxes, and latex paints
- pesticides and herbicides
- hydraulic fluids
- windshield wipers
- paints, varnishes, dyes, and inks
- adhesives
- medical products
- personal care products (for example, shampoo, hair conditioners, sunscreen, cosmetics, toothpaste, dental floss)

NEWSVT also accepts a variety of commercial and industrial wastes. Sanborn Head will be obtaining and reviewing a list of the wastes that have been accepted by NEWSVT to identify potential PFAS-containing wastes. Generically, at least two categories of potential wastes that are recognized as PFAS sources will be targeted for examination if on the NEWSVT accepted waste list.

- **AFFF Debris/Soils:** A potentially significant potential source of PFAS that has been identified is disposal aqueous film forming foams (AFFF) used for firefighting. Certain types of AFFF are known to contain low percentage levels of PFAS.
- **WWTP Sludge:** Wastewater treatment plant (WWTP) sludge is another potential source of PFAS. Household dust from the wearing of consumer products is suspected to contribute to PFAS loadings at WWTPs.

## 1.2 Background and Scope of Testing Plan

Permit Condition 74 requires development of a testing plan to evaluate the concentrations of PFAS within sources identified as having a high probability of elevated PFAS concentrations, and Permit Condition 85 requires submission of the PFAS testing plan to the VTDEC by December 31, 2018, with subsequent implementation and reporting by October 15, 2019. Permit Conditions 74 and 85 are presented below.

### **Permit Condition 74**

*The Permittee shall review the types of wastes accepted at the Facility and develop a testing plan to evaluate the concentration of PFAS within sources identified as having a high probability of elevated PFAS concentrations. The plan shall include a proposed schedule for implementation of the testing and the Permittee shall retain a qualified professional to perform the monitoring established within this testing plan.*

**Permit Condition 85**

*By December 31, 2018, the Permittee shall submit the plan for testing potential sources of PFAS, required by Condition 74, to the Secretary for review and approval prior to implementing any testing. The Permittee shall submit a final report, including all data, on the monitoring required by Condition 74 on or before October 15, 2019.*

In response to these Permit Conditions, this Testing Plan is intended to identify high-PFAS containing wastes based on the types of wastes historically accepted by NEWSVT, in conjunction with current knowledge of PFAS in waste materials. Because many of the anticipated materials of interest are not media intended for standard PFAS analytical methods, the testing program will employ a phased approach to allow results from early phases to inform subsequent phases of work. For the purposes of this Testing Plan, we have identified three phases of sample acquisition and analysis:

**Exhibit 1.1 – Summary of Testing Phases**

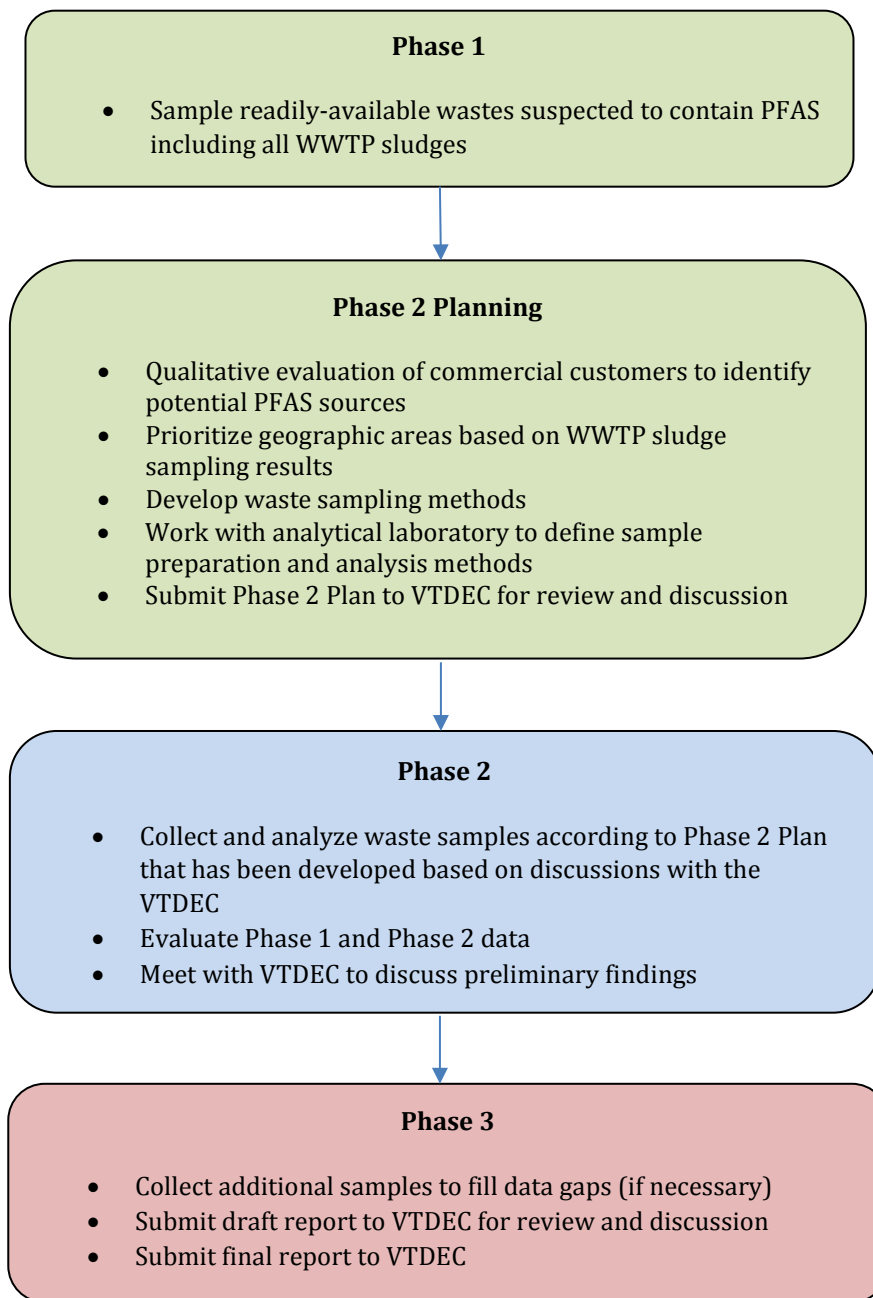
<b>Phase 1</b>	<p><b><u>Sampling</u></b> Sample acquisition of readily available special wastes that are suspected to contain significant levels of PFAS (e.g., WWTP sludge, contaminated soil, paper mill sludges, C&amp;D waste, textile covered bulky waste).</p>
	<p><b><u>Phase 2 Planning</u></b></p> <ul style="list-style-type: none"> <li>□ Waste stream prioritization: Qualitative evaluations of NEWSVT/Casella commercial customer waste streams for possible PFAS-containing materials. Use WWTP sludge sampling results to potentially focus geographically on potential PFAS sources.</li> <li>□ Development of sample acquisition methods for obtaining target Phase 2 materials.</li> <li>□ Coordination with analytical laboratories to identify sample preparation/analytical methods appropriate to the planned matrices in Phase 2.</li> </ul>
<b>Phase 2</b>	Sample acquisition of materials requiring coordination with commercial disposal customers.
<b>Phase 3</b>	Targeted follow-up sampling of materials to be identified based on the results of Phases 1 and 2 and communications with VTDEC.

NEWSVT and its consultants will work closely with the VTDEC throughout the implementation of the Testing Plan. Other phases may be developed following receipt of results from Phases 1 and 2, and communications with VTDEC.

**1.3 Process and Decision Making**

A process and decision flow diagram has been developed to show how the testing phases and decision-making processes will work throughout the implementation of the Testing Plan. The diagram is provided as Exhibit 1.2 below.

### Exhibit 1.2 – Process/Decision Flow Diagram



## 2.0 IDENTIFICATION OF POTENTIAL SOURCES OF PFAS-BASED WASTE

To identify potential sources of PFAS-based waste disposed at the NEWSVT Landfill, we will perform a qualitative evaluation of NEWSVT/Casella commercial customer waste streams for possible PFAS-containing materials. This evaluation will include review of NEWSVT's/Casella's commercial waste disposal customer list to identify potentially significant PFAS sources. Based on our current understanding of general waste disposal

practices, including information contained in VTDEC's July 2018 PFAS Contamination Status Report<sup>2</sup>, target sampling sites are anticipated to be:

- Wire coating facilities
- Semi-conductor facilities
- Battery manufacturing facilities
- Fire-fighting foam locations (users such as fire departments, or businesses with foam fire suppression systems)
- Tanneries
- Wastes from industries that use waterproofing coatings (if these exist)
- Textile plant wastes (if these exist)
- Car washes (PFAS possibly used in some waxes, polishes, and coatings)
- Ski areas (PFAS used in some waxes; shavings could be added to waste stream)
- Businesses that use/dispose significant quantities of coated food wrappers/packaging (e.g., fast food restaurants)

Qualitative evaluations of additional industries that VTDEC has targeted for investigation in their July 2018 PFAS Contamination Status Report, and commercial industries associated with PFAS will also be performed. These potential sources will be discussed with VTDEC and, if identified as suspected PFAS sources in waste, customer lists will be searched for facilities served by NEWSVT. Candidates for waste stream sampling include:

- Electroplating facilities using mist suppression systems
- Other specialty/performance coatings facilities (e.g., PTFE coated ductwork)
- Capacitor manufacturers
- Aircraft turbine manufacturers
- Impregnated/coated paper product manufacturers
- Plastic injection molding facilities
- Plastic extruders (PFAS based plastics)
- Paint manufacturers

As part of the "industry-specific" screening, we propose to evaluate Safety Data Sheets (SDS) [as available] for potentially PFAS-containing materials for products within target waste streams.

The identification of potential PFAS waste streams will include review of special wastes that have been accepted by NEWSVT in the past three years (2016, 2017, and 2018) with screening for materials and products known or suspected to contain significant levels of PFAS. The overall goal of this screening is to identify potential special wastes that may be the most significant PFAS sources. Examples of potential PFAS sources to evaluate will include the following waste types that might provide useful information for understanding PFAS loadings:

---

2

<https://dec.vermont.gov/sites/dec/files/documents/PFAS%20Sampling%20Report%207.10.18%20FINAL.pdf>

- Wastewater treatment plant (WWTP) sludges
- Contaminated soil
- Paper mill sludges (recycled paper may contain PFAS)
- Construction and Demolition (C&D) debris (including carpeting)
- Debris/soil from fire incidents with confirmed AFFF Class B foam
- Textile covered bulky waste (e.g., furniture, mattresses)
- Food products that may contain packaging/prep materials

### **3.0 SAMPLING PRIORITIZATION OF NEWSVT'S COMMERCIAL CUSTOMERS**

Prioritization of NEWSVT's commercial customers for Phase 2 sampling will be performed by developing a "matrix" of potential PFAS sources. The matrix will consider:

- The likelihood of PFAS presence based on types of wastes generated to develop a ranking of low, medium, or high; and
- The mass/volume of waste generated by customers (other things equal, sample high generation customers).

Additionally, based on the results of the Phase 1 sampling, which will include analytical results from WWTP sludges, we will review the locations of customers with respect to PFAS mass loadings from WWTP sludge materials as an additional selection criteria for Phase 2 sampling. Based on the results of the WWTP sludge, we plan to generate a target list of customers to sample as part of Phase 2 based on the PFAS ranking in the matrix.

The customer screening matrix, results of WWTP sludge sampling, and target list of customers to sample as part of Phase 2 sampling (based on the PFAS ranking in the matrix) will be transmitted to VTDEC for review and comment prior to initiating the Phase 2 sampling.

### **4.0 PROPOSED WASTE SAMPLING AND TESTING PLAN**

This section provides an overview of the planned scope for the sampling and analysis of target waste streams. The testing program will include focus on anticipated high-content PFAS waste materials and using the phased sampling approach discussed above in Section 1. Early phases of testing will be used to inform later phases of the sampling program. The proposed approach for sample acquisition and testing is described below. Modifications to this approach, including additional details on sample acquisition, preparation, and analysis to be performed as part of Phases 2 and 3 will be communicated to VTDEC in a subsequent transmittal.

#### **4.1 Sampling Acquisition Methods**

Sample acquisition of Phase 1 materials is anticipated to occur at the NEWSVT Landfill, select Casella transfer stations, or directly from NEWSVT's industrial/commercial customers' place of business. Sample collection of soil and sludge matrices in Phase 1 is anticipated to be performed similar to soil stockpile sampling, using dedicated, disposable, non-PFAS containing sampling equipment. The soil and sludge matrices included in Phase 1 sampling are anticipated to involve only compositing into a laboratory container as part of sample preparation. Collection of samples of the soil and sludge matrices will involve collecting composite samples consisting of sub-samples (preliminarily between 6 to 12 sub-samples, but to be reviewed with respect to laboratory requirements) homogenized in a laboratory container.

Acquisition of Phase 2 samples will be based on the geographic locations of the target samples (to be identified), but is anticipated to involve sample collection from Casella's transfer stations or directly from NEWSVT's industrial/commercial customers' place of business. Refer to attached Table 2 for a summary of proposed matrices, samples, and analyses.

#### **4.2 Sample Preparation Methods**

As mentioned above, the soil and sludge matrices included in Phase 1 sampling are anticipated to involve only compositing into a single container as part of sample preparation.

Preparation of non-soil/non-sludge matrices proposed for Phase 1 sampling (e.g., C&D debris, textile covered bulky waste, and food packaging/prep materials), as well as matrices to be included in Phase 2 sampling, are anticipated to require coordination with the laboratory, and perhaps trial and error sample preparation method development. We will coordinate with the analytical laboratory to develop an approach for sample compositing and reduction to laboratory capabilities/needs.

Based on preliminary discussions with the laboratory, "homogenization" of the non-soil/non-sludge matrices will likely require mechanically breaking the material into relatively uniform-sized pieces. Given the anticipated variability in materials, multiple approaches may be required to produce a sample that can be considered reasonably "homogenized" for the purposes of laboratory analysis. Plans for sample preparation methods for non-soil/non-sludge matrices as part of Phases 1 and 2 will be communicated with VTDEC.

#### **4.3 Analytical Testing Methods**

The sampling approach will consider PFAS content of waste material, material type, and laboratory requirements. We understand the sludge and soil matrices proposed to be included in Phase 1 sampling will be treated like a soil matrix for analysis by the laboratory (i.e., a relatively homogenous sample will be provided to the laboratory and they will select an aliquot for analysis).

As part of the testing program, we will screen analytical methods, including consideration of alternative methods less sensitive than Method 537 for screening purposes. Findings from this screening will be communicated to VTDEC.

Analytical testing methods proposed for Phase 1 include analysis of both total PFAS and leachable PFAS:

- **Total PFAS:** MLA 110<sup>3</sup> equivalent and 537/537.1 adapted to non-drinking water matrix.
- **Leachable PFAS:** Synthetic Precipitation Leaching Procedure (SPLP)<sup>4</sup> MLA 110 equivalent or 537/537.1 adapted to non-drinking water matrix.

Analytical methods for Phase 2 will be confirmed as part of the testing program and Phase 1 results, but preliminarily, we anticipate using similar analytical methods in Phases 1 and 2. The approach for Phase 3 analyses will be established based on the findings of Phases 1 and 2. Table 2 provides a summary of proposed matrices, samples, and analyses.

As part of this testing program, we will work with appropriately-qualified laboratories. In the event more than one lab is used, a plan for submitting “split” samples will be developed to evaluate comparability between labs.

## 5.0 DATA EVALUATION

The phased approach will allow for early phases of the testing program to inform later phases. The results from Phase 1 sampling will be used to inform the approach and scope for Phase 2 and Phase 3 sampling. In addition, the Phase 1 and Phase 2 results will be used to derive a preliminary estimate of PFAS loadings that will be further evaluated as part of Phase 3. As discussed in the Section 8 below, we have planned periodic transmittals and meetings with VTDEC to discuss Phase 1 and Phase 2 results to focus potential Phase 3 sampling.

The data evaluation for this testing program will be performed to support ranking (by PFAS concentration and mass of waste accepted by NEWSVT) the waste streams with the highest likelihood of contributing PFAS to the NEWSVT leachate. PFAS results will be tabulated to facilitate identification of elevated concentrations to evaluate together with NEWSVT waste acceptance mass ranking.

## 6.0 NEWSVT PROJECT TEAM

NEWSVT plans to conduct the activities described in this document through a project team consisting of NEWSVT personnel and external consultants and laboratories. Exhibit 6.1 below shows the general organization of the project team.

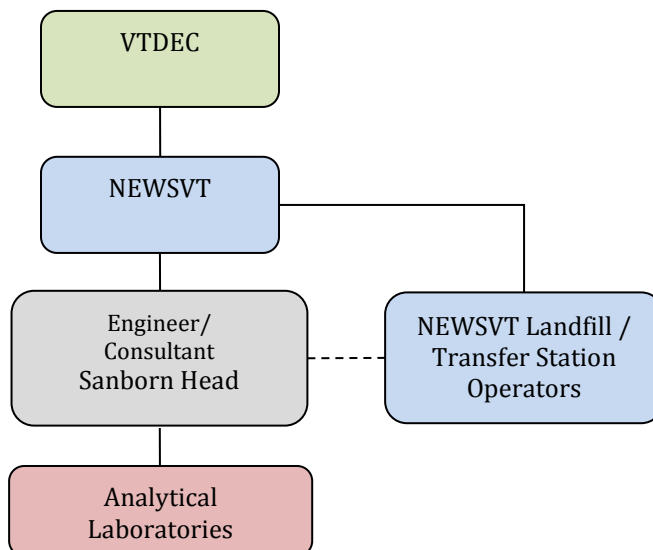
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<sup>3</sup> MLA 110 is an ID name for PFAS analysis used by a specific laboratory (SGS AXYS). We understand this method has been used by VTDEC previously to characterize non-aqueous matrices and follows Department of Defense (DoD) protocols and is based on isotope dilution. A PFAS method by a different laboratory would be considered equivalent to MLA 110 if it is based on isotope dilution and has a similar list of PFAS analytes.

<sup>4</sup> USEPA Method 1312.



### Exhibit 6.1 – NEWSVT Project Team Organization



Additional team members may be engaged by NEWSVT/Sanborn Head with communications to VTDEC.

### 7.0 DATA REPORTING AND COMMUNICATIONS WITH VTDEC

As indicated in the schedule in Section 8.0, for planning purposes, we have assumed meetings with VTDEC will occur quarterly in Q1, Q2, and Q3 2019 to discuss the interim sample results. Data will be discussed with the VTDEC following each phase of sampling, in the event that modifications to the testing program appear needed. Should VTDEC have comments to the testing plan, NEWSVT/Sanborn Head will make appropriate adjustments to the scope and details of the planned activities.

A final report will be transmitted to VTDEC summarizing the findings of the testing program, with the appropriate context, interpretation, and recommendations, if any. The final report will rank (by PFAS concentration and mass of waste accepted by NEWSVT) the waste streams with the highest likelihood of contributing PFAS to the NEWSVT leachate.

### 8.0 ANTICIPATED SCHEDULE

Phase 1 testing is anticipated to start early in Q1 2019 following approval of the plan by VTDEC. At the same time, Phase 2 planning will begin with the objective of collecting Phase 2 samples beginning in late Q1 2019. The schedule for Phase 3 sampling, and subsequent phases as needed, will be based on the results of Phases 1 and 2 and communications with VTDEC. The anticipated schedule of activities is presented as Exhibit 8.1 below.

### Exhibit 8.1 – Anticipated Schedule of Activities

Anticipated Date	Anticipated Activities
Q1 2019	<ul style="list-style-type: none"> <li>- Approval of Testing Plan by VTDEC</li> <li>- Phase 1: Commence WWTP sludge sampling and other Phase 1 materials as available</li> <li>- Phase 2: Begin screening commercial customers; sampling acquisition/preparation method development; analytical laboratory coordination; commence sampling sources as available</li> <li>- Update meeting with VTDEC</li> </ul>
Q2 2019	<ul style="list-style-type: none"> <li>- Phase 1: Interim deliverable to VTDEC with WWTP Sludge sample results</li> <li>- Update meeting with VTDEC</li> <li>- Phase 2: Continue sampling sources as available</li> </ul>
Q3 2019	<ul style="list-style-type: none"> <li>- Phase 2: Interim deliverable to VTDEC with Phase 2 sample results</li> <li>- Update meeting with VTDEC – ahead of transmittal of final report</li> <li>- Phase 3 sampling – scope to be determined</li> </ul>
On or before October 15, 2019	Final report transmitting and summarizing all sampling results to VTDEC

**Note:** The above schedule may be modified with communication to VTDEC depending upon findings from early phases of sampling.

## 9.0 REFERENCES

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# TABLE

**TABLE 2**  
**Summary of Proposed Matrices, Samples, and Analyses**  
**PFAS Waste Source Testing Plan**  
**NEWSVT Landfill, Coventry, VT**

Waste Category	Anticipated Medium/ Matrix	Anticipated Sample Acquisition Method	Anticipated Minimum Number of Samples	Anticipated QA/QC Samples	Anticipated Laboratory Methods	Anticipated Analyte Reporting List
<b>Phase 1</b>						
WWTP Sludge	Dewatered sludge cake	Composite samples from individual disposers placed in stockpiles at NEWSVT Landfill or transfer station	1 sample from each WWTP disposing of sludge at NEWSVT in Q1 2019	Field duplicates to be collected on 20% of samples	MLA 110 <sup>1</sup> equivalent or 537/537.1  and  (SPLP) MLA 110 equivalent or 537/537.1	Standard list of VT analytes, and select perfluoroalkane sulfonamides (FASAs) <sup>2</sup>
Contaminated Soil	Soil from suspected PFAS sites		25% of waste stream <sup>3</sup>			
Paper mill sludges	Dewatered sludge cake		25% of waste stream <sup>3</sup>			
C&D Waste	Carpeting/coated materials (e.g., Tyvek house wrap)		25% of waste stream <sup>3</sup>			
Textile covered bulky waste	Fabrics	Composite samples from individual items	25% of waste stream <sup>3</sup>			
<b>Phase 2</b>						
<u>Anticipated sources:</u> Electroplating facilities, other specialty/performance coatings facilities (e.g., PTFE coated ductwork), capacitor manufacturers, aircraft turbine manufacturers, impregnated/coated paper product manufacturers, plastic injection molding facilities, plastic extruders (PFAS based plastics), paint manufacturers, car washes/auto detailing, ski areas, fast food restaurants, firefighting foams not suspected to contain PFAS	To be determined from the ranking matrix, a cross-section of industries, and discussion with VTDEC	Composite samples of individual material types – anticipated to be collected at transfer station or directly at customer’s place of business	20 initially (if appropriate based on available sources), with potential follow-up in Phase 3	Field duplicates to be collected on 20% of samples	To be confirmed - preliminarily:  MLA 110 equivalent or 537/537.1  and /or  SPLP MLA 110 equivalent or 537/537.1	Standard list of VT analytes, and select FASAs
<b>Phase 3 – Targeted sampling and analysis to be determined and communicated to VTDEC based on results of Phases 1 and 2</b>						

**Notes:**

1. For soil and sludge matrices, we anticipate between 6 and 12 sub-samples will be collected for each composite sample.
2. The number of sub-samples to be collected for non-soil/non-sludge matrices will be identified based on laboratory requirements.

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<sup>1</sup> MLA 110 is an ID name for PFAS analysis used by a specific laboratory (SGS AXYS). We understand this method has been used by VTDEC previously to characterize non-aqueous matrices and follows DoD protocols and is based on isotope dilution. A PFAS method by a different laboratory would be considered equivalent to MLA 110 if it is based on isotope dilution and has a similar list of PFAS analytes.

<sup>2</sup> Target FASAs will include: N-Methylperfluorooctanesulfonamide (N-MeFOSA), N-Ethylperfluorooctanesulfonamide (N-EtFOSA), N-Methylperfluorooctanesulfonamidoethanol (N-MeFOSE), N-Ethylperfluorooctanesulfonamidoethanol (N-EtFOSE).

<sup>3</sup> Samples will be collected from a minimum of 25% of the waste disposal projects accepted by NEWSVT for each waste category identified during the testing period.

## **New England Waste Services of Vermont, Inc.'s Response to the Solid Waste Management Program's Request for Clarification Dated January 8, 2019**

### Section 4.3: Analytical Testing Methods

- Alternative Screening Methods and additional analytical methods – please confirm that alternative screening methods or analytical methods other than those presented in this sampling plan that may be implemented in the subsequent phases of sampling, will only be utilized after presented to the Program and approved for use in the final report.

***If contemplated, alternative screening methods or analytical methods other than those presented in the sampling plan will only be utilized after being presented to the Program and approved for use in the final report.***

- Phase I testing methods – please justify the proposed use of the Synthetic Precipitation Leach Procedure (SPLP) rather than Toxic Characteristic Leaching Procedure (TCLP).

***We understand SPLP methodology was developed to simulate leaching from material exposed to precipitation, whereas the TCLP methodology was developed to screen for characterizing potentially hazardous waste for disposal purposes. NEWSVT leachate has indicated a pH of approximately 8 s.u., which is closer to the pH extraction fluid used in the SPLP method (typically approximately 4.2 s.u.) than the more acidic TCLP extraction fluid (typically approximately 2.9 s.u.). Although neither SPLP or TCLP match the basic quality of leachate, the greater acidity of the TCLP extraction makes it potentially more misleading than SPLP as a gauge of leaching potential. Based on this information, SPLP is proposed as part of the PFAS waste sampling plan because it is considered to be a closer representation of leaching from newly-placed waste on working faces of the landfill where precipitation falls and leaching is anticipated to occur.***

### Table 2: Summary of Proposed Matrices, Samples and Analyses

- Please clarify the number of samples/time period during which 25% of the contaminated soil, paper mill sludges, C&D Waste and Textile covered bulky wastes will be sampled (i.e. just during Phase I or throughout the full years sampling period).

***In order to account for anticipated laboratory turnaround times for data to be reported/included into a final report to the Program by October 15, 2019, waste sampling is anticipated to occur between approximately January 15 and July 15, 2019.***

***To clarify the information on Table 2 of the Sampling Plan, we note the following:***

<b>Waste Category</b>	<b>Anticipated Minimum Number of Samples</b>
Contaminated Soil	25% of <u>the contaminated soil disposal projects accepted by NEWSVT January 15 to July 15, 2019.</u>
Paper mill sludges	25% of <u>the paper mill sludge disposal projects accepted by NEWSVT January 15 to July 15, 2019.</u>
C&D Waste	25% of <u>the C&amp;D disposal projects accepted by NEWSVT January 15 to July 15, 2019.</u>
Textile covered bulky waste	25% of <u>the textile covered bulky waste disposal projects (e.g., disposers of mattresses and furniture) accepted by NEWSVT January 15 to July 15, 2019.</u>

***Note that (as proposed) samples of projects are likely to be composite samples if the project involves multiple disposal loads or items.***

# PFAS LABORATORY REQUIREMENTS, QA/QC, AND SAMPLING PROTOCOL

This document along with associated attachment(s) and addendums provide sampling protocols for PFAS sampling of solid waste disposed of at the New England Waste Services of Vermont, Inc. (NEWSVT) Landfill in Coventry, Vermont.

## **Laboratory Requirements**

The samples will be analyzed for both linear and branched PFAS isomers using a modified U.S. Environmental Protection Agency (USEPA) Method 537 with isotope dilution for a 28-compound analyte list by Alpha Analytical of Mansfield, Massachusetts (Alpha), a National Environmental Laboratory Accreditation Program (NELAP) laboratory. In addition, leachable PFAS analysis will be performed in accordance with the Synthetic Precipitation Leaching Procedure (SPLP) and EPA Method 537, isotope dilution, adapted to non-drinking water matrix, on approximately 10 percent of the field samples.

The analyte list, target laboratory reporting limits (RLs), and method detection limits (MDLs) are provided in the attachment entitled “Method Detection Limit Study”, prepared in June 2018 by Alpha. We note, however, that dilutions and/or matrix interferences (e.g., TDS, TSS) may elevate the actual RLs achieved, and the laboratory’s standard RLs may not meet the targets for all analytes in every analysis.

## **Field QA/QC**

The following table provides a summary of QA/QC samples that will be collected in the field and analyzed by the laboratory. PFAS-free water will be supplied by Alpha for collection of the equipment rinseate blank and the field blank.

<b>QA/QC Sample Types</b>	<b>Frequency</b>	<b>Description</b>	<b>Example Nomenclature</b>
Field Duplicate	1 per 5 field samples.	The field duplicate will be collected from the same stainless steel bowl as the primary sample after the soil in the bowl has been mixed.	FD-01_2019XXXX
Aqueous Equipment Rinseate Blank	1 per 20 field samples.	Collected by pouring an aliquot of PFAS-free water over the sampling equipment and collecting the rinseate in a sampling container.	EB-01_2019XXXX
Aqueous Field Blank	1 per 20 field samples.	Collected at a sampling location by pouring an aliquot of PFAS-free water into a sampling container.	FB-01_2019XXXX



### **Allowable and Prohibited Sampling-Related Items**

The following table provides a summary of items that are likely to contain PFAS (i.e., prohibited items) and the allowable alternatives.

<b>Item Category</b>	<b>Allowable Items</b>	<b>Prohibited Items</b>
Decontamination	Alconox® and/or Liquinox®, deionized rinse, and a final PFAS-free water rinse.	Decon 90.
Sample Storage and Preservation	Laboratory-provided sample container (HDPE or polypropylene bottles), regular ice in re-sealable plastic bags. After sampling, containers will be stored individually in re-sealable plastic bags.	LDPE or glass bottles, PTFE- or Teflon®-lined caps, chemical ice packs. Samples cannot be field filtered due to potential PFAS adsorption onto the filter.
Field Documentation	Plain paper, metal clipboard, Sharpies®, pens.	Waterproof/treated paper or field books, plastic clipboards, non-Sharpies® markers, Post-It®, and other adhesive paper products.
Field Clothing	Well-laundered (more than six times washed after purchase) clothing made of synthetic or cotton material, no fabric softener.  Polyurethane and wax coated materials.  Boots made with polyurethane and PVC, well-worn or untreated leather boots.  PFAS-free Tyvek® material.	Clothing (including boots) made of Gore-Tex™ or other synthetic water resistant and/or stain resistant material, coated Tyvek® material.  Fabric softener.
Personal Care Products (for the day of sampling)	<b>Sunscreens</b> – Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss My Face, Baby sunscreens that are “free” or “natural”. <b>Insect Repellents</b> – Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellent, Herbal Armor, California Baby Natural Bug Spray, BabyGanics. <b>Sunscreen and insect repellent</b> – Avon Skin So Soft Bug Guard – SPF 30 Lotion.	Cosmetics, moisturizers, hand cream, and other related products.
Food and Beverage	Bottled water and hydration drinks.	Pre-packaged food, fast food wrappers and containers.

**Notes:**

Although we don’t anticipate this situation, if an item is expected to come in direct contact with field samples, it may be necessary to have the product(s) analyzed for PFAS to confirm that a specific batch or lot number does not contain PFAS. If an item is not expected to come into direct contact with field samples, then the product Safety Data Sheet and/or manufacturing specifications may be reviewed to determine if the item is PFAS-containing by checking for any chemicals with “fluoro” in the name or the acronyms PTFE, TPE, FEP, ETFE, or PFA.

### **Sludge and Soil Sampling Protocol**

Note: The sampling program anticipates sampling/analyzing PFAS in samples of wastewater treatment plant (WWTP) sludge, and potentially contaminated soil that has been transported to NEWSVT for disposal. For practical purposes of this sampling program, sludge samples will be

generally treated in a manner consistent with “soil” matrices. For simplification purposes, the text below will reference sludge and soil samples as “soil”.

Similar to many volatile organic compounds (VOCs), PFAS may adsorb to soils more or less depending on a variety of factors (e.g., organic content, grain size). Additionally, PFAS distribution in soil may depend on a number of factors including: the PFAS materials released, the source type (e.g., air deposition, aqueous film forming foam [AFFF]), the temporal nature of the release, and precipitation/infiltration. Unlike the photoionization detector (PID) for VOCs, a field screening technique for PFAS is not readily available. For sludge and soil matrices, a composite sample consisting of 6 to 12 sub-samples collected from the waste material stockpile is the preferred method for PFAS sample collection.

### **Sample Collection**

Particular care will be taken for sampling personnel to don a new pair of nitrile gloves for each new sampling location. Nitrile gloves should be replaced immediately before handling sample bottles, immediately before handling sampling equipment, and immediately before collecting the PFAS samples. Gloves will be replaced frequently and before each new source is sampled to limit cross-contamination potential. Additionally, if feasible (and PFAS concentration data are available), locations should generally be sampled in order of least anticipated PFAS concentrations to greatest anticipated PFAS concentrations.

Samples will be collected using the following procedure.

1. Advance the stainless-steel spade or scoop into the stockpile approximately 3 to 6 inches at 6 to 12 locations distributed approximately equally around the soil pile and place the soil into a stainless-steel mixing bowl.
2. Mix the sample volume thoroughly in the stainless steel bowl using the stainless steel scoop in a manner which limits the introduction of air into the sample as much as is practicable. Remove any large rocks, gravel, or organic litter from the sample volume. In general, material greater than ¼-inch will be excluded from sample collection if it cannot be made smaller by mechanical means.
3. Fill the sample containers for the intended chemical analyses. PFAS samples should be collected first, prior to collecting samples for any other parameters into any other containers. The sample bottle caps should not be placed on any surface during sampling and, after samples are collected, the bottles should be capped, labeled, and sealed in individual re-sealable plastic (e.g., Ziploc®) bags. Sample containers will then be placed on ice for delivery to the laboratory.
4. Log the soil sample, take a photo of the material sampled, and record field observations.
5. Between each sampling location, decontaminate soil sampling equipment using the procedures outlined below.

### **Field Equipment Decontamination Procedures**

Soil sampling equipment (i.e., stainless steel spade and scoop, stainless steel mixing bowl) will be decontaminated between each sample collection using the below methods.

1. Remove loose material with a brush.
2. Rinse equipment with a distilled/deionized water rinse and scrub.
3. Rinse with an Alconox® or Liquinox® detergent wash made with distilled/deionized water.
4. Rinse with distilled/deionized water rinse.
5. Complete with a final rinse of laboratory-verified PFAS-free water.

The aqueous equipment rinseate blank will be collected from sampling equipment by following Steps 1 through 5 above, and collecting the rinseate of the PFAS-free water (Step 6) into a container provided by the laboratory.

### ***Equipment and Supplies***

The following supplies will be required for sampling:

- stainless steel spade;
- stainless steel scoop;
- stainless steel mixing bowl;
- sampling containers;
- plastic sheeting;
- decontamination brushes;
- detergent;
- distilled/deionized water;
- laboratory-verified PFAS-free water;
- cooler;
- ice;
- personal protective equipment;
- field sampling summary forms;
- camera; and
- measurement tape.

Attachments:            June 2018 Method Detection Limit Study – Alpha Analytical

EPA 537 Isotope Dilution, Soil Compound	Target Concentration	Units	Average	% Recovery	Standard Deviation	Number of Replicates	Student t-value	MDLs	MDLb	MDL	RL
PFBA	0.250	ng/g	0.300	120%	0.0078	9	2.896	0.0227	N/A	0.0227	1.00
PFPeA	0.250	ng/g	0.323	129%	0.0159	9	2.896	0.0460	0.024	0.0460	1.00
PFBS	0.250	ng/g	0.289	115%	0.0135	9	2.896	0.0390	N/A	0.0390	1.00
4:2FTS	0.250	ng/g	0.304	121%	0.0222	9	2.896	0.0643	N/A	0.0643	1.00
PFHxA	0.250	ng/g	0.344	137%	0.0182	9	2.896	0.0526	0.0138	0.0526	1.00
PFPeS	0.250	ng/g	0.297	119%	0.0288	9	2.896	0.0835	N/A	0.0835	1.00
PFHpA	0.250	ng/g	0.290	116%	0.0156	9	2.896	0.0451	N/A	0.0451	1.00
PFHxS	0.250	ng/g	0.324	130%	0.0210	9	2.896	0.0607	0.0081	0.0607	1.00
PFOA	0.250	ng/g	0.307	123%	0.0145	9	2.896	0.0419	0.0164	0.0419	1.00
6:2FTS	0.250	ng/g	0.323	129%	0.0621	9	2.896	0.180	N/A	0.1797	1.00
PFHpS	0.250	ng/g	0.297	119%	0.0456	8	2.998	0.137	N/A	0.1367	1.00
PFNA	0.250	ng/g	0.326	130%	0.0260	9	2.896	0.0752	N/A	0.0752	1.00
PFOS	0.250	ng/g	0.285	114%	0.0448	9	2.896	0.130	0.0205	0.1299	1.00
PFDA	0.250	ng/g	0.307	123%	0.0231	9	2.896	0.0670	N/A	0.0670	1.00
8:2FTS	0.250	ng/g	0.334	134%	0.0991	9	2.896	0.287	N/A	0.2869	1.00
PFNS	0.250	ng/g	0.292	117%	0.1032	9	2.896	0.299	N/A	0.2988	1.00
NMeFOSAA	0.250	ng/g	0.289	115%	0.0697	9	2.896	0.202	N/A	0.2017	1.00
PFUnA	0.250	ng/g	0.307	123%	0.0162	9	2.896	0.0468	N/A	0.0468	1.00
PFDS	0.250	ng/g	0.221	89%	0.0528	9	2.896	0.153	N/A	0.1530	1.00
FOSA	0.250	ng/g	0.294	118%	0.0339	9	2.896	0.0981	N/A	0.0981	1.00
NEtFOSAA	0.250	ng/g	0.277	111%	0.0293	9	2.896	0.0847	0.031	0.0847	1.00
PFDoA	0.250	ng/g	0.289	116%	0.0242	9	2.896	0.0700	N/A	0.0700	1.00
PFTTrDA	0.250	ng/g	0.222	89%	0.0706	9	2.896	0.205	N/A	0.2045	1.00
PFTA	0.250	ng/g	0.329	132%	0.0172	7	3.143	0.0542	N/A	0.0542	1.00
HFPO-DA	5.00	ng/g	4.89	98%	1.32	9	2.896	3.81	0.103	3.81	10.0
ADONA	0.250	ng/g	0.316	126%	0.0143	9	2.896	0.0413	N/A	0.0413	1.00

EPA 537 Isotope Dilution, Soil Compound	Target Concentration	Units	Average	% Recovery	Standard Deviation	Number of Replicates	Student t-value	MDLs	MDLb	MDL	RL
PFHxDA	0.250	ng/g	0.167	67%	0.0383	7	3.143	0.120	0.047	0.120	1.00
PFODA	0.250	ng/g	0.121	48%	0.0545	7	3.143	0.171	0.103	0.171	1.00

Approved



6/11/18

EPA 537 Isotope Dilution, Soil	MDL 1	MDL 2	MDL 3	MDL 4	MDL 5	MDL 6	MDL 7	MDL 8	MDL 9
Compound	4/12/2018	4/12/2018	4/12/2018	4/20/2018	4/20/2018	4/20/2018	4/20/2018	4/20/2018	4/20/2018
PFBA	0.300	0.314	0.308	0.290	0.291	0.303	0.303	0.295	0.300
PFPeA	0.287	0.343	0.312	0.326	0.333	0.331	0.325	0.323	0.328
PFBS	0.281	0.266	0.308	0.285	0.294	0.304	0.281	0.282	0.300
4:2FTS	0.332	0.299	0.321	0.257	0.300	0.323	0.292	0.313	0.299
PFHxA	0.302	0.339	0.343	0.364	0.345	0.363	0.348	0.340	0.350
PFPeS	0.285	0.350	0.341	0.296	0.286	0.267	0.291	0.290	0.272
PFHpA	0.270	0.298	0.323	0.291	0.283	0.289	0.277	0.281	0.301
PFHxS	0.272	0.334	0.325	0.327	0.338	0.334	0.343	0.321	0.323
PFOA	0.284	0.303	0.288	0.310	0.324	0.319	0.301	0.317	0.321
6:2FTS	0.279	0.390	0.429	0.248	0.283	0.372	0.334	0.311	0.266
PFHpS	ND	0.329	0.221	0.349	0.303	0.350	0.291	0.251	0.287
PFNA	0.371	0.335	0.362	0.312	0.295	0.310	0.312	0.331	0.307
PFOS	0.379	0.240	0.227	0.309	0.275	0.293	0.309	0.264	0.272
PFDA	0.261	0.318	0.332	0.306	0.291	0.300	0.321	0.303	0.337
8:2FTS	0.258	0.451	0.530	0.250	0.295	0.373	0.322	0.249	0.280
PFNS	0.288	0.546	0.206	0.215	0.284	0.208	0.295	0.290	0.301
NMeFOSAA	0.302	0.235	0.460	0.264	0.247	0.229	0.308	0.278	0.276
PFUnA	0.296	0.325	0.301	0.330	0.314	0.321	0.299	0.279	0.302
PFDS	0.284	0.221	0.150	0.237	0.174	0.144	0.259	0.264	0.262
FOSA	0.237	0.363	0.303	0.300	0.277	0.309	0.276	0.281	0.301
NEtFOSAA	0.248	0.330	0.291	0.269	0.301	0.234	0.286	0.257	0.278
PFDoA	0.305	0.321	0.308	0.246	0.277	0.305	0.297	0.283	0.263
PFTTrDA	0.274	0.275	0.268	0.189	0.129	0.090	0.287	0.245	0.238
PFTA	0.311	0.335	0.357	0.315	ND	ND	0.334	0.341	0.313
HFPO-DA	3.250	5.377	5.530	4.169	3.996	3.170	6.708	6.560	5.258
ADONA	0.318	0.306	0.337	0.319	0.337	0.293	0.305	0.316	0.314

EPA 537 Isotope Dilution, Soil	MDL 1	MDL 2	MDL 3	MDL 4	MDL 5	MDL 6	MDL 7		
Compound	6/2/2018	6/2/2018	6/2/2018	6/6/2018	6/6/2018	6/7/2018	6/7/2018		
PFHxDA	0.112	0.117	0.197	0.206	0.194	0.172	0.169		
PFODA	0.061	0.071	0.060	0.182	0.164	0.160	0.150		



6/11/18

# ADDENDUM NO. 1 TO PFAS LABORATORY REQUIREMENTS, QA/QC, AND SAMPLING PROTOCOL

This Addendum No. 1 to our “PFAS Laboratory Requirements, QA/QC, and Sampling Protocol” provides a list of field equipment and procedures for sample collection and equipment decontamination for PFAS sampling of C&D, textile covered bulky waste, food packaging, and other miscellaneous bulk waste disposed of at the New England Waste Services of Vermont, Inc. (NEWSVT) Landfill in Coventry, Vermont.

## **C&D, Textile Covered Bulky Waste, Food Packaging, and Other Miscellaneous Bulk Waste Sampling Protocol**

The sampling program anticipates sampling/analyzing PFAS in samples of construction and demolition (C&D) waste (e.g., carpeting, Tyvek house wrap, other coated materials), fabrics from textile covered bulky wastes (e.g., mattresses, couches, chairs, other furniture), and coated food packaging or preparation materials (e.g., wrappers, containers). For each potential source identified, a composite sample consisting of sub-samples collected from each disposal load (if multiple loads) or multiple items in a single load is the preferred method for PFAS sample collection. Examples of the types of wastes that we anticipate sampling and the corresponding sampling plan are provided below for reference:

- **C&D Waste**: collect a sub-sample from each different suspected PFAS-containing waste in the load, or loads, and composite into a single sample. For example, the composite sample may include sub-samples from carpet, curtains/drapes, and electrical cable insulation/jacketing that may come from a single load. One sub-sample will be collected for each different material (e.g., if two types of carpeting are identified, one sub-sample will be collected from each type and combined into one composite sample). Composite samples will be limited to approximately six sub-samples. If more than six sub-samples are identified for a single source, we may elect to collect multiple composite samples for that source.
- **Textile Covered Bulky Waste**: collect a sub-sample from each different suspected PFAS-containing waste in the load, or loads, and composite into a single sample. For example, the composite sample may include sub-samples from mattresses, couches, chairs, and other textile or leather covered furniture. One sub-sample will be collected for each different material (e.g., if two types of mattresses are identified, one sub-sample will be collected from each type). Composite samples will be limited to approximately six sub-samples. If more than six sub-samples are identified for a single source, we may elect to collect multiple composite samples for that source, or we may elect to composite sub-samples for similar materials (e.g., one composite sample for mattresses, one composite sample for fabric covered couches/chairs, one composite sample for leather covered couches/chairs, etc.).
- **Food Packaging/Preparation Waste**: collect a sub-sample from each different suspected PFAS-containing waste in the load, or loads, and composite into a single sample. For example, the composite sample may include sub-samples from containers, wraps, foil, plates, and folding cartons. One sub-sample will be collected for each different material



(e.g., if two types of wraps are identified, one sub-sample will be collected from each type and combined into one composite sample). Composite samples will be limited to approximately twelve sub-samples. If more than twelve sub-samples are identified for a single source, we may elect to collect multiple composite samples for that source, or we may elect to composite sub-samples for similar materials (e.g., one composite sample for containers, one for wraps, etc.).

For each composite sample, the sample collector will record the source, the number of sub-samples, the type of sub-sample (e.g., mattress, food wrapper, carpet, etc.), and to the extent available, information about the source of the sub-sample (e.g., manufacturer, make, model, etc.).

### **Sample Collection**

Particular care will be taken for sampling personnel to don a new pair of nitrile gloves for each new sampling location. Nitrile gloves should be replaced immediately before handling sample bottles, immediately before handling sampling equipment, and immediately before collecting the PFAS samples. Gloves will be replaced frequently and before each new source is sampled to limit cross-contamination potential. Additionally, if feasible (and PFAS concentration data are available), locations should generally be sampled in order of least anticipated PFAS concentrations to greatest anticipated PFAS concentrations.

Samples will be collected using the following procedure.

1. Using a stainless-steel knife or scissors, score the material in-place into sections of desired width, if necessary.
2. Cut the material free and place into a stainless-steel mixing bowl.
3. Repeat steps 1 and 2 for each sub sample.
4. Log the sample, take a photo of the material sampled, and record field observations.
5. Using stainless-steel scissors, cut the collected materials into ¼" to ½" size pieces.
6. Mix the sample volume thoroughly in the stainless-steel bowl using the stainless-steel scoop in a manner which limits the introduction of air into the sample as much as is practicable.
7. Fill the sample containers for the intended chemical analyses. PFAS samples should be collected first, prior to collecting samples for any other parameters into any other containers. The sample bottle caps should not be placed on any surface during sampling and, after samples are collected, the bottles should be capped, labeled, and sealed in individual re-sealable plastic (e.g., Ziploc®) bags. Sample containers will then be placed on ice for delivery to the laboratory.
8. Between each sampling location, decontaminate sampling equipment using the procedures outlined below.

### ***Field Equipment Decontamination Procedures***

Sampling equipment (i.e., stainless steel scoop, stainless steel mixing bowl, stainless steel knife, stainless steel scissors) will be decontaminated between each sample collection using the below methods.

1. Remove loose material with a brush.
2. Rinse equipment with a distilled/deionized water rinse and scrub.
3. Rinse with an Alconox® or Liquinox® detergent wash made with distilled/deionized water.
4. Rinse with distilled/deionized water rinse.
5. Complete with a final rinse of laboratory-verified PFAS-free water.

The aqueous equipment rinseate blank will be collected from sampling equipment by following Steps 1 through 5 above, and collecting the rinseate of the PFAS-free water (Step 6) into a container provided by the laboratory.

### ***Equipment and Supplies***

The following supplies will be required for sampling:

- stainless steel knife;
- stainless steel scissors;
- stainless steel scoop;
- stainless steel mixing bowl;
- sampling containers;
- plastic sheeting;
- decontamination brushes;
- detergent;
- distilled/deionized water;
- laboratory-verified PFAS-free water;
- cooler;
- ice;
- personal protective equipment;
- field sampling summary forms;
- camera; and
- measurement tape.

### ***Laboratory SOP***

For reference, the laboratory protocol provided by Alpha Analytical, Inc. for Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (LC/MS/MS) is attached. Samples will be prepared at the laboratory in accordance with Section 10.4, which describes the sample preparation and extraction protocol for soils/solids.



**Attachments:** Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (LC/MS/MS) – Alpha Analytical

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## Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (LC/MS/MS)

Reference: EPA Method 537, Version 1.1, September 2009, EPA Document #: EPA/600/R-08/09

Department of Defense, Quality Systems Manual for Environmental Laboratories, Version 5.1, .2017

### 1. Scope and Application

**Matrices:** Drinking Water, Non-potable Water and Soil Matrices

**Definitions:** Refer to Alpha Analytical Quality Manual.

- 1.1 This is a liquid chromatography/tandem mass spectrometry (LC/MS/MS) method for the determination of selected perfluorinated alkyl substances (PFAS) in Non-Drinking Water Matrices. Accuracy and precision data have been generated in reagent water, and finished ground and surface waters for the compounds listed in Table 1.
- 1.2 The data report packages present the documentation of any method modification related to the samples tested. Depending upon the nature of the modification and the extent of intended use, the laboratory may be required to demonstrate that the modifications will produce equivalent results for the matrix. Approval of all method modifications is by one or more of the following laboratory personnel before performing the modification: Area Supervisor, Department Supervisor, Laboratory Director, or Quality Assurance Officer.
- 1.3 This method is restricted to use by or under the supervision of analysts experienced in the operation of the LC/MS/MS and in the interpretation of LC/MS/MS data. Each analyst must demonstrate the ability to generate acceptable results with this method by performing an initial demonstration of capability.

### 2. Summary of Method

- 2.1 A 250-mL water sample is fortified with extracted internal standards (EIS) and passed through a solid phase extraction (WAX) cartridge containing a mixed mode, Weak Anion Exchange, reversed phase, water-wettable polymer to extract the method analytes and isotopically-labeled compounds. The compounds are eluted from the solid phase in two fractions with methanol followed by a small amount of 2% ammonium hydroxide in methanol solution. The extract is concentrated with nitrogen in a heated water bath, and then adjusted to a 1-mL volume with 80:20% (vol/vol) methanol:water. A 3 µl injection is made into an LC equipped with a C18 column that is interfaced to an MS/MS. The analytes are separated and identified by comparing the acquired mass spectra and retention times to reference spectra and retention times for calibration standards acquired under identical LC/MS/MS conditions. The concentration of each analyte is determined by using the isotope dilution technique. Extracted Internal Standards (EIS) analytes are used to monitor the extraction efficiency of the method analytes.

#### 2.2 Method Modifications from Reference

None.

Table 1

Parameter	Acronym	CAS
<b>PERFLUOROALKYL ETHER CARBOXYLIC ACIDS (PFECAs)</b>		
Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	HFPO-DA	62037-80-3
Dodecafluoro-3h-4,8-dioxanonoate	ADONA	958445-44-8
<b>PERFLUOROALKYLCARBOXILIC ACIDS (PFCAs)</b>		
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA *	307-24-4
Perfluoroheptanoic acid	PFHpA *	375-85-9
Perfluorooctanoic acid	PFOA *	335-67-1
Perfluorononanoic acid	PFNA *	375-95-1
Perfluorodecanoic acid	PFDA *	335-76-2
Perfluoroundecanoic acid	PFUnA *	2058-94-8
Perfluorododecanoic acid	PFDoA *	307-55-1
Perfluorotridecanoic acid	PFTTrDA *	72629-94-8
Perfluorotetradecanoic acid	PFTA *	376-06-7
Perfluorohexadecanoic acid	PFHxDA	67905-19-5
Perfluorooctadecanoic acid	PFODA	16517-11-6
<b>PERFLUOROALKYLSULFONATES (PFASs)</b>		
Perfluorobutanesulfonic acid	PFBS *	375-73-5
Perfluoropentanesulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS *	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS *	1763-23-1
Perfluoronanesulfonic acid	PFNS	68259-12-1
Perfluorodecanesulfonic acid	PFDS	335-77-3
<b>PERFLUOROCTANESULFONAMIDES (FOSAs)</b>		
Perfluorooctanesulfonamide	PFOSA	754-91-6
<b>TELOMER SULFONATES</b>		
1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	4:2FTS	27619-93-8
1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	6:2FTS	27619-97-2
1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	8:2FTS	39108-34-4
<b>PERFLUOROCTANESULFONAMIDOACETIC ACIDS</b>		
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA *	2355-31-9
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA *	2991-50-6

\* also reportable via the standard 537 method

### 3. Reporting Limits

The reporting limit for PFAS's is 2 ng/L for aqueous samples and 1 ng/g for soil samples.



## 4. Interferences

**4.1** All glassware must be meticulously cleaned. Wash glassware with detergent and tap water, rinse with tap water, followed by a reagent water rinse. Non-volumetric glassware can be heated in a muffle furnace at 400 °C for 2 hours or solvent rinsed. Volumetric glassware should be solvent rinsed and not be heated in an oven above 120 °C. Store clean glassware inverted or capped. Do not cover with aluminum foil because PFAS's can be potentially transferred from the aluminum foil to the glassware.

**4.1.1 NOTE:** PFAS standards, extracts and samples should not come in contact with any glass containers or pipettes as these analytes can potentially adsorb to glass surfaces. PFAS analyte and EIS standards commercially purchased in glass ampoules are acceptable; however, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene containers.

**4.2** Method interferences may be caused by contaminants in solvents, reagents (including reagent water), sample bottles and caps, and other sample processing hardware that lead to discrete artifacts and/or elevated baselines in the chromatograms. The method analytes in this method can also be found in many common laboratory supplies and equipment, such as PTFE (polytetrafluoroethylene) products, LC solvent lines, methanol, aluminum foil, SPE sample transfer lines, etc. All items such as these must be routinely demonstrated to be free from interferences (less than 1/3 the RL for each method analyte) under the conditions of the analysis by analyzing laboratory reagent blanks as described in Section 9.2. **Subtracting blank values from sample results is not permitted.**

**4.3** Matrix interferences may be caused by contaminants that are co-extracted from the sample. The extent of matrix interferences will vary considerably from source to source, depending upon the nature of the water. Humic and/or fulvic material can be co-extracted during SPE and high levels can cause enhancement and/or suppression in the electrospray ionization source or low recoveries on the SPE sorbent. Total organic carbon (TOC) is a good indicator of humic content of the sample.

**4.4** SPE cartridges can be a source of interferences. The analysis of field and laboratory reagent blanks can provide important information regarding the presence or absence of such interferences. Brands and lots of SPE devices should be tested to ensure that contamination does not preclude analyte identification and quantitation.

## 5. Health and Safety

**5.1** The toxicity or carcinogenicity of each reagent and standard used in this method is not fully established; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means available. A reference file of material safety data sheets is available to all personnel involved in the chemical analysis. Additional references to laboratory safety are available in the Chemical Hygiene Plan.

**5.2** All personnel handling environmental samples known to contain or to have been in contact with municipal waste must follow safety practices for handling known disease causative agents.

- 5.3** PFOA has been described as “likely to be carcinogenic to humans.” Pure standard materials and stock standard solutions of these method analytes should be handled with suitable protection to skin and eyes, and care should be taken not to breathe the vapors or ingest the materials.

## **6. Sample Collection, Preservation, Shipping and Handling**

### **6.1 Sample Collection for Aqueous Samples**

- 6.1.1** Samples must be collected in three (3) 250-mL high density polyethylene (HDPE) container with an unlined plastic screw cap.
- 6.1.2** The sample handler must wash their hands before sampling and wear nitrile gloves while filling and sealing the sample bottles. PFAS contamination during sampling can occur from a number of common sources, such as food packaging and certain foods and beverages. Proper hand washing and wearing nitrile gloves will aid in minimizing this type of accidental contamination of the samples.
- 6.1.3** Open the tap and allow the system to flush until the water temperature has stabilized (approximately 3 to 5 min). Collect samples from the flowing system.
- 6.1.4** Fill sample bottles. Samples do not need to be collected headspace free.
- 6.1.5** After collecting the sample and cap the bottle. Keep the sample sealed from time of collection until extraction.
- 6.1.6** Field Reagent Blank (FRB)
- 6.1.6.1** A FRB must be handled along with each sample set. The sample set is composed of samples collected from the same sample site and at the same time. At the laboratory, fill the field blank sample bottle with reagent water and preservatives, seal, and ship to the sampling site along with the sample bottles. For each FRB shipped, an empty sample bottle (no preservatives) must also be shipped. At the sampling site, the sampler must open the shipped FRB and pour the reagent water into the empty shipped sample bottle, seal and label this bottle as the FRB. The FRB is shipped back to the laboratory along with the samples and analyzed to ensure that PFAS's were not introduced into the sample during sample collection/handling.

The reagent water used for the FRBs must be initially analyzed for method analytes as a MB and must meet the MB criteria in Section 9.2.1 prior to use. This requirement will ensure samples are not being discarded due to contaminated reagent water rather than contamination during sampling.

### **6.2 Sample Collection for Soil and Sediment samples.**

Grab samples are collected in polypropylene containers. Sample containers and contact surfaces containing PTFE shall be avoided.



### 6.3 Sample Preservation

The preservation reagent, listed in the table below, is added to each drinking water sample bottle as a solid prior to shipment to the field (or prior to sample collection).

Table 2

Compound	Amount	Purpose
Trizma	5.0 g/l	Buffering reagent and removes free chlorine

### 6.4 Sample Shipping

Samples must be chilled during shipment and must not exceed 10 °C during the first 48 hours after collection. Sample temperature must be confirmed to be at or below 10 °C when the samples are received at the laboratory. Samples stored in the lab must be held at or below 6 °C until extraction, but should not be frozen.

**NOTE:** Samples that are significantly above 10° C, at the time of collection, may need to be iced or refrigerated for a period of time, in order to chill them prior to shipping. This will allow them to be shipped with sufficient ice to meet the above requirements.

### 6.5 Sample Handling

#### 6.5.1 Holding Times

**6.5.1.1** Water samples should be extracted as soon as possible but must be extracted within 14 days. Soil samples should be extracted within 28 days. Extracts are stored at < 10 ° C and analyzed within 28 days after extraction.

## 7. Equipment and Supplies

**7.1** SAMPLE CONTAINERS – 250-mL high density polyethylene (HDPE) bottles fitted with unlined screw caps. Sample bottles must be discarded after use.

**7.2** POLYPROPYLENE BOTTLES – 4-mL narrow-mouth polypropylene bottles.

**7.3** CENTRIFUGE TUBES – 15-mL conical polypropylene tubes with polypropylene screw caps for storing standard solutions and for collection of the extracts.

**7.4** AUTOSAMPLER VIALS – Polypropylene 0.7-mL autosampler vials with polypropylene caps.

**7.4.1** NOTE: Polypropylene vials and caps are necessary to prevent contamination of the sample from PTFE coated septa. However, polypropylene caps do not reseal, so evaporation occurs after injection. Thus, multiple injections from the same vial are not possible.

**7.5** POLYPROPYLENE GRADUATED CYLINDERS – Suggested sizes include 25, 50, 100 and 1000-mL cylinders.

**7.6** Auto Pipets – Suggested sizes include 5, 10, 25, 50, 100, 250, 500 and 1000-µL syringes.

**7.7** PLASTIC PIPETS – Polypropylene or polyethylene disposable pipets.

**7.8** ANALYTICAL BALANCE – Capable of weighing to the nearest 0.0001 g.

## 7.9 SOLID PHASE EXTRACTION (SPE) APPARATUS FOR USING CARTRIDGES

- 7.9.1 SPE CARTRIDGES – 0.5 g SPE cartridges containing a reverse phase copolymer characterized by a weak anion exchanger (WAX) sorbent phase.
- 7.9.2 VACUUM EXTRACTION MANIFOLD – A manual vacuum manifold with large volume sampler for cartridge extractions, or an automatic/robotic sample preparation system designed for use with SPE cartridges, may be used if all QC requirements discussed in Section 9 are met. Extraction and/or elution steps may not be changed or omitted to accommodate the use of an automated system. Care must be taken with automated SPE systems to ensure the PTFE commonly used in these systems does not contribute to unacceptable analyte concentrations in the MB (Sect. 9.2.1).
- 7.9.3 SAMPLE DELIVERY SYSTEM – Use of a polypropylene transfer tube system, which transfers the sample directly from the sample container to the SPE cartridge, is recommended, but not mandatory. Standard extraction manifolds come equipped with PTFE transfer tube systems. These can be replaced with 1/8" O.D. x 1/16" I.D. polypropylene or polyethylene tubing cut to an appropriate length to ensure no sample contamination from the sample transfer lines. Other types of non-PTFE tubing may be used provided it meets the MB (Sect. 9.2.1) and LCS (Sect. 9.3) QC requirements. The PTFE transfer tubes may be used, but an MB must be run on each PTFE transfer tube and the QC requirements in Section 13.2.2 must be met. In the case of automated SPE, the removal of PTFE lines may not be feasible; therefore, MBs will need to be rotated among the ports and must meet the QC requirements of Sections 13.2.2 and 9.2.1.

7.10 Extract Clean-up Cartridge – 5 g 6ml SPE Cartridge containing graphitized polymer carbon

7.11 EXTRACT CONCENTRATION SYSTEM – Extracts are concentrated by evaporation with nitrogen using a water bath set no higher than 65 °C.

7.12 LABORATORY OR ASPIRATOR VACUUM SYSTEM – Sufficient capacity to maintain a vacuum of approximately 10 to 15 inches of mercury for extraction cartridges.

7.13 LIQUID CHROMATOGRAPHY (LC)/TANDEM MASS SPECTROMETER (MS/MS) WITH DATA SYSTEM

- 7.13.1 LC SYSTEM – Instrument capable of reproducibly injecting up to 10-µL aliquots, and performing binary linear gradients at a constant flow rate near the flow rate used for development of this method (0.4 mL/min). The LC must be capable of pumping the water/methanol mobile phase without the use of a degasser which pulls vacuum on the mobile phase bottle (other types of degassers are acceptable). Degassers which pull vacuum on the mobile phase bottle will volatilize the ammonium acetate mobile phase causing the analyte peaks to shift to earlier retention times over the course of the analysis batch. The usage of a column heater is optional.

NOTE: During the course of method development, it was discovered that while idle for more than one day, PFAS's built up in the PTFE solvent transfer lines. To prevent long delays in purging high levels of PFAS's from the LC solvent lines, they were replaced with PEEK tubing and the PTFE solvent frits were replaced with stainless steel frits. It is not possible to remove all PFAS background contamination, but these measures help to minimize their background levels.

- 7.13.2 LC/TANDEM MASS SPECTROMETER – The LC/MS/MS must be capable of negative ion electrospray ionization (ESI) near the suggested LC flow rate of 0.4



mL/min. The system must be capable of performing MS/MS to produce unique product ions for the method analytes within specified retention time segments. A minimum of 10 scans across the chromatographic peak is required to ensure adequate precision.

- 7.13.3 DATA SYSTEM – An interfaced data system is required to acquire, store, reduce, and output mass spectral data. The computer software should have the capability of processing stored LC/MS/MS data by recognizing an LC peak within any given retention time window. The software must allow integration of the ion abundance of any specific ion within specified time or scan number limits. The software must be able to calculate relative response factors, construct linear regressions or quadratic calibration curves, and calculate analyte concentrations.
- 7.13.4 ANALYTICAL COLUMN – An LC BEH C<sub>18</sub> column (2.1 x 50 mm) packed with 1.7 µm d<sub>p</sub> C<sub>18</sub> solid phase particles was used. Any column that provides adequate resolution, peak shape, capacity, accuracy, and precision (Sect. 9) may be used.

## 8. Reagents and Standards

- 8.1 GASES, REAGENTS, AND SOLVENTS – Reagent grade or better chemicals should be used.
- 8.1.1 REAGENT WATER – Purified water which does not contain any measurable quantities of any method analytes or interfering compounds greater than 1/3 the RL for each method analyte of interest. Prior to daily use, at least 3 L of reagent water should be flushed from the purification system to rinse out any build-up of analytes in the system's tubing.
- 8.1.2 METHANOL (CH<sub>3</sub>OH, CAS#: 67-56-1) – High purity, demonstrated to be free of analytes and interferences.
- 8.1.3 AMMONIUM ACETATE (NH<sub>4</sub>C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>, CAS#: 631-61-8) – High purity, demonstrated to be free of analytes and interferences.
- 8.1.4 ACETIC ACID (H<sub>3</sub>CCOOH, CAS#: 64-19-7) - High purity, demonstrated to be free of analytes and interferences.
- 8.1.5 1M AMMONIUM ACETATE/REAGENT WATER – High purity, demonstrated to be free of analytes and interferences.
- 8.1.6 2mM AMMONIUM ACETATE/METHANOL:WATER (5:95) – To prepare, mix 2 ml of 1M AMMONIUM ACETATE, 1 ml ACETIC ACID and 50 ml METHANOL into 1 Liter of REAGENT WATER.
- 8.1.7 2mM AMMONIUM ACETATE/METHANOL – To prepare, mix 2 ml of 1M AMMONIUM ACETATE and 1 ml ACETIC ACID into 1L METHANOL.
- 8.1.8 Methanol/Water (80:20) – To prepare a 1 Liter bottle, mix 200 ml of REAGENT WATER with 800 ml of METHANOL.
- 8.1.9 AMMONIUM HYDROXIDE (NH<sub>3</sub>, CAS#: 1336-21-6) – High purity, demonstrated to be free of analytes and interferences.



- 8.1.10 Sodium Acetate ( $\text{NaOOCCH}_3$ , CAS#: 127-09-3) – High purity, demonstrated to be free of analytes and interferences.
- 8.1.11 25 mM Sodium Acetate Buffer – To prepare 250mls, dissolve .1 grams of sodium acetate into 100 mls of reagent water. Add 4 mls Acetic Acid and adjust the final volume to 250 mls with reagent water.
- 8.1.12 NITROGEN – Used for the following purposes: Nitrogen aids in aerosol generation of the ESI liquid spray and is used as collision gas in some MS/MS instruments. The nitrogen used should meet or exceed instrument manufacturer’s specifications. In addition, Nitrogen is used to concentrate sample extracts (Ultra High Purity or equivalent).
- 8.1.13 ARGON – Used as collision gas in MS/MS instruments. Argon should meet or exceed instrument manufacturer’s specifications. Nitrogen gas may be used as the collision gas provided sufficient sensitivity (product ion formation) is achieved.

**8.2 STANDARD SOLUTIONS** – When a compound purity is assayed to be 96% or greater, the weight can be used without correction to calculate the concentration of the stock standard. PFAS analyte and IS standards commercially purchased in glass ampoules are acceptable; however, all subsequent transfers or dilutions performed by the analyst must be prepared and stored in polypropylene containers. Standards for sample fortification generally should be prepared in the smallest volume that can be accurately measured to minimize the addition of excess organic solvent to aqueous samples.

**NOTE:** Stock standards (Sect. 8.2.1 and 8.2.3) are stored at  $\leq 4$  °C. Primary dilution standards (Sect. 8.2.2 and 8.2.4) are stored at room temperature to prevent adsorption of the method analytes onto the container surfaces that may occur when refrigerated. Storing the standards at room temperature will also minimize daily imprecision due to the potential of inadequate room temperature stabilization.

- 8.2.1 ISOTOPE DILUTION Extracted Internal Standard (ID EIS) STOCK SOLUTIONS - ID EIS stock standard solutions are stable for at least 6 months when stored at 4 °C. The stock solution is purchased at a concentration of 1000 ng/mL.
- 8.2.2 ISOTOPE DILUTION Extracted Internal Standard PRIMARY DILUTION STANDARD (ID EIS PDS) – Prepare the ID EIS PDS at a concentration of 500 ng/mL. The ID PDS is prepared in 80:20% (vol/vol) methanol:water. The ID PDS is stable for 6 months when stored at  $\leq 4$  °C.

**Table 3**

Isotope Labeled Standard	Conc. of EIS Stock (ng/mL)	Vol. of EIS Stock (mL)	Final Vol. of EIS PDS (mL)	Final Conc. of EIS PDS (ng/mL)
M4PFBA	1000	1.0	2.0	500
M5PFPeA	1000	1.0	2.0	500
M5PFHxA	1000	1.0	2.0	500
M4PFHpA	1000	1.0	2.0	500
M8PFOA	1000	1.0	2.0	500
M9PFNA	1000	1.0	2.0	500
M6PFDA	1000	1.0	2.0	500
M7PFUdA	1000	1.0	2.0	500
MPFDoA	1000	1.0	2.0	500

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Isotope Labeled Standard	Conc. of EIS Stock (ng/mL)	Vol. of EIS Stock (mL)	Final Vol. of EIS PDS (mL)	Final Conc. of EIS PDS (ng/mL)
M2PFTeDA	1000	1.0	2.0	500
M2PFHxDA	50,000	.02	2.0	500
M8FOSA	1000	1.0	2.0	500
d3-N-MeFOSAA	1000	1.0	2.0	500
d5-N-EtFOSAA	1000	1.0	2.0	500
M3PFBS	929	1.0	2.0	464.5
M3PFHxS	946	1.0	2.0	473
M8PFOS	957	1.0	2.0	478.5
M2-4:2FTS	935	1.0	2.0	467.5
M2-6:2FTS	949	1.0	2.0	474.5
M2-8:2FTS	958	1.0	2.0	479
M3HFPO-DA	50,000	.4	2.0	10,000

**8.2.3 ANALYTE STOCK STANDARD SOLUTION** – Analyte stock standards are stable for at least 6 months when stored at 4 °C. When using these stock standards to prepare a PDS, care must be taken to ensure that these standards are at room temperature and adequately vortexed.

**8.2.4 ANALYTE PRIMARY SPIKING STANDARD** – Prepare the spiking standard at a concentration of 500 ng/mL in 80:20% (vol/vol) methanol:water. The spiking standard is stable for at least six months when stored at ≤4 °C.

Table 4

Analyte	Conc. of Stock (ng/mL)	Vol. of Stock (mL)	Final Vol. of IS PDS (mL)	Final Conc. of IS PDS (ng/mL)
HFPO-DA	50,000	.04	4	500
ADONA	50,000	.04	4	500
PFBA	2000	1	4	500
PFPeA	2000	1	4	500
PFHxA	2000	1	4	500
PFHpA	2000	1	4	500
PFOA	2000	1	4	500
PFNA	2000	1	4	500
PFDA	2000	1	4	500
PFUdA	2000	1	4	500
PFDoA	2000	1	4	500
PFTTrDA	2000	1	4	500
PFTeDA	2000	1	4	500
PFHxDA	50,000	.04	4	500
PFODA	50,000	.04	4	500
FOSA	2000	1	4	500
N-MeFOSAA	2000	1	4	500
N-EtFOSAA	2000	1	4	500
L-PFBS	1770	1	4	442.5
L-PFPeS	1880	1	4	470
L-PFHxSK	1480	1	4	370
Br-PFHxSK	344	1	4	86

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Analyte	Conc. of Stock (ng/mL)	Vol. of Stock (mL)	Final Vol. of IS PDS (mL)	Final Conc. of IS PDS (ng/mL)
L-PFHpS	1900	1	4	475
L-PFOSK	1460	1	4	365
Br-PFOSK	391	1	4	97.75
L-PFNS	1920	1	4	480
L-PFDS	1930	1	4	482.5
4:2FTS	1870	1	4	467.5
6:2FTS	1900	1	4	475
8:2FTS	1920	1	4	480

- 8.2.5** LOW, MEDIUM AND HIGH LEVEL LCS – The LCS's will be prepared at the following concentrations and rotated per batch; 2 ng/L, 40 ng/L, 500 ng/l. The analyte PDS contains all the method analytes of interest at various concentrations in methanol containing 20% water. The analyte PDS has been shown to be stable for six months when stored at  $\leq 4$  °C.
- 8.2.6** Isotope Dilution Labeled Recovery Stock Solutions (ID REC) – ID REC Stock solutions are stable for at least 6 months when stored at 4 °C. The stock solution is purchased at a concentration of 1000 ng/mL.
- 8.2.7** Isotope Dilution Labeled Recovery Primary Dilution Standard (ID REC PDS) - Prepare the ID REC PDS at a concentration of 500 ng/mL. The ID REC PDS is prepared in 80:20% (vol/vol) methanol:water. The ID REC PDS is stable for at least six months when stored in polypropylene centrifuge tubes at  $\leq 4$  °C.

**Table 5**

Analyte	Conc. of REC Stock (ng/mL)	Vol. of REC Stock (mL)	Final Vol. of REC PDS (mL)	Final Conc. of REC PDS (ng/mL)
M2PFOA	2000	1	4	500
M2PFDA	2000	1	4	500
M3PFBA	2000	1	4	500
M4PFOS	2000	1	4	500



8.2.8 CALIBRATION STANDARDS (CAL) –

Current Concentrations (ng/mL): 0.5, 1.0, 5.0, 10.0, 50.0, 125, 150

Prepare the CAL standards over the concentration range of interest from dilutions of the analyte PDS in methanol containing 20% reagent water. 20 µl of the EIS PDS and REC PDS are added to the CAL standards to give a constant concentration of 10 ng/ml. The lowest concentration CAL standard must be at or below the RL (2 ng/L), which may depend on system sensitivity. The CAL standards may also be used as CCVs (Sect. 9.8). To make calibration stock standards:

Table 6

Calibration Standard Concentration	Final Aqueous Cal STD Level Concentration	Final Soil Cal STD Level Concentration	24 compound stock added (ul)	PFHxDA Stock added (ul)	500 ng/ml PFHxDA dilution added (ul)	PFODA Stock added (ul)	500 ng/ml PFODA dilution added (ul)	ADONA Stock added (ul)	500 ng/ml ADONA dilution added (ul)	HFPO-DA Stock added (ul)	Final Volume in MeOH/H <sub>2</sub> O (82:20)
.5 ng/ml	2 ng/L	.25 ng/g	6.25		25		25		25	8.33	25 mls
1 ng/ml	4 ng/L	.5 ng/g	12.5		50		50		50	16.65	10 mls
5 ng/ml	20 ng/L	1 ng/g	25		100		100		100	33.3	10 mls
10 ng/ml	40 ng/L	5 ng/g	125	5		5		5		100	25 mls
10 ng/ml	200 ng/L	25 ng/g	250	10		10		10		200	10 mls
125 ng/ml	500 ng/L	62.5 ng/g	625	25		25		25		500	10 mls
150 ng/ml	600 ng/L	75 ng/g	750	30		30		30		600	10 mls

9. Quality Control

The laboratory must maintain records to document the quality of data that is generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method.

9.1 MINIMUM REPORTING LIMIT (MRL) CONFIRMATION

9.1.1 Fortify, extract, and analyze seven replicate LCSs at 2 ng/l. Calculate the mean measured concentration (*Mean*) and standard deviation for these replicates.

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Determine the Half Range for the prediction interval of results ( $HR_{PIR}$ ) using the equation below

$$HR_{PIR} = 3.963s$$

Where:

$s$  = the standard deviation

3.963 = a constant value for seven replicates.

- 9.1.2 Confirm that the upper and lower limits for the Prediction Interval of Result ( $PIR = Mean \pm HR_{PIR}$ ) meet the upper and lower recovery limits as shown below

The Upper PIR Limit must be  $\leq 150\%$  recovery.

$$\frac{Mean + HR_{PIR}}{Fortified\ Concentration} \times 100\% \leq 150\%$$

The Lower PIR Limit must be  $\geq 50\%$  recovery.

$$\frac{Mean - HR_{PIR}}{Fortified\ Concentration} \times 100\% \geq 50\%$$

- 9.1.3 The RL is validated if both the Upper and Lower PIR Limits meet the criteria described above. If these criteria are not met, the RL has been set too low and must be determined again at a higher concentration.

## 9.2 Blank(s)

- 9.2.1 **METHOD BLANK (MB)** - A Method Blank (MB) is required with each extraction batch to confirm that potential background contaminants are not interfering with the identification or quantitation of method analytes. If more than 20 Field Samples are included in a batch, analyze an MB for every 20 samples. If the MB produces a peak within the retention time window of any analyte that would prevent the determination of that analyte, determine the source of contamination and eliminate the interference before processing samples. Background contamination must be reduced to an acceptable level before proceeding. Background from method analytes or other contaminants that interfere with the measurement of method analytes must be below the RL. If the method analytes are detected in the MB at concentrations equal to or greater than this level, then all data for the problem analyte(s) must be considered invalid for all samples in the extraction batch. Because background contamination is a significant problem for several method analytes, it is highly recommended that the analyst maintain a historical record of MB data.

- 9.2.2 **FIELD REAGENT BLANK (FRB)** - The purpose of the FRB is to ensure that PFAS's measured in the Field Samples were not inadvertently introduced into the sample during sample collection/handling. Analysis of the FRB is required only if a Field Sample contains a method analyte or analytes at or above the RL. The FRB is processed, extracted and analyzed in exactly the same manner as a Field Sample.

## 9.3 Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicates (LCSD)

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- 9.3.1 An LCS is required with each extraction batch. The fortified concentration of the LCS may be rotated between low, medium, and high concentrations from batch to batch. The low concentration LCS must be as near as practical to, but no more than two times, the RL. Similarly, the high concentration LCS should be near the high end of the calibration range established during the initial calibration (Sect. 10.6). Results of the low-level LCS analyses must be 50-150% of the true value. Results of the medium and high-level LCS analyses must be 70-130% of the true value. Calculate the percent recovery (%R) for each analyte using the equation

$$\%R = \frac{A \times 100}{B}$$

Where:

A = measured concentration in the fortified sample  
B = fortification concentration.

- 9.3.2 Where applicable, LCSD's are to be extracted and analyzed. The concentration and analyte recovery criteria for the LSD must be the same as the batch LCS. The RSD's must fall within  $\leq 30\%$  of the true value for medium and high level replicates, and  $\leq 50\%$  for low level replicates. Calculate the relative percent difference (RPD) for duplicate MSs (MS and MSD) using the equation

$$RPD = \frac{|LCS - LCSD|}{(LCS + LCSD) / 2} \times 100$$

- 9.3.3 If the LCS and or LCSD results do not meet these criteria for method analytes, then all data for the problem analyte(s) must be considered invalid for all samples in the extraction batch.

## 9.4 Labeled Recovery Standards (REC)

- 9.4.1 The analyst must monitor the peak areas of the REC(s) in all injections during each analysis day. The REC responses (peak areas) in any chromatographic run must be within laboratory generated control limits generated from the analysis of control spike samples. Default limits of 50-150% may be used for analytes until sufficient replicates have been analyzed to generate proper control limits. If the REC areas in a chromatographic run do not meet these criteria, inject a second aliquot of that extract into a new capped autosampler vial. Random evaporation losses have been observed with the polypropylene caps causing high REC(s) areas.

9.4.1.1 If the reinjected aliquot produces an acceptable REC response, report results for that aliquot.

9.4.1.2 If the reinjected extract fails again, the analyst should check the calibration by reanalyzing the most recently acceptable CAL standard. If the CAL standard fails the criteria of Section 9.8, recalibration is in order per Section 10.6. If the CAL standard is acceptable, extraction of the sample may need to be repeated provided the sample is still within the holding time. Otherwise, report results obtained from the reinjected

extract, but annotate as suspect. Alternatively, collect a new sample and re-analyze.

## 9.5 Extracted Internal Standards (EIS)

- 9.5.1 The EIS standard is fortified into all samples, CCVs, MBs, LCSs, MSs, MSDs, FD, and FRB prior to extraction. It is also added to the CAL standards. The EIS is a means of assessing method performance from extraction to final chromatographic measurement. Calculate the recovery (%R) for the EIS using the following equation

$$\%R = (A / B) \times 100$$

Where:

A = calculated EIS concentration for the QC or Field Sample  
B = fortified concentration of the EIS.

- 9.5.2 Default limits of 50-150% may be used for analytes until sufficient replicates have been analyzed to generate proper control limits. A low or high percent recovery for a sample, blank, or CCV does not require discarding the analytical data but it may indicate a potential problem with future analytical data. When EIS recovery from a sample, blank, or CCV are outside control limits, check 1) calculations to locate possible errors, 2) standard solutions for degradation, 3) contamination, and 4) instrument performance. For CCVs and QC elements spiked with all target analytes, if the recovery of the corresponding target analytes meet the acceptance criteria for the EIS in question, the data can be used but all potential biases in the recovery of the EIS must be documented in the sample report. If the associated target analytes do not meet the acceptance criteria. The data must be reanalyzed.

## 9.6 Matrix Spike (MS)

- 9.6.1 Analysis of an MS is required in each extraction batch and is used to determine that the sample matrix does not adversely affect method accuracy. Assessment of method precision is accomplished by analysis of a Field Duplicate (FD) (Sect. 9.6); however, infrequent occurrence of method analytes would hinder this assessment. If the occurrence of method analytes in the samples is infrequent, or if historical trends are unavailable, a second MS, or MSD, must be prepared, extracted, and analyzed from a duplicate of the Field Sample. Extraction batches that contain MSDs will not require the extraction of a field sample duplicate. If a variety of different sample matrices are analyzed regularly, for example, drinking water from groundwater and surface water sources, method performance should be established for each. Over time, MS data should be documented by the laboratory for all routine sample sources.
- 9.6.2 Within each extraction batch, a minimum of one Field Sample is fortified as an MS for every 20 Field Samples analyzed. The MS is prepared by spiking a sample with an appropriate amount of the Analyte Stock Standard (Sect. 8.2.4). Use historical data and rotate through the low, mid and high concentrations when selecting a fortifying concentration. Calculate the percent recovery (%R) for each analyte using the equation

$$\%R = \frac{(A - B)}{C} \times 100$$



Where:

- A = measured concentration in the fortified sample
- B = measured concentration in the unfortified sample
- C = fortification concentration.

- 9.6.3 Analyte recoveries may exhibit matrix bias. For samples fortified at or above their native concentration, recoveries should range between 50-150%, except for low-level fortification near or at the RL (within a factor of 2-times the RL concentration) where 50-150% recoveries are acceptable. If the accuracy of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the LCS, the recovery is judged to be matrix biased. The result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

## 9.7 Laboratory Duplicate

- 9.7.1 FIELD DUPLICATE OR LABORATORY FORTIFIED SAMPLE MATRIX DUPLICATE (FD or MSD) – Within each extraction batch (not to exceed 20 Field Samples), a minimum of one FD or MSD must be analyzed. Duplicates check the precision associated with sample collection, preservation, storage, and laboratory procedures. If method analytes are not routinely observed in Field Samples, an MSD should be analyzed rather than an FD.

- 9.7.2 Calculate the relative percent difference (RPD) for duplicate measurements (FD1 and FD2) using the equation

$$RPD = \frac{|FD1 - FD2|}{(FD1 + FD2) / 2} \times 100$$

- 9.7.3 RPDs for FDs should be  $\leq 30\%$ . Greater variability may be observed when FDs have analyte concentrations that are within a factor of 2 of the RL. At these concentrations, FDs should have RPDs that are  $\leq 50\%$ . If the RPD of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the CCV, the recovery is judged to be matrix biased. The result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

- 9.7.4 If an MSD is analyzed instead of a FD, calculate the relative percent difference (RPD) for duplicate MSs (MS and MSD) using the equation

$$RPD = \frac{|MS - MSD|}{(MS + MSD) / 2} \times 100$$

- 9.7.5 RPDs for duplicate MSs should be  $\leq 30\%$  for samples fortified at or above their native concentration. Greater variability may be observed when MSs are fortified at analyte concentrations that are within a factor of 2 of the RL. MSs fortified at these concentrations should have RPDs that are  $\leq 50\%$  for samples fortified at or above their native concentration. If the RPD of any analyte falls outside the designated range, and the laboratory performance for that analyte is shown to be in control in the LCSD where applicable, the result is judged to be matrix biased. If no LCSD is present, the associated MS and MSD are to be re-analyzed to determine if any analytical has occurred. If the resulting RPDs are still outside



control limits, the result for that analyte in the unfortified sample is labeled suspect/matrix to inform the data user that the results are suspect due to matrix effects.

## 9.8 Initial Calibration Verification (ICV)

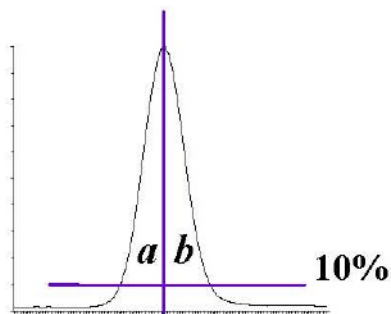
9.8.1 As part of the IDC (Sect. 13.2), each time a new Analyte Stock Standard solution (Sect. 8.2.4) is used, and at least quarterly, analyze a QCS sample from a source different from the source of the CAL standards. If a second vendor is not available, then a different lot of the standard should be used. The QCS should be prepared and analyzed just like a CCV. Acceptance criteria for the QCS are identical to the CCVs; the calculated amount for each analyte must be  $\pm 30\%$  of the expected value. If measured analyte concentrations are not of acceptable accuracy, check the entire analytical procedure to locate and correct the problem.

## 9.9 Continuing Calibration Verification (CCV)

9.9.1 CCV Standards are analyzed at the beginning of each analysis batch, after every 10 Field Samples, and at the end of the analysis batch. See Section 10.7 for concentration requirements and acceptance criteria.

## 9.10 Method-specific Quality Control Samples

9.10.1 PEAK ASYMMETRY FACTOR – A peak asymmetry factor must be calculated using the equation below during the IDL and every time a calibration curve is generated. The peak asymmetry factor for the first two eluting peaks in a midlevel CAL standard (if only two analytes are being analyzed, both must be evaluated) must fall in the range of 0.8 to 1.5. Modifying the standard or extract composition to more aqueous content to prevent poor shape is not permitted. See guidance in Section 10.6.4.1 if the calculated peak asymmetry factors do not meet the criteria.



$$A_s = b / a$$

Where:

$A_s$  = peak asymmetry factor

$b$  = width of the back half of the peak measured (at 10% peak height) from the trailing edge of the peak to a line dropped perpendicularly from the peak apex

$a$  = the width of the front half of the peak measured (at 10% peak height) from the leading edge of the peak to a line dropped perpendicularly from the apex.

## 9.11 Method Sequence

- CCV-LOW
- MB
- LCS

- LCSD
- MS
- Duplicate or MSD
- Field Samples (1-10)
- CCV-MID
- Field Samples (11-20)
- CCV-HIGH

## 10. Procedure

### 10.1 Equipment Set-up

- 10.1.1 This procedure may be performed manually or in an automated mode using a robotic or automatic sample preparation device. If an automated system is used to prepare samples, follow the manufacturer's operating instructions, but all extraction and elution steps must be the same as in the manual procedure. Extraction and/or elution steps may not be changed or omitted to accommodate the use of an automated system. If an automated system is used, the MBs should be rotated among the ports to ensure that all the valves and tubing meet the MB requirements (Sect. 9.2).
- 10.1.2 Some of the PFAS's adsorb to surfaces, including polypropylene. Therefore, the aqueous sample bottles must be rinsed with the elution solvent (Sect 10.3.4) whether extractions are performed manually or by automation. The bottle rinse is passed through the cartridge to elute the method analytes and is then collected (Sect. 10.3.4).
- 10.1.3 **NOTE:** The SPE cartridges and sample bottles described in this section are designed as single use items and should be discarded after use. They may not be refurbished for reuse in subsequent analyses.

### 10.2 Sample Preparation and Extraction of Aqueous Samples

- 10.2.1 Samples are preserved, collected and stored as presented in Section 6.

The entire sample that is received must be sent through the SPE cartridge. In addition, the bottle must be solvent rinsed and this rinse must be sent through the SPE cartridge as well. The method blank (MB) and laboratory control sample (LCS) must be extracted in exactly the same manner (i.e., must include the bottle solvent rinse). It should be noted that a water rinse alone is not sufficient. This does not apply to samples with high concentrations of PFAS that are prepared using serial dilution and not SPE.

- 10.2.2 Determine sample volume. An indirect measurement may be done in one of two ways: by marking the level of the sample on the bottle or by weighing the sample and bottle to the nearest 10 g. After extraction, proceed to Section 10.5 for final volume determination.

**NOTE:** Some of the PFAS's adsorb to surfaces, thus the sample volume may **NOT** be transferred to a graduated cylinder for volume measurement.



- 10.2.3 The MB, LCS and FRB may be prepared by measuring 250 mL of reagent water with a polypropylene graduated cylinder or filling a 250-mL sample bottle to near the top.
- 10.2.4 Adjust the sample pH to 3 by adding a 1:1 solution of acetic acid in water dropwise
- 10.2.5 Add 20 µL of the EIS PDS (Sect. 8.2.2) to each sample and QC, cap and invert to mix.
- 10.2.6 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS (Sect. 8.2.4). Cap and invert each sample to mix.

### 10.3 Cartridge SPE Procedure

- 10.3.1 CARTRIDGE CLEAN-UP AND CONDITIONING – DO NOT allow cartridge packing material to go dry during any of the conditioning steps. Rinse each cartridge with 3 X 5 mL of 2% ammonium hydroxide in methanol, followed by 5mls of methanol. Next, rinse each cartridge with 5 mls of the 25 mM acetate buffer, followed by 15 mL of reagent water, without allowing the water to drop below the top edge of the packing. If the cartridge goes dry during the conditioning phase, the conditioning must be started over. Add 4-5 mL of reagent water to each cartridge, attach the sample transfer tubes (Sect. 7.9.3), turn on the vacuum, and begin adding sample to the cartridge.
- 10.3.2 SAMPLE EXTRACTON – Adjust the vacuum so that the approximate flow rate is 10-15 mL/min. Do not allow the cartridge to go dry before all the sample has passed through.
- 10.3.3 SAMPLE BOTTLE AND CARTRIDGE RINSE – After the entire sample has passed through the cartridge, rinse the sample bottles with 4 ml reagent water followed by 4 ml 25 mM acetate buffer at pH 4 and draw the aliquot through the sample transfer tubes and the cartridges. Draw air or nitrogen through the cartridge for 5-10 min at high vacuum (10-15 in. Hg). **NOTE: If empty plastic reservoirs are used in place of the sample transfer tubes to pass the samples through the cartridges, these reservoirs must be treated like the transfer tubes. After the entire sample has passed through the cartridge, the reservoirs must be rinsed to waste with reagent water.**
- 10.3.4 SAMPLE BOTTLE AND CARTRIDGE ELUTION, Fraction 1 – Turn off and release the vacuum. Lift the extraction manifold top and insert a rack with collection tubes into the extraction tank to collect the extracts as they are eluted from the cartridges. Rinse the sample bottles with 4 mls of methanol and draw the aliquot through the sample transfer tubes and cartridges. Use a low vacuum such that the solvent exits the cartridge in a dropwise fashion. Repeat sample bottle rinse and cartridge elution with 2 more 4-mL methanol.

SAMPLE BOTTLE AND CARTRIDGE ELUTION, Fraction 2 In a separate collection vial, rinse the sample bottles with 4 mL of 2% ammonium hydroxide in methanol and elute the analytes from the cartridges by pulling the 4 mL of methanol through the sample transfer tubes and the cartridges. Use a low vacuum such that the solvent exits the cartridge in a dropwise fashion. Repeat sample bottle rinse and cartridge elution with 2 more 4-mL aliquots of 2% ammonium hydroxide in methanol. To the final extract, add 50 ul of acetic acid.

**NOTE: If empty plastic reservoirs are used in place of the sample transfer tubes to pass the samples through the cartridges, these reservoirs must be**

treated like the transfer tubes. After the reservoirs have been rinsed in Section 10.3.3, the elution solvent used to rinse the sample bottles must be swirled down the sides of the reservoirs while eluting the cartridge to ensure that any method analytes on the surface of the reservoirs are transferred to the extract.

- 10.3.5 Fractions 1 and 2 are to be combined during the concentration stage (section 10.6)

#### 10.4 Sample Prep and Extraction Protocol for Soils

- 10.4.1 2 grams of sample (measured to the nearest hundredth of a gram) is placed in a 15 ml polypropylene centrifuge tube. For laboratory control blanks and spikes, 2 grams of clean sand is used.
- 10.4.2 Add 20 µL of the EIS PDS (Sect. 8.2.2) to each sample and QC.
- 10.4.3 If the sample is an LCS, LCSD, MS, or MSD, add the necessary amount of analyte PDS (Sect. 8.2.4). Cap and invert each sample to mix.
- 10.4.4 To all samples, add 10 mls of methanol, cap and mix of 30 minutes using a shaker table of tumbler.
- 10.4.5 Following mixing, sonicate each sample for 30 minutes
- 10.4.6 Centrifuge each sample at 15,000g for 5 minutes.
- 10.4.7 Remove supernatant, and reserve for clean-up.

#### 10.5 Extract Clean-up

- 10.5.1 CARTRIDGE CLEAN-UP AND CONDITIONING – Rinse each cartridge with 15 mL of methanol and discard. If the cartridge goes dry during the conditioning phase, the conditioning must be started over. Attach the sample transfer tubes (Sect. 7.9.3), turn on the vacuum, and begin adding sample to the cartridge.
- 10.5.2 Adjust the vacuum so that the approximate flow rate is 1-2 mL/min. Do not allow the cartridge to go dry before all the sample has passed through.
- 10.5.3 SAMPLE BOTTLE AND CARTRIDGE RINSE – After the entire sample has passed through the cartridge, rinse the sample collection vial with two 1-mL aliquots of methanol and draw each aliquot through the cartridges. Draw air or nitrogen through the cartridge for 5 min at high vacuum (10-15 in. Hg).
- 10.5.4 If extracts are not to be immediately evaporated, cover collection tubes and store at ambient temperature till concentration.

#### 10.6 Extract Concentration

- 10.6.1 Concentrate the extract to dryness under a gentle stream of nitrogen in a heated water bath (60-65 °C) to remove all the water/methanol mix. Add the appropriate amount of 80:20% (vol/vol) methanol:water solution and 20 µl of the ID REC PDS (Sect. 8.2.7) to the collection vial to bring the volume to 1 mL and vortex. Transfer a small aliquot with a plastic pipet (Sect. 7.6) to a polypropylene autosampler vial.



**NOTE:** It is recommended that the entire 1-mL aliquot not be transferred to the autosampler vial because the polypropylene autosampler caps do not reseal after injection. Therefore, do not store the extracts in the autosampler vials as evaporation losses can occur occasionally in these autosampler vials. Extracts can be split between 2 X 700 µl vials (Sect. 7.4).

## 10.7 Sample Volume Determination

- 10.7.1** If the level of the sample was marked on the sample bottle, use a graduated cylinder to measure the volume of water required to fill the original sample bottle to the mark made prior to extraction. Determine to the nearest 10 mL.
- 10.7.2** If using weight to determine volume, weigh the empty bottle to the nearest 10 g and determine the sample weight by subtraction of the empty bottle weight from the original sample weight (Sect. 10.2.2). Assume a sample density of 1.0 g/mL. In either case, the sample volume will be used in the final calculations of the analyte concentration (Sect. 11.2).

**10.8 Initial Calibration** - Demonstration and documentation of acceptable initial calibration is required before any samples are analyzed. After the initial calibration is successful, a CCV is required at the beginning and end of each period in which analyses are performed, and after every tenth Field Sample.

### 10.8.1 ESI-MS/MS TUNE

- 10.8.1.1** Calibrate the mass scale of the MS with the calibration compounds and procedures prescribed by the manufacturer.
- 10.8.1.2** Optimize the [M-H]<sup>-</sup> for each method analyte by infusing approximately 0.5-1.0 µg/mL of each analyte (prepared in the initial mobile phase conditions) directly into the MS at the chosen LC mobile phase flow rate (approximately 0.4 mL/min). This tune can be done on a mix of the method analytes. The MS parameters (voltages, temperatures, gas flows, etc.) are varied until optimal analyte responses are determined. The method analytes may have different optima requiring some compromise between the optima.
- 10.8.1.3** Optimize the product ion for each analyte by infusing approximately 0.5-1.0 µg/mL of each analyte (prepared in the initial mobile phase conditions) directly into the MS at the chosen LC mobile phase flow rate (approximately 0.3 mL/min). This tune can be done on a mix of the method analytes. The MS/MS parameters (collision gas pressure, collision energy, etc.) are varied until optimal analyte responses are determined. Typically, the carboxylic acids have very similar MS/MS conditions and the sulfonic acids have similar MS/MS conditions.
- 10.8.2** Establish LC operating parameters that optimize resolution and peak shape. Modifying the standard or extract composition to more aqueous content to prevent poor shape is not permitted.

**Cautions:** LC system components, as well as the mobile phase constituents, contain many of the method analytes in this method. Thus, these PFAS's will build up on the head of the LC column during mobile phase equilibration. To minimize the background PFAS peaks and to keep background levels constant, the time the LC column sits at initial conditions must be kept constant and as short as possible (while ensuring reproducible retention times). In addition, prior to daily use, flush the column with 100% methanol

for at least 20 min before initiating a sequence. It may be necessary on some systems to flush other LC components such as wash syringes, sample needles or any other system components before daily use.

**10.8.3** Inject a mid-level CAL standard under LC/MS conditions to obtain the retention times of each method analyte. If analyzing for PFTA, ensure that the LC conditions are adequate to prevent co-elution of PFTA and the mobile phase interferants. These interferants have the same precursor and products ions as PFTA, and under faster LC conditions may co-elute with PFTA. Divide the chromatogram into retention time windows each of which contains one or more chromatographic peaks. During MS/MS analysis, fragment a small number of selected precursor ions ([M-H]<sup>-</sup>) for the analytes in each window and choose the most abundant product ion. For maximum sensitivity, small mass windows of  $\pm 0.5$  daltons around the product ion mass were used for quantitation. If sufficient sensitivity exists to meet the RL, wider mass ranges may be used to obtain more confirmation ions.

**10.8.3.1** **NOTE:** As the NOTE in Section 10.6.4.1 indicates, PFOS has linear and branched isomers. There have been reports that not all the products ions in the linear PFOS are produced in all the branched PFOS isomers. (This phenomenon probably exists for PFHxS and PFBS also, although it has not been studied to date.) Thus, in an attempt to reduce PFOS bias, it is required that the  $m/z$  499  $\rightarrow$   $m/z$  80 transition be used as the quantitation transition. Some MS/MS instruments, such as conventional ion traps, may not be able to scan a product ion with such a wide mass difference from the precursor ion; therefore, they may not be used for this method if PFOS, PFBS, or PFHxS analysis is to be conducted. Literature reports indicate for the most abundant PFOS isomer, which is the linear isomer, that all the products ions obtained on an ion trap have less than 10% relative abundance. In addition, there is not a single ion trap MS/MS transition that encompasses the linear isomer and the majority of the branch isomers; thus, the bias would be unacceptably high.

**10.8.4** Inject a mid-level CAL standard under optimized LC/MS/MS conditions to ensure that each method analyte is observed in its MS/MS window and that there are at least 10 scans across the peak for optimum precision.

**10.8.4.1** If broad, split or fronting peaks are observed for the first two eluting chromatographic peaks (if only two analytes are being analyzed, both must be evaluated), change the initial mobile phase conditions to higher aqueous content until the peak asymmetry ratio for each peak is 0.8 – 1.5. The peak asymmetry factor is calculated as described in Section 9.9.1 on a mid-level CAL standard. The peak asymmetry factor must meet the above criteria for the first two eluting peaks during the IDL and every time a new calibration curve is generated. Modifying the standard or extract composition to more aqueous content to prevent poor shape is not permitted.

**NOTE:** PFHxS, PFOS, NMeFOSAA, and NEtFOSAA have multiple chromatographic peaks using the LC conditions in Table 5 due to chromatographic resolution of the linear and branched isomers of these compounds. Most PFAS's are produced by two different processes. One process gives rise to linear PFAS's only while the



other process produces both linear and branched isomers. Thus, both branched and linear PFAS's can potentially be found in the environment. For the aforementioned compounds that give rise to more than one peak, all the chromatographic peaks observed in the standard must be integrated and the areas totaled. Chromatographic peaks in a sample must be integrated in the same way as the CAL standard.

- 10.8.5 Prepare a set of CAL standards as described in Section 8.2.5. The lowest concentration CAL standard must be at or below the RL (2 ng/L), which may depend on system sensitivity. It is recommended that at least four of the CAL standards are at a concentration greater than or equal to the RL.
- 10.8.6 The LC/MS/MS system is calibrated using the IS technique. Use the LC/MS/MS data system software to generate a linear regression or quadratic calibration curve for each of the analytes. This curve **must always** be forced through zero and may be concentration weighted, if necessary. Forcing zero allows for a better estimate of the background levels of method analytes. A minimum of 5 levels are required for a linear calibration model and a minimum of 6 levels are required for a quadratic calibration model.
- 10.8.6.1 The isotopically labeled IS(s) in this method may undergo suppression in the ESI source if the concentration of the co-eluting unlabeled method analyte(s) is too high. The analyte concentration at which suppression may occur can vary depending on the instrument, LC conditions, ESI conditions, IS concentration, etc. To evaluate whether suppression is occurring during calibration, calculate the relative percent difference (RPD) between the high (H) and low (L) areas for each IS using the equation

$$RPD = \frac{(H - L)}{(H + L) / 2} \times 100$$

- 10.8.6.2 The RPD calculated above must be <20% for each IS during calibration. If the calculated RPD is >20% for any IS, the analyst must recalibrate at lower analyte concentrations until the IS RPDs are <20%.

10.8.7 **CALIBRATION ACCEPTANCE CRITERIA** – A linear fit is acceptable if the coefficient of determination ( $r^2$ ) is greater than 0.99. When quantitated using the initial calibration curve, each calibration point, except the lowest point, for each analyte should calculate to be within 70-130% of its true value. The lowest CAL point should calculate to be within 50-150% of its true value. If these criteria cannot be met, the analyst will have difficulty meeting ongoing QC criteria. It is recommended that corrective action is taken to reanalyze the CAL standards, restrict the range of calibration, or select an alternate method of calibration (forcing the curve through zero is still required).

- 10.8.7.1 **CAUTION:** When acquiring MS/MS data, LC operating conditions must be carefully reproduced for each analysis to provide reproducible retention times. If this is not done, the correct ions will not be monitored at the appropriate times. As a precautionary measure, the chromatographic peaks in each window must not elute too close to the edge of the segment time window.

**10.9 CONTINUING CALIBRATION CHECK (CCV)** – Minimum daily calibration verification is as follows. Verify the initial calibration at the beginning and end of each group of analyses, and after every tenth sample during analyses. In this context, a “sample” is considered to be a Field Sample. MBs, CCVs, LCSs, MSs, FDs FRBs and MSDs are not counted as samples. The beginning CCV of each analysis batch must be at or below the RL in order to verify instrument sensitivity prior to any analyses. If standards have been prepared such that all low CAL points are not in the same CAL solution, it may be necessary to analyze two CAL standards to meet this requirement. Alternatively, the analyte concentrations in the analyte PDS may be customized to meet these criteria. Subsequent CCVs should alternate between a medium and Low concentration CAL standard.

**10.9.1** Inject an aliquot of the appropriate concentration CAL standard and analyze with the same conditions used during the initial calibration.

**10.9.2** Calculate the concentration of each analyte and EIS in the CCV. The calculated amount for each analyte for medium level CCVs must be within  $\pm 30\%$  of the true value with an allowance of 10% of the reported analytes to be greater than 30%, but less than 40%. The calculated amount for each EIS must be within  $\pm 50\%$  of the true value. The calculated amount for the lowest calibration point for each analyte must be within  $\pm 50\%$ . If these conditions do not exist, then all data for the problem analyte must be considered invalid, and remedial action should be taken (Sect. 10.7.4) which may require recalibration. Any Field or QC Samples that have been analyzed since the last acceptable calibration verification should be reanalyzed after adequate calibration has been restored, with the following exception. **If the CCV fails because the calculated concentration is greater than 130% (150% for the low-level CCV) for a particular method analyte, and Field Sample extracts show no detection for that method analyte, non-detects may be reported without re-analysis.**

**10.9.3** REMEDIAL ACTION – Failure to meet CCV QC performance criteria may require remedial action. Major maintenance, such as cleaning the electrospray probe, atmospheric pressure ionization source, cleaning the mass analyzer, replacing the LC column, etc., requires recalibration (Sect 10.6) and verification of sensitivity by analyzing a CCV at or below the RL (Sect 10.7).

## 10.10 EXTRACT ANALYSIS

**10.10.1** Establish operating conditions equivalent to those summarized in Tables 6-8 of Section 16. Instrument conditions and columns should be optimized prior to the initiation of the IDC.

**10.10.2** Establish an appropriate retention time window for each analyte. This should be based on measurements of actual retention time variation for each method



analyte in CAL standard solutions analyzed on the LC over the course of time. A value of plus or minus three times the standard deviation of the retention time obtained for each method analyte while establishing the initial calibration and completing the IDC can be used to calculate a suggested window size. However, the experience of the analyst should weigh heavily on the determination of the appropriate retention window size.

- 10.10.3 Calibrate the system by either the analysis of a calibration curve (Sect. 10.6) or by confirming the initial calibration is still valid by analyzing a CCV as described in Section 10.7. If establishing an initial calibration, complete the IDC as described in Section 13.2.
- 10.10.4 Begin analyzing Field Samples, including QC samples, at their appropriate frequency by injecting the same size aliquots under the same conditions used to analyze the CAL standards.
- 10.10.5 At the conclusion of data acquisition, use the same software that was used in the calibration procedure to identify peaks of interest in predetermined retention time windows. Use the data system software to examine the ion abundances of the peaks in the chromatogram. Identify an analyte by comparison of its retention time with that of the corresponding method analyte peak in a reference standard.
- 10.10.6 Comparison of the MS/MS mass spectra is not particularly useful given the limited  $\pm 0.5$  dalton mass range around a single product ion for each method analyte.
- 10.10.7 The analyst must not extrapolate beyond the established calibration range. If an analyte peak area exceeds the range of the initial calibration curve, the sample should be re-extracted with a reduced sample volume in order to bring the out of range target analytes into the calibration range. If a smaller sample size would not be representative of the entire sample, the following options is recommended. Re-extract an additional aliquot of sufficient size to insure that it is representative of the entire sample. Spike it with a higher concentration of internal standard. Prior to LC/MS analysis, dilute the sample so that it has a concentration of internal standard equivalent to that present in the calibration standard. Then, analyze the diluted extract.

## 11. Data Evaluation, Calculations and Reporting

- 11.1 Complete chromatographic resolution is not necessary for accurate and precise measurements of analyte concentrations using MS/MS. In validating this method, concentrations were calculated by measuring the product ions listed in Table 7.
- 11.2 Calculate analyte concentrations using the multipoint calibration established in Section 10.6. Do not use daily calibration verification data to quantitate analytes in samples. Adjust final analyte concentrations to reflect the actual sample volume determined in Section 10.6 where:

$$C_{ex} = (\text{Area of target analyte} * \text{Concentration of Labeled analog}) / (\text{area of labeled analog} * CF)$$

$$C_s = (C_{ex} / \text{sample volume in ml}) * 1000$$

$$C_{ex} = \text{The concentration of the analyte in the extract}$$

CF = calibration factor from calibration.

- 11.3 Prior to reporting the data, the chromatogram should be reviewed for any incorrect peak identification or poor integration.
- 11.4 PFHxS, PFOS, PFOA, NMeFOSAA, and NEtFOSAA have multiple chromatographic peaks using the LC conditions in Table 5 due to the linear and branch isomers of these compounds (Sect. 10.6.4.1). The areas of all the linear and branched isomer peaks observed in the CAL standards for each of these analytes must be summed and the concentrations reported as a total for each of these analytes.
- 11.5 Calculations must utilize all available digits of precision, but final reported concentrations should be rounded to an appropriate number of significant figures (one digit of uncertainty), typically two, and not more than three significant figures.

## 12. Contingencies for Handling Out-of-Control Data or Unacceptable Data

- 12.1 Section 9.0 outlines sample batch QC acceptance criteria. If non-compliant organic compound results are to be reported, the Organic Section Head and/or the Laboratory Director, and the Operations Manager must approve the reporting of these results. The laboratory Project Manager shall be notified, and may choose to relay the non-compliance to the client, for approval, or other corrective action, such as re-sampling and re-analysis. The analyst, Data Reviewer, or Department Supervisor performing the secondary review initiates the project narrative, and the narrative must clearly document the non-compliance and provide a reason for acceptance of these results.
- 12.2 All results for the organic compounds of interest are reportable without qualification if extraction and analytical holding times are met, preservation requirements (including cooler temperatures) are met, all QC criteria are met, and matrix interference is not suspected during extraction or analysis of the samples. If any of the below QC parameters are not met, all associated samples must be evaluated for re-extraction and/or re-analysis.

## 13. Method Performance

### 13.1 Detection Limit Study (DL) / Limit of Detection Study (LOD) / Limit of Quantitation (LOQ)

- 13.1.1 The laboratory follows the procedure to determine the DL, LOD, and/or LOQ as outlined in Alpha SOP ID 1732. These studies performed by the laboratory are maintained on file for review.

### 13.2 Demonstration of Capability Studies

- 13.2.1 The IDC must be successfully performed prior to analyzing any Field Samples. Prior to conducting the IDC, the analyst must first generate an acceptable Initial Calibration following the procedure outlined in Section 10.6.
- 13.2.2 INITIAL DEMONSTRATION OF LOW SYSTEM BACKGROUND – Any time a new lot of SPE cartridges, solvents, centrifuge tubes, disposable pipets, and



autosampler vials are used, it must be demonstrated that an MB is reasonably free of contamination and that the criteria in Section 9.2.1 are met. If an automated extraction system is used, an MB should be extracted on each port to ensure that all the valves and tubing are free from potential PFAS contamination.

- 13.2.3 INITIAL DEMONSTRATION OF PRECISION (IDP)** – Prepare, extract, and analyze four to seven replicate LCSs fortified near the midrange of the initial calibration curve according to the procedure described in Section 10. Sample preservatives as described in Section 6.2.1 must be added to these samples. The relative standard deviation (RSD) of the results of the replicate analyses must be less than 20%.
- 13.2.4 INITIAL DEMONSTRATION OF ACCURACY (IDA)** – Using the same set of replicate data generated for Section 13.2.3, calculate average recovery. The average recovery of the replicate values must be within  $\pm 30\%$  of the true value.
- 13.2.5 INITIAL DEMONSTRATION OF PEAK ASYMMETRY FACTOR** – Peak asymmetry factors must be calculated using the equation in Section 9.10.1 for the first two eluting peaks (if only two analytes are being analyzed, both must be evaluated) in a mid-level CAL standard. The peak asymmetry factors must fall in the range of 0.8 to 1.5. See guidance in Section 10.6.4.1 if the calculated peak asymmetry factors do not meet the criteria.
- 13.2.6** Refer to Alpha SOP ID 1739 for further information regarding IDC/DOC Generation.
- 13.2.7** The analyst must make a continuing, annual, demonstration of the ability to generate acceptable accuracy and precision with this method.

## 14. Pollution Prevention and Waste Management

- 14.1** Refer to Alpha's Chemical Hygiene Plan and Hazardous Waste Management and Disposal SOP for further pollution prevention and waste management information.
- 14.2** This method utilizes SPE to extract analytes from water. It requires the use of very small volumes of organic solvent and very small quantities of pure analytes, thereby minimizing the potential hazards to both the analyst and the environment as compared to the use of large volumes of organic solvents in conventional liquid-liquid extractions.
- 14.3** The analytical procedures described in this method generate relatively small amounts of waste since only small amounts of reagents and solvents are used. The matrices of concern are finished drinking water or source water. However, laboratory waste management practices must be conducted consistent with all applicable rules and regulations, and that laboratories protect the air, water, and land by minimizing and controlling all releases from fume hoods and bench operations. Also, compliance is required with any sewage discharge permits and regulations, particularly the hazardous waste identification rules and land disposal restrictions.

## 15. Referenced Documents

- Chemical Hygiene Plan – ID 2124  
SOP ID 1732 Detection Limit (DL), Limit of Detection (LOD) & Limit of Quantitation (LOQ) SOP  
SOP ID 1739 Demonstration of Capability (DOC) Generation SOP  
SOP ID 1728 Hazardous Waste Management and Disposal SOP

## 16. Attachments

**Table 7: LC Method Conditions**

Time (min)	2 mM Ammonium Acetate (5:95 MeOH/H <sub>2</sub> O)	2 mM Ammonium Acetate (100% Methanol)
Initial	100.0	0.0
1.0	100.0	0.0
2.2	85.0	15.0
11	20.0	80.0
11.4	0.0	100.0
12.4	100.0	00.0
15.5	100.0	0.0
Waters Aquity UPLC ® BEHC <sub>18</sub> 2.1 x 50 mm packed with 1.7 µm BEH C <sub>18</sub> stationary phase Flow rate of 0.4 mL/min 2-5 µL injection		

**Table 8: ESI-MS Method Conditions**

ESI Conditions	
Polarity	Negative ion
Capillary needle voltage	.5 kV
Cone Gas Flow	20 L/hr
Nitrogen desolvation gas	1000 L/hr
Desolvation gas temp.	500 °C

**Table 9: Method Analyte Source, Retention Times (RTs), and EIS References**

#	Analyte	Transition	RT	IS	Type
1	M3PBA	216>171	2.65		REC
2	PFBA	213 > 169	2.65	2: M4PFBA	
3	M4PFBA	217 > 172	2.65	1: M3PBA	EIS
4	PFPeA	263 > 219	5.67	4: M5PFPEA	
5	M5PFPEA	268 > 223	5.66	1: M3PBA	EIS
6	PFBS	299 > 80	6.35	6: M3PFBS	
7	M3PFBS	302 > 80	6.35	1: M3PBA	EIS
8	FtS 4:2	327 > 307	7.47	9: M2-4:2FtS	
9	M2-4:2FtS	329 > 81	7.47	1: M3PBA	EIS
10	PFHxA	303 > 269	7.57	10: M5PFHxA	
11	M5PFHxA	318 > 273	7.57	1: M3PBA	EIS
12	PFPeS	349 > 80	7.88	18: M3PFHxS	
13	PFHpA	363 > 319	8.80	14: M4PFHpA	

#	Analyte	Transition	RT	IS	Type
14	M4PFHpA	367 > 322	8.80	1: M3PBA	EIS
15	L-PFHxS	399 > 80	8.94	18: M3PFHxS	
16	br-PFHxS	399 > 80	8.72	18: M3PFHxS	
17	PFHxS Total	399 > 80	8.94	18: M3PFHxS	
18	M3PFHxS	402 > 80	8.94	1: M3PBA	EIS
19	M2PFOA	415 > 370	9.7		REC
20	PFOA	413 > 369	9.7	23: M8PFOA	
21	br-PFOA	413 > 369	9.48	23: M8PFOA	
22	PFOA Total	413 > 369	9.7	23: M8PFOA	
23	M8PFOA	421 > 376	9.7	19: M2PFOA	EIS
24	FtS 6:2	427 > 407	9.66	25: M2-6:2FTS	
25	M2-6:2FTS	429 > 409	9.66	19: M2PFOA	EIS
26	PFHpS	449 > 80	9.78	33: M8PFOS	
27	PFNA	463 > 419	10.41	33: M8PFOS	
28	M9PFNA	472 > 427	10.41	19: PFOA	EIS
29	M2PFOS	501 > 80	10.45		REC
30	PFOS	499 > 80	10.45	33: M8PFOS	
31	br-PFOS	499 > 80	10.27	33: M8PFOS	
32	PFOS Total	499 > 80	10.45	33: M8PFOS	
33	M8PFOS	507 > 80	10.45	29: M4PFOS	EIS
34	FtS 8:2	527 > 507	10.99	38: M2-8:2FTS	
35	M2-8:2FTS	529 > 509	10.99	36: M2PFDA	EIS
36	M2PFDA	515 > 470	11.00		REC
37	PFDA	513 > 469	11.00	38: M6PFDA	
38	M6PFDA	519 > 474	11.00	36: M2PFDA	EIS
39	PFNS	549 > 80	11.02	38: M6PFDA	
40	NMeFOSAA	570 > 419	11.41	41: D3-NMeFOSAA	
41	d3-NMeFOSAA	573 > 419	11.41	36: M2PFDA	EIS
42	PFOSA	498 > 78	11.48	29: M8FOSA	
43	M8FOSA	506 > 78	11.48	19: M2PFOA	EIS
44	PFUnDA	563 > 519	11.51	41: M7-PFUDA	
45	M7-PFUDA	570 > 525	11.51	36: M2PFDA	EIS
46	PFDS	599 > 80	11.51	45: M7-PFUDA	
47	NEtFOSAA	584 > 419	11.68	48: d5-NEtFOSAA	
48	d5-NEtFOSAA	589 > 419	11.68	36: M2PFDA	EIS
49	PFDoA	613 > 569	11.96	50: MPFDOA	
50	MPFDOA	615 > 570	11.96	36: M2PFDA	EIS
51	PFTriA	663 > 619	12.34	50: MPFDOA	
52	PFTeA	713 > 669	12.6	53: M2PFTEDA	

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#	Analyte	Transition	RT	IS	Type
53	M2PFTEDA	715 > 670	12.6	36: M2PFDA	EIS
54	M3HFPO-DA	329>285	7.97	1: M3PFBA	EIS
55	HFPO-DA	332>287	7.97	54: M3HFPO-DA	
56	ADONA	377>251		23: M8PFOA	
57	PFHxDA	813>769	13.2	53:M2PFTEDA	
58	PFODA	913>869	13.5	53:M2PFTEDA	



**APPENDIX B**

**LABORATORY ANALYTICAL REPORTS**



## ANALYTICAL REPORT

Lab Number:	L1913692
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	04/16/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1913692-01	Redacted_20190403	SLUDGE	COVENTRY, VT	04/03/19 06:45	04/04/19
L1913692-02	Redacted_20190403	SLUDGE	COVENTRY, VT	04/03/19 07:20	04/04/19
L1913692-03	Redacted_20190403	SLUDGE	COVENTRY, VT	04/03/19 10:36	04/04/19
L1913692-04	Redacted_20190403	SLUDGE	COVENTRY, VT	04/03/19 11:46	04/04/19
L1913692-05	FD_Redacted	SLUDGE	COVENTRY, VT	04/03/19 07:20	04/04/19
L1913692-06	FB_20190403	WATER	COVENTRY, VT	04/03/19 11:35	04/04/19
L1913692-07	EB_20190403	WATER	COVENTRY, VT	04/03/19 13:00	04/04/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1913692-01, -02, -03, -04, and -05: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Elizabeth Porta

Title: Technical Director/Representative

Date: 04/16/19



# ORGANICS

# SEMIVOLATILES

Project Name: NEWSVT LANDFILL

Lab Number: L1913692

Project Number: 4536.00

Report Date: 04/16/19

## SAMPLE RESULTS

Lab ID: L1913692-01  
 Client ID: Redacted\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 06:45  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 04/11/19 06:32  
 Analyst: JW  
 Percent Solids: 17%

Extraction Method: EPA 537(M)  
 Extraction Date: 04/09/19 12:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	3.30	0.070	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	3.30	0.034	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	3.30	0.210	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.30	0.357	1
Perfluorohexanoic Acid (PFHxA)	2.24	J	ng/g	3.30	0.211	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	3.30	0.319	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	3.30	0.211	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	3.30	0.188	1
Perfluorooctanoic Acid (PFOA)	0.978	J	ng/g	3.30	0.136	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	3.30	0.654	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	3.30	0.449	1
Perfluorononanoic Acid (PFNA)	0.481	J	ng/g	3.30	0.274	1
Perfluorooctanesulfonic Acid (PFOS)	9.98		ng/g	3.30	0.398	1
Perfluorodecanoic Acid (PFDA)	2.40	J	ng/g	3.30	0.238	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.35	J	ng/g	3.30	0.908	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	3.30	0.291	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	9.49		ng/g	3.30	0.340	1
Perfluoroundecanoic Acid (PFUnA)	0.879	J	ng/g	3.30	0.185	1
Perfluorodecanesulfonic Acid (PFDS)	3.72		ng/g	3.30	0.320	1
Perfluorooctanesulfonamide (FOSA)	1.18	J	ng/g	3.30	0.338	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	6.17		ng/g	3.30	0.297	1
Perfluorododecanoic Acid (PFDoA)	1.26	J	ng/g	3.30	0.284	1
Perfluorotridecanoic Acid (PFTrDA)	0.372	J	ng/g	3.30	0.205	1
Perfluorotetradecanoic Acid (PFTA)	0.586	J	ng/g	3.30	0.231	1
PFOA/PFOS, Total	11.0	J	ng/g	3.30	0.136	1
PFAS, Total (5)	11.4	J	ng/g	3.30	0.136	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

Lab ID: L1913692-01  
 Client ID: Redacted\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 06:45  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>240</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>212</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>304</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>41</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	56		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		26-160

Project Name: NEWSVT LANDFILL

Lab Number: L1913692

Project Number: 4536.00

Report Date: 04/16/19

## SAMPLE RESULTS

Lab ID: L1913692-02  
 Client ID: Redacted\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 07:20  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 04/11/19 06:49  
 Analyst: JW  
 Percent Solids: 22%

Extraction Method: EPA 537(M)  
 Extraction Date: 04/09/19 12:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	2.69	0.057	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	2.69	0.028	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.69	0.171	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.69	0.291	1
Perfluorohexanoic Acid (PFHxA)	0.955	J	ng/g	2.69	0.172	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.69	0.260	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	2.69	0.172	1
Perfluorohexanesulfonic Acid (PFHxS)	1.28	J	ng/g	2.69	0.154	1
Perfluorooctanoic Acid (PFOA)	0.851	J	ng/g	2.69	0.110	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.43	J	ng/g	2.69	0.533	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.69	0.366	1
Perfluorononanoic Acid (PFNA)	0.361	J	ng/g	2.69	0.224	1
Perfluorooctanesulfonic Acid (PFOS)	15.4		ng/g	2.69	0.324	1
Perfluorodecanoic Acid (PFDA)	1.62	J	ng/g	2.69	0.194	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.01	J	ng/g	2.69	0.741	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.69	0.237	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.05		ng/g	2.69	0.277	1
Perfluoroundecanoic Acid (PFUnA)	0.665	J	ng/g	2.69	0.151	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.69	0.261	1
Perfluorooctanesulfonamide (FOSA)	0.562	J	ng/g	2.69	0.276	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.12	J	ng/g	2.69	0.242	1
Perfluorododecanoic Acid (PFDoA)	0.917	J	ng/g	2.69	0.232	1
Perfluorotridecanoic Acid (PFTrDA)	0.298	J	ng/g	2.69	0.167	1
Perfluorotetradecanoic Acid (PFTA)	0.324	J	ng/g	2.69	0.188	1
PFOA/PFOS, Total	16.3	J	ng/g	2.69	0.110	1
PFAS, Total (5)	17.9	J	ng/g	2.69	0.110	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

Lab ID: L1913692-02  
 Client ID: Redacted\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 07:20  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>177</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	79		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>270</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>255</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	124		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>47</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-03  
**Client ID:** Redacted\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 10:36  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/11/19 07:05  
**Analyst:** JW  
**Percent Solids:** 18%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 04/09/19 12:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.397	J	ng/g	2.97	0.063	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	2.97	0.031	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.97	0.189	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.97	0.321	1
Perfluorohexanoic Acid (PFHxA)	1.52	J	ng/g	2.97	0.190	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.97	0.287	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	2.97	0.190	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	2.97	0.169	1
Perfluorooctanoic Acid (PFOA)	1.99	J	ng/g	2.97	0.122	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.927	J	ng/g	2.97	0.588	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.97	0.404	1
Perfluorononanoic Acid (PFNA)	1.01	J	ng/g	2.97	0.246	1
Perfluorooctanesulfonic Acid (PFOS)	7.62		ng/g	2.97	0.358	1
Perfluorodecanoic Acid (PFDA)	7.55		ng/g	2.97	0.214	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.924	J	ng/g	2.97	0.817	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.97	0.261	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	11.2		ng/g	2.97	0.306	1
Perfluoroundecanoic Acid (PFUnA)	0.971	J	ng/g	2.97	0.166	1
Perfluorodecanesulfonic Acid (PFDS)	17.9		ng/g	2.97	0.288	1
Perfluorooctanesulfonamide (FOSA)	1.04	J	ng/g	2.97	0.304	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	19.1		ng/g	2.97	0.267	1
Perfluorododecanoic Acid (PFDoA)	1.44	J	ng/g	2.97	0.255	1
Perfluorotridecanoic Acid (PFTrDA)	0.336	J	ng/g	2.97	0.184	1
Perfluorotetradecanoic Acid (PFTA)	0.397	J	ng/g	2.97	0.208	1
PFOA/PFOS, Total	9.61	J	ng/g	2.97	0.122	1
PFAS, Total (5)	10.6	J	ng/g	2.97	0.122	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

Lab ID: L1913692-03  
 Client ID: Redacted\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 10:36  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	72		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>187</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	71		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>214</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>244</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>62</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	108		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>54</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-04  
**Client ID:** Redacted\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 11:46  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/11/19 07:22 JW  
**Analyst:**  
**Percent Solids:** 21%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 04/09/19 12:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.992	J	ng/g	2.82	0.060	1
Perfluoropentanoic Acid (PFPeA)	1.51	J	ng/g	2.82	0.029	1
Perfluorobutanesulfonic Acid (PFBS)	0.996	J	ng/g	2.82	0.179	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.82	0.305	1
Perfluorohexanoic Acid (PFHxA)	2.22	J	ng/g	2.82	0.181	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.82	0.272	1
Perfluoroheptanoic Acid (PFHpA)	0.318	J	ng/g	2.82	0.181	1
Perfluorohexanesulfonic Acid (PFHxS)	1.12	J	ng/g	2.82	0.161	1
Perfluorooctanoic Acid (PFOA)	2.73	J	ng/g	2.82	0.116	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	2.82	0.559	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.82	0.384	1
Perfluorononanoic Acid (PFNA)	5.95		ng/g	2.82	0.234	1
Perfluorooctanesulfonic Acid (PFOS)	9.76		ng/g	2.82	0.340	1
Perfluorodecanoic Acid (PFDA)	3.06		ng/g	2.82	0.203	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.26	J	ng/g	2.82	0.776	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.82	0.248	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	12.0		ng/g	2.82	0.291	1
Perfluoroundecanoic Acid (PFUnA)	0.871	J	ng/g	2.82	0.158	1
Perfluorodecanesulfonic Acid (PFDS)	27.1		ng/g	2.82	0.274	1
Perfluorooctanesulfonamide (FOSA)	1.49	J	ng/g	2.82	0.289	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.62		ng/g	2.82	0.254	1
Perfluorododecanoic Acid (PFDoA)	0.921	J	ng/g	2.82	0.243	1
Perfluorotridecanoic Acid (PFTrDA)	0.281	J	ng/g	2.82	0.175	1
Perfluorotetradecanoic Acid (PFTA)	0.412	J	ng/g	2.82	0.198	1
PFOA/PFOS, Total	12.5	J	ng/g	2.82	0.116	1
PFAS, Total (5)	19.9	J	ng/g	2.82	0.116	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

Lab ID: L1913692-04  
 Client ID: Redacted\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 11:46  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			89			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			70			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			85			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>212</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			70			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			83			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			88			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			92			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			<b>283</b>	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			101			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			93			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			89			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			<b>377</b>	Q		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			<b>138</b>	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			103			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			39			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			<b>186</b>	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			68			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			70			26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-05  
**Client ID:** FD\_Redacted  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 07:20  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/11/19 07:38 JW  
**Analyst:**  
**Percent Solids:** 23%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 04/09/19 12:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	2.27	0.048	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	2.27	0.024	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.27	0.144	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.27	0.246	1
Perfluorohexanoic Acid (PFHxA)	0.737	J	ng/g	2.27	0.146	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.27	0.220	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	2.27	0.146	1
Perfluorohexanesulfonic Acid (PFHxS)	0.929	J	ng/g	2.27	0.130	1
Perfluorooctanoic Acid (PFOA)	0.803	J	ng/g	2.27	0.093	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.22	J	ng/g	2.27	0.450	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.27	0.309	1
Perfluorononanoic Acid (PFNA)	0.326	J	ng/g	2.27	0.189	1
Perfluorooctanesulfonic Acid (PFOS)	12.0		ng/g	2.27	0.274	1
Perfluorodecanoic Acid (PFDA)	1.34	J	ng/g	2.27	0.164	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.50	J	ng/g	2.27	0.626	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.27	0.200	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.67		ng/g	2.27	0.234	1
Perfluoroundecanoic Acid (PFUnA)	0.622	J	ng/g	2.27	0.127	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.27	0.221	1
Perfluorooctanesulfonamide (FOSA)	0.572	J	ng/g	2.27	0.233	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.54	J	ng/g	2.27	0.205	1
Perfluorododecanoic Acid (PFDoA)	0.808	J	ng/g	2.27	0.196	1
Perfluorotridecanoic Acid (PFTrDA)	0.275	J	ng/g	2.27	0.141	1
Perfluorotetradecanoic Acid (PFTA)	0.322	J	ng/g	2.27	0.159	1
PFOA/PFOS, Total	12.8	J	ng/g	2.27	0.093	1
PFAS, Total (5)	14.1	J	ng/g	2.27	0.093	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

Lab ID: L1913692-05  
 Client ID: FD\_Redacted  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 07:20  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	77		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>172</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	<b>59</b>	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	71		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>262</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>330</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>44</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	64		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-06  
**Client ID:** FB\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 11:35  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/10/19 18:40  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 04/09/19 08:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.86	0.347	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.86	0.431	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.86	0.353	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.86	0.454	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.86	0.457	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.86	0.221	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.86	0.346	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.86	0.405	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.86	0.428	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.524	J	ng/l	1.86	0.180	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.86	0.483	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.86	0.405	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.86	0.520	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.86	0.576	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.86	0.270	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.86	0.498	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.86	0.233	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.86	0.394	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.86	0.359	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.86	0.517	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.86	0.346	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.86	0.550	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.86	0.292	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.86	0.918	1
PFOA/PFOS, Total	ND		ng/l	1.86	0.428	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

Lab ID: L1913692-06  
 Client ID: FB\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 11:35  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	71		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-07  
**Client ID:** EB\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 13:00  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/10/19 18:56  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 04/09/19 08:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.79	0.334	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	0.416	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	0.340	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	0.437	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.79	0.441	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	0.213	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	0.333	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	0.391	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	0.412	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.79	0.174	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	0.466	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	0.391	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	0.502	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	0.556	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	0.260	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.79	0.480	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.79	0.224	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	0.380	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.79	0.346	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.79	0.498	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.79	0.334	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	0.530	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.79	0.281	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.79	0.885	1
PFOA/PFOS, Total	ND		ng/l	1.79	0.412	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

Lab ID: L1913692-07  
 Client ID: EB\_20190403  
 Sample Location: COVENTRY, VT

Date Collected: 04/03/19 13:00  
 Date Received: 04/04/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	117		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	112		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	68		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	117		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	118		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	81		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 04/10/19 14:31  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 04/09/19 08:58

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 06-07 Batch: WG1224490-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.373
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.464
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.380
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.488
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.492
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.238
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.372
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.436
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.460
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.520
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.436
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.560
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.620
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	0.536
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.872	J	ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.424
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.386
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.556
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.592
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.314
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	2.00	0.988
PFOA/PFOS, Total	ND		ng/l	2.00	0.460

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 04/10/19 14:31  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 04/09/19 08:58

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 06-07 Batch: WG1224490-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	113		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	89		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	98		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	119		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 04/11/19 04:03  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 04/09/19 12:34

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-05 Batch: WG1224590-1					
Perfluorobutanoic Acid (PFBA)	0.065	J	ng/g	0.571	0.012
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.571	0.006
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.571	0.036
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.571	0.062
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.571	0.037
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.571	0.055
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.571	0.037
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.571	0.033
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.286	0.023
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.571	0.113
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.571	0.078
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.571	0.047
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.571	0.069
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.571	0.041
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.571	0.157
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.571	0.050
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.571	0.059
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.571	0.032
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.571	0.055
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.571	0.059
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.571	0.051
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.571	0.049
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.571	0.035
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.571	0.040
PFOA/PFOS, Total	ND		ng/g	0.571	0.023
PFAS, Total (5)	ND		ng/g	0.571	0.023

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 04/11/19 04:03  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 04/09/19 12:34

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-05 Batch: WG1224590-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	116		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	97		26-160



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1913692

Project Number: 4536.00

Report Date: 04/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-07 Batch: WG1224490-2 WG1224490-3								
Perfluorobutanoic Acid (PFBA)	110		106		67-148	4		30
Perfluoropentanoic Acid (PFPeA)	103		98		63-161	5		30
Perfluorobutanesulfonic Acid (PFBS)	97		95		65-157	2		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	117		107		37-219	9		30
Perfluorohexanoic Acid (PFHxA)	110		105		69-168	5		30
Perfluoropentanesulfonic Acid (PFPeS)	114		106		52-156	7		30
Perfluoroheptanoic Acid (PFHpA)	103		96		58-159	7		30
Perfluorohexanesulfonic Acid (PFHxS)	109		103		69-177	6		30
Perfluorooctanoic Acid (PFOA)	103		95		63-159	8		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		109		49-187	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	114		101		61-179	12		30
Perfluorononanoic Acid (PFNA)	111		106		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	94		85		52-151	10		30
Perfluorodecanoic Acid (PFDA)	110		107		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	112		122		56-173	9		30
Perfluorononanesulfonic Acid (PFNS)	120		105		48-150	13		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	102		107		60-166	5		30
Perfluoroundecanoic Acid (PFUnA)	97		94		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	113		100		38-156	12		30
Perfluorooctanesulfonamide (FOSA)	96		93		46-170	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	102		95		45-170	7		30
Perfluorododecanoic Acid (PFDoA)	106		99		67-153	7		30

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-07 Batch: WG1224490-2 WG1224490-3								
Perfluorotridecanoic Acid (PFTTrDA)	91		92		48-158	1		30
Perfluorotetradecanoic Acid (PFTA)	107		105		59-182	2		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		107		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		109		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	84		87		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		107		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	105		105		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		108		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		105		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		82		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		109		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		98		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		79		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		91		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		102		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		68		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		98		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		111		33-143



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1913692

Project Number: 4536.00

Report Date: 04/16/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-05 Batch: WG1224590-2 WG1224590-3								
Perfluorobutanoic Acid (PFBA)	97		95		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	94		91		69-132	3		30
Perfluorobutanesulfonic Acid (PFBS)	79		76		72-128	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	99		101		62-145	2		30
Perfluorohexanoic Acid (PFHxA)	98		94		70-132	4		30
Perfluoropentanesulfonic Acid (PFPeS)	106		100		73-123	6		30
Perfluoroheptanoic Acid (PFHpA)	87		85		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	95		92		67-130	3		30
Perfluorooctanoic Acid (PFOA)	86		84		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	93		85		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	100		95		70-132	5		30
Perfluorononanoic Acid (PFNA)	94		93		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	81		75		68-136	8		30
Perfluorodecanoic Acid (PFDA)	94		92		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	97		112		65-137	14		30
Perfluorononanesulfonic Acid (PFNS)	109		96		69-125	13		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	95		95		63-144	0		30
Perfluoroundecanoic Acid (PFUnA)	84		85		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	94		87		59-134	8		30
Perfluorooctanesulfonamide (FOSA)	79		93		67-137	16		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	91		85		61-139	7		30
Perfluorododecanoic Acid (PFDoA)	92		87		69-135	6		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1913692

Project Number: 4536.00

Report Date: 04/16/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-05 Batch: WG1224590-2 WG1224590-3								
Perfluorotridecanoic Acid (PFTTrDA)	81		79		66-139	3		30
Perfluorotetradecanoic Acid (PFTA)	97		97		69-133	0		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		104		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		105		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		118		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		87		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		105		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		106		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		110		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		96		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		113		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		115		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		106		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		107		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		92		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		112		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		101		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	105		106		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	100		97		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-01  
**Client ID:** Redacted\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 06:45  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	17.2		%	0.100	0.100	1	-	04/06/19 01:32	121,2540G	CC





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-02  
**Client ID:** Redacted\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 07:20  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	22.3		%	0.100	0.100	1	-	04/06/19 01:32	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-03  
**Client ID:** Redacted\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 10:36  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	18.0		%	0.100	0.100	1	-	04/06/19 01:32	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-04  
**Client ID:** Redacted\_20190403  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 11:46  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	20.6		%	0.100	0.100	1	-	04/06/19 01:32	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

**SAMPLE RESULTS**

**Lab ID:** L1913692-05  
**Client ID:** FD\_Redacted  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/03/19 07:20  
**Date Received:** 04/04/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	22.6		%	0.100	0.100	1	-	04/06/19 01:32	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1913692

Report Date: 04/16/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1223729-1 QC Sample: L1913692-01 Client ID: Redacted_20190403						
Solids, Total	17.2	17.2	%	0		10

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

Serial\_No:04161917:18  
**Lab Number:** L1913692  
**Report Date:** 04/16/19

**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1913692-01A	Plastic 8oz unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(28)
L1913692-01B	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		A2-TS(7)
L1913692-02A	Plastic 8oz unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(28)
L1913692-02B	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		A2-TS(7)
L1913692-03A	Plastic 8oz unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(28)
L1913692-03B	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		A2-TS(7)
L1913692-04A	Plastic 8oz unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(28)
L1913692-04B	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		A2-TS(7)
L1913692-05A	Plastic 8oz unpreserved	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(28)
L1913692-05B	Plastic 2oz unpreserved for TS	A	NA		4.1	Y	Absent		A2-TS(7)
L1913692-06A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(14)
L1913692-07A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		4.1	Y	Absent		A2-537-ISOTOPE(14)

\*Values in parentheses indicate holding time in days





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1913692  
**Report Date:** 04/16/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

---

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# MANSFIELD CHAIN OF CUSTODY

PAGE 1 OF 1

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-821-9300  
FAX: 508-422-3286

Date Rec'd in Lab: **4-5-19**  
ALPHA Job #: **L1913692**

## Client Information

Client: **Sanborn, Head, & Associates, Inc**  
Address: **187 Saint Paul Street**  
**Suite 4-C, Burlington, VT 05401**  
Phone: **802-391-8504**  
Fax:

## Project Information

Project Name: **NEWSVT Landfill**  
Project Location: **Coventry, VT**  
Project #: **4536.00**  
Project Manager: **Matt Estabrooks**  
ALPHA Quote #:

## Report Information - Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client Info PO #: **4536.00**

## Regulatory Requirements/Report Limits

State /Fed Program Criteria

## Turn-Around Time

Standard  RUSH (only confirmed if pre-approved!)

Date Due: Time:

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Second report for Maine DEP compounds (PFOA, PFOS, PFBS)

PLEASE NOTE required for indicated samples. EQUIS

MS/MSD (at unit cost) will be omitted unless you check here:  EDD needed.

**ANALYSIS**

TS-5M 2540  
EPA-537(M) - Isotope Dilution

**SAMPLE HANDLING**

Filtration \_\_\_\_\_

Done

Not needed

Lab to do

Preservation \_\_\_\_\_

Lab to do

(Please specify bottle)

**TOTAL # BOTTLES**

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Analysis		Sample Specific Comments	TOTAL # BOTTLES
		Date	Time			TS-5M 2540	EPA-537(M)		
13692-01	[REDACTED]-20190403	4/3/19	6:45	Sludge	MEE LET	X	X	Second report for Maine DEP needed.	2
02	[REDACTED]		7:20			X	X		2
03	[REDACTED]		10:36			X	X		2
04	[REDACTED]		11:46			X	X		2
05	FD- [REDACTED]		7:20	↓		X	X	Second report for Maine DEP needed.	2
06	FB- 20190403		11:35	Water		X	X		1
07	EB- 20190403		1300	Water		X	X		1

Container Type \_\_\_\_\_  
Preservative \_\_\_\_\_

Relinquished By: *[Signature]* Date/Time: **4/4/19 11:50**  
Received By: *[Signature]* Date/Time: **4-4-19 1353**  
*[Signature]* **4/4/19 1620**  
*[Signature]* **4-5-19 0600**

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



## ANALYTICAL REPORT

Lab Number:	L1914746
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	04/25/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1914746-01	Redacted_20190409	SLUDGE	COVENTRY, VT	04/09/19 12:10	04/11/19
L1914746-02	Redacted_20190409	SLUDGE	COVENTRY, VT	04/09/19 12:50	04/11/19
L1914746-03	FD_Redacted_20190409	SLUDGE	COVENTRY, VT	04/09/19 12:50	04/11/19
L1914746-04	Redacted_20190409	SLUDGE	COVENTRY, VT	04/09/19 13:03	04/11/19
L1914746-05	Redacted_20190409	SLUDGE	COVENTRY, VT	04/09/19 13:40	04/11/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

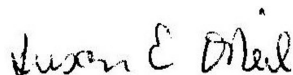
L1914746-01, -04, and -05: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1228174-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1228174-5 Laboratory Duplicate RPDs, performed on L1914746-01, are above the acceptance criteria for perfluorobutanesulfonic acid (pfbs) (77%) and 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (123%). The elevated RPDs have been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 04/25/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

Lab ID: L1914746-01  
 Client ID: Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 12:10  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge 122,537(M)  
 Analytical Method: 04/22/19 20:11 AJ  
 Analytical Date:  
 Analyst:  
 Percent Solids: 31%

Extraction Method: EPA 537(M)  
 Extraction Date: 04/19/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.63		ng/g	1.59	0.034	1
Perfluoropentanoic Acid (PFPeA)	2.14		ng/g	1.59	0.016	1
Perfluorobutanesulfonic Acid (PFBS)	6.97		ng/g	1.59	0.101	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.59	0.171	1
Perfluorohexanoic Acid (PFHxA)	7.06		ng/g	1.59	0.102	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.59	0.153	1
Perfluoroheptanoic Acid (PFHpA)	0.910	J	ng/g	1.59	0.102	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.59	0.090	1
Perfluorooctanoic Acid (PFOA)	3.24		ng/g	1.59	0.065	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	31.3		ng/g	1.59	0.314	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.59	0.216	1
Perfluorononanoic Acid (PFNA)	2.02		ng/g	1.59	0.132	1
Perfluorooctanesulfonic Acid (PFOS)	10.7		ng/g	1.59	0.191	1
Perfluorodecanoic Acid (PFDA)	4.05		ng/g	1.59	0.114	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.59	0.436	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.59	0.140	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.59	0.163	1
Perfluoroundecanoic Acid (PFUnA)	9.42		ng/g	1.59	0.089	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.59	0.154	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.59	0.163	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.21	J	ng/g	1.59	0.143	1
Perfluorododecanoic Acid (PFDoA)	23.0		ng/g	1.59	0.136	1
Perfluorotridecanoic Acid (PFTrDA)	38.9		ng/g	1.59	0.098	1
Perfluorotetradecanoic Acid (PFTA)	39.7		ng/g	1.59	0.111	1
PFOA/PFOS, Total	13.9		ng/g	1.59	0.065	1
PFAS, Total (5)	16.9	J	ng/g	1.59	0.065	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

Lab ID: L1914746-01  
 Client ID: Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 12:10  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	58	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	56	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	53	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	45	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	55	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	54	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	49		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	60	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	55	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	53	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	51		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	27	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	54	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	29	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	48	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	29		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

**Lab ID:** L1914746-02  
**Client ID:** Redacted\_20190409  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/09/19 12:50  
**Date Received:** 04/11/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/22/19 20:44  
**Analyst:** AJ  
**Percent Solids:** 16%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 04/19/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.088	J	ng/g	2.97	0.063	1
Perfluoropentanoic Acid (PFPeA)	0.146	J	ng/g	2.97	0.031	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.97	0.189	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.97	0.321	1
Perfluorohexanoic Acid (PFHxA)	0.653	J	ng/g	2.97	0.190	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.97	0.287	1
Perfluoroheptanoic Acid (PFHpA)	0.400	J	ng/g	2.97	0.190	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	2.97	0.170	1
Perfluorooctanoic Acid (PFOA)	2.03	J	ng/g	2.97	0.122	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.88	J	ng/g	2.97	0.589	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.97	0.404	1
Perfluorononanoic Acid (PFNA)	1.38	J	ng/g	2.97	0.247	1
Perfluorooctanesulfonic Acid (PFOS)	5.89		ng/g	2.97	0.358	1
Perfluorodecanoic Acid (PFDA)	0.891	J	ng/g	2.97	0.214	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	2.97	0.818	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.97	0.262	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.97	0.306	1
Perfluoroundecanoic Acid (PFUnA)	0.467	J	ng/g	2.97	0.166	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.97	0.288	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	2.97	0.305	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.70		ng/g	2.97	0.268	1
Perfluorododecanoic Acid (PFDoA)	0.477	J	ng/g	2.97	0.256	1
Perfluorotridecanoic Acid (PFTrDA)	0.342	J	ng/g	2.97	0.184	1
Perfluorotetradecanoic Acid (PFTA)	0.442	J	ng/g	2.97	0.208	1
PFOA/PFOS, Total	7.92	J	ng/g	2.97	0.122	1
PFAS, Total (5)	9.70	J	ng/g	2.97	0.122	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

Lab ID: L1914746-02  
 Client ID: Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 12:50  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			77		60-153	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			71		65-182	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			79		70-151	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			108		56-138	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			71		61-147	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			66		62-149	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			79		63-166	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			78		62-152	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			122		32-182	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			76		61-154	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			79		65-151	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			72		65-150	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			102		25-186	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			57		45-137	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			82		64-158	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			68		1-125	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			59		42-136	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			66		56-148	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			50		26-160	

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1914746**Project Number:** 4536.00**Report Date:** 04/25/19**SAMPLE RESULTS**

Lab ID: L1914746-03  
 Client ID: FD\_Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 12:50  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 04/22/19 21:00  
 Analyst: AJ  
 Percent Solids: 17%

Extraction Method: EPA 537(M)  
 Extraction Date: 04/19/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.089	J	ng/g	2.83	0.060	1
Perfluoropentanoic Acid (PFPeA)	0.146	J	ng/g	2.83	0.029	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.83	0.180	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.83	0.306	1
Perfluorohexanoic Acid (PFHxA)	0.636	J	ng/g	2.83	0.181	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.83	0.273	1
Perfluoroheptanoic Acid (PFHpA)	0.423	J	ng/g	2.83	0.181	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	2.83	0.161	1
Perfluorooctanoic Acid (PFOA)	1.98	J	ng/g	2.83	0.116	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	13.3		ng/g	2.83	0.560	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.83	0.385	1
Perfluorononanoic Acid (PFNA)	1.42	J	ng/g	2.83	0.235	1
Perfluorooctanesulfonic Acid (PFOS)	4.98		ng/g	2.83	0.341	1
Perfluorodecanoic Acid (PFDA)	0.931	J	ng/g	2.83	0.204	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	2.83	0.778	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.83	0.249	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.83	0.292	1
Perfluoroundecanoic Acid (PFUnA)	0.457	J	ng/g	2.83	0.158	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.83	0.275	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	2.83	0.290	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.69		ng/g	2.83	0.255	1
Perfluorododecanoic Acid (PFDoA)	0.406	J	ng/g	2.83	0.243	1
Perfluorotridecanoic Acid (PFTrDA)	0.337	J	ng/g	2.83	0.176	1
Perfluorotetradecanoic Acid (PFTA)	0.389	J	ng/g	2.83	0.198	1
PFOA/PFOS, Total	6.96	J	ng/g	2.83	0.116	1
PFAS, Total (5)	8.80	J	ng/g	2.83	0.116	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1914746**Project Number:** 4536.00**Report Date:** 04/25/19**SAMPLE RESULTS**

Lab ID: L1914746-03  
 Client ID: FD\_Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 12:50  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	115		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	151		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	72		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

**Lab ID:** L1914746-04  
**Client ID:** Redacted\_20190409  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/09/19 13:03  
**Date Received:** 04/11/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/23/19 13:03  
**Analyst:** AJ  
**Percent Solids:** 22%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 04/19/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.260	J	ng/g	2.21	0.047	1
Perfluoropentanoic Acid (PFPeA)	0.188	J	ng/g	2.21	0.023	1
Perfluorobutanesulfonic Acid (PFBS)	0.222	J	ng/g	2.21	0.140	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.21	0.239	1
Perfluorohexanoic Acid (PFHxA)	1.26	J	ng/g	2.21	0.142	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.21	0.213	1
Perfluoroheptanoic Acid (PFHpA)	0.694	J	ng/g	2.21	0.142	1
Perfluorohexanesulfonic Acid (PFHxS)	1.76	J	ng/g	2.21	0.126	1
Perfluorooctanoic Acid (PFOA)	19.8		ng/g	2.21	0.091	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	13.9		ng/g	2.21	0.438	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.32	J	ng/g	2.21	0.301	1
Perfluorononanoic Acid (PFNA)	4.67		ng/g	2.21	0.184	1
Perfluorooctanesulfonic Acid (PFOS)	41.1		ng/g	2.21	0.266	1
Perfluorodecanoic Acid (PFDA)	3.24		ng/g	2.21	0.159	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.32	J	ng/g	2.21	0.608	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.21	0.195	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.509	J	ng/g	2.21	0.228	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	2.21	0.124	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.21	0.214	1
Perfluorooctanesulfonamide (FOSA)	1.08	J	ng/g	2.21	0.227	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.29		ng/g	2.21	0.199	1
Perfluorododecanoic Acid (PFDoA)	0.912	J	ng/g	2.21	0.190	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.21	0.137	1
Perfluorotetradecanoic Acid (PFTA)	0.389	J	ng/g	2.21	0.155	1
PFOA/PFOS, Total	60.9		ng/g	2.21	0.091	1
PFAS, Total (5)	68.0	J	ng/g	2.21	0.091	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

Lab ID: L1914746-04  
 Client ID: Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 13:03  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			58	Q		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			46	Q		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			145			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			212	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			55	Q		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			54	Q		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			131			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			60	Q		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			193	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			32	Q		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			56	Q		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			57	Q		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			222	Q		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			45			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			43	Q		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			12			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			29	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			29	Q		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			28			26-160

Project Name: NEWSVT LANDFILL

Lab Number: L1914746

Project Number: 4536.00

Report Date: 04/25/19

## SAMPLE RESULTS

Lab ID: L1914746-05  
 Client ID: Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 13:40  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 04/23/19 13:20  
 Analyst: AJ  
 Percent Solids: 12%

Extraction Method: EPA 537(M)  
 Extraction Date: 04/19/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.120	J	ng/g	3.94	0.084	1
Perfluoropentanoic Acid (PFPeA)	0.466	J	ng/g	3.94	0.041	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	3.94	0.250	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.94	0.425	1
Perfluorohexanoic Acid (PFHxA)	1.60	J	ng/g	3.94	0.252	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	3.94	0.380	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	3.94	0.252	1
Perfluorohexanesulfonic Acid (PFHxS)	0.632	J	ng/g	3.94	0.224	1
Perfluorooctanoic Acid (PFOA)	4.78		ng/g	3.94	0.162	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	25.2		ng/g	3.94	0.779	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	3.94	0.535	1
Perfluorononanoic Acid (PFNA)	0.801	J	ng/g	3.94	0.327	1
Perfluorooctanesulfonic Acid (PFOS)	9.67		ng/g	3.94	0.474	1
Perfluorodecanoic Acid (PFDA)	5.99		ng/g	3.94	0.283	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	3.94	1.08	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	3.94	0.346	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	10.6		ng/g	3.94	0.405	1
Perfluoroundecanoic Acid (PFUnA)	0.858	J	ng/g	3.94	0.220	1
Perfluorodecanesulfonic Acid (PFDS)	0.734	J	ng/g	3.94	0.382	1
Perfluorooctanesulfonamide (FOSA)	1.58	J	ng/g	3.94	0.403	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	8.48		ng/g	3.94	0.354	1
Perfluorododecanoic Acid (PFDoA)	1.07	J	ng/g	3.94	0.338	1
Perfluorotridecanoic Acid (PFTrDA)	0.494	J	ng/g	3.94	0.244	1
Perfluorotetradecanoic Acid (PFTA)	0.488	J	ng/g	3.94	0.276	1
PFOA/PFOS, Total	14.5		ng/g	3.94	0.162	1
PFAS, Total (5)	15.9	J	ng/g	3.94	0.162	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

Lab ID: L1914746-05  
 Client ID: Redacted\_20190409  
 Sample Location: COVENTRY, VT

Date Collected: 04/09/19 13:40  
 Date Received: 04/11/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	51	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	68	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	63		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	68		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	69		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	135		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	75		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	63	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	65		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	238	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	70		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	49	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	29		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 04/22/19 18:31  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 04/19/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-05 Batch: WG1228174-1					
Perfluorobutanoic Acid (PFBA)	0.108	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.005
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.032
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.054
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.032
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.048
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.032
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.029
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.099
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.042
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.060
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.036
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.138
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.044
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.052
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.028
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.049
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.051
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.045
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.043
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.031
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.035
PFOA/PFOS, Total	ND		ng/g	0.500	0.021
PFAS, Total (5)	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
 Analytical Date: 04/22/19 18:31  
 Analyst: AJ

Extraction Method: EPA 537(M)  
 Extraction Date: 04/19/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-05 Batch: WG1228174-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	63		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1914746

Project Number: 4536.00

Report Date: 04/25/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-05 Batch: WG1228174-2 WG1228174-3								
Perfluorobutanoic Acid (PFBA)	115		113		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	116		112		69-132	4		30
Perfluorobutanesulfonic Acid (PFBS)	110		106		72-128	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	117		111		62-145	5		30
Perfluorohexanoic Acid (PFHxA)	123		123		70-132	0		30
Perfluoropentanesulfonic Acid (PFPeS)	110		113		73-123	3		30
Perfluoroheptanoic Acid (PFHpA)	116		114		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	112		112		67-130	0		30
Perfluorooctanoic Acid (PFOA)	112		116		69-133	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	119		110		64-140	8		30
Perfluoroheptanesulfonic Acid (PFHpS)	115		112		70-132	3		30
Perfluorononanoic Acid (PFNA)	118		123		72-129	4		30
Perfluorooctanesulfonic Acid (PFOS)	100		98		68-136	2		30
Perfluorodecanoic Acid (PFDA)	121		122		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	114		128		65-137	12		30
Perfluorononanesulfonic Acid (PFNS)	120		123		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	119		115		63-144	3		30
Perfluoroundecanoic Acid (PFUnA)	106		104		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	131		128		59-134	2		30
Perfluorooctanesulfonamide (FOSA)	105		119		67-137	13		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	123		123		61-139	0		30
Perfluorododecanoic Acid (PFDoA)	119		122		69-135	2		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1914746

Project Number: 4536.00

Report Date: 04/25/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-05 Batch: WG1228174-2 WG1228174-3								
Perfluorotridecanoic Acid (PFTrDA)	86		100		66-139	15		30
Perfluorotetradecanoic Acid (PFTA)	128		126		69-133	2		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		91		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		86		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		102		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75		81		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		96		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		101		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		90		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		78		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		102		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		86		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		82		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		93		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		31		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		74		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	122		101		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		61		26-160

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1914746

Report Date: 04/25/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1228174-5 QC Sample: L1914746-01 Client ID: Redacted_20190409						
Perfluorobutanoic Acid (PFBA)	3.63	3.36	ng/g	8		30
Perfluoropentanoic Acid (PFPeA)	2.14	2.02	ng/g	6		30
Perfluorobutanesulfonic Acid (PFBS)	6.97	3.09	ng/g	77	Q	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	7.06	6.40	ng/g	10		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.910J	0.901J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	3.24	3.42	ng/g	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	31.3	7.45	ng/g	123	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	2.02	1.94	ng/g	4		30
Perfluorooctanesulfonic Acid (PFOS)	10.7	11.8	ng/g	10		30
Perfluorodecanoic Acid (PFDA)	4.05	4.46	ng/g	10		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	0.163J	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	9.42	9.92	ng/g	5		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1228174-5 QC Sample: L1914746-01 Client ID: Redacted_20190409						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.21J	1.90	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	23.0	26.0	ng/g	12		30
Perfluorotridecanoic Acid (PFTTrDA)	38.9	46.0	ng/g	17		30
Perfluorotetradecanoic Acid (PFTA)	39.7	40.8	ng/g	3		30
PFOA/PFOS, Total	13.9	15.2	ng/g	0		30
PFAS, Total (5)	16.9J	18.1J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	58	Q	51	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	56	Q	49	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	53	Q	50	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	45	Q	43	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58	Q	52	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	55	Q	50	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	54	Q	53	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	57	Q	51	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	49		40		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	60	Q	54	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	55	Q	46	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	53	Q	46	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	51		45		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	27	Q	26	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	54	Q	46	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		28		1-125

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1914746

Report Date: 04/25/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1228174-5 QC Sample: L1914746-01 Client ID: Redacted_20190409						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	29	Q	25	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	48	Q	37	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	29		24	Q	26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

**Lab ID:** L1914746-01  
**Client ID:** Redacted\_20190409  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/09/19 12:10  
**Date Received:** 04/11/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	30.9		%	0.100	0.100	1	-	04/13/19 03:36	121,2540G	CC





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

**Lab ID:** L1914746-02  
**Client ID:** Redacted\_20190409  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/09/19 12:50  
**Date Received:** 04/11/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	16.4		%	0.100	0.100	1	-	04/13/19 03:36	121,2540G	CC



**Project Name:** NEWSVT LANDFILL**Project Number:** 4536.00**Lab Number:** L1914746**Report Date:** 04/25/19**SAMPLE RESULTS**

Lab ID: L1914746-03

Client ID: FD\_Redacted\_20190409

Sample Location: COVENTRY, VT

Date Collected: 04/09/19 12:50

Date Received: 04/11/19

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	16.7		%	0.100	0.100	1	-	04/13/19 03:36	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

**Lab ID:** L1914746-04  
**Client ID:** Redacted\_20190409  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/09/19 13:03  
**Date Received:** 04/11/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	22.0		%	0.100	0.100	1	-	04/13/19 03:36	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

**SAMPLE RESULTS**

**Lab ID:** L1914746-05  
**Client ID:** Redacted\_20190409  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/09/19 13:40  
**Date Received:** 04/11/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	11.9		%	0.100	0.100	1	-	04/13/19 03:36	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1914746

Report Date: 04/25/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-05 QC Batch ID: WG1226070-1 QC Sample: L1914596-01 Client ID: DUP Sample						
Solids, Total	77.8	71.7	%	8		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1914746**Project Number:** 4536.00**Report Date:** 04/25/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1914746-01A	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(28)
L1914746-01B	Plastic 2oz unpreserved for TS	A	NA		2.0	Y	Absent		A2-TS(7)
L1914746-02A	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(28)
L1914746-02B	Plastic 2oz unpreserved for TS	A	NA		2.0	Y	Absent		A2-TS(7)
L1914746-03A	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(28)
L1914746-03B	Plastic 2oz unpreserved for TS	A	NA		2.0	Y	Absent		A2-TS(7)
L1914746-04A	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(28)
L1914746-04B	Plastic 2oz unpreserved for TS	A	NA		2.0	Y	Absent		A2-TS(7)
L1914746-05A	Plastic 8oz unpreserved	A	NA		2.0	Y	Absent		A2-537-ISOTOPE(28)
L1914746-05B	Plastic 2oz unpreserved for TS	A	NA		2.0	Y	Absent		A2-TS(7)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1914746  
**Report Date:** 04/25/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

**Westborough Facility**

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

**Mansfield Facility**

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

**Westborough Facility:**

**Drinking Water**

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

**Non-Potable Water**

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

**Mansfield Facility:**

**Drinking Water**

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

**Non-Potable Water**

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





**MANSFIELD CHAIN OF CUSTODY**

PAGE 1 OF 1

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-8300  
FAX: 508-822-3288

**Client Information**

Client: Sanborn, Head & Assoc. Inc.  
Address: 187 Saint Paul St.  
Suite 4-C, Burlington, VT 05401  
Phone: 802-391-8504  
Fax:

Email: mestabrooks@sanbornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
Second report for Maine DEP Compounds (PFOA, PFOS, PFBS)  
**PLEASE NOTE** required for indicated samples.  
MS/MSD (at unit cost) will be omitted unless you check here:

**Project Information**

Project Name: NEWSVT Landfill  
Project Location: Coventry, VT  
Project #: 4536.00  
Project Manager: Matt Estabrooks  
ALPHA Quote #:

**Turn-Around Time**

Standard  RUSH (only confirmed if pre-approved)  
Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 4-11-19 ALPHA Job #: L1914746

**Report Information - Data Deliverables**

FAX  EMAIL  
 ADEx  Add'l Deliverables

**Billing Information**

Same as Client info PO #: 4536.00

**Regulatory Requirements/Report Limits**

State /Fed Program	Criteria

**ANALYSIS**  
TS - JM 2540  
EPA-537(m) Isotope Dilution

**SAMPLE HANDLING**

Filtration \_\_\_\_\_

Done

Not needed

Lab to do

Preservation \_\_\_\_\_

Lab to do

(Please specify below)

Sample Specific Comments

**TOTAL # BOTTLES**

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials				
		Date	Time						
14746-01	<u>[REDACTED]-20190409</u>	<u>4/9/19</u>	<u>12:10</u>	<u>Sludge</u>	<u>MEE</u>	<u>X</u>	<u>X</u>		
02	<u>[REDACTED]</u>		<u>12:50</u>			<u>X</u>	<u>X</u>		
03	<u>FD-[REDACTED]</u>		<u>12:50</u>			<u>X</u>	<u>X</u>		
04	<u>[REDACTED]</u>		<u>13:03</u>			<u>X</u>	<u>X</u>		
05	<u>[REDACTED]</u>		<u>13:40</u>			<u>X</u>	<u>X</u>		

Second report for Maine DEP needed.

Container Type		Preservative	
Relinquished By:	Date/Time	Received By:	Date/Time
<u>Matthew Estabrooks</u>	<u>4/10/19-16:30</u>	<u>[Signature]</u>	<u>4/11/19 13:53</u>
<u>[Signature]</u>	<u>4-11-19 19:00</u>	<u>[Signature]</u>	<u>4/11/19 18:20</u>
<u>[Signature]</u>	<u>4-11-19 2:38</u>	<u>[Signature]</u>	<u>4-11-19 22:28</u>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



## ANALYTICAL REPORT

Lab Number:	L1916014
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	05/01/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1916014-01	Redacted_20190418	SLUDGE	COVENTRY, VT	04/18/19 08:32	04/18/19
L1916014-02	Redacted_20190419	SLUDGE	COVENTRY, VT	04/18/19 12:28	04/18/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

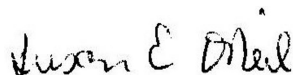
#### Perfluorinated Alkyl Acids by Isotope Dilution

L1916014-01 and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1916014-01 has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 05/01/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1916014**Project Number:** 4536.00**Report Date:** 05/01/19**SAMPLE RESULTS**

Lab ID: L1916014-01 D

Date Collected: 04/18/19 08:32

Client ID: Redacted\_20190418

Date Received: 04/18/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Extraction Method: EPA 537(M)

Analytical Method: 122,537(M)

Extraction Date: 04/23/19 17:00

Analytical Date: 04/30/19 12:34

Analyst: PB

Percent Solids: 25%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	19.5	0.415	10
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	19.5	0.202	10
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	19.5	1.24	10
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	19.5	2.10	10
Perfluorohexanoic Acid (PFHxA)	1.30	J	ng/g	19.5	1.25	10
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	19.5	1.88	10
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	19.5	1.25	10
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	19.5	1.11	10
Perfluorooctanoic Acid (PFOA)	3.44	J	ng/g	19.5	0.800	10
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	19.5	3.86	10
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	19.5	2.65	10
Perfluorononanoic Acid (PFNA)	ND		ng/g	19.5	1.62	10
Perfluorooctanesulfonic Acid (PFOS)	7.77	J	ng/g	19.5	2.35	10
Perfluorodecanoic Acid (PFDA)	10.0	J	ng/g	19.5	1.40	10
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	19.5	5.36	10
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	19.5	1.72	10
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.75	J	ng/g	19.5	2.01	10
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	19.5	1.09	10
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	19.5	1.89	10
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	19.5	2.00	10
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	19.5	1.75	10
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	19.5	1.68	10
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	19.5	1.21	10
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	19.5	1.36	10
PFOA/PFOS, Total	11.2	J	ng/g	1.95	0.080	10
PFAS, Total (5)	11.2	J	ng/g	1.95	0.080	10



Project Name: NEWSVT LANDFILL

Lab Number: L1916014

Project Number: 4536.00

Report Date: 05/01/19

## SAMPLE RESULTS

Lab ID: L1916014-01 D

Date Collected: 04/18/19 08:32

Client ID: Redacted\_20190418

Date Received: 04/18/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			102			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			118			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			106			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			152			56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			87			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			91			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			122			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			97			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			177			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			99			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			103			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			97			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			216	Q		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			132			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			107			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			68			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			124			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			84			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			83			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

**SAMPLE RESULTS**

**Lab ID:** L1916014-02  
**Client ID:** Redacted\_20190419  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/18/19 12:28  
**Date Received:** 04/18/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 04/26/19 05:49 AJ  
**Analyst:**  
**Percent Solids:** 24%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 04/23/19 17:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.419	J	ng/g	2.07	0.044	1
Perfluoropentanoic Acid (PFPeA)	0.223	J	ng/g	2.07	0.021	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.07	0.132	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.07	0.224	1
Perfluorohexanoic Acid (PFHxA)	1.44	J	ng/g	2.07	0.133	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.07	0.200	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	2.07	0.133	1
Perfluorohexanesulfonic Acid (PFHxS)	0.613	J	ng/g	2.07	0.118	1
Perfluorooctanoic Acid (PFOA)	0.843	J	ng/g	2.07	0.085	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	2.07	0.410	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.07	0.282	1
Perfluorononanoic Acid (PFNA)	0.337	J	ng/g	2.07	0.172	1
Perfluorooctanesulfonic Acid (PFOS)	7.05		ng/g	2.07	0.250	1
Perfluorodecanoic Acid (PFDA)	1.82	J	ng/g	2.07	0.149	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	2.07	0.570	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.07	0.182	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.70		ng/g	2.07	0.214	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	2.07	0.116	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.07	0.201	1
Perfluorooctanesulfonamide (FOSA)	0.335	J	ng/g	2.07	0.212	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	2.07	0.187	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	2.07	0.178	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.07	0.128	1
Perfluorotetradecanoic Acid (PFTA)	0.328	J	ng/g	2.07	0.145	1
PFOA/PFOS, Total	7.89	J	ng/g	2.07	0.085	1
PFAS, Total (5)	8.84	J	ng/g	2.07	0.085	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

**SAMPLE RESULTS**

Lab ID: L1916014-02  
 Client ID: Redacted\_20190419  
 Sample Location: COVENTRY, VT

Date Collected: 04/18/19 12:28  
 Date Received: 04/18/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>159</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	79		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	131		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	130		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>35</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 04/26/19 03:20  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 04/23/19 17:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1229366-1					
Perfluorobutanoic Acid (PFBA)	0.106	J	ng/g	0.468	0.010
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.468	0.005
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.468	0.030
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.468	0.051
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.468	0.030
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.468	0.045
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.468	0.030
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.468	0.027
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.468	0.019
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.468	0.093
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.468	0.064
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.468	0.039
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.468	0.056
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.468	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.468	0.129
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.468	0.041
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.468	0.048
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.468	0.026
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.468	0.045
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.468	0.048
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.468	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.468	0.040
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.468	0.029
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/g	0.468	0.033
PFOA/PFOS, Total	ND		ng/g	0.468	0.019
PFAS, Total (5)	ND		ng/g	0.468	0.019

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 04/26/19 03:20  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 04/23/19 17:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1229366-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	105		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	123		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	56		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	56		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1916014

Project Number: 4536.00

Report Date: 05/01/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1229366-2 WG1229366-3								
Perfluorobutanoic Acid (PFBA)	98		98		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	94		95		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	89		90		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	92		92		62-145	0		30
Perfluorohexanoic Acid (PFHxA)	107		110		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	98		102		73-123	4		30
Perfluoroheptanoic Acid (PFHpA)	98		99		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		102		67-130	4		30
Perfluorooctanoic Acid (PFOA)	95		94		69-133	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	80		77		64-140	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	94		94		70-132	0		30
Perfluorononanoic Acid (PFNA)	107		102		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	78		78		68-136	0		30
Perfluorodecanoic Acid (PFDA)	102		102		69-133	0		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	81		83		65-137	2		30
Perfluorononanesulfonic Acid (PFNS)	104		105		69-125	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	89		89		63-144	0		30
Perfluoroundecanoic Acid (PFUnA)	87		83		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	89		98		59-134	10		30
Perfluorooctanesulfonamide (FOSA)	96		93		67-137	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	100		100		61-139	0		30
Perfluorododecanoic Acid (PFDoA)	98		105		69-135	7		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1916014

Project Number: 4536.00

Report Date: 05/01/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1229366-2 WG1229366-3								
Perfluorotridecanoic Acid (PFTrDA)	90		95		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	117		110		69-133	6		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		95		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		97		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		116		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78		78		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	111		107		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		96		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		63		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		83		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		106		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		89		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		50		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		88		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	120		111		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	113		103		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		76		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		58		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

**SAMPLE RESULTS**

**Lab ID:** L1916014-01  
**Client ID:** Redacted\_20190418  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/18/19 08:32  
**Date Received:** 04/18/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	24.9		%	0.100	0.100	1	-	04/19/19 16:06	121,2540G	AL



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

**SAMPLE RESULTS**

**Lab ID:** L1916014-02  
**Client ID:** Redacted\_20190419  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/18/19 12:28  
**Date Received:** 04/18/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	23.7		%	0.100	0.100	1	-	04/19/19 16:06	121,2540G	AL



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1916014

Report Date: 05/01/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1228328-1 QC Sample: L1915576-03 Client ID: DUP Sample						
Solids, Total	67.1	67.2	%	0		10

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

Serial\_No:05011913:53

**Lab Number:** L1916014

**Report Date:** 05/01/19

**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

**Cooler**                      **Custody Seal**

A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1916014-01A	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		A2-TS(7)
L1916014-01B	Plastic 8oz unpreserved	A	NA		2.5	Y	Absent		A2-537-ISOTOPE(28)
L1916014-02A	Glass 60mL/2oz unpreserved	A	NA		2.5	Y	Absent		A2-TS(7)
L1916014-02B	Plastic 2oz unpreserved for TS	A	NA		2.5	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1916014  
**Report Date:** 05/01/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

**Westborough Facility**

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

**Mansfield Facility**

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

**Westborough Facility:**

**Drinking Water**

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

**Non-Potable Water**

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

**Mansfield Facility:**

**Drinking Water**

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

**Non-Potable Water**

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 4/19/19  
 ALPHA Job #: L1916014

8 Walkup Drive  
 Westboro, MA 01581  
 Tel: 508-898-0220

320 Forbes Blvd  
 Mansfield, MA 02048  
 Tel: 508-822-8309

## Project Information

Project Name: **NEWSVT Landfill**  
 Project Location: **Coventry, VT**  
 Project #: **4536.00**  
 Project Manager: **Matt Estabrooks**  
 ALPHA Quote #:

## Report Information - Data Deliverables

ADEX  EMAIL

## Billing Information

Same as Client info PO #: **4536.00**

## Client Information

Client: **Sanborn, Head & Associates, Inc.**  
 Address: **187 Saint Paul Street**  
**Suite 4-C, Burlington VT 05401**  
 Phone: **802-391-8504**  
 Email: **mestabrooks@sanbornhead.com**

## Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)

Date Due:

## Regulatory Requirements & Project Information Requirements

- Yes  No MA MCP Analytical Methods
- Yes  No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
- Yes  No GW1 Standards (Info Required for Metals & EPH with Targets)
- Yes  No NPDES RGP
- Other State/Fed Program

## Additional Project Information:

Second report for Maine DEP compounds (PFOA, PFOS, PFBS) required for indicated samples. EQUIS EDD needed.

**ANALYSIS**

VOC:  8260  824  8242

SVOC:  ABN  PAH

METALS:  MCP 13  MCP 14  RCP 15

EPH:  RCRAS  RCRAS  PPT13

VPH:  Ranges & Targets  Ranges Only

PCB:  Ranges & Targets  Ranges Only

TPH:  PEST  Quant Only  Fingerprint

**15-SM 2540**  
**EPA-532(M) - 800ppb dilution**

**SAMPLE INFO**

Filtration  
 Field  
 Lab to do

Preservation  
 Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials
		Date	Time		
16014-01	██████-20190418	4/18/19	0832	Sludge	LET
02	██████-20190418	4/18/19	1228	Sludge	LET

Sample Comments	TOTAL # SAMPLES
Second report for Maine DEP	2
Second report for Maine DEP	2

**Container Type**  
 P= Plastic  
 A= Amber glass  
 V= Vial  
 G= Glass  
 B= Bacteria cup  
 C= Cube  
 O= Other  
 E= Encore  
 Q= BOD Bottle

**Preservative**  
 A= None  
 B= HCl  
 C= HNO<sub>3</sub>  
 D= H<sub>2</sub>SO<sub>4</sub>  
 E= NaOH  
 F= MeOH  
 G= NaHSO<sub>4</sub>  
 H= Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>  
 I= Ascorbic Acid  
 J= NH<sub>4</sub>Cl  
 K= Zn Acetate  
 O= Other

Container Type	Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
<i>Jana Tracy</i>	4/18/19 1525	<i>Daniel AAC</i>	4/18/19 25
<i>Daniel AAC</i>	4/18/19 1530	<i>Matt</i>	4/19/19 30
<i>M</i>	4/19/19 0600	<i>CHUCK MAL</i>	4-19-19 0600

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (Rev. 12/16/2012)



## ANALYTICAL REPORT

Lab Number:	L1917306
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	05/10/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1917306-01	Redacted_20190424	SLUDGE	COVENTRY, VT	04/24/19 09:16	04/26/19
L1917306-02	Redacted_20190424	SLUDGE	COVENTRY, VT	04/24/19 11:17	04/26/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

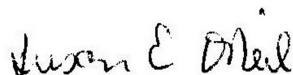
#### Perfluorinated Alkyl Acids by Isotope Dilution

L1917306-01 and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1234971-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 05/10/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

**SAMPLE RESULTS**

**Lab ID:** L1917306-01  
**Client ID:** Redacted\_20190424  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/24/19 09:16  
**Date Received:** 04/26/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/09/19 19:56  
**Analyst:** JW  
**Percent Solids:** 56%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	4.84		ng/g	0.812	0.017	1
Perfluoropentanoic Acid (PFPeA)	9.52		ng/g	0.812	0.008	1
Perfluorobutanesulfonic Acid (PFBS)	7.97		ng/g	0.812	0.052	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.812	0.088	1
Perfluorohexanoic Acid (PFHxA)	11.3		ng/g	0.812	0.052	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.812	0.078	1
Perfluoroheptanoic Acid (PFHpA)	1.97		ng/g	0.812	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	0.475	J	ng/g	0.812	0.046	1
Perfluorooctanoic Acid (PFOA)	14.1		ng/g	0.812	0.033	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.331	J	ng/g	0.812	0.161	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.291	J	ng/g	0.812	0.110	1
Perfluorononanoic Acid (PFNA)	5.32		ng/g	0.812	0.067	1
Perfluorooctanesulfonic Acid (PFOS)	41.4		ng/g	0.812	0.098	1
Perfluorodecanoic Acid (PFDA)	17.5		ng/g	0.812	0.059	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.825		ng/g	0.812	0.223	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.812	0.072	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	19.0		ng/g	0.812	0.084	1
Perfluoroundecanoic Acid (PFUnA)	2.70		ng/g	0.812	0.046	1
Perfluorodecanesulfonic Acid (PFDS)	2.31		ng/g	0.812	0.079	1
Perfluorooctanesulfonamide (FOSA)	2.98		ng/g	0.812	0.083	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	8.47		ng/g	0.812	0.073	1
Perfluorododecanoic Acid (PFDoA)	5.44		ng/g	0.812	0.070	1
Perfluorotridecanoic Acid (PFTrDA)	0.884		ng/g	0.812	0.050	1
Perfluorotetradecanoic Acid (PFTA)	1.71		ng/g	0.812	0.057	1
PFOA/PFOS, Total	55.5		ng/g	0.812	0.033	1
PFAS, Total (5)	63.3	J	ng/g	0.812	0.033	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

**SAMPLE RESULTS**

Lab ID: L1917306-01  
 Client ID: Redacted\_20190424  
 Sample Location: COVENTRY, VT

Date Collected: 04/24/19 09:16  
 Date Received: 04/26/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	75		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>179</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	147		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>224</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>42</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	58		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1917306**Project Number:** 4536.00**Report Date:** 05/10/19**SAMPLE RESULTS**

Lab ID: L1917306-02  
 Client ID: Redacted\_20190424  
 Sample Location: COVENTRY, VT

Date Collected: 04/24/19 11:17  
 Date Received: 04/26/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/09/19 20:13  
 Analyst: JW  
 Percent Solids: 25%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.88	0.040	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.88	0.019	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.88	0.119	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.88	0.202	1
Perfluorohexanoic Acid (PFHxA)	2.02		ng/g	1.88	0.120	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.88	0.181	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.88	0.120	1
Perfluorohexanesulfonic Acid (PFHxS)	0.114	J	ng/g	1.88	0.107	1
Perfluorooctanoic Acid (PFOA)	0.946	J	ng/g	1.88	0.077	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.88	0.371	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.88	0.255	1
Perfluorononanoic Acid (PFNA)	0.272	J	ng/g	1.88	0.156	1
Perfluorooctanesulfonic Acid (PFOS)	18.0		ng/g	1.88	0.226	1
Perfluorodecanoic Acid (PFDA)	0.945	J	ng/g	1.88	0.135	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.88	0.516	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.88	0.165	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.63	J	ng/g	1.88	0.193	1
Perfluoroundecanoic Acid (PFUnA)	1.32	J	ng/g	1.88	0.105	1
Perfluorodecanesulfonic Acid (PFDS)	8.21		ng/g	1.88	0.182	1
Perfluorooctanesulfonamide (FOSA)	0.425	J	ng/g	1.88	0.192	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.13		ng/g	1.88	0.169	1
Perfluorododecanoic Acid (PFDoA)	0.447	J	ng/g	1.88	0.161	1
Perfluorotridecanoic Acid (PFTrDA)	0.437	J	ng/g	1.88	0.116	1
Perfluorotetradecanoic Acid (PFTA)	0.254	J	ng/g	1.88	0.131	1
PFOA/PFOS, Total	18.9	J	ng/g	1.88	0.077	1
PFAS, Total (5)	19.3	J	ng/g	1.88	0.077	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

**SAMPLE RESULTS**

Lab ID: L1917306-02  
 Client ID: Redacted\_20190424  
 Sample Location: COVENTRY, VT

Date Collected: 04/24/19 11:17  
 Date Received: 04/26/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	153		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	183	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	67	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	219	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	58	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	244	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	70		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	253	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	29	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	38	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	32	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	41		26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/09/19 20:29  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1234971-1					
Perfluorobutanoic Acid (PFBA)	0.116	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.005
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.032
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.054
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.032
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.048
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.032
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.029
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.099
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.042
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.060
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.036
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.138
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.044
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.052
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.028
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.049
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.051
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.045
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.043
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.031
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.035
PFOA/PFOS, Total	ND		ng/g	0.500	0.021
PFAS, Total (5)	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/09/19 20:29  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1234971-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	137		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	140		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		26-160

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1234971-2 WG1234971-3								
Perfluorobutanoic Acid (PFBA)	104		112		71-135	7		30
Perfluoropentanoic Acid (PFPeA)	99		108		69-132	9		30
Perfluorobutanesulfonic Acid (PFBS)	85		94		72-128	10		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	94		110		62-145	16		30
Perfluorohexanoic Acid (PFHxA)	108		115		70-132	6		30
Perfluoropentanesulfonic Acid (PFPeS)	87		100		73-123	14		30
Perfluoroheptanoic Acid (PFHpA)	99		109		71-131	10		30
Perfluorohexanesulfonic Acid (PFHxS)	85		97		67-130	13		30
Perfluorooctanoic Acid (PFOA)	98		106		69-133	8		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		119		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	105		123		70-132	16		30
Perfluorononanoic Acid (PFNA)	103		114		72-129	10		30
Perfluorooctanesulfonic Acid (PFOS)	87		99		68-136	13		30
Perfluorodecanoic Acid (PFDA)	105		115		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	89		121		65-137	30		30
Perfluorononanesulfonic Acid (PFNS)	105		116		69-125	10		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		100		63-144	11		30
Perfluoroundecanoic Acid (PFUnA)	91		100		64-136	9		30
Perfluorodecanesulfonic Acid (PFDS)	116		123		59-134	6		30
Perfluorooctanesulfonamide (FOSA)	123		108		67-137	13		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	91		99		61-139	8		30
Perfluorododecanoic Acid (PFDoA)	98		100		69-135	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1917306

Project Number: 4536.00

Report Date: 05/10/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1234971-2 WG1234971-3								
Perfluorotridecanoic Acid (PFTrDA)	92		102		66-139	10		30
Perfluorotetradecanoic Acid (PFTA)	102		112		69-133	9		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		97		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		110		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	154	Q	131		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		95		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		96		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	134		118		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	148		125		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		92		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	155		112		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		99		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		107		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		11		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		92		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		90		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEA)	85		83		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

**SAMPLE RESULTS**

**Lab ID:** L1917306-01  
**Client ID:** Redacted\_20190424  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/24/19 09:16  
**Date Received:** 04/26/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	56.2		%	0.100	0.100	1	-	04/30/19 02:12	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

**SAMPLE RESULTS**

**Lab ID:** L1917306-02  
**Client ID:** Redacted\_20190424  
**Sample Location:** COVENTRY, VT

**Date Collected:** 04/24/19 11:17  
**Date Received:** 04/26/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	24.8		%	0.100	0.100	1	-	04/30/19 02:12	121,2540G	CC





## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1917306

Report Date: 05/10/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1231731-1 QC Sample: L1917402-06 Client ID: DUP Sample						
Solids, Total	95.4	95.4	%	0		10

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

Serial\_No:05101913:47  
**Lab Number:** L1917306  
**Report Date:** 05/10/19

**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1917306-01A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1917306-01B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1917306-02A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1917306-02B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1917306  
**Report Date:** 05/10/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# CHAIN OF CUSTODY

PAGE 1 OF 1

8 Walkup Drive  
Westford, MA 01581  
Tel: 508-898-9220

320 Forbes Blvd  
Mansfield, MA 02048  
Tel: 508-822-9300

Date Rec'd in Lab: 4/27/19  
ALPHA Job #: 61917306

## Project Information

Project Name: **NEWSVT Landfill**

Project Location: **Coventry, VT**

Project #: **4536.00**

Project Manager: **Matt Estabrooks**

ALPHA Quote #:

## Report Information - Data Deliverables

ADEx  EMAIL

## Regulatory Requirements & Project Information Requirements

- Yes  No MA MCP Analytical Methods  Yes  No CT RCP Analytical Methods  
 Yes  No Matrix Spike Required on this SDG? (Required for MCP Inorganics)  
 Yes  No GW1 Standards (Info Required for Metals & EPH with Targets)  
 Yes  No NPDES RGP  
 Other State /Fed Program Criteria \_\_\_\_\_

## Client Information

Client: **Sauborn, Head & Associates, Inc.**

Address: **187 Saint Paul Street**

Suite **4-C Burlington, VT 05401**

Phone: **802-391-8504**

Email: **mestabrooks@saubornhead.com**

## Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)

Date Due:

## Additional Project Information:

**Second report for Maine DEP compounds (PFOA, PFOS, PFBS) required for indicated samples. EQUIS EDD ~~required~~ needed.**

ANALYSIS		TOTAL # BOTTLES  SAMPLE INFO <input type="checkbox"/> Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do Sample Comments
VOC: <input type="checkbox"/> B260 <input type="checkbox"/> B24 <input type="checkbox"/> B24.2	SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	
METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	METALS: <input type="checkbox"/> RCRAS <input type="checkbox"/> RCRAS	
EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	
15-DM 2540 EPA-537(M) - Isotopic Distribution		

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Time	Sample Matrix	Sampler Initials
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91730601	[REDACTED]	20190424	4/24/19 0916	Sludge	LET
-02	[REDACTED]	20190424	4/24/19 1617	Sludge	LET

- Container Type**
- P= Plastic
  - A= Amber glass
  - V= Vial
  - G= Glass
  - B= Bacteria cup
  - C= Cube
  - O= Other
  - E= Encore
  - D= BOD Bottle
- Preservative**
- A= None
  - B= HCl
  - C= HNO<sub>3</sub>
  - D= H<sub>2</sub>SO<sub>4</sub>
  - E= NaOH
  - F= NaOH
  - G= NaHSO<sub>4</sub>
  - H= Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>
  - I= Ascorbic Acid
  - J= NH<sub>4</sub>Cl
  - K= Zn Acetate
  - O= Other

Container Type	
Preservative	

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	4/26/19 1:30	<i>[Signature]</i>	4/26/19 13:00
	4/26/19 17:00		07/26/19 17:00
	04/27/19 0910		4/27/19 06:10

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.





## ANALYTICAL REPORT

Lab Number:	L1918595
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	05/17/19

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1918595-01	Redacted_20190502	SLUDGE	COVENTRY, VT	05/02/19 08:33	05/03/19
L1918595-02	Redacted_20190502	SLUDGE	COVENTRY, VT	05/02/19 08:48	05/03/19
L1918595-03	Redacted_20190502	SLUDGE	COVENTRY, VT	05/02/19 11:25	05/03/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1918595-01 and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1918595-03 has elevated detection limits due to the dilution required by the sample matrix.

WG1234971-2, WG1234971-4, and WG1234971-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1234971-4 MS recovery, performed on L1918595-01, is outside the acceptance criteria for perfluorononanesulfonic acid (pfns) (66%).

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

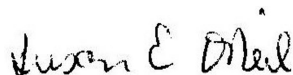
L1918595-03: The sample has elevated detection limits due to the dilution required by the sample matrix.

L1918595-03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1237876-1, WG1237876-2, WG1237876-3, and WG1237876-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 05/17/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**SAMPLE RESULTS**

**Lab ID:** L1918595-01  
**Client ID:** Redacted\_20190502  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/02/19 08:33  
**Date Received:** 05/03/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/10/19 22:18  
**Analyst:** AJ  
**Percent Solids:** 20%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	2.36	0.050	1
Perfluoropentanoic Acid (PFPeA)	0.122	J	ng/g	2.36	0.024	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.36	0.150	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.36	0.254	1
Perfluorohexanoic Acid (PFHxA)	0.547	J	ng/g	2.36	0.151	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.36	0.227	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	2.36	0.151	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	2.36	0.134	1
Perfluorooctanoic Acid (PFOA)	1.40	J	ng/g	2.36	0.097	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	2.36	0.467	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.467	J	ng/g	2.36	0.320	1
Perfluorononanoic Acid (PFNA)	0.432	J	ng/g	2.36	0.196	1
Perfluorooctanesulfonic Acid (PFOS)	18.0		ng/g	2.36	0.284	1
Perfluorodecanoic Acid (PFDA)	0.994	J	ng/g	2.36	0.170	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	2.36	0.648	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.36	0.207	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.91		ng/g	2.36	0.243	1
Perfluoroundecanoic Acid (PFUnA)	0.516	J	ng/g	2.36	0.132	1
Perfluorodecanesulfonic Acid (PFDS)	1.39	J	ng/g	2.36	0.228	1
Perfluorooctanesulfonamide (FOSA)	0.621	J	ng/g	2.36	0.242	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.11		ng/g	2.36	0.212	1
Perfluorododecanoic Acid (PFDoA)	0.713	J	ng/g	2.36	0.203	1
Perfluorotridecanoic Acid (PFTrDA)	0.320	J	ng/g	2.36	0.146	1
Perfluorotetradecanoic Acid (PFTA)	0.336	J	ng/g	2.36	0.165	1
PFOA/PFOS, Total	19.4	J	ng/g	2.36	0.097	1
PFAS, Total (5)	19.8	J	ng/g	2.36	0.097	1



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1918595**Project Number:** 4536.00**Report Date:** 05/17/19**SAMPLE RESULTS**

Lab ID: L1918595-01  
 Client ID: Redacted\_20190502  
 Sample Location: COVENTRY, VT

Date Collected: 05/02/19 08:33  
 Date Received: 05/03/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	72		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	54	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	60	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	116		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	67		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	69		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	119		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	65		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	67		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	39		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	109		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	67		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	37	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		26-160

Project Name: NEWSVT LANDFILL

Lab Number: L1918595

Project Number: 4536.00

Report Date: 05/17/19

## SAMPLE RESULTS

Lab ID: L1918595-02  
 Client ID: Redacted\_20190502  
 Sample Location: COVENTRY, VT

Date Collected: 05/02/19 08:48  
 Date Received: 05/03/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/10/19 23:08  
 Analyst: AJ  
 Percent Solids: 34%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.45	0.031	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.45	0.015	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.45	0.092	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.45	0.156	1
Perfluorohexanoic Acid (PFHxA)	1.18	J	ng/g	1.45	0.093	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.45	0.140	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.45	0.093	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.45	0.083	1
Perfluorooctanoic Acid (PFOA)	1.02	J	ng/g	1.45	0.059	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.45	0.286	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.45	0.197	1
Perfluorononanoic Acid (PFNA)	3.22		ng/g	1.45	0.120	1
Perfluorooctanesulfonic Acid (PFOS)	11.8		ng/g	1.45	0.174	1
Perfluorodecanoic Acid (PFDA)	0.898	J	ng/g	1.45	0.104	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.778	J	ng/g	1.45	0.398	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.45	0.127	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.50		ng/g	1.45	0.149	1
Perfluoroundecanoic Acid (PFUnA)	2.54		ng/g	1.45	0.081	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.45	0.140	1
Perfluorooctanesulfonamide (FOSA)	0.614	J	ng/g	1.45	0.148	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.99		ng/g	1.45	0.130	1
Perfluorododecanoic Acid (PFDoA)	0.926	J	ng/g	1.45	0.124	1
Perfluorotridecanoic Acid (PFTrDA)	1.54		ng/g	1.45	0.090	1
Perfluorotetradecanoic Acid (PFTA)	0.422	J	ng/g	1.45	0.101	1
PFOA/PFOS, Total	12.8	J	ng/g	1.45	0.059	1
PFAS, Total (5)	16.0	J	ng/g	1.45	0.059	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**SAMPLE RESULTS**

Lab ID: L1918595-02  
 Client ID: Redacted\_20190502  
 Sample Location: COVENTRY, VT

Date Collected: 05/02/19 08:48  
 Date Received: 05/03/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			69			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			49	Q		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			69	Q		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			120			56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			69			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			68			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			73			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			66			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			110			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			69			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			68			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			68			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			116			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			21	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			36	Q		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			15			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			32	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			14	Q		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			47			26-160

Project Name: NEWSVT LANDFILL

Lab Number: L1918595

Project Number: 4536.00

Report Date: 05/17/19

## SAMPLE RESULTS

Lab ID: L1918595-03 D

Date Collected: 05/02/19 11:25

Client ID: Redacted\_20190502

Date Received: 05/03/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Extraction Method: EPA 537(M)

Analytical Method: 122,537(M)

Extraction Date: 05/08/19 17:06

Analytical Date: 05/11/19 01:20

Analyst: AJ

Percent Solids: 25%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	9.35	0.199	5
Perfluoropentanoic Acid (PFPeA)	0.271	J	ng/g	9.35	0.097	5
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	9.35	0.594	5
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	9.35	1.01	5
Perfluorohexanoic Acid (PFHxA)	2.00	J	ng/g	9.35	0.598	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	9.35	0.902	5
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	9.35	0.598	5
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	9.35	0.533	5
Perfluorooctanoic Acid (PFOA)	1.00	J	ng/g	9.35	0.384	5
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	9.35	1.85	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	9.35	1.27	5
Perfluorononanoic Acid (PFNA)	ND		ng/g	9.35	0.776	5
Perfluorooctanesulfonic Acid (PFOS)	2.66	J	ng/g	9.35	1.13	5
Perfluorodecanoic Acid (PFDA)	0.696	J	ng/g	9.35	0.673	5
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	9.35	2.57	5
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	9.35	0.823	5
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	6.56	J	ng/g	9.35	0.963	5
Perfluoroundecanoic Acid (PFUnA)	0.538	J	ng/g	9.35	0.524	5
Perfluorodecanesulfonic Acid (PFDS)	3.56	J	ng/g	9.35	0.907	5
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	9.35	0.958	5
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	8.42	J	ng/g	9.35	0.842	5
Perfluorododecanoic Acid (PFDoA)	0.902	J	ng/g	9.35	0.804	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	9.35	0.580	5
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	9.35	0.654	5
PFOA/PFOS, Total	3.66	J	ng/g	9.35	0.384	5
PFAS, Total (5)	3.66	J	ng/g	9.35	0.384	5

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**SAMPLE RESULTS**

Lab ID: L1918595-03 D  
 Client ID: Redacted\_20190502  
 Sample Location: COVENTRY, VT

Date Collected: 05/02/19 11:25  
 Date Received: 05/03/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>172</b>		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	119		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	115		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	120		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	106		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	108		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	85		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>52</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1918595**Project Number:** 4536.00**Report Date:** 05/17/19**SAMPLE RESULTS**

Lab ID: L1918595-03 D

Date Collected: 05/02/19 11:25

Client ID: Redacted\_20190502

Date Received: 05/03/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Extraction Method: EPA 537

Analytical Method: 122,537(M)

Extraction Date: 05/16/19 11:25

Analytical Date: 05/17/19 15:55

Analyst: AJ

Percent Solids: 25%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	19.2	3.59	10
Perfluoropentanoic Acid (PFPeA)	7.15	J	ng/l	19.2	4.46	10
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	19.2	3.65	10
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	19.2	4.69	10
Perfluorohexanoic Acid (PFHxA)	51.2		ng/l	19.2	4.73	10
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	19.2	2.29	10
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	19.2	3.58	10
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	19.2	4.19	10
Perfluorooctanoic Acid (PFOA)	12.7	J	ng/l	19.2	4.42	10
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.81	J	ng/l	19.2	1.86	10
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	19.2	5.00	10
Perfluorononanoic Acid (PFNA)	ND		ng/l	19.2	4.19	10
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	19.2	5.38	10
Perfluorodecanoic Acid (PFDA)	ND		ng/l	19.2	5.96	10
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	19.2	2.80	10
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	19.2	5.15	10
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	5.92	J	ng/l	19.2	2.41	10
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	19.2	4.08	10
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	19.2	3.71	10
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	19.2	5.35	10
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	19.2	3.58	10
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	19.2	5.69	10
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	19.2	3.02	10
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	19.2	9.50	10
PFOA/PFOS, Total	12.7	J	ng/l	19.2	4.42	10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1918595**Project Number:** 4536.00**Report Date:** 05/17/19**SAMPLE RESULTS**

Lab ID: L1918595-03 D

Date Collected: 05/02/19 11:25

Client ID: Redacted\_20190502

Date Received: 05/03/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	223		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	137		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	123		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	145		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	108		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	89		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>138</b>	Q	1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/09/19 20:29  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1234971-1					
Perfluorobutanoic Acid (PFBA)	0.116	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.005
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.032
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.054
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.032
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.048
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.032
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.029
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.099
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.042
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.060
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.036
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.138
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.044
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.052
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.028
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.049
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.051
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.045
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.043
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.031
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.035
PFOA/PFOS, Total	ND		ng/g	0.500	0.021
PFAS, Total (5)	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/09/19 20:29  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 05/08/19 17:06

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1234971-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	127		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	137		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	140		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/17/19 12:20  
Analyst: AJ  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 05/16/19 11:25

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1237876-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.373
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.464
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.380
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.488
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.492
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.238
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.372
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.436
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.460
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.05	J	ng/l	2.00	0.194
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.520
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.436
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.560
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.620
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	0.291
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	0.536
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.250
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.424
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.386
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.556
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.373
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.592
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.314
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	2.00	0.988
PFOA/PFOS, Total	ND		ng/l	2.00	0.460

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
 Analytical Date: 05/17/19 12:20  
 Analyst: AJ  
 TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
 Extraction Date: 05/16/19 11:25

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1237876-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	136		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	151		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	144		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	98		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	145		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	133		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	172	Q	47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	126		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	121		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	136		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	122		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	94		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	134		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	81		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/17/19 12:37  
Analyst: AJ  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 05/16/19 11:25

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1237876-2					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.79	0.334
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	0.416
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	0.340
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	0.437
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.79	0.441
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	0.213
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	0.333
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	0.391
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	0.412
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.627	J	ng/l	1.79	0.174
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	0.466
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	0.391
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	0.502
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	0.556
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	0.260
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.79	0.480
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.79	0.224
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	0.380
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.79	0.346
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.79	0.498
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.79	0.334
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	0.530
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.79	0.281
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	1.79	0.885
PFOA/PFOS, Total	ND		ng/l	1.79	0.412

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
 Analytical Date: 05/17/19 12:37  
 Analyst: AJ  
 TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
 Extraction Date: 05/16/19 11:25

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1237876-2					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	135		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	151		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	143		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	143		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	134		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	<b>170</b>	Q	47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	131		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	130		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	130		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	127		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	119		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1918595

Project Number: 4536.00

Report Date: 05/17/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1234971-2 WG1234971-3								
Perfluorobutanoic Acid (PFBA)	104		112		71-135	7		30
Perfluoropentanoic Acid (PFPeA)	99		108		69-132	9		30
Perfluorobutanesulfonic Acid (PFBS)	85		94		72-128	10		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	94		110		62-145	16		30
Perfluorohexanoic Acid (PFHxA)	108		115		70-132	6		30
Perfluoropentanesulfonic Acid (PFPeS)	87		100		73-123	14		30
Perfluoroheptanoic Acid (PFHpA)	99		109		71-131	10		30
Perfluorohexanesulfonic Acid (PFHxS)	85		97		67-130	13		30
Perfluorooctanoic Acid (PFOA)	98		106		69-133	8		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	108		119		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	105		123		70-132	16		30
Perfluorononanoic Acid (PFNA)	103		114		72-129	10		30
Perfluorooctanesulfonic Acid (PFOS)	87		99		68-136	13		30
Perfluorodecanoic Acid (PFDA)	105		115		69-133	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	89		121		65-137	30		30
Perfluorononanesulfonic Acid (PFNS)	105		116		69-125	10		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	90		100		63-144	11		30
Perfluoroundecanoic Acid (PFUnA)	91		100		64-136	9		30
Perfluorodecanesulfonic Acid (PFDS)	116		123		59-134	6		30
Perfluorooctanesulfonamide (FOSA)	123		108		67-137	13		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	91		99		61-139	8		30
Perfluorododecanoic Acid (PFDoA)	98		100		69-135	2		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1918595

Project Number: 4536.00

Report Date: 05/17/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1234971-2 WG1234971-3								
Perfluorotridecanoic Acid (PFTrDA)	92		102		66-139	10		30
Perfluorotetradecanoic Acid (PFTA)	102		112		69-133	9		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		97		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		110		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	154	Q	131		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		95		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		96		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	134		118		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	148		125		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		92		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		98		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	155		112		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	100		99		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		107		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		11		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		92		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		90		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		83		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1918595

Project Number: 4536.00

Report Date: 05/17/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1237876-3 WG1237876-4								
Perfluorobutanoic Acid (PFBA)	82		83		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	80		82		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	73		75		65-157	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	90		88		37-219	2		30
Perfluorohexanoic Acid (PFHxA)	92		96		69-168	4		30
Perfluoropentanesulfonic Acid (PFPeS)	75		74		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	88		89		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	76		80		69-177	5		30
Perfluorooctanoic Acid (PFOA)	88		91		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	72		83		49-187	14		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		88		61-179	3		30
Perfluorononanoic Acid (PFNA)	91		92		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	74		74		52-151	0		30
Perfluorodecanoic Acid (PFDA)	89		92		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	68		84		56-173	21		30
Perfluorononanesulfonic Acid (PFNS)	96		95		48-150	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	82		88		60-166	7		30
Perfluoroundecanoic Acid (PFUnA)	81		81		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	106		113		38-156	6		30
Perfluorooctanesulfonamide (FOSA)	83		85		46-170	2		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		76		45-170	17		30
Perfluorododecanoic Acid (PFDoA)	92		97		67-153	5		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1918595

Project Number: 4536.00

Report Date: 05/17/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1237876-3 WG1237876-4								
Perfluorotridecanoic Acid (PFTrDA)	91		98		48-158	7		30
Perfluorotetradecanoic Acid (PFTA)	94		97		59-182	3		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	136		134		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	145		142		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	148		148		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		105		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	146	Q	145		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	131		132		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	170	Q	176	Q	47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	125		126		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		101		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	123		129		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	135		141		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	127		128		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	107		109		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	106		100		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	128		125		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	86		97	Q	1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		98		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		102		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		92		33-143

## Matrix Spike Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1918595

**Project Number:** 4536.00

**Report Date:** 05/17/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1234971-4 QC Sample: L1918595-01 Client ID: Redacted_20190502												
Perfluorobutanoic Acid (PFBA)	ND	12.3	12.6	102		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.122J	12.3	12.5	102		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	12.3	13.0	106		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	12.3	13.0	106		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	0.547J	12.3	14.4	117		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	12.3	11.2	91		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	12.3	13.6	111		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	12.3	12.3	100		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	1.40J	12.3	14.7	120		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	12.3	12.8	104		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.467J	12.3	13.2	107		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.432J	12.3	14.7	120		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	18.0	12.3	27.0	73		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	0.994J	12.3	14.8	120		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	12.3	12.3	100		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	12.3	8.07	66	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.91	12.3	16.1	107		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.516J	12.3	13.0	106		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.39J	12.3	14.0	114		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	0.621J	12.3	14.4	117		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.11	12.3	19.1	122		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	0.713J	12.3	14.8	120		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1918595

**Project Number:** 4536.00

**Report Date:** 05/17/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1234971-4 QC Sample: L1918595-01 Client ID: Redacted_20190502												
Perfluorotridecanoic Acid (PFTrDA)	0.320J	12.3	14.2	116		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	0.336J	12.3	16.3	133		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	47				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128				56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	121				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	131				45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	81				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>46</b>	Q			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	78				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	<b>60</b>	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>66</b>	Q			70-151

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1918595

Report Date: 05/17/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1234971-5 QC Sample: L1918595-02 Client ID: Redacted_20190502						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	1.18J	1.28J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	1.02J	1.11J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	3.22	3.23	ng/g	0		30
Perfluorooctanesulfonic Acid (PFOS)	11.8	14.6	ng/g	21		30
Perfluorodecanoic Acid (PFDA)	0.898J	0.905J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.778J	0.437J	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.50	2.74	ng/g	24		30
Perfluoroundecanoic Acid (PFUnA)	2.54	2.35	ng/g	8		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	0.614J	0.654J	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1234971-5 QC Sample: L1918595-02 Client ID: Redacted_20190502						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.99	5.00	ng/g	22		30
Perfluorododecanoic Acid (PFDoA)	0.926J	0.642J	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	1.54	1.12J	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.422J	0.405J	ng/g	NC		30
PFOA/PFOS, Total	12.8J	15.7J	ng/g	NC		30
PFAS, Total (5)	16.0J	18.9J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	69		71		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	49	Q	46	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	69	Q	96		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120		179	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		70		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	68		68		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	73		117		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		70		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	110		178		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	69		63		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	68		86		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68		73		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	116		167		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	21	Q	20	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	36	Q	37	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		13		1-125



**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1234971-5 QC Sample: L1918595-02 Client ID: Redacted_20190502						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	32	Q	29	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	14	Q	20	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		40		26-160



# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**SAMPLE RESULTS**

**Lab ID:** L1918595-01  
**Client ID:** Redacted\_20190502  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/02/19 08:33  
**Date Received:** 05/03/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	19.6		%	0.100	0.100	1	-	05/07/19 03:16	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**SAMPLE RESULTS**

**Lab ID:** L1918595-02  
**Client ID:** Redacted\_20190502  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/02/19 08:48  
**Date Received:** 05/03/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	34.3		%	0.100	0.100	1	-	05/07/19 03:16	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

**SAMPLE RESULTS**

**Lab ID:** L1918595-03  
**Client ID:** Redacted\_20190502  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/02/19 11:25  
**Date Received:** 05/03/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	24.7		%	0.100	0.100	1	-	05/07/19 03:16	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1918595

Report Date: 05/17/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1234227-1 QC Sample: L1918430-01 Client ID: DUP Sample						
Solids, Total	95.6	95.1	%	1		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1918595**Project Number:** 4536.00**Report Date:** 05/17/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1918595-01A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(28)
L1918595-01B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		A2-TS(7)
L1918595-02A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(28)
L1918595-02B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		A2-TS(7)
L1918595-03A	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		A2-537-ISOTOPE(28)
L1918595-03B	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		A2-TS(7)
L1918595-03C	Plastic 8oz unpreserved	A	NA		3.2	Y	Absent		-
L1918595-03D	Plastic 2oz unpreserved for TS	A	NA		3.2	Y	Absent		A2-TS(7)
L1918595-03X	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1918595-03X1	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1918595-03X2	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1918595-03X3	Plastic 250ml unpreserved Extracts	NA	NA			Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1918595-03X9	Tumble Vessel	NA	NA			Y	Absent		-



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1918595  
**Report Date:** 05/17/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 1 OF 1

8 Walkup Drive Westboro, MA 01581 Tel: 508-898-9220  
 320 Forbes Blvd Mansfield, MA 02048 Tel: 508-822-9300

Date Rec'd in Lab: 5/4/19

ALPHA Job #: 21918595

## Project Information

Project Name: NEWSVT Landfill

Project Location: Coventry, VT

Project #: 4536.00

Project Manager: Matt Estabrooks

ALPHA Quote #:

## Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)

Date Due:

## Report Information - Data Deliverables

ADEX  EMAIL

## Billing Information

Same as Client info PO #: 4536.00

## Regulatory Requirements & Project Information Requirements

- Yes  No MA MCP Analytical Methods
- Yes  No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
- Yes  No GW1 Standards (Info Required for Metals & EPH with Targets)
- Yes  No NPDES RGP
- Other State /Fed Program
- Yes  No CT RGP Analytical Methods

## Client Information

Client: Sanborn, Head & Associates

Address: 187 Saint Paul Street

Suite 4-C, Burlington, VT 05401

Phone: 802-391-8504

Email: mestabrooks@sanbornhead.com

Additional Project Information:

ANALYSIS	VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 824 <input type="checkbox"/> S242
	SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH
	METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15
	METALS: <input type="checkbox"/> RCRA5 <input type="checkbox"/> RCRA8 <input type="checkbox"/> PP13
	EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only
	VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only
	PCB <input type="checkbox"/> PEST
	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint
	TS-SM 2540
	EPA-537(M) - Isotopes
	SPLP PFAS-537
	SAMPLE INFO
	Filtration
	<input type="checkbox"/> Field <input type="checkbox"/> Lab to do
	Preservation
	<input type="checkbox"/> Lab to do
	TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials	VOC	SVOC	METALS	METALS	EPH	VPH	PCB	TPH	Fingerprint	Sample Comments	TOTAL # BOTTLES
		Date	Time													
918545-01	[REDACTED]	20190502	5/2/19 0833	Sludge	LET										X X	2
-02	[REDACTED]	20190502	5/2/19 0848	Sludge	LET										X X	2
-03	[REDACTED]	20190502	5/2/19 1125	Sludge	LET										X X X X	4

## Container Type

- P= Plastic
- A= Amber glass
- V= Vial
- G= Glass
- B= Bacteria cup
- C= Cube
- O= Other
- E= Encore
- D= BOD Bottle

## Preservative

- A= None
- B= HCl
- C= HNO<sub>3</sub>
- D= H<sub>2</sub>SO<sub>4</sub>
- E= NaOH
- F= MeOH
- G= NaHSO<sub>4</sub>
- H= Na<sub>2</sub>S<sub>2</sub>O<sub>8</sub>
- I= Ascorbic Acid
- J= NH<sub>4</sub>Cl
- K= Zn Acetate
- O= Other

## Container Type

## Preservative

## Relinquished By:

Tim Pest  
 [Signature]

## Date/Time

5/3/19 13:50  
 5/3/19 17:20  
 05/04/19 05:10

## Received By:

[Signature]

## Date/Time

5/3/19 13:50  
 05/03/19 17:20  
 5/4/19 05:10

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)



## ANALYTICAL REPORT

Lab Number:	L1919451
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	05/23/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1919451-01	Redacted_20190507	SLUDGE	COVENTRY, VT	05/07/19 07:35	05/09/19
L1919451-02	FD_Redacted_20190507	SLUDGE	COVENTRY, VT	05/07/19 07:35	05/09/19
L1919451-03	Redacted_20190507	SLUDGE	COVENTRY, VT	05/07/19 09:23	05/09/19



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1919451-01 through -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1236904-2/-3 LCS/LCSD recovery, associated with L1919451-01 through -03, is above the acceptance criteria for perfluorononanesulfonic acid (pfns) (137%-LCSD only) and perfluorodecanesulfonic acid (pfd) (145%/156%); however, the associated samples are non-detect to the RL for this target analyte.


The results of the original analysis are reported.

The WG1236904-4 MS recoveries, performed on L1919451-01, are outside the acceptance criteria for perfluorodecanesulfonic acid (pfd) (141%) and perfluorotetradecanoic acid (pfta) (140%).

WG1236904-4 and WG1236904-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 05/23/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

**Lab ID:** L1919451-01  
**Client ID:** Redacted\_20190507  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/07/19 07:35  
**Date Received:** 05/09/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/16/19 22:12  
**Analyst:** AJ  
**Percent Solids:** 15%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 05/14/19 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	2.87	0.061	1
Perfluoropentanoic Acid (PFPeA)	1.16	J	ng/g	2.87	0.030	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.87	0.182	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.87	0.310	1
Perfluorohexanoic Acid (PFHxA)	3.42		ng/g	2.87	0.184	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.87	0.277	1
Perfluoroheptanoic Acid (PFHpA)	0.213	J	ng/g	2.87	0.184	1
Perfluorohexanesulfonic Acid (PFHxS)	0.974	J	ng/g	2.87	0.164	1
Perfluorooctanoic Acid (PFOA)	3.72		ng/g	2.87	0.118	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.08	J	ng/g	2.87	0.569	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.87	0.391	1
Perfluorononanoic Acid (PFNA)	0.471	J	ng/g	2.87	0.238	1
Perfluorooctanesulfonic Acid (PFOS)	14.1		ng/g	2.87	0.346	1
Perfluorodecanoic Acid (PFDA)	3.38		ng/g	2.87	0.207	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.908	J	ng/g	2.87	0.790	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.87	0.253	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	6.30		ng/g	2.87	0.296	1
Perfluoroundecanoic Acid (PFUnA)	0.588	J	ng/g	2.87	0.161	1
Perfluorodecanesulfonic Acid (PFDS)	2.33	J	ng/g	2.87	0.279	1
Perfluorooctanesulfonamide (FOSA)	0.786	J	ng/g	2.87	0.294	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	11.6		ng/g	2.87	0.258	1
Perfluorododecanoic Acid (PFDoA)	1.48	J	ng/g	2.87	0.247	1
Perfluorotridecanoic Acid (PFTrDA)	0.310	J	ng/g	2.87	0.178	1
Perfluorotetradecanoic Acid (PFTA)	0.710	J	ng/g	2.87	0.201	1
PFOA/PFOS, Total	17.8		ng/g	2.87	0.118	1
PFAS, Total (5)	19.5	J	ng/g	2.87	0.118	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

Lab ID: L1919451-01  
 Client ID: Redacted\_20190507  
 Sample Location: COVENTRY, VT

Date Collected: 05/07/19 07:35  
 Date Received: 05/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	67		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>157</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	176		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>262</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>183</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	130		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>52</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	38		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1919451**Project Number:** 4536.00**Report Date:** 05/23/19**SAMPLE RESULTS**

Lab ID: L1919451-02  
 Client ID: FD\_Redacted\_20190507  
 Sample Location: COVENTRY, VT

Date Collected: 05/07/19 07:35  
 Date Received: 05/09/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/16/19 22:45  
 Analyst: AJ  
 Percent Solids: 15%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/14/19 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	2.94	0.063	1
Perfluoropentanoic Acid (PFPeA)	1.12	J	ng/g	2.94	0.030	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.94	0.186	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.94	0.317	1
Perfluorohexanoic Acid (PFHxA)	3.27		ng/g	2.94	0.188	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.94	0.283	1
Perfluoroheptanoic Acid (PFHpA)	0.195	J	ng/g	2.94	0.188	1
Perfluorohexanesulfonic Acid (PFHxS)	1.05	J	ng/g	2.94	0.167	1
Perfluorooctanoic Acid (PFOA)	3.44		ng/g	2.94	0.120	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.07	J	ng/g	2.94	0.582	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.94	0.400	1
Perfluorononanoic Acid (PFNA)	0.460	J	ng/g	2.94	0.244	1
Perfluorooctanesulfonic Acid (PFOS)	14.0		ng/g	2.94	0.354	1
Perfluorodecanoic Acid (PFDA)	3.07		ng/g	2.94	0.212	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	2.94	0.808	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.94	0.258	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	6.55		ng/g	2.94	0.302	1
Perfluoroundecanoic Acid (PFUnA)	0.571	J	ng/g	2.94	0.164	1
Perfluorodecanesulfonic Acid (PFDS)	2.36	J	ng/g	2.94	0.285	1
Perfluorooctanesulfonamide (FOSA)	0.696	J	ng/g	2.94	0.301	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	10.7		ng/g	2.94	0.264	1
Perfluorododecanoic Acid (PFDoA)	1.36	J	ng/g	2.94	0.253	1
Perfluorotridecanoic Acid (PFTrDA)	0.369	J	ng/g	2.94	0.182	1
Perfluorotetradecanoic Acid (PFTA)	0.683	J	ng/g	2.94	0.206	1
PFOA/PFOS, Total	17.4		ng/g	2.94	0.120	1
PFAS, Total (5)	19.1	J	ng/g	2.94	0.120	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

Lab ID: L1919451-02  
 Client ID: FD\_Redacted\_20190507  
 Sample Location: COVENTRY, VT

Date Collected: 05/07/19 07:35  
 Date Received: 05/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	164	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	205	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	261	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	144	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	44	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

**Lab ID:** L1919451-03  
**Client ID:** Redacted\_20190507  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/07/19 09:23  
**Date Received:** 05/09/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge 122,537(M)  
**Analytical Method:** 05/16/19 23:18 AJ  
**Analytical Date:**  
**Analyst:**  
**Percent Solids:** 41%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 05/14/19 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.22	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.22	0.013	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.22	0.077	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.22	0.131	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.22	0.078	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.22	0.117	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.22	0.078	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.22	0.069	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.22	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.84		ng/g	1.22	0.241	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.22	0.165	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.22	0.101	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.22	0.146	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.22	0.088	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.22	0.334	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.22	0.107	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.22	0.125	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.22	0.068	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.22	0.118	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.22	0.125	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.22	0.109	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.22	0.105	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.22	0.075	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.22	0.085	1
PFOA/PFOS, Total	ND		ng/g	1.22	0.050	1
PFAS, Total (5)	ND		ng/g	1.22	0.050	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

Lab ID: L1919451-03  
 Client ID: Redacted\_20190507  
 Sample Location: COVENTRY, VT

Date Collected: 05/07/19 09:23  
 Date Received: 05/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	57	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	42	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	71		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	199	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	48	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	48	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	55	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	175		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	59	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	67		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	61	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	290	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	118		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	64		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	20		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	96		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	41		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/16/19 20:32  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 05/14/19 12:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1236904-1					
Perfluorobutanoic Acid (PFBA)	0.098	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.005
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.032
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.054
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.032
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.048
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.032
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.029
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.104	J	ng/g	0.500	0.099
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.042
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.060
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.036
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.138
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.044
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.052
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.028
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.049
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.051
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.045
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.043
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.031
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.035
PFOA/PFOS, Total	ND		ng/g	0.500	0.021
PFAS, Total (5)	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/16/19 20:32  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 05/14/19 12:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1236904-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	123		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	144		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	59		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1919451

Project Number: 4536.00

Report Date: 05/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1236904-2 WG1236904-3								
Perfluorobutanoic Acid (PFBA)	109		110		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	102		102		69-132	0		30
Perfluorobutanesulfonic Acid (PFBS)	97		98		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	107		108		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	120		122		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	91		96		73-123	5		30
Perfluoroheptanoic Acid (PFHpA)	114		112		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	98		99		67-130	1		30
Perfluorooctanoic Acid (PFOA)	113		114		69-133	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	96		100		64-140	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	111		124		70-132	11		30
Perfluorononanoic Acid (PFNA)	114		117		72-129	3		30
Perfluorooctanesulfonic Acid (PFOS)	95		107		68-136	12		30
Perfluorodecanoic Acid (PFDA)	121		121		69-133	0		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	100		99		65-137	1		30
Perfluorononanesulfonic Acid (PFNS)	120		137	Q	69-125	13		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	108		108		63-144	0		30
Perfluoroundecanoic Acid (PFUnA)	108		106		64-136	2		30
Perfluorodecanesulfonic Acid (PFDS)	145	Q	156	Q	59-134	7		30
Perfluorooctanesulfonamide (FOSA)	114		118		67-137	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	120		107		61-139	11		30
Perfluorododecanoic Acid (PFDoA)	117		117		69-135	0		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1919451

Project Number: 4536.00

Report Date: 05/23/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1236904-2 WG1236904-3								
Perfluorotridecanoic Acid (PFTTrDA)	114		114		66-139	0		30
Perfluorotetradecanoic Acid (PFTA)	122		126		69-133	3		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		102		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		105		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		114		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75		76		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	113		113		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		104		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	141		134		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		97		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	60		64		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		92		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		103		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		99		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		69		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		87		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		101		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	51		8		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		81		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		88		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		74		26-160



## Matrix Spike Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1919451

**Project Number:** 4536.00

**Report Date:** 05/23/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1236904-4 QC Sample: L1919451-01 Client ID: Redacted_20190507												
Perfluorobutanoic Acid (PFBA)	ND	15.2	17.0	111		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	1.16J	15.2	17.1	112		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	15.2	15.6	102		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	15.2	16.0	105		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	3.42	15.2	22.5	125		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	15.2	14.5	95		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.213J	15.2	18.0	118		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.974J	15.2	15.7	103		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	3.72	15.2	21.4	116		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.08J	15.2	16.1	106		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	15.2	16.7	109		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.471J	15.2	18.9	124		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	14.1	15.2	26.9	84		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	3.38	15.2	21.7	120		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.908J	15.2	16.3	107		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	15.2	17.6	115		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	6.30	15.2	22.8	108		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.588J	15.2	17.0	111		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	2.33J	15.2	21.5	141	Q	-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	0.786J	15.2	17.9	117		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	11.6	15.2	29.3	116		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	1.48J	15.2	20.0	131		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1919451

**Project Number:** 4536.00

**Report Date:** 05/23/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1236904-4 QC Sample: L1919451-01 Client ID: Redacted_20190507												
Perfluorotridecanoic Acid (PFTrDA)	0.310J	15.2	15.6	102		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	0.710J	15.2	21.3	140	Q	-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	286	Q			25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	157	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	201	Q			32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	140	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUDA)	91				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	55	Q			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	38				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	92				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	61	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	40				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83				70-151

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1919451

Report Date: 05/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1236904-5 QC Sample: L1919451-02 Client ID: FD_Redacted_20190507						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	1.12J	1.09J	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	3.27	3.34	ng/g	2		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.195J	0.203J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	1.05J	1.18J	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	3.44	3.41	ng/g	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.07J	3.86	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	0.460J	0.434J	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	14.0	13.7	ng/g	2		30
Perfluorodecanoic Acid (PFDA)	3.07	3.11J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	0.864J	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	6.55	6.07	ng/g	8		30
Perfluoroundecanoic Acid (PFUnA)	0.571J	0.586J	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	2.36J	2.03J	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	0.696J	0.970J	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1236904-5 QC Sample: L1919451-02 Client ID: FD_Redacted_20190507						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	10.7	11.2	ng/g	5		30
Perfluorododecanoic Acid (PFDoA)	1.36J	1.21J	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	0.369J	0.544J	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.683J	0.621J	ng/g	NC		30
PFOA/PFOS, Total	17.4	17.1	ng/g	0		30
PFAS, Total (5)	19.1J	18.9J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		98		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59	Q	63	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		87		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	164	Q	161	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	80		79		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130		116		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		94		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	205	Q	194	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		97		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		95		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	261	Q	272	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	144	Q	142	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		95		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		41		1-125

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1236904-5 QC Sample: L1919451-02 Client ID: FD_Redacted_20190507						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		86		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	44	Q	45	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		47		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

**Lab ID:** L1919451-01  
**Client ID:** Redacted\_20190507  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/07/19 07:35  
**Date Received:** 05/09/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	15.1		%	0.100	0.100	1	-	05/14/19 01:46	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

**Lab ID:** L1919451-02  
**Client ID:** FD\_Redacted\_20190507  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/07/19 07:35  
**Date Received:** 05/09/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	15.3		%	0.100	0.100	1	-	05/14/19 01:46	121,2540G	CC





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

**SAMPLE RESULTS**

**Lab ID:** L1919451-03  
**Client ID:** Redacted\_20190507  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/07/19 09:23  
**Date Received:** 05/09/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	40.8		%	0.100	0.100	1	-	05/14/19 01:46	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1919451

Report Date: 05/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1236736-1 QC Sample: L1919123-01 Client ID: DUP Sample						
Solids, Total	87.0	87.3	%	0		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1919451**Project Number:** 4536.00**Report Date:** 05/23/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1919451-01A	Plastic 2oz unpreserved for TS	A	NA		1.8	Y	Absent		A2-TS(7)
L1919451-01B	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(28)
L1919451-02A	Plastic 2oz unpreserved for TS	A	NA		1.8	Y	Absent		A2-TS(7)
L1919451-02B	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(28)
L1919451-03A	Plastic 2oz unpreserved for TS	A	NA		1.8	Y	Absent		A2-TS(7)
L1919451-03B	Plastic 8oz unpreserved	A	NA		1.8	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1919451  
**Report Date:** 05/23/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 5/10/19

ALPHA Job #: L1919451

B Walkup Drive Westboro, MA 01581 Tel: 508-898-8220  
 320 Forbes Blvd Mansfield, MA 02048 Tel: 508-822-8300

### Project Information

Project Name: **NEWSVT Landfill**  
 Project Location: **Coventry, VT**  
 Project #: **4536.00**  
 Project Manager: **Matt Estabrooks**  
 ALPHA Quote #:

### Report Information - Data Deliverables

ADEx  EMAIL

### Billing Information

Same as Client Info PO #: **4536.00**

### Client Information

Client: **Sanborn, Head & Assoc**  
 Address: **187 Saint Paul Street**  
**Suite 4-C, Burlington, VT 05401**  
 Phone: **802-391-8504**  
 Email: **mestabrooks@sanbornhead.com**

### Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)  
 Date Due:

### Regulatory Requirements & Project Information Requirements

Yes  No MA MCP Analytical Methods  Yes  No CT RCP Analytical Methods  
 Yes  No Matrix Spike Required on this SDG? (Required for MCP Inorganics)  
 Yes  No GW1 Standards (Info Required for Metals & EPH with Targets)  
 Yes  No NPDES RGP  
 Other State /Fed Program Criteria

ANALYSIS		SAMPLE INFO Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do	TOTAL # BOTTLES
VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 5242			
SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH			
METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15			
EPH: <input type="checkbox"/> RCRA5 <input type="checkbox"/> RCRA8			
VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only			
<input type="checkbox"/> PCB <input type="checkbox"/> PEST			
TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint			
TS-5M 2540 EPA-537(M)-Isotopes Dilution			
Sample Comments			

### Additional Project Information:

EQUIS EOD needed.

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler Initials	ANALYSIS		Sample Comments	TOTAL # BOTTLES
		Date	Time			VOC	SVOC		
19457.01	[REDACTED] 20190507	5-7-19	7:35am	Sudge	MEE				2
02	FD-[REDACTED] 20190507	↓	7:35am	↓	↓				2
03	[REDACTED] 20190507	↓	9:23am	↓	↓				2

<b>Container Type</b> P= Plastic A= Amber glass V= Vial G= Glass B= Bacteria cup C= Cube O= Other E= Encore D= BOD Bottle	<b>Preservative</b> A= None B= HCl C= HNO <sub>3</sub> D= H <sub>2</sub> SO <sub>4</sub> E= NaOH F= MeOH G= NaHSO <sub>4</sub> H= Na <sub>2</sub> S <sub>2</sub> O <sub>5</sub> I= Ascorbic Acid J= NH <sub>4</sub> Cl K= Zn Acetate O= Other	<b>Container Type</b> _____ <b>Preservative</b> _____
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Relinquished By: 	Date/Time: 5-8-19/16:45 5/8/19 16:53 05/10/19 07:00	Received By: 	Date/Time: 5/8/19 13:32 5/10/19 01:45 5/10/19 07:00	All samples submitted are subject to Alpha's Terms and Conditions. See reverse side. FORM NO: 01-01 (rev. 12-Mar-2012)
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## ANALYTICAL REPORT

Lab Number:	L1920015
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	05/29/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1920015-01	Redacted_20190510	SLUDGE	COVENTRY, VT	05/10/19 09:11	05/14/19
L1920015-02	Redacted_20190510	SLUDGE	COVENTRY, VT	05/10/19 11:24	05/14/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Semivolatile Organics

WG1241729-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1241729-6 is the SPLP Extraction Blank

#### Perfluorinated Alkyl Acids by Isotope Dilution


L1920015-01 and -02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1240039-4 and WG1240039-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1240039-4 MS recoveries, performed on L1920015-01, are outside the acceptance criteria for perfluoropentanoic acid (pfpea) (62%) and perfluoropentanesulfonic acid (pfpes) (68%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Elizabeth Porta

Title: Technical Director/Representative

Date: 05/29/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

**Lab ID:** L1920015-01  
**Client ID:** Redacted\_20190510  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/10/19 09:11  
**Date Received:** 05/14/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/24/19 19:45  
**Analyst:** AJ  
**Percent Solids:** 24%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	4.90		ng/g	2.04	0.046	1
Perfluoropentanoic Acid (PFPeA)	24.9		ng/g	2.04	0.094	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.04	0.079	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.04	0.131	1
Perfluorohexanoic Acid (PFHxA)	43.4		ng/g	2.04	0.107	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.04	0.170	1
Perfluoroheptanoic Acid (PFHpA)	4.34		ng/g	2.04	0.092	1
Perfluorohexanesulfonic Acid (PFHxS)	2.78		ng/g	2.04	0.123	1
Perfluorooctanoic Acid (PFOA)	8.83		ng/g	2.04	0.085	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	2.04	0.365	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.04	0.278	1
Perfluorononanoic Acid (PFNA)	2.00	J	ng/g	2.04	0.153	1
Perfluorooctanesulfonic Acid (PFOS)	12.4		ng/g	2.04	0.265	1
Perfluorodecanoic Acid (PFDA)	9.80		ng/g	2.04	0.136	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.86	J	ng/g	2.04	0.584	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.04	0.609	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	7.05		ng/g	2.04	0.410	1
Perfluoroundecanoic Acid (PFUnA)	0.868	J	ng/g	2.04	0.095	1
Perfluorodecanesulfonic Acid (PFDS)	0.694	J	ng/g	2.04	0.312	1
Perfluorooctanesulfonamide (FOSA)	1.91	J	ng/g	2.04	0.200	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	7.78		ng/g	2.04	0.172	1
Perfluorododecanoic Acid (PFDoA)	2.32		ng/g	2.04	0.142	1
Perfluorotridecanoic Acid (PFTrDA)	0.858	J	ng/g	2.04	0.416	1
Perfluorotetradecanoic Acid (PFTA)	0.662	J	ng/g	2.04	0.110	1
PFOA/PFOS, Total	21.2		ng/g	2.04	0.085	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

Lab ID: L1920015-01  
 Client ID: Redacted\_20190510  
 Sample Location: COVENTRY, VT

Date Collected: 05/10/19 09:11  
 Date Received: 05/14/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	95		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	49	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	68	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	128		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	71		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	147		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	122		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	144		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	253	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	133		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	127		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

**Lab ID:** L1920015-01  
**Client ID:** Redacted\_20190510  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/10/19 09:11  
**Date Received:** 05/14/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/29/19 10:20  
**Analyst:** AJ  
**Percent Solids:** 24%

**Extraction Method:** EPA 537  
**Extraction Date:** 05/28/19 12:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	48.6		ng/l	1.87	0.382	1
Perfluoropentanoic Acid (PFPeA)	279		ng/l	1.87	0.371	1
Perfluorobutanesulfonic Acid (PFBS)	4.26		ng/l	1.87	0.223	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	0.423	1
Perfluorohexanoic Acid (PFHxA)	432		ng/l	1.87	0.307	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	0.230	1
Perfluoroheptanoic Acid (PFHpA)	46.2		ng/l	1.87	0.211	1
Perfluorohexanesulfonic Acid (PFHxS)	42.9		ng/l	1.87	0.352	1
Perfluorooctanoic Acid (PFOA)	77.8		ng/l	1.87	0.221	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	1.25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.644	1
Perfluorononanoic Acid (PFNA)	10.2		ng/l	1.87	0.292	1
Perfluorooctanesulfonic Acid (PFOS)	27.7		ng/l	1.87	0.472	1
Perfluorodecanoic Acid (PFDA)	13.1		ng/l	1.87	0.285	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.71		ng/l	1.87	1.13	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.87	1.05	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.29		ng/l	1.87	0.607	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.243	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.87	0.918	1
Perfluorooctanesulfonamide (FOSA)	0.846	J	ng/l	1.87	0.543	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.82	J	ng/l	1.87	0.753	1
Perfluorododecanoic Acid (PFDoA)	0.374	J	ng/l	1.87	0.348	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	0.306	1
Perfluorotetradecanoic Acid (PFTA)	0.393	J	ng/l	1.87	0.232	1
PFOA/PFOS, Total	106		ng/l	1.87	0.221	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

**Lab ID:** L1920015-01  
**Client ID:** Redacted\_20190510  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/10/19 09:11  
**Date Received:** 05/14/19  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	59		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	202		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	124		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	204		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	150		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

Lab ID: L1920015-02  
 Client ID: Redacted\_20190510  
 Sample Location: COVENTRY, VT

Date Collected: 05/10/19 11:24  
 Date Received: 05/14/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge 122,537(M)  
 Analytical Method: 05/24/19 20:18 AJ  
 Analytical Date:  
 Analyst:  
 Percent Solids: 58%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.862	0.020	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.862	0.040	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.862	0.034	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.862	0.056	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.862	0.045	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.862	0.072	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.862	0.039	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.862	0.052	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.862	0.036	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.862	0.155	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.862	0.118	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.862	0.065	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.862	0.112	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.862	0.058	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.862	0.247	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.862	0.258	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.862	0.174	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.862	0.040	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.862	0.132	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.862	0.085	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.862	0.073	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.862	0.060	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.862	0.176	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.862	0.047	1
PFOA/PFOS, Total	ND		ng/g	0.862	0.036	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

Lab ID: L1920015-02  
 Client ID: Redacted\_20190510  
 Sample Location: COVENTRY, VT

Date Collected: 05/10/19 11:24  
 Date Received: 05/14/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>65</b>	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>156</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	73		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	65		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	118		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/24/19 18:55  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1240039-1					
Perfluorobutanoic Acid (PFBA)	0.093	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.035
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.027
PFOA/PFOS, Total	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/24/19 18:55  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1240039-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	135		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	123		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	142		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	113		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/29/19 09:14  
Analyst: AJ  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 05/28/19 12:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1241729-1					
Perfluorobutanoic Acid (PFBA)	0.455	J	ng/l	1.79	0.366
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	0.355
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	0.213
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	0.405
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.79	0.294
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	0.220
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	0.202
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	0.337
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	0.211
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.79	1.19
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	0.616
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	0.280
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	0.452
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	0.272
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	1.09
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.79	1.00
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.79	0.581
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	0.233
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.79	0.878
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.79	0.520
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.79	0.720
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	0.333
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.79	0.293
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.79	0.222
PFOA/PFOS, Total	ND		ng/l	1.79	0.211

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 05/29/19 09:14  
Analyst: AJ  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 05/28/19 12:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1241729-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	109		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	122		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/29/19 09:30  
Analyst: AJ  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 05/28/19 12:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1241729-6					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/29/19 09:30  
Analyst: AJ  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 05/28/19 12:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1241729-6					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	120		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	132		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	71		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920015

Project Number: 4536.00

Report Date: 05/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1240039-2 WG1240039-3								
Perfluorobutanoic Acid (PFBA)	92		92		71-135	4		30
Perfluoropentanoic Acid (PFPeA)	90		89		69-132	8		30
Perfluorobutanesulfonic Acid (PFBS)	87		89		72-128	8		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	90		90		62-145	11		30
Perfluorohexanoic Acid (PFHxA)	101		101		70-132	9		30
Perfluoropentanesulfonic Acid (PFPeS)	87		86		73-123	10		30
Perfluoroheptanoic Acid (PFHpA)	98		94		71-131	8		30
Perfluorohexanesulfonic Acid (PFHxS)	89		85		67-130	14		30
Perfluorooctanoic Acid (PFOA)	95		95		69-133	9		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	79		82		64-140	11		30
Perfluoroheptanesulfonic Acid (PFHpS)	94		102		70-132	3		30
Perfluorononanoic Acid (PFNA)	102		99		72-129	8		30
Perfluorooctanesulfonic Acid (PFOS)	78		80		68-136	7		30
Perfluorodecanoic Acid (PFDA)	101		100		69-133	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	92		82		65-137	18		30
Perfluorononanesulfonic Acid (PFNS)	96		105		69-125	9		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	92		99		63-144	14		30
Perfluoroundecanoic Acid (PFUnA)	88		90		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	107		113		59-134	1		30
Perfluorooctanesulfonamide (FOSA)	86		105		67-137	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		90		61-139	21		30
Perfluorododecanoic Acid (PFDoA)	100		103		69-135	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920015

Project Number: 4536.00

Report Date: 05/29/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1240039-2 WG1240039-3								
Perfluorotridecanoic Acid (PFTTrDA)	101		101		66-139	12		30
Perfluorotetradecanoic Acid (PFTA)	113		108		69-133	6		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		113		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		111		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132		133		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	108		114		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	134		134		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	121		122		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	138		143		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	110		109		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94		92		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		104		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		112		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112		110		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88		99		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93		90		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		114		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		81		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		98		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		81		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920015

Project Number: 4536.00

Report Date: 05/29/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1241729-2 WG1241729-3								
Perfluorobutanoic Acid (PFBA)	99		98		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	97		98		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	95		95		65-157	0		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		95		37-219	9		30
Perfluorohexanoic Acid (PFHxA)	109		114		69-168	4		30
Perfluoropentanesulfonic Acid (PFPeS)	93		91		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	106		107		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	96		93		69-177	3		30
Perfluorooctanoic Acid (PFOA)	104		107		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	97		94		49-187	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	110		123		61-179	11		30
Perfluorononanoic Acid (PFNA)	107		108		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	93		100		52-151	7		30
Perfluorodecanoic Acid (PFDA)	107		110		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	77		86		56-173	11		30
Perfluorononanesulfonic Acid (PFNS)	112		118		48-150	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		90		60-166	11		30
Perfluoroundecanoic Acid (PFUnA)	102		93		60-153	9		30
Perfluorodecanesulfonic Acid (PFDS)	135		125		38-156	8		30
Perfluorooctanesulfonamide (FOSA)	106		111		46-170	5		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	122		104		45-170	16		30
Perfluorododecanoic Acid (PFDoA)	105		110		67-153	5		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920015

Project Number: 4536.00

Report Date: 05/29/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1241729-2 WG1241729-3								
Perfluorotridecanoic Acid (PFTTrDA)	130		124		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	113		115		59-182	2		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	117		116		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		126		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		121		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	133		132		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	116		118		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	139		141		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	108		107		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		92		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		108		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		109		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		90		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		96		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		108		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	66		77		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		82		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		75		33-143

## Matrix Spike Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1920015

**Project Number:** 4536.00

**Report Date:** 05/29/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1240039-4 QC Sample: L1920015-01 Client ID: Redacted_20190510												
Perfluorobutanoic Acid (PFBA)	4.90	9.2	12.7	85		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	24.9	9.2	30.6	62	Q	-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	9.2	8.10	88		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	9.2	7.91	86		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	43.4	9.2	52.6	100		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	9.2	6.23	68	Q	-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	4.34	9.2	12.9	93		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	2.78	9.2	10.7	86		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	8.83	9.2	17.0	89		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	9.2	7.60	83		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	9.2	8.07	88		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	2.00J	9.2	10.9	119		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	12.4	9.2	19.1	73		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	9.80	9.2	18.5	95		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.86J	9.2	9.43	103		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	9.2	8.70	95		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	7.05	9.2	15.1	88		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.868J	9.2	8.73	95		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	0.694J	9.2	9.90	108		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	1.91J	9.2	11.2	122		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	7.78	9.2	13.6	63		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	2.32	9.2	11.3	98		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1920015

**Project Number:** 4536.00

**Report Date:** 05/29/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1240039-4 QC Sample: L1920015-01 Client ID: Redacted_20190510												
Perfluorotridecanoic Acid (PFTrDA)	0.858J	9.2	10.4	113		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	0.662J	9.2	10.4	113		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	192	Q			25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	115				56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	167				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	201	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUDA)	96				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	96				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	47	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	119				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	63	Q			70-151



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1920015

**Project Number:** 4536.00

**Report Date:** 05/29/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Redacted_20190510												
				Associated sample(s): 01		QC Batch ID: WG1241729-4			QC Sample: L1920015-01		Client ID:	
Perfluorobutanoic Acid (PFBA)	48.6	38.2	85.6	97		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	279	38.2	320	107		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	4.26	38.2	39.3	92		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	38.2	34.9	91		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	432	38.2	467	92		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	38.2	27.8	73		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	46.2	38.2	85.8	104		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	42.9	38.2	78.5	93		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	77.8	38.2	121	113		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	38.2	33.6	88		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	38.2	51.1	134		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	10.2	38.2	52.0	110		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	27.7	38.2	63.7	94		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	13.1	38.2	52.3	103		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.71	38.2	38.6	94		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	38.2	34.8	91		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.29	38.2	37.8	93		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	38.2	33.1	87		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	38.2	39.5	103		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	0.846J	38.2	37.0	97		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.82J	38.2	39.8	104		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	0.374J	38.2	38.3	100		-	-		67-153	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1920015

**Project Number:** 4536.00

**Report Date:** 05/29/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Redacted_20190510												
				Associated sample(s): 01		QC Batch ID: WG1241729-4		QC Sample: L1920015-01		Client ID:		
Perfluorotridecanoic Acid (PFTTrDA)	ND	38.2	40.1	105		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.393J	38.2	51.4	135		-	-		59-182	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	156				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	213				1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	215				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	60				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	57				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	55				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				31-159

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1920015

Report Date: 05/29/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1240039-5 QC Sample: L1920015-02 Client ID: Redacted_20190510						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1240039-5 QC Sample: L1920015-02 Client ID: Redacted_20190510						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
PFOA/PFOS, Total	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		86		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		89		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>65</b>	Q	<b>66</b>	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>156</b>	Q	<b>141</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		117		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		97		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	73		77		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		86		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		82		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		82		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	65		<b>61</b>	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	118		79		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95		65		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUA)	93		93		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	74		89		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		65		42-136

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1920015

Report Date: 05/29/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1240039-5 QC Sample: L1920015-02						
Client ID: Redacted_20190510						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		71		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		49		26-160

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1920015

Report Date: 05/29/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1241729-5 QC Sample: L1920015-01						
Client ID: Redacted_20190510						
Perfluorobutanoic Acid (PFBA)	48.6	49.4	ng/l	2		30
Perfluoropentanoic Acid (PFPeA)	279	283	ng/l	1		30
Perfluorobutanesulfonic Acid (PFBS)	4.26	4.30	ng/l	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	432	434	ng/l	0		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	46.2	45.8	ng/l	1		30
Perfluorohexanesulfonic Acid (PFHxS)	42.9	40.6	ng/l	6		30
Perfluorooctanoic Acid (PFOA)	77.8	77.6	ng/l	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	1.26J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	10.2	10.1	ng/l	1		30
Perfluorooctanesulfonic Acid (PFOS)	27.7	29.1	ng/l	5		30
Perfluorodecanoic Acid (PFDA)	13.1	13.7	ng/l	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.71	2.26	ng/l	18		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.29	2.78	ng/l	19		30
Perfluoroundecanoic Acid (PFUnA)	ND	0.248J	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	0.846J	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1241729-5 QC Sample: L1920015-01 Client ID: Redacted_20190510						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.82J	1.16J	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	0.374J	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.393J	0.233J	ng/l	NC		30
PFOA/PFOS, Total	106	107	ng/l	0		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	59		59		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59		57		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98		106		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	202		221		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		71		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		73		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	124		140		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	204		223		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>150</b>		<b>175</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		98		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		112		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		38		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		109		23-146

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1920015

Report Date: 05/29/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1241729-5 QC Sample: L1920015-01						
Client ID: Redacted_20190510						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	64		67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		36		33-143



# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

**Lab ID:** L1920015-01  
**Client ID:** Redacted\_20190510  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/10/19 09:11  
**Date Received:** 05/14/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	23.9		%	0.100	0.100	1	-	05/16/19 01:42	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

**SAMPLE RESULTS**

**Lab ID:** L1920015-02  
**Client ID:** Redacted\_20190510  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/10/19 11:24  
**Date Received:** 05/14/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	58.0		%	0.100	0.100	1	-	05/16/19 01:42	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1920015

Report Date: 05/29/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1237682-1 QC Sample: L1919918-01 Client ID: DUP Sample						
Solids, Total	8.80	8.17	%	7		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1920015**Project Number:** 4536.00**Report Date:** 05/29/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1920015-01A	Plastic 8oz unpreserved	A	NA		5.7	Y	Absent		A2-537-ISOTOPE(28)
L1920015-01B	Plastic 2oz unpreserved for TS	A	NA		5.7	Y	Absent		A2-TS(7)
L1920015-01C	Plastic 2oz unpreserved for TS	A	NA		5.7	Y	Absent		A2-TS(7)
L1920015-01D	Plastic 8oz unpreserved	A	NA		5.7	Y	Absent		-
L1920015-01X	Plastic 250ml unpreserved Extracts	A	NA		5.7	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1920015-01X1	Plastic 250ml unpreserved Extracts	A	NA		5.7	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1920015-01X2	Plastic 250ml unpreserved Extracts	A	NA		5.7	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1920015-01X3	Plastic 250ml unpreserved Extracts	A	NA		5.7	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1920015-01X9	Tumble Vessel	A	NA		5.7	Y	Absent		-
L1920015-02A	Plastic 8oz unpreserved	A	NA		5.7	Y	Absent		A2-537-ISOTOPE(28)
L1920015-02B	Plastic 2oz unpreserved for TS	A	NA		5.7	Y	Absent		A2-TS(7)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

## GLOSSARY

### Acronyms

- DL** - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- EDL** - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
- EMPC** - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- LFB** - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LOD** - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- LOQ** - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NDPA/DPA** - N-Nitrosodiphenylamine/Diphenylamine.
- NI** - Not Ignitable.
- NP** - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
- SRM** - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
- STLP** - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
- TEF** - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
- TEQ** - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
- TIC** - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920015  
**Report Date:** 05/29/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



**MANSFIELD CHAIN OF CUSTODY**

PAGE 1 OF 1

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

**Client Information**

Client: Samborn, Head & Associates  
Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
Phone: 802-391-8504  
Fax:

Email: mcstabrooks@sambornhead.com  
 These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**PLEASE NOTE**

MS/MSD (at unit cost) will be omitted unless you check here:

**Project Information**

Project Name: NEWSIT Landfill  
Project Location: Coventry, VT  
Project #: 4536.00  
Project Manager: Matt Estabrooks  
ALPHA Quote #:

**Turn-Around Time**

Standard  RUSH (only confirmed if pre-approved)  
Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 5/14/19

**Report Information - Data Deliverables**

FAX  EMAIL  
 ADEX  Add'l Deliverables

ALPHA Job #: L1920015

**Billing Information**

Same as Client info PO #: 4536.00

**Regulatory Requirements/Report Limits**

State /Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

ANALYSIS TS-SM 2540 EPA-837(M) - Isotope Dilution SPUP PFAS-537	<b>SAMPLE HANDLING</b>	TOTAL # BOTTLES
	Filtration _____ <input type="checkbox"/> Done <input type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	
Sample Specific Comments		

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Analysis Results						Sample Specific Comments	TOTAL # BOTTLES	
		Date	Time			1	2	3	4	5	6			
<u>2015-01</u>	<u>[REDACTED]-20190510</u>	<u>5/10/19</u>	<u>0911</u>	<u>Sludge</u>	<u>LET</u>	<u>X</u>	<u>X</u>	<u>X</u>						<u>4</u>
<u>-02</u>	<u>[REDACTED]-20190510</u>	<u>5/10/19</u>	<u>1124</u>	<u>Sludge</u>	<u>LET</u>	<u>X</u>	<u>X</u>							<u>2</u>

Container Type \_\_\_\_\_  
Preservative \_\_\_\_\_

Relinquished By: <u>Matt Estabrooks</u>	Date/Time: <u>5-13-19/16:00</u>	Received By: <u>Cheri Sebeau</u>	Date/Time: <u>5/14/19 1053</u>
--	------------------------------------	-------------------------------------	-----------------------------------

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



1. Ensure there are no other shipping or tracking labels attached to your package. Select the Print button on the print dialogue box that appears. Note: If your browser does not support this function, select Print from the File menu to print the label.

2. Fold the printed label at the solid line below. Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. GETTING YOUR SHIPMENT TO UPS  
Customers with a scheduled Pickup  
o Your driver will pickup your shipment(s) as usual.

Customers without a scheduled Pickup  
o Schedule a Pickup on ups.com to have a UPS driver pickup all of your packages.  
o Take your package to any location of The UPS Store®, UPS Access Point™ location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. To find the location nearest you, please visit the 'Locations' Quick link at ups.com.

UPS Access Point™  
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BURLINGTON VT

UPS Access Point™  
LAKESIDE PHARMACY  
242 PEARL ST  
BURLINGTON VT

UPS Access Point™  
THE UPS STORE  
150 DORSET ST  
SOUTH BURLINGTON VT

FOLD HERE

MATTHEW ESTABROOKS 802-391-8504 SANBORN, HEAD & ASSOCIATES, IN 187 SAINT PAUL STREET BURLINGTON VT 05401		<b>26 LBS</b> DWT: 24,14,13	<b>1 OF 1</b>
<b>SHIP TO:</b> ATTN: SAMPLE RECEIVING 508-898-9220 5156 ALPHA ANALYTICAL 8 WALKUP DRIVE <b>WESTBOROUGH MA 01581</b>			
	<b>MA 016 9-03</b> 		
<b>UPS NEXT DAY AIR SAVER 1P</b> TRACKING #: 1Z 851 RX2 13 9976 8567			
			
BILLING: P/P Reference #1: 4536.00			
<small>XOL 19.04.02</small>		<small>NW45 12.0A 04/2019</small>	
			



## ANALYTICAL REPORT

Lab Number:	L1920614
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	05/31/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1920614-01	FB_20190514	WATER	COVENTRY, VT	05/14/19 10:58	05/16/19
L1920614-02	FD_Redacted20190515	SLUDGE	COVENTRY, VT	05/15/19 10:55	05/16/19
L1920614-03	EB_20190514	WATER	COVENTRY, VT	05/14/19 16:28	05/16/19
L1920614-04	Redacted_20190515	SLUDGE	COVENTRY, VT	05/15/19 10:55	05/16/19
L1920614-05	Redacted_20190514	SLUDGE	COVENTRY, VT	05/14/19 10:56	05/16/19
L1920614-06	Redacted_20190515	SLUDGE	COVENTRY, VT	05/15/19 11:45	05/16/19
L1920614-07	Redacted_20190513	SLUDGE	COVENTRY, VT	05/13/19 14:16	05/16/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

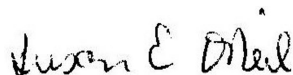
#### Perfluorinated Alkyl Acids by Isotope Dilution

The WG1240886-1 Method Blank, associated with L1920614-01 and -03, has concentrations above the reporting limits for 6:2FTS; however, re-extraction could not be performed due to lack of additional sample volume. The results of the original analyses are reported and are qualified with a "B".

L1920614--02, -04, -05, and -06: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 05/31/19

# ORGANICS



# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

**Lab ID:** L1920614-01  
**Client ID:** FB\_20190514  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/14/19 10:58  
**Date Received:** 05/16/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/27/19 13:22  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 05/24/19 10:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.88	0.383	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.88	0.372	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.88	0.224	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.88	0.425	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.88	0.308	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.88	0.230	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	0.212	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.353	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	0.222	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.32	B	ng/l	1.88	1.25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.647	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.293	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.88	0.474	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.286	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	1.14	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.88	1.05	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.88	0.609	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.244	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.921	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.545	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.756	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.350	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.308	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.88	0.233	1
PFOA/PFOS, Total	ND		ng/l	1.88	0.222	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-01  
 Client ID: FB\_20190514  
 Sample Location: COVENTRY, VT

Date Collected: 05/14/19 10:58  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	110		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	117		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	127		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	127		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	111		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73		33-143

Project Name: NEWSVT LANDFILL

Lab Number: L1920614

Project Number: 4536.00

Report Date: 05/31/19

## SAMPLE RESULTS

Lab ID: L1920614-02  
 Client ID: FD\_Redacted20190515  
 Sample Location: COVENTRY, VT

Date Collected: 05/15/19 10:55  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/24/19 20:51  
 Analyst: AJ  
 Percent Solids: 66%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.666	0.015	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.666	0.031	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.666	0.026	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.666	0.043	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.666	0.035	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.666	0.056	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.666	0.030	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.666	0.040	1
Perfluorooctanoic Acid (PFOA)	0.036	J	ng/g	0.666	0.028	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.666	0.120	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.666	0.091	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.666	0.050	1
Perfluorooctanesulfonic Acid (PFOS)	0.352	J	ng/g	0.666	0.087	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.666	0.045	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.666	0.191	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.666	0.199	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.666	0.134	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.666	0.031	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.666	0.102	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.666	0.065	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.666	0.056	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.666	0.047	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.666	0.136	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.666	0.036	1
PFOA/PFOS, Total	0.388	J	ng/g	0.666	0.028	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-02  
 Client ID: FD\_Redacted20190515  
 Sample Location: COVENTRY, VT

Date Collected: 05/15/19 10:55  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	59	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	12	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	336	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	38	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	153		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	48	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	56		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	17	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	24	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	59		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

**Lab ID:** L1920614-03  
**Client ID:** EB\_20190514  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/14/19 16:28  
**Date Received:** 05/16/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/27/19 13:39  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 05/24/19 10:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.75	0.357	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.75	0.346	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.75	0.208	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.75	0.395	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.75	0.287	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.75	0.214	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.75	0.197	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.75	0.329	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.75	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.95	B	ng/l	1.75	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.75	0.601	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.75	0.273	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.75	0.440	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.75	0.266	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.75	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.75	0.979	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.75	0.566	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.75	0.227	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.75	0.857	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.75	0.507	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.75	0.703	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.75	0.325	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.75	0.286	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.75	0.217	1
PFOA/PFOS, Total	ND		ng/l	1.75	0.206	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-03  
 Client ID: EB\_20190514  
 Sample Location: COVENTRY, VT

Date Collected: 05/14/19 16:28  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	121		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	96		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	64		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		33-143

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1920614**Project Number:** 4536.00**Report Date:** 05/31/19**SAMPLE RESULTS**

Lab ID: L1920614-04  
 Client ID: Redacted\_20190515  
 Sample Location: COVENTRY, VT

Date Collected: 05/15/19 10:55  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/24/19 21:08  
 Analyst: AJ  
 Percent Solids: 67%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.681	0.015	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.681	0.031	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.681	0.027	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.681	0.044	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.681	0.036	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.681	0.057	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.681	0.031	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.681	0.041	1
Perfluorooctanoic Acid (PFOA)	0.031	J	ng/g	0.681	0.029	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.681	0.122	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.681	0.093	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.681	0.051	1
Perfluorooctanesulfonic Acid (PFOS)	0.245	J	ng/g	0.681	0.089	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.681	0.046	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.681	0.195	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.681	0.204	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.681	0.137	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.681	0.032	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.681	0.104	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.681	0.067	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.681	0.058	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.681	0.048	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.681	0.139	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.681	0.037	1
PFOA/PFOS, Total	0.276	J	ng/g	0.681	0.029	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-04  
 Client ID: Redacted\_20190515  
 Sample Location: COVENTRY, VT

Date Collected: 05/15/19 10:55  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			87			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			67			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			9	Q		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			350	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			26	Q		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			87			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			157			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			85			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			89			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			46	Q		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			97			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			87			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			54			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			16	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			116			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			28			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			25	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			78			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			41			26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1920614**Project Number:** 4536.00**Report Date:** 05/31/19**SAMPLE RESULTS**

Lab ID: L1920614-05  
 Client ID: Redacted\_20190514  
 Sample Location: COVENTRY, VT

Date Collected: 05/14/19 10:56  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/24/19 21:24  
 Analyst: AJ  
 Percent Solids: 89%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.522	0.012	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.522	0.024	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.522	0.020	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.522	0.034	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.522	0.027	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.522	0.044	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.522	0.024	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.522	0.032	1
Perfluorooctanoic Acid (PFOA)	0.046	J	ng/g	0.522	0.022	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.522	0.094	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.522	0.071	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.522	0.039	1
Perfluorooctanesulfonic Acid (PFOS)	0.661		ng/g	0.522	0.068	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.522	0.035	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.522	0.150	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.522	0.156	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.522	0.105	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.522	0.024	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.522	0.080	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.522	0.051	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.522	0.044	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.522	0.037	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.522	0.107	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.522	0.028	1
PFOA/PFOS, Total	0.707	J	ng/g	0.522	0.022	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-05  
 Client ID: Redacted\_20190514  
 Sample Location: COVENTRY, VT

Date Collected: 05/14/19 10:56  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			111			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			111			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			132			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			106			56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			122			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			112			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			140			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			106			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			93			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			99			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			113			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			112			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			87			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			77			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			109			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			<b>127</b>	Q		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			67			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			92			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			72			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-06  
 Client ID: Redacted\_20190515  
 Sample Location: COVENTRY, VT

Date Collected: 05/15/19 11:45  
 Date Received: 05/16/19  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/24/19 21:41  
 Analyst: AJ  
 Percent Solids: 90%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.520	0.012	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.520	0.024	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.520	0.020	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.520	0.034	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.520	0.027	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.520	0.043	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.520	0.024	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.520	0.032	1
Perfluorooctanoic Acid (PFOA)	0.054	J	ng/g	0.520	0.022	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.520	0.093	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.520	0.071	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.520	0.039	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.520	0.068	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.520	0.035	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.520	0.149	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.520	0.156	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.520	0.105	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.520	0.024	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.520	0.080	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.520	0.051	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.520	0.044	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.520	0.036	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.520	0.106	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.520	0.028	1
PFOA/PFOS, Total	0.054	J	ng/g	0.520	0.022	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-06  
 Client ID: Redacted\_20190515  
 Sample Location: COVENTRY, VT

Date Collected: 05/15/19 11:45  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	145		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>144</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	119		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	146		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	117		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	54		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-07  
 Client ID: Redacted\_20190513  
 Sample Location: COVENTRY, VT

Date Collected: 05/13/19 14:16  
 Date Received: 05/16/19  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 05/24/19 21:57  
 Analyst: AJ  
 Percent Solids: 90%

Extraction Method: EPA 537(M)  
 Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.493	0.011	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.493	0.023	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.493	0.019	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.493	0.032	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.493	0.026	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.493	0.041	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.493	0.022	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.493	0.030	1
Perfluorooctanoic Acid (PFOA)	0.087	J	ng/g	0.493	0.021	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.493	0.089	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.493	0.067	1
Perfluorononanoic Acid (PFNA)	0.070	J	ng/g	0.493	0.037	1
Perfluorooctanesulfonic Acid (PFOS)	0.494		ng/g	0.493	0.064	1
Perfluorodecanoic Acid (PFDA)	0.066	J	ng/g	0.493	0.033	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.493	0.142	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.493	0.147	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.493	0.099	1
Perfluoroundecanoic Acid (PFUnA)	0.035	J	ng/g	0.493	0.023	1
Perfluorodecanesulfonic Acid (PFDS)	0.081	J	ng/g	0.493	0.076	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.493	0.048	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.493	0.042	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.493	0.035	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.493	0.101	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.493	0.027	1
PFOA/PFOS, Total	0.581	J	ng/g	0.493	0.021	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

Lab ID: L1920614-07  
 Client ID: Redacted\_20190513  
 Sample Location: COVENTRY, VT

Date Collected: 05/13/19 14:16  
 Date Received: 05/16/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	113		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	122		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	114		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	136		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	124		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	113		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	114		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	59		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/24/19 18:55  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04-07 Batch: WG1240039-1					
Perfluorobutanoic Acid (PFBA)	0.093	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.035
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.027
PFOA/PFOS, Total	ND		ng/g	0.500	0.021



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/24/19 18:55  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 05/22/19 15:58

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04-07 Batch: WG1240039-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	135		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	123		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	142		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	113		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 122,537(M)  
**Analytical Date:** 05/27/19 11:43  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 05/24/19 10:02

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1240886-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.18		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 05/27/19 11:43  
Analyst: AJ

Extraction Method: EPA 537  
Extraction Date: 05/24/19 10:02

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1240886-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	113		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	130		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	118		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	133		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	107		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	91		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920614

Project Number: 4536.00

Report Date: 05/31/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-07 Batch: WG1240039-2 WG1240039-3								
Perfluorobutanoic Acid (PFBA)	92		92		71-135	4		30
Perfluoropentanoic Acid (PFPeA)	90		89		69-132	8		30
Perfluorobutanesulfonic Acid (PFBS)	87		89		72-128	8		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	90		90		62-145	11		30
Perfluorohexanoic Acid (PFHxA)	101		101		70-132	9		30
Perfluoropentanesulfonic Acid (PFPeS)	87		86		73-123	10		30
Perfluoroheptanoic Acid (PFHpA)	98		94		71-131	8		30
Perfluorohexanesulfonic Acid (PFHxS)	89		85		67-130	14		30
Perfluorooctanoic Acid (PFOA)	95		95		69-133	9		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	79		82		64-140	11		30
Perfluoroheptanesulfonic Acid (PFHpS)	94		102		70-132	3		30
Perfluorononanoic Acid (PFNA)	102		99		72-129	8		30
Perfluorooctanesulfonic Acid (PFOS)	78		80		68-136	7		30
Perfluorodecanoic Acid (PFDA)	101		100		69-133	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	92		82		65-137	18		30
Perfluorononanesulfonic Acid (PFNS)	96		105		69-125	9		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	92		99		63-144	14		30
Perfluoroundecanoic Acid (PFUnA)	88		90		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	107		113		59-134	1		30
Perfluorooctanesulfonamide (FOSA)	86		105		67-137	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		90		61-139	21		30
Perfluorododecanoic Acid (PFDoA)	100		103		69-135	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920614

Project Number: 4536.00

Report Date: 05/31/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-07 Batch: WG1240039-2 WG1240039-3								
Perfluorotridecanoic Acid (PFTrDA)	101		101		66-139	12		30
Perfluorotetradecanoic Acid (PFTA)	113		108		69-133	6		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		113		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		111		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	132		133		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	108		114		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	134		134		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	121		122		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	138		143		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	110		109		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	94		92		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		104		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		112		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	112		110		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88		99		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	93		90		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		114		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		81		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		98		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		81		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920614

Project Number: 4536.00

Report Date: 05/31/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1240886-2 WG1240886-3								
Perfluorobutanoic Acid (PFBA)	88		80		67-148	10		30
Perfluoropentanoic Acid (PFPeA)	87		79		63-161	10		30
Perfluorobutanesulfonic Acid (PFBS)	88		78		65-157	12		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	87		80		37-219	8		30
Perfluorohexanoic Acid (PFHxA)	102		90		69-168	13		30
Perfluoropentanesulfonic Acid (PFPeS)	83		77		52-156	8		30
Perfluoroheptanoic Acid (PFHpA)	94		84		58-159	11		30
Perfluorohexanesulfonic Acid (PFHxS)	93		85		69-177	9		30
Perfluorooctanoic Acid (PFOA)	93		89		63-159	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	89		86		49-187	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	95		92		61-179	3		30
Perfluorononanoic Acid (PFNA)	101		88		68-171	14		30
Perfluorooctanesulfonic Acid (PFOS)	81		79		52-151	3		30
Perfluorodecanoic Acid (PFDA)	94		88		63-171	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	71		77		56-173	8		30
Perfluorononanesulfonic Acid (PFNS)	92		93		48-150	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	83		83		60-166	0		30
Perfluoroundecanoic Acid (PFUnA)	87		76		60-153	13		30
Perfluorodecanesulfonic Acid (PFDS)	104		91		38-156	13		30
Perfluorooctanesulfonamide (FOSA)	83		80		46-170	4		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		90		45-170	1		30
Perfluorododecanoic Acid (PFDoA)	95		83		67-153	13		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1920614

Project Number: 4536.00

Report Date: 05/31/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1240886-2 WG1240886-3								
Perfluorotridecanoic Acid (PFTrDA)	102		92		48-158	10		30
Perfluorotetradecanoic Acid (PFTA)	106		91		59-182	15		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		121		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		139		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	105		128		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	128		135		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	117		122		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		142		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	108		110		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	90		115		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		108		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		122		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		119		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		100		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		88		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		116		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	72		44		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		78		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		94		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		83		33-143

# **INORGANICS & MISCELLANEOUS**



Project Name: NEWSVT LANDFILL

Lab Number: L1920614

Project Number: 4536.00

Report Date: 05/31/19

## SAMPLE RESULTS

Lab ID: L1920614-02

Date Collected: 05/15/19 10:55

Client ID: FD\_Redacted20190515

Date Received: 05/16/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	66.3		%	0.100	0.100	1	-	05/21/19 02:23	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

**Lab ID:** L1920614-04  
**Client ID:** Redacted\_20190515  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/15/19 10:55  
**Date Received:** 05/16/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	66.6		%	0.100	0.100	1	-	05/21/19 02:23	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

**Lab ID:** L1920614-05  
**Client ID:** Redacted\_20190514  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/14/19 10:56  
**Date Received:** 05/16/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	89.1		%	0.100	0.100	1	-	05/21/19 02:23	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

**Lab ID:** L1920614-06  
**Client ID:** Redacted\_20190515  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/15/19 11:45  
**Date Received:** 05/16/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	89.8		%	0.100	0.100	1	-	05/21/19 02:23	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

**SAMPLE RESULTS**

**Lab ID:** L1920614-07  
**Client ID:** Redacted\_20190513  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/13/19 14:16  
**Date Received:** 05/16/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	89.5		%	0.100	0.100	1	-	05/21/19 02:23	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

Serial\_No:05311912:54  
**Lab Number:** L1920614  
**Report Date:** 05/31/19

**Sample Receipt and Container Information**

Were project specific reporting limits specified? YES

**Cooler Information**

**Cooler**                      **Custody Seal**  
A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1920614-01A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		2.4	Y	Absent		A2-537-ISOTOPE(14)
L1920614-02A	Plastic 8oz unpreserved	A	NA		2.4	Y	Absent		A2-537-ISOTOPE(28)
L1920614-02B	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		A2-TS(7)
L1920614-03A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		2.4	Y	Absent		A2-537-ISOTOPE(14)
L1920614-04A	Plastic 8oz unpreserved	A	NA		2.4	Y	Absent		A2-537-ISOTOPE(28)
L1920614-04B	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		A2-TS(7)
L1920614-05A	Plastic 8oz unpreserved	A	NA		2.4	Y	Absent		A2-537-ISOTOPE(28)
L1920614-05B	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		A2-TS(7)
L1920614-06A	Plastic 8oz unpreserved	A	NA		2.4	Y	Absent		A2-537-ISOTOPE(28)
L1920614-06B	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		A2-TS(7)
L1920614-07A	Plastic 8oz unpreserved	A	NA		2.4	Y	Absent		A2-537-ISOTOPE(28)
L1920614-07B	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		A2-TS(7)

\*Values in parentheses indicate holding time in days



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1920614  
**Report Date:** 05/31/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

**Westborough Facility**

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

**Mansfield Facility**

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

**Westborough Facility:**

**Drinking Water**

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

**Non-Potable Water**

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

**Mansfield Facility:**

**Drinking Water**

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

**Non-Potable Water**

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



# MANSFIELD CHAIN OF CUSTODY

PAGE 1 OF 1

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

### Client Information

Client: **Samborn, Head & Associates**  
Address: **187 Saint Paul Street**  
**Suite 4-C, Burlington, VT 05401**  
Phone: **802-391-8504**  
Fax:

### Project Information

Project Name: **NEWSVT Landfill**  
Project Location: **Conventry, VT**  
Project #: **4536.00**  
Project Manager: **Matt Estabrooks**  
ALPHA Quote #:

### Turn-Around Time

Standard  RUSH (only confirmed if pre-approved!)  
Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: **5/17/19**

### Report Information - Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

ALPHA Job #: **61920614**

### Billing Information

Same as Client info PO #: **4536.00**

### Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

### PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here:

ANALYSIS

TS-SM 2540

EPA 537(M) 75000 Dilution

**TOTAL # BOTTLES**

1

2

1

2

2

2

2

**SAMPLE HANDLING**

Filtration \_\_\_\_\_

Done

Not needed

Lab to do

Preservation \_\_\_\_\_

Lab to do

(Please specify below)

Sample Specific Comments \_\_\_\_\_

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials							
		Date	Time									
920614-01	FB-20190514	5/14/19	10:58	Water	LET	X						
-02	FD-██████████-20190515	5/15/19	10:55	Sludge	LET	X	X					
-03	EB-20190514	5/14/19	16:28	Water	LET	X						
-04	██████████-20190515	5/15/19	10:55	Sludge	LET	X	X					
-05	██████████BP-20190514	5/14/19	10:56	Soil	LET	X	X					
-06	██████████-20190515	5/15/19	11:45	Soil	LET	X	X					
-07	██████████-20190513	5/13/19	14:16	Soil	LET	X	X					

Container Type	
Preservative	

Relinquished By: <i>[Signature]</i>	Date/Time: <b>5-16-19/14:45</b>	Received By: <i>[Signature]</i>	Date/Time: <b>5/16/19 14:45</b>
<i>[Signature]</i>	<b>5/16/19</b>	<i>[Signature]</i>	<b>5/17/19 02:30</b>
<i>[Signature]</i>	<b>5/17/19 11:08</b>	<i>[Signature]</i>	<b>5/17/19 11:08</b>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.





## ANALYTICAL REPORT

Lab Number:	L1922110
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	06/11/19

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1922110-01	Redacted_20190521	SLUDGE	COVENTRY, VT	05/21/19 07:38	05/24/19
L1922110-02	Redacted_20190521	SOIL	COVENTRY, VT	05/21/19 15:30	05/24/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

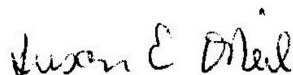
WG1245989-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1245989-4 MS recovery, performed on L1922110-01, is outside the acceptance criteria for perfluorodecanoic acid (pfda) (65%). The unacceptable percent recovery is attributed to the elevated concentration of the target compound present in the native sample.

The WG1245989-4 MS recovery, performed on L1922110-01, is outside the acceptance criteria for perfluorotridecanoic acid (pfrda) (140%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 06/11/19

# ORGANICS



# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**SAMPLE RESULTS**

**Lab ID:** L1922110-01  
**Client ID:** Redacted\_20190521  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/21/19 07:38  
**Date Received:** 05/24/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/10/19 22:09  
**Analyst:** AJ  
**Percent Solids:** 20%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/07/19 23:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	2.17	0.049	1
Perfluoropentanoic Acid (PFPeA)	0.965	J	ng/g	2.17	0.100	1
Perfluorobutanesulfonic Acid (PFBS)	1.27	J	ng/g	2.17	0.085	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.17	0.140	1
Perfluorohexanoic Acid (PFHxA)	4.29		ng/g	2.17	0.114	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.17	0.181	1
Perfluoroheptanoic Acid (PFHpA)	0.838	J	ng/g	2.17	0.098	1
Perfluorohexanesulfonic Acid (PFHxS)	0.410	J	ng/g	2.17	0.131	1
Perfluorooctanoic Acid (PFOA)	6.80		ng/g	2.17	0.091	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.90		ng/g	2.17	0.389	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.17	0.296	1
Perfluorononanoic Acid (PFNA)	3.37		ng/g	2.17	0.162	1
Perfluorooctanesulfonic Acid (PFOS)	9.52		ng/g	2.17	0.282	1
Perfluorodecanoic Acid (PFDA)	84.3		ng/g	2.17	0.145	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.24	J	ng/g	2.17	0.622	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.17	0.648	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	37.2		ng/g	2.17	0.437	1
Perfluoroundecanoic Acid (PFUnA)	3.36		ng/g	2.17	0.101	1
Perfluorodecanesulfonic Acid (PFDS)	2.11	J	ng/g	2.17	0.332	1
Perfluorooctanesulfonamide (FOSA)	3.58		ng/g	2.17	0.212	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	20.2		ng/g	2.17	0.183	1
Perfluorododecanoic Acid (PFDoA)	25.1		ng/g	2.17	0.152	1
Perfluorotridecanoic Acid (PFTrDA)	1.97	J	ng/g	2.17	0.443	1
Perfluorotetradecanoic Acid (PFTA)	2.52		ng/g	2.17	0.117	1
PFOA/PFOS, Total	16.3		ng/g	2.17	0.091	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**SAMPLE RESULTS**

Lab ID: L1922110-01  
 Client ID: Redacted\_20190521  
 Sample Location: COVENTRY, VT

Date Collected: 05/21/19 07:38  
 Date Received: 05/24/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			67			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			72			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			101			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>166</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			73			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			71			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			101			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			68			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			155			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			67			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			93			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			74			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			100			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			<b>19</b>	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			<b>33</b>	Q		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			8			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			<b>38</b>	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			<b>40</b>	Q		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			52			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**SAMPLE RESULTS**

**Lab ID:** L1922110-02  
**Client ID:** Redacted\_20190521  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/21/19 15:30  
**Date Received:** 05/24/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/10/19 20:30  
**Analyst:** AJ  
**Percent Solids:** 81%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/07/19 23:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.605	0.014	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.605	0.028	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.605	0.024	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.605	0.039	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.605	0.032	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.605	0.051	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.605	0.027	1
Perfluorohexanesulfonic Acid (PFHxS)	0.081	J	ng/g	0.605	0.037	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.605	0.025	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.605	0.109	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.605	0.083	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.605	0.045	1
Perfluorooctanesulfonic Acid (PFOS)	0.367	J	ng/g	0.605	0.079	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.605	0.041	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.605	0.174	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.605	0.181	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.605	0.122	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.605	0.028	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.605	0.093	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.605	0.059	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.605	0.051	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.605	0.042	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.605	0.124	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.605	0.033	1
PFOA/PFOS, Total	0.367	J	ng/g	0.605	0.025	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**SAMPLE RESULTS**

Lab ID: L1922110-02  
 Client ID: Redacted\_20190521  
 Sample Location: COVENTRY, VT

Date Collected: 05/21/19 15:30  
 Date Received: 05/24/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	65		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	121		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/10/19 21:03  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 06/07/19 23:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1245989-1					
Perfluorobutanoic Acid (PFBA)	0.058	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.027
PFOA/PFOS, Total	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/10/19 21:03  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 06/07/19 23:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1245989-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	74		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	117		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	132		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	60		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	105		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/10/19 19:40  
**Analyst:** AJ

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/07/19 23:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1246449-1					
Perfluorobutanoic Acid (PFBA)	0.029	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.035
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.500	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.027
PFOA/PFOS, Total	ND		ng/g	0.500	0.021



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 122,537(M)  
 Analytical Date: 06/10/19 19:40  
 Analyst: AJ

Extraction Method: EPA 537(M)  
 Extraction Date: 06/07/19 23:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1246449-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	64		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	52		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	50		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1922110

Project Number: 4536.00

Report Date: 06/11/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1245989-2 WG1245989-3								
Perfluorobutanoic Acid (PFBA)	106		106		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	100		100		69-132	0		30
Perfluorobutanesulfonic Acid (PFBS)	97		102		72-128	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	92		100		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	119		119		70-132	0		30
Perfluoropentanesulfonic Acid (PFPeS)	100		102		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	110		110		71-131	0		30
Perfluorohexanesulfonic Acid (PFHxS)	100		103		67-130	3		30
Perfluorooctanoic Acid (PFOA)	109		112		69-133	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	92		94		64-140	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	119		112		70-132	6		30
Perfluorononanoic Acid (PFNA)	115		115		72-129	0		30
Perfluorooctanesulfonic Acid (PFOS)	87		88		68-136	1		30
Perfluorodecanoic Acid (PFDA)	113		111		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		92		65-137	12		30
Perfluorononanesulfonic Acid (PFNS)	119		118		69-125	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		95		63-144	5		30
Perfluoroundecanoic Acid (PFUnA)	98		102		64-136	4		30
Perfluorodecanesulfonic Acid (PFDS)	120		112		59-134	7		30
Perfluorooctanesulfonamide (FOSA)	116		119		67-137	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	93		120		61-139	25		30
Perfluorododecanoic Acid (PFDoA)	116		125		69-135	7		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1922110

Project Number: 4536.00

Report Date: 06/11/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1245989-2 WG1245989-3								
Perfluorotridecanoic Acid (PFTTrDA)	110		117		66-139	6		30
Perfluorotetradecanoic Acid (PFTA)	129		128		69-133	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		96		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		93		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		119		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	77		76		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		113		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		103		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	126		121		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64		64		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		88		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		104		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		98		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	56		62		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		69		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		37		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		55		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		80		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		65		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1922110

Project Number: 4536.00

Report Date: 06/11/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1246449-2 WG1246449-3								
Perfluorobutanoic Acid (PFBA)	104		101		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	98		97		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	100		97		72-128	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		97		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	119		114		70-132	4		30
Perfluoropentanesulfonic Acid (PFPeS)	98		99		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	110		107		71-131	3		30
Perfluorohexanesulfonic Acid (PFHxS)	97		98		67-130	1		30
Perfluorooctanoic Acid (PFOA)	109		107		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	94		101		64-140	7		30
Perfluoroheptanesulfonic Acid (PFHpS)	110		117		70-132	6		30
Perfluorononanoic Acid (PFNA)	113		111		72-129	2		30
Perfluorooctanesulfonic Acid (PFOS)	88		94		68-136	7		30
Perfluorodecanoic Acid (PFDA)	118		109		69-133	8		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		96		65-137	5		30
Perfluorononanesulfonic Acid (PFNS)	111		112		69-125	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		92		63-144	14		30
Perfluoroundecanoic Acid (PFUnA)	100		95		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	123		127		59-134	3		30
Perfluorooctanesulfonamide (FOSA)	100		100		67-137	0		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	101		87		61-139	15		30
Perfluorododecanoic Acid (PFDoA)	110		118		69-135	7		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1922110

Project Number: 4536.00

Report Date: 06/11/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1246449-2 WG1246449-3								
Perfluorotridecanoic Acid (PFTTrDA)	110		116		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	131		123		69-133	6		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		85		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		87		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	123		118		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		67		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		107		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		97		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	128		122		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		89		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		56		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		84		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		99		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		62		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		65		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		94		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	7		6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		58		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		79		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		63		26-160

## Matrix Spike Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1922110

**Project Number:** 4536.00

**Report Date:** 06/11/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1245989-4 QC Sample: L1922110-01 Client ID: Redacted_20190521												
Perfluorobutanoic Acid (PFBA)	ND	12.1	13.2	109		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.965J	12.1	13.2	109		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	1.27J	12.1	13.6	112		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	12.1	12.2	101		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	4.29	12.1	18.6	118		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	12.1	12.4	102		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.838J	12.1	14.1	116		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.410J	12.1	12.8	106		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	6.80	12.1	19.7	107		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.90	12.1	17.9	107		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	12.1	15.0	124		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	3.37	12.1	17.2	114		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	9.52	12.1	23.2	113		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	84.3	12.1	92.2	65	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.24J	12.1	11.3	93		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	12.1	14.4	119		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	37.2	12.1	46.4	76		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	3.36	12.1	14.6	93		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	2.11J	12.1	13.0	107		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	3.58	12.1	16.5	107		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	20.2	12.1	35.1	123		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	25.1	12.1	37.0	98		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1922110

**Project Number:** 4536.00

**Report Date:** 06/11/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1245989-4 QC Sample: L1922110-01 Client ID: Redacted_20190521												
Perfluorotridecanoic Acid (PFTTrDA)	1.97J	12.1	16.9	140	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	2.52	12.1	18.0	128		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	148	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	37	Q			42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	23	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	30	Q			64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	68				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	41	Q			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	45				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	60				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65				65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	61	Q			62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94				70-151

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1246449-4 QC Sample: L1922110-02 Client ID: Redacted_20190521						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.081J	0.074J	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	0.367J	0.295J	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1246449-4 QC Sample: L1922110-02 Client ID: Redacted_20190521						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
PFOA/PFOS, Total	0.367J	0.295J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		99		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		122		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	65		70		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		117		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		106		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	125		125		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		94		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	61		60		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		90		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		101		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		98		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		54		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUA)	102		103		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	121		116		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52		51		42-136

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1922110

**Report Date:** 06/11/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1246449-4 QC Sample: L1922110-02 Client ID: Redacted_20190521						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		68		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**SAMPLE RESULTS**

**Lab ID:** L1922110-01  
**Client ID:** Redacted\_20190521  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/21/19 07:38  
**Date Received:** 05/24/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	20.1		%	0.100	0.100	1	-	05/29/19 01:10	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

**SAMPLE RESULTS**

**Lab ID:** L1922110-02  
**Client ID:** Redacted\_20190521  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/21/19 15:30  
**Date Received:** 05/24/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	81.2		%	0.100	0.100	1	-	05/29/19 01:10	121,2540G	CC



**Lab Duplicate Analysis**  
*Batch Quality Control***Project Name:** NEWSVT LANDFILL**Project Number:** 4536.00**Lab Number:** L1922110**Report Date:** 06/11/19

<b>Parameter</b>	<b>Native Sample</b>	<b>Duplicate Sample</b>	<b>Units</b>	<b>RPD</b>	<b>Qual</b>	<b>RPD Limits</b>
General Chemistry - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1242019-1 QC Sample: L1922042-28 Client ID: DUP Sample						
Solids, Total	18.2	18.0	%	1		10

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

Serial\_No:06111911:59

**Lab Number:** L1922110

**Report Date:** 06/11/19

**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

**Cooler**                      **Custody Seal**

A                                  Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1922110-01A	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		A2-TS(7)
L1922110-01B	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1922110-02A	Plastic 2oz unpreserved for TS	A	NA		3.6	Y	Absent		-
L1922110-02B	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		-

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

## GLOSSARY

### Acronyms

- DL** - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- EDL** - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
- EMPC** - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- LFB** - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LOD** - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- LOQ** - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NDPA/DPA** - N-Nitrosodiphenylamine/Diphenylamine.
- NI** - Not Ignitable.
- NP** - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
- SRM** - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
- STLP** - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
- TEF** - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
- TEQ** - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
- TIC** - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1922110  
**Report Date:** 06/11/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.







## ANALYTICAL REPORT

Lab Number:	L1923119
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	06/14/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1923119-01	AC_01_20190529	SOLID	COVENTRY, VT	05/29/19 10:00	05/31/19
L1923119-02	AC_02_20190529	SOLID	COVENTRY, VT	05/29/19 10:10	05/31/19
L1923119-03	FD_AC_02_20190529	SOLID	COVENTRY, VT	05/29/19 10:10	05/31/19
L1923119-04	AC_03_20190529	SOLID	COVENTRY, VT	05/29/19 12:25	05/31/19
L1923119-05	AC_04_20190529	SOLID	COVENTRY, VT	05/29/19 14:30	05/31/19
L1923119-06	AC_05_20190529	SOLID	COVENTRY, VT	05/29/19 15:05	05/31/19
L1923119-07	EB_20190529	WATER	COVENTRY, VT	05/29/19 13:05	05/31/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1923119-01, -02, -03, -04, -05, -06, and -07: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1923119-04: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

WG1246402-1, WG1246402-2, WG1246402-3, WG1247573-4, and WG1247573-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1247573-4 MS recoveries, performed on L1923119-01, are outside the acceptance criteria for perfluorohexanesulfonic acid (pfhxs) (269%), perfluorooctanoic acid (pfoa) (20%), perfluorooctanesulfonic acid (pfos) (40%), n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (0%) and perfluorotridecanoic acid (pftrda) (164%). The recoveries have been attributed to the non-homogeneous nature of the native sample. The WG1247573-5 Laboratory Duplicate RPD for perfluorooctanesulfonic acid (pfos) (35%), performed on L1923119-05, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

WG1246922-1 The continuing calibration standard, associated with L1923119 and QC, had the response for 6:2FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1246922-1 The continuing calibration standard, associated with L1923119 and QC, had the response for the extracted internal standard 1H,1H,2H,2H-Perfluoro[1,2-<sup>13</sup>C<sub>2</sub>]Octanesulfonic Acid (M2-6:2FTS) and



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### Case Narrative (continued)

1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1246922-2 The continuing calibration standard, associated with L1923119 and QC, had the response for the extracted internal standard 1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1246922-2: The continuing calibration standard, associated with L1923119 and QC, had the response for Perfluorononanesulfonic Acid (PFNS) above the acceptance criteria for the method. The associated samples were non-detect; therefore, no further action was taken.

WG1246922-3: The continuing calibration standard, associated with L1923119 and QC, had the response for 1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS) above the acceptance criteria for the method. The associated samples were non-detect; therefore, no further action was taken.

WG1246922-3: The continuing calibration standard, associated with L1923119 and QC, had the response for Perfluorooctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1246922-3: The continuing calibration standard, associated with L1923119 and QC, had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

WG1246922-3 The continuing calibration standard, associated with L1923119 and QC, had the response for the extracted internal standard 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1246922-4 The continuing calibration standard, associated with L1923119 and QC, had the response for the extracted internal standard 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

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**Case Narrative (continued)**

WG1246922-4: The continuing calibration standard, associated with L1923119 and QC, had the response for Perfluorobutanesulfonic Acid (PFBS), 1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS), Perfluorononanesulfonic Acid (PFNS) above the acceptance criteria for the method. The associated samples were non-detect; therefore, no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Elizabeth Porta

Title: Technical Director/Representative

Date: 06/14/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-01  
 Client ID: AC\_01\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 10:00  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/14/19 11:43  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.15	J	ng/g	1.29	0.029	1
Perfluoropentanoic Acid (PFPeA)	0.393	J	ng/g	1.29	0.060	1
Perfluorobutanesulfonic Acid (PFBS)	0.212	J	ng/g	1.29	0.051	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.29	0.084	1
Perfluorohexanoic Acid (PFHxA)	1.95		ng/g	1.29	0.068	1
Perfluoropentanesulfonic Acid (PFPeS)	0.145	J	ng/g	1.29	0.108	1
Perfluoroheptanoic Acid (PFHpA)	1.31		ng/g	1.29	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	3.87		ng/g	1.29	0.078	1
Perfluorooctanoic Acid (PFOA)	6.71		ng/g	1.29	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.55		ng/g	1.29	0.232	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.180	J	ng/g	1.29	0.177	1
Perfluorononanoic Acid (PFNA)	0.865	J	ng/g	1.29	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	10.1		ng/g	1.29	0.168	1
Perfluorodecanoic Acid (PFDA)	2.58		ng/g	1.29	0.087	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.12	J	ng/g	1.29	0.372	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.29	0.387	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.960	J	ng/g	1.29	0.261	1
Perfluoroundecanoic Acid (PFUnA)	0.391	J	ng/g	1.29	0.061	1
Perfluorodecanesulfonic Acid (PFDS)	0.268	J	ng/g	1.29	0.198	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.29	0.127	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	8.35		ng/g	1.29	0.109	1
Perfluorododecanoic Acid (PFDoA)	1.09	J	ng/g	1.29	0.091	1
Perfluorotridecanoic Acid (PFTrDA)	0.417	J	ng/g	1.29	0.265	1
Perfluorotetradecanoic Acid (PFTA)	0.441	J	ng/g	1.29	0.070	1
PFOA/PFOS, Total	16.8		ng/g	1.29	0.054	1

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**SAMPLE RESULTS**

Lab ID: L1923119-01  
 Client ID: AC\_01\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 10:00  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	68		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>196</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	112		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	53		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>52</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		26-160

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**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

**Lab ID:** L1923119-02  
**Client ID:** AC\_02\_20190529  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/29/19 10:10  
**Date Received:** 05/31/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/14/19 12:16  
**Analyst:** AJ  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.04	J	ng/g	2.56	0.058	1
Perfluoropentanoic Acid (PFPeA)	0.396	J	ng/g	2.56	0.118	1
Perfluorobutanesulfonic Acid (PFBS)	1.73	J	ng/g	2.56	0.100	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.56	0.165	1
Perfluorohexanoic Acid (PFHxA)	3.14		ng/g	2.56	0.135	1
Perfluoropentanesulfonic Acid (PFPeS)	0.247	J	ng/g	2.56	0.214	1
Perfluoroheptanoic Acid (PFHpA)	1.08	J	ng/g	2.56	0.116	1
Perfluorohexanesulfonic Acid (PFHxS)	1.85	J	ng/g	2.56	0.155	1
Perfluorooctanoic Acid (PFOA)	6.16		ng/g	2.56	0.107	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.79	J	ng/g	2.56	0.460	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.56	0.350	1
Perfluorononanoic Acid (PFNA)	0.512	J	ng/g	2.56	0.192	1
Perfluorooctanesulfonic Acid (PFOS)	13.6		ng/g	2.56	0.333	1
Perfluorodecanoic Acid (PFDA)	1.82	J	ng/g	2.56	0.172	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.02	J	ng/g	2.56	0.736	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.56	0.767	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.56	0.517	1
Perfluoroundecanoic Acid (PFUnA)	0.237	J	ng/g	2.56	0.120	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.56	0.392	1
Perfluorooctanesulfonamide (FOSA)	1.85	J	ng/g	2.56	0.251	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.98		ng/g	2.56	0.217	1
Perfluorododecanoic Acid (PFDoA)	0.826	J	ng/g	2.56	0.179	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.56	0.524	1
Perfluorotetradecanoic Acid (PFTA)	0.438	J	ng/g	2.56	0.138	1
PFOA/PFOS, Total	19.8		ng/g	2.56	0.107	1

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**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-02  
 Client ID: AC\_02\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 10:10  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>184</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	117		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	144		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	109		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		26-160



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Lab ID: L1923119-03  
 Client ID: FD\_AC\_02\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 10:10  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/14/19 12:33  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.781	J	ng/g	2.56	0.058	1
Perfluoropentanoic Acid (PFPeA)	0.242	J	ng/g	2.56	0.118	1
Perfluorobutanesulfonic Acid (PFBS)	1.42	J	ng/g	2.56	0.100	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.56	0.165	1
Perfluorohexanoic Acid (PFHxA)	2.43	J	ng/g	2.56	0.135	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.56	0.214	1
Perfluoroheptanoic Acid (PFHpA)	0.763	J	ng/g	2.56	0.116	1
Perfluorohexanesulfonic Acid (PFHxS)	1.83	J	ng/g	2.56	0.155	1
Perfluorooctanoic Acid (PFOA)	5.98		ng/g	2.56	0.107	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.02	J	ng/g	2.56	0.460	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.56	0.350	1
Perfluorononanoic Acid (PFNA)	0.487	J	ng/g	2.56	0.192	1
Perfluorooctanesulfonic Acid (PFOS)	9.44		ng/g	2.56	0.333	1
Perfluorodecanoic Acid (PFDA)	2.15	J	ng/g	2.56	0.172	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.24	J	ng/g	2.56	0.736	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.56	0.767	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.56	0.517	1
Perfluoroundecanoic Acid (PFUnA)	0.212	J	ng/g	2.56	0.120	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.56	0.392	1
Perfluorooctanesulfonamide (FOSA)	1.31	J	ng/g	2.56	0.251	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.88	J	ng/g	2.56	0.217	1
Perfluorododecanoic Acid (PFDoA)	0.717	J	ng/g	2.56	0.179	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.56	0.524	1
Perfluorotetradecanoic Acid (PFTA)	0.350	J	ng/g	2.56	0.138	1
PFOA/PFOS, Total	15.4		ng/g	2.56	0.107	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-03  
 Client ID: FD\_AC\_02\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 10:10  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	175	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	117		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	128		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	57		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

**Lab ID:** L1923119-04  
**Client ID:** AC\_03\_20190529  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/29/19 12:25  
**Date Received:** 05/31/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/14/19 12:49  
**Analyst:** AJ  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	10.4		ng/g	1.11	0.025	1
Perfluoropentanoic Acid (PFPeA)	14.0		ng/g	1.11	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	10.4		ng/g	1.11	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.11	0.072	1
Perfluorohexanoic Acid (PFHxA)	88.0		ng/g	1.11	0.059	1
Perfluoropentanesulfonic Acid (PFPeS)	8.26		ng/g	1.11	0.093	1
Perfluoroheptanoic Acid (PFHpA)	79.7		ng/g	1.11	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	33.4		ng/g	1.11	0.067	1
Perfluorooctanoic Acid (PFOA)	276		ng/g	1.11	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.44		ng/g	1.11	0.200	1
Perfluoroheptanesulfonic Acid (PFHpS)	13.6		ng/g	1.11	0.152	1
Perfluorononanoic Acid (PFNA)	7.10		ng/g	1.11	0.084	1
Perfluorooctanesulfonic Acid (PFOS)	517	E	ng/g	1.11	0.145	1
Perfluorodecanoic Acid (PFDA)	3.56		ng/g	1.11	0.075	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.82		ng/g	1.11	0.320	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.11	0.333	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	156		ng/g	1.11	0.224	1
Perfluoroundecanoic Acid (PFUnA)	2.30		ng/g	1.11	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	2.29		ng/g	1.11	0.170	1
Perfluorooctanesulfonamide (FOSA)	3.14		ng/g	1.11	0.109	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	13.6		ng/g	1.11	0.094	1
Perfluorododecanoic Acid (PFDoA)	1.89		ng/g	1.11	0.078	1
Perfluorotridecanoic Acid (PFTrDA)	1.70		ng/g	1.11	0.228	1
Perfluorotetradecanoic Acid (PFTA)	0.731	J	ng/g	1.11	0.060	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-04  
 Client ID: AC\_03\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 12:25  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	77		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>194</b>	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>502</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	125		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	<b>188</b>	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>263</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	72		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	103		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	128		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	64		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-04 D  
 Client ID: AC\_03\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 12:25  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/14/19 15:52  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	486		ng/g	5.57	0.724	5
PFOA/PFOS, Total	486		ng/g	1.11	0.047	5

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		65-151

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

**Lab ID:** L1923119-05  
**Client ID:** AC\_04\_20190529  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/29/19 14:30  
**Date Received:** 05/31/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/14/19 13:06  
**Analyst:** AJ  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.329	J	ng/g	2.57	0.058	1
Perfluoropentanoic Acid (PFPeA)	0.232	J	ng/g	2.57	0.118	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.57	0.100	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.57	0.166	1
Perfluorohexanoic Acid (PFHxA)	1.16	J	ng/g	2.57	0.135	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.57	0.215	1
Perfluoroheptanoic Acid (PFHpA)	0.341	J	ng/g	2.57	0.116	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	2.57	0.156	1
Perfluorooctanoic Acid (PFOA)	1.33	J	ng/g	2.57	0.108	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.83	J	ng/g	2.57	0.462	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.57	0.351	1
Perfluorononanoic Acid (PFNA)	0.204	J	ng/g	2.57	0.193	1
Perfluorooctanesulfonic Acid (PFOS)	2.62		ng/g	2.57	0.334	1
Perfluorodecanoic Acid (PFDA)	0.451	J	ng/g	2.57	0.172	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.35	J	ng/g	2.57	0.738	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.57	0.769	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	2.57	0.518	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	2.57	0.120	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.57	0.394	1
Perfluorooctanesulfonamide (FOSA)	5.39		ng/g	2.57	0.252	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.824	J	ng/g	2.57	0.217	1
Perfluorododecanoic Acid (PFDoA)	0.264	J	ng/g	2.57	0.180	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.57	0.526	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	2.57	0.139	1
PFOA/PFOS, Total	3.95	J	ng/g	2.57	0.108	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-05  
 Client ID: AC\_04\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 14:30  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>257</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	120		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	130		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	119		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	69		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-06  
 Client ID: AC\_05\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 15:05  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/14/19 13:39  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	8.16		ng/g	2.34	0.053	1
Perfluoropentanoic Acid (PFPeA)	12.7		ng/g	2.34	0.108	1
Perfluorobutanesulfonic Acid (PFBS)	1.30	J	ng/g	2.34	0.091	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.34	0.151	1
Perfluorohexanoic Acid (PFHxA)	32.6		ng/g	2.34	0.123	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.34	0.195	1
Perfluoroheptanoic Acid (PFHpA)	46.2		ng/g	2.34	0.105	1
Perfluorohexanesulfonic Acid (PFHxS)	1.22	J	ng/g	2.34	0.142	1
Perfluorooctanoic Acid (PFOA)	55.8		ng/g	2.34	0.098	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.66	J	ng/g	2.34	0.420	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.34	0.319	1
Perfluorononanoic Acid (PFNA)	54.4		ng/g	2.34	0.175	1
Perfluorooctanesulfonic Acid (PFOS)	16.4		ng/g	2.34	0.304	1
Perfluorodecanoic Acid (PFDA)	36.8		ng/g	2.34	0.157	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.45		ng/g	2.34	0.671	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.34	0.699	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.55		ng/g	2.34	0.471	1
Perfluoroundecanoic Acid (PFUnA)	24.6		ng/g	2.34	0.109	1
Perfluorodecanesulfonic Acid (PFDS)	1.14	J	ng/g	2.34	0.358	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	2.34	0.229	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.97	J	ng/g	2.34	0.198	1
Perfluorododecanoic Acid (PFDoA)	22.0		ng/g	2.34	0.164	1
Perfluorotridecanoic Acid (PFTrDA)	19.7		ng/g	2.34	0.478	1
Perfluorotetradecanoic Acid (PFTA)	14.7		ng/g	2.34	0.126	1
PFOA/PFOS, Total	72.2		ng/g	2.34	0.098	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-06  
 Client ID: AC\_05\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 15:05  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	107		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>285</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	116		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>188</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	114		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	71		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	107		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

**Lab ID:** L1923119-07  
**Client ID:** EB\_20190529  
**Sample Location:** COVENTRY, VT

**Date Collected:** 05/29/19 13:05  
**Date Received:** 05/31/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/11/19 20:55  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 06/10/19 09:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.96	0.400	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.96	0.388	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.96	0.233	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.96	0.443	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.96	0.322	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.96	0.240	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.96	0.221	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.96	0.369	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.96	0.231	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.96	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.96	0.674	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.96	0.306	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.96	0.494	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.96	0.298	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.96	1.19	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.96	1.10	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.96	0.635	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.96	0.255	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.96	0.961	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.96	0.569	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.96	0.788	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.96	0.365	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.96	0.321	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.96	0.243	1
PFOA/PFOS, Total	ND		ng/l	1.96	0.231	1
PFAS, Total (5)	ND		ng/l	1.96	0.221	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**SAMPLE RESULTS**

Lab ID: L1923119-07  
 Client ID: EB\_20190529  
 Sample Location: COVENTRY, VT

Date Collected: 05/29/19 13:05  
 Date Received: 05/31/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	200		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>292</b>	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>346</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	117		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**Method Blank Analysis  
Batch Quality Control**

**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/11/19 17:20  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 06/10/19 09:04

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 07 Batch: WG1246402-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/11/19 17:20  
Analyst: AJ

Extraction Method: EPA 537  
Extraction Date: 06/10/19 09:04

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 07 Batch: WG1246402-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	118		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	169		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	211		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>200</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	97		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	103		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	92		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/14/19 11:36  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-06 Batch: WG1247573-1					
Perfluorobutanoic Acid (PFBA)	0.074	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/14/19 11:36  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 06/12/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-06 Batch: WG1247573-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	96		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1923119

Project Number: 4536.00

Report Date: 06/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 07 Batch: WG1246402-2 WG1246402-3								
Perfluorobutanoic Acid (PFBA)	111		104		67-148	7		30
Perfluoropentanoic Acid (PFPeA)	124		119		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	153		145		65-157	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	124		124		37-219	0		30
Perfluorohexanoic Acid (PFHxA)	124		118		69-168	5		30
Perfluoropentanesulfonic Acid (PFPeS)	148		150		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	110		106		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	128		128		69-177	0		30
Perfluorooctanoic Acid (PFOA)	116		113		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	139		133		49-187	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	136		133		61-179	2		30
Perfluorononanoic Acid (PFNA)	119		117		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	96		91		52-151	5		30
Perfluorodecanoic Acid (PFDA)	118		111		63-171	6		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	135		141		56-173	4		30
Perfluorononanesulfonic Acid (PFNS)	143		144		48-150	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	116		105		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	103		102		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	102		102		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	147		129		46-170	13		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	106		111		45-170	5		30
Perfluorododecanoic Acid (PFDoA)	112		105		67-153	6		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1923119

Project Number: 4536.00

Report Date: 06/14/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 07 Batch: WG1246402-2 WG1246402-3								
Perfluorotridecanoic Acid (PFTrDA)	131		121		48-158	8		30
Perfluorotetradecanoic Acid (PFTA)	132		131		59-182	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		102		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		99		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	165		161		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		91		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		75		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	198		188		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		93		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		87		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		88		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>208</b>	Q	<b>182</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	88		100		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		93		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		13		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		92		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		88		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		90		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1923119

Project Number: 4536.00

Report Date: 06/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 Batch: WG1247573-2 WG1247573-3								
Perfluorobutanoic Acid (PFBA)	94		94		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	93		92		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	98		96		72-128	2		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		102		62-145	2		30
Perfluorohexanoic Acid (PFHxA)	103		102		70-132	1		30
Perfluoropentanesulfonic Acid (PFPeS)	97		91		73-123	6		30
Perfluoroheptanoic Acid (PFHpA)	92		93		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	98		99		67-130	1		30
Perfluorooctanoic Acid (PFOA)	90		88		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	87		100		64-140	14		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		95		70-132	2		30
Perfluorononanoic Acid (PFNA)	98		99		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	86		77		68-136	11		30
Perfluorodecanoic Acid (PFDA)	96		98		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	93		97		65-137	4		30
Perfluorononanesulfonic Acid (PFNS)	106		104		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	86		92		63-144	7		30
Perfluoroundecanoic Acid (PFUnA)	82		86		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	106		104		59-134	2		30
Perfluorooctanesulfonamide (FOSA)	92		68		67-137	30		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	95		96		61-139	1		30
Perfluorododecanoic Acid (PFDoA)	91		91		69-135	0		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1923119

Project Number: 4536.00

Report Date: 06/14/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 Batch: WG1247573-2 WG1247573-3								
Perfluorotridecanoic Acid (PFTrDA)	99		106		66-139	7		30
Perfluorotetradecanoic Acid (PFTA)	104		109		69-133	5		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		87		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		93		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	78		76		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		82		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		85		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		94		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		86		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		95		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		93		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	108		94		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		83		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		98		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		3		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		80		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		93		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEA)	99		91		26-160

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1923119

**Project Number:** 4536.00

**Report Date:** 06/14/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1247573-4 QC Sample: L1923119-01 Client ID: AC_01_20190529												
Perfluorobutanoic Acid (PFBA)	1.15J	5.51	4.96	90		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.393J	5.51	5.28	96		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.212J	5.51	5.41	98		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	5.51	5.03	91		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	1.95	5.51	6.95	91		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.145J	5.51	5.46	99		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	1.31	5.51	6.13	88		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	3.87	5.51	18.7	269	Q	-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	6.71	5.51	7.81	20	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.55	5.51	5.55	73		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	0.180J	5.51	5.87	107		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.865J	5.51	6.07	110		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	10.1	5.51	12.3	40	Q	-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	2.58	5.51	6.64	74		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.12J	5.51	4.35	79		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	5.51	6.13	111		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.960J	5.51	4.93	90		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.391J	5.51	5.29	96		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	0.268J	5.51	5.46	99		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	5.51	5.44	99		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	8.35	5.51	7.95	0	Q	-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	1.09J	5.51	6.04	110		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1923119

**Project Number:** 4536.00

**Report Date:** 06/14/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1247573-4 QC Sample: L1923119-01 Client ID: AC_01_20190529												
Perfluorotridecanoic Acid (PFTrDA)	0.417J	5.51	9.05	164	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	0.441J	5.51	6.39	116		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	239	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	127				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95				45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	72				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	68				65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	60				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113				70-151

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1247573-5 QC Sample: L1923119-05 Client ID: AC_04_20190529						
Perfluorobutanoic Acid (PFBA)	0.329J	0.252J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.232J	0.174J	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	1.16J	0.888J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.341J	0.326J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	1.33J	1.44	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.83J	0.673J	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	0.204J	0.123J	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	2.62	1.84	ng/g	35	Q	30
Perfluorodecanoic Acid (PFDA)	0.451J	0.475J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.35J	0.500J	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	0.062J	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	5.39	4.66	ng/g	15		30

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1247573-5 QC Sample: L1923119-05 Client ID: AC_04_20190529						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.824J	0.438J	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	0.264J	0.237J	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	0.092J	ng/g	NC		30
PFOA/PFOS, Total	3.95J	3.28	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		38	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		37	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		47	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	257	Q	104		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	120		45	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		45	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		50	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		37	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	130		66		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		38	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		42	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		38	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	99		49		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	119		56		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		36	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	69		31		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	71		28	Q	42-136

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1247573-5 QC Sample: L1923119-05 Client ID: AC_04_20190529						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		24	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		36		26-160





**Project Name:** NEWSVT LANDFILL**Lab Number:** L1923119**Project Number:** 4536.00**Report Date:** 06/14/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1923119-01A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(28)
L1923119-02A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(28)
L1923119-03A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(28)
L1923119-04A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(28)
L1923119-05A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(28)
L1923119-06A	Plastic 8oz unpreserved	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(28)
L1923119-07A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		5.6	Y	Absent		A2-537-ISOTOPE(14)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1923119  
**Report Date:** 06/14/19

## REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# MANSFIELD CHAIN OF CUSTODY

WESTBORO, MA  
TEL: 508-898-9220  
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MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

PAGE \_\_\_\_\_ OF \_\_\_\_\_

Date Rec'd in Lab: 5/31/19

ALPHA Job #: L1923119

### Project Information

Project Name: **NEWSVT Landfill**  
 Project Location: **Coventry, VT**  
 Project #: **4536.00**  
 Project Manager: **Matt Estabrooks**  
 ALPHA Quote #:

### Report Information - Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

### Billing Information

Same as Client info PO #: **4536.00**

### Client Information

Client: **Sanborn, Head & Assoc., Inc.**  
 Address: **187 Saint Paul Street**  
**Suite 4-C, Burlington, VT 05401**  
 Phone: **802-391-8504**  
 Fax:  
 Email: **mestabrooks@sanbornhead.com**

### Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)  
 Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

### Regulatory Requirements/Report Limits

State/Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

### PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here:

ANALYSIS

EPA-537(M) - Isotope Dilution

**SAMPLE HANDLING**

Filtration \_\_\_\_\_

Done

Not needed

Lab to do

Preservation

Lab to do

(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials		Sample Specific Comments	
		Date	Time					
973203-01	AC-01-20190529	5/29	10:00	Furniture	JHG/MEE	X		1
-02	AC-02-20190529	5/29	10:10	Mattress	JHG/MEE	X		1
-03	FD-AC-02-20190529	5/29	10:10	Mattress	JHG/MEE	X		1
-04	AC-03-20190529	5/29	12:25	Furniture	JHG/MEE	X		1
-05	AC-04-20190529	5/29	14:30	Furniture	JHG/MEE	X		1
-06	AC-05-20190529	5/29	15:05	Carpet	JHG/MEE	X		1
-07	EB-20190529	5/29	13:05	Water	JHG/MEE	X		1

Container Type	
Preservative	

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	5/31/2019	<i>[Signature]</i>	5/31/19 1:18 PM
<i>[Signature]</i>	5/31/2019 17:00	<i>[Signature]</i>	5/31/19 17:00
<i>[Signature]</i>	5-31-19 2055	<i>[Signature]</i>	5/31/19 16:55



## ANALYTICAL REPORT

Lab Number:	L1924538
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	06/24/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1924538-01	CV_01_20190606	SOLID	COVENTRY, VT	06/06/19 09:45	06/07/19
L1924538-02	SPLP_CV_01_20190606	SOLID	COVENTRY, VT	06/06/19 09:50	06/07/19
L1924538-03	CV_02_20190606	SOLID	COVENTRY, VT	06/06/19 11:30	06/07/19
L1924538-04	CV_03_20190606	SOLID	COVENTRY, VT	06/06/19 12:00	06/07/19
L1924538-05	FD_CV_03_20190606	SOLID	COVENTRY, VT	06/06/19 12:00	06/07/19
L1924538-06	CV_04_20190606	SOLID	COVENTRY, VT	06/06/19 12:40	06/07/19
L1924538-07	CV_05_20190606	SOLID	COVENTRY, VT	06/06/19 14:30	06/07/19
L1924538-08	CV_06_20190606	SOLID	COVENTRY, VT	06/06/19 15:35	06/07/19
L1924538-09	FB_20190606	WATER	COVENTRY, VT	06/06/19 09:00	06/07/19
L1924538-10	Redacted_01_2019060 4	SOIL	COVENTRY, VT	06/04/19 10:00	06/07/19
L1924538-11	FD_Redacted_01_201 90604	SOIL	COVENTRY, VT	06/04/19 10:10	06/07/19
L1924538-12	Redacted_SLUDGE_01_2 0190604	SLUDGE	COVENTRY, VT	06/04/19 12:45	06/07/19



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L1924538-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1251702-2 SPLP Blank, associated with L1924538-02, has a concentration above the reporting limit for 6:2FTS, however the extraction method blank (WG1217202-1) was non-detect to the RL. The results of the original analyses are reported and are qualified with a "B".

WG1251702-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1251702-4/-5 LCS/LCSD RPD(s), associated with L1924538-02, are above the acceptance criteria for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (37%).

WG1251985-6: The continuing calibration standard had the response for M2-8:2FTS and M8FOSA outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1251985-7: The continuing calibration standard had the response for 8:2FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1251985-7: The continuing calibration standard had the response for M2-6:2FTS, M2-8:2FTS and M8FOSA outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1924538-01, 03, -04, -05, -06, -07, -08, and -12: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

### Case Narrative (continued)

WG1249956-2, WG1249956-3, WG1250020-4, and WG1250020-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1249811-2 LCS recovery, associated with L1924538-10 and -11, is above the acceptance criteria for perfluorodecanesulfonic acid (pfd) (142%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1249811-2/-3 LCS/LCSD RPD(s), associated with L1924538-10 and -11, are above the acceptance criteria for 1H,1H,2H,2H-Perfluoro[1,2-13C<sub>2</sub>]Octanesulfonic Acid (M2-6:2FTS) (35%).

The WG1249956-2 LCS recovery, associated with L1924538-12, is above the acceptance criteria for perfluorodecanesulfonic acid (pfd) (149%) and perfluorooctanesulfonamide (fosa) (168%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1249956-3 LCSD recovery, associated with L1924538-12, is above the acceptance criteria for perfluorotetradecanoic acid (pfta) (138%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1249956-2/-3 LCS/LCSD RPD(s), associated with L1924538-12, are above the acceptance criteria for perfluorooctanesulfonamide (fosa) (41%).

The WG1249956-4 MS recoveries, performed on L1924538-12, are outside the acceptance criteria for perfluorohexanoic acid (pfhxa) (137%), perfluoroundecanoic acid (pfuna) (0%), perfluorodecanesulfonic acid (pfd) (0%), perfluorododecanoic acid (pfdoa) (0%), perfluorotridecanoic acid (pftrda) (0%) and perfluorotetradecanoic acid (pfta) (140%).

The WG1250020-4 MS recovery, performed on L1924538-01, is outside the acceptance criteria for perfluorotridecanoic acid (pftrda) (410%).

The WG1249811-3 Laboratory Duplicate RPD for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (35%), performed on WG1249811-2, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

The WG1250020-5 Laboratory Duplicate RPDs for perfluorobutanoic acid (pfba) (73%), perfluoropentanoic

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**Report Date:** 06/24/19

### Case Narrative (continued)

acid (pfpea) (64%), perfluorobutanesulfonic acid (pfbs) (85%), perfluorohexanoic acid (pfhxa) (77%), perfluoropentanesulfonic acid (pfpes) (90%), perfluoroheptanoic acid (pfhpa) (72%), perfluorohexanesulfonic acid (pfhxs) (81%), perfluorooctanoic acid (pfoa) (75%), perfluoroheptanesulfonic acid (pfhps) (85%), perfluorononanoic acid (pfna) (40%), perfluorooctanesulfonic acid (pfos) (78%), perfluorodecanoic acid (pfda) (39%), n-methyl perfluorooctanesulfonamidoacetic acid (nmefosaa) (85%), perfluorodecanesulfonic acid (pfds) (200%), perfluorooctanesulfonamide (fosa) (63%), n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (68%), perfluorododecanoic acid (pfdoa) (45%) and perfluorotetradecanoic acid (pfta) (36%), performed on L1924538-03, are outside the acceptance criteria. The elevated RPDs have been attributed to the non-homogeneous nature of the native sample.

The WG1249811-3 Laboratory Duplicate RPD for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (35%), performed on WG1249811-2, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

WG1250880-1: The continuing calibration standard had the response for the extracted internal standard 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1250880-1: The continuing calibration standard had the response for N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA) outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1250880-2: The continuing calibration standard had the response for the extracted internal standard 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1250880-2: The continuing calibration standard had the response for Perfluoropentanesulfonic Acid (PFPeS) outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1250880-3: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

### Case Narrative (continued)

Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1250880-4: The continuing calibration standard had the response for Perfluoropentanesulfonic Acid (PFPeS) outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1250880-4: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

WG1250880-4: The continuing calibration standard had the response for the extracted internal standard Perfluoro[13C8]Octanesulfonamide (M8FOSA), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1250880-5: The continuing calibration standard had the response for the extracted internal standard Perfluoro[13C8]Octanesulfonamide (M8FOSA), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1250880-5: The continuing calibration standard had the response for 8:2FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1250880-6: The continuing calibration standard had the response for the extracted internal standard Perfluoro[13C8]Octanesulfonamide (M8FOSA), 1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS) and 1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS) outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1251337-1: The continuing calibration standard had the response for M8FOSA, M2-6:2FTS and M2-

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**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

### Case Narrative (continued)

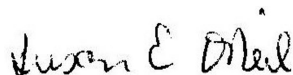
8:2FTS outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1251337-1: The continuing calibration standard had the response for 8:2FTS outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1251337-2: The continuing calibration standard had the response for M2-6:2FTS, M2-8:2FTS and M8FOSA outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 06/24/19

# ORGANICS

# SEMIVOLATILES



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-01  
**Client ID:** CV\_01\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 09:45  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/20/19 14:37  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.278	J	ng/g	1.15	0.026	1
Perfluoropentanoic Acid (PFPeA)	0.355	J	ng/g	1.15	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	0.170	J	ng/g	1.15	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.15	0.074	1
Perfluorohexanoic Acid (PFHxA)	1.77		ng/g	1.15	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.15	0.096	1
Perfluoroheptanoic Acid (PFHpA)	0.948	J	ng/g	1.15	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	0.411	J	ng/g	1.15	0.069	1
Perfluorooctanoic Acid (PFOA)	1.96		ng/g	1.15	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.363	J	ng/g	1.15	0.206	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.15	0.156	1
Perfluorononanoic Acid (PFNA)	0.273	J	ng/g	1.15	0.086	1
Perfluorooctanesulfonic Acid (PFOS)	4.26		ng/g	1.15	0.149	1
Perfluorodecanoic Acid (PFDA)	0.740	J	ng/g	1.15	0.077	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.15	0.329	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.15	0.343	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.232	J	ng/g	1.15	0.231	1
Perfluoroundecanoic Acid (PFUnA)	0.139	J	ng/g	1.15	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	1.30		ng/g	1.15	0.175	1
Perfluorooctanesulfonamide (FOSA)	0.327	J	ng/g	1.15	0.112	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.746	J	ng/g	1.15	0.097	1
Perfluorododecanoic Acid (PFDoA)	0.568	J	ng/g	1.15	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	0.357	J	ng/g	1.15	0.234	1
Perfluorotetradecanoic Acid (PFTA)	0.354	J	ng/g	1.15	0.062	1
PFOA/PFOS, Total	6.22		ng/g	1.15	0.048	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-01  
 Client ID: CV\_01\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 09:45  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			95			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			84			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			96			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>156</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			105			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			94			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			120			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			93			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			178			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			92			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			100			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			95			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			32			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			<b>249</b>	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			<b>197</b>	Q		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			38			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			<b>153</b>	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			100			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			<b>256</b>	Q		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1924538**Project Number:** 4536.00**Report Date:** 06/24/19**SAMPLE RESULTS**

Lab ID: L1924538-02  
 Client ID: SPLP\_CV\_01\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 09:50  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/24/19 03:04  
 Analyst: PB

Extraction Method: EPA 537  
 Extraction Date: 06/21/19 19:00

TCLP/SPLP Ext. Date: 06/17/19 14:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	7.57		ng/l	1.84	0.376	1
Perfluoropentanoic Acid (PFPeA)	7.40		ng/l	1.84	0.365	1
Perfluorobutanesulfonic Acid (PFBS)	3.80		ng/l	1.84	0.220	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.84	0.417	1
Perfluorohexanoic Acid (PFHxA)	44.0		ng/l	1.84	0.302	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.84	0.226	1
Perfluoroheptanoic Acid (PFHpA)	19.5		ng/l	1.84	0.208	1
Perfluorohexanesulfonic Acid (PFHxS)	21.9		ng/l	1.84	0.347	1
Perfluorooctanoic Acid (PFOA)	31.6		ng/l	1.84	0.218	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8.44	B	ng/l	1.84	1.23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.84	0.635	1
Perfluorononanoic Acid (PFNA)	3.42		ng/l	1.84	0.288	1
Perfluorooctanesulfonic Acid (PFOS)	36.2		ng/l	1.84	0.465	1
Perfluorodecanoic Acid (PFDA)	7.53		ng/l	1.84	0.280	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.24		ng/l	1.84	1.12	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.84	1.03	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.62		ng/l	1.84	0.598	1
Perfluoroundecanoic Acid (PFUnA)	0.804	J	ng/l	1.84	0.240	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.84	0.904	1
Perfluorooctanesulfonamide (FOSA)	0.845	J	ng/l	1.84	0.535	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	7.73		ng/l	1.84	0.742	1
Perfluorododecanoic Acid (PFDoA)	2.12		ng/l	1.84	0.343	1
Perfluorotridecanoic Acid (PFTrDA)	0.782	J	ng/l	1.84	0.302	1
Perfluorotetradecanoic Acid (PFTA)	1.69	J	ng/l	1.84	0.229	1
PFOA/PFOS, Total	67.8		ng/l	1.84	0.218	1
PFAS, Total (5)	113		ng/l	1.84	0.208	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1924538**Project Number:** 4536.00**Report Date:** 06/24/19**SAMPLE RESULTS**

Lab ID: L1924538-02  
 Client ID: SPLP\_CV\_01\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 09:50  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	51		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	147		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	60		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	173	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	181		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	203	Q	40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	131	Q	1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	178	Q	23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	116		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	117		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-03  
**Client ID:** CV\_02\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 11:30  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/20/19 14:53  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	4.83		ng/g	1.23	0.028	1
Perfluoropentanoic Acid (PFPeA)	9.33		ng/g	1.23	0.057	1
Perfluorobutanesulfonic Acid (PFBS)	3.77		ng/g	1.23	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	0.086	J	ng/g	1.23	0.079	1
Perfluorohexanoic Acid (PFHxA)	55.9		ng/g	1.23	0.065	1
Perfluoropentanesulfonic Acid (PFPeS)	4.68		ng/g	1.23	0.103	1
Perfluoroheptanoic Acid (PFHpA)	64.8		ng/g	1.23	0.056	1
Perfluorohexanesulfonic Acid (PFHxS)	13.2		ng/g	1.23	0.075	1
Perfluorooctanoic Acid (PFOA)	268		ng/g	1.23	0.052	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.15		ng/g	1.23	0.221	1
Perfluoroheptanesulfonic Acid (PFHpS)	5.34		ng/g	1.23	0.168	1
Perfluorononanoic Acid (PFNA)	12.5		ng/g	1.23	0.092	1
Perfluorooctanesulfonic Acid (PFOS)	299		ng/g	1.23	0.160	1
Perfluorodecanoic Acid (PFDA)	25.5		ng/g	1.23	0.083	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	5.05		ng/g	1.23	0.353	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.23	0.368	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	111		ng/g	1.23	0.248	1
Perfluoroundecanoic Acid (PFUnA)	6.10		ng/g	1.23	0.058	1
Perfluorodecanesulfonic Acid (PFDS)	0.401	J	ng/g	1.23	0.188	1
Perfluorooctanesulfonamide (FOSA)	18.6		ng/g	1.23	0.121	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	9.92		ng/g	1.23	0.104	1
Perfluorododecanoic Acid (PFDoA)	15.2		ng/g	1.23	0.086	1
Perfluorotridecanoic Acid (PFTrDA)	10.3		ng/g	1.23	0.252	1
Perfluorotetradecanoic Acid (PFTA)	8.42		ng/g	1.23	0.067	1
PFOA/PFOS, Total	567		ng/g	1.23	0.052	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-03  
 Client ID: CV\_02\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 11:30  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	56	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	40	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	225	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	182		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	140		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	49	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	118		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-04  
**Client ID:** CV\_03\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 12:00  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/20/19 15:26  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.452	J	ng/g	2.24	0.051	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	2.24	0.103	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.24	0.087	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.24	0.144	1
Perfluorohexanoic Acid (PFHxA)	1.20	J	ng/g	2.24	0.118	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.24	0.187	1
Perfluoroheptanoic Acid (PFHpA)	0.797	J	ng/g	2.24	0.101	1
Perfluorohexanesulfonic Acid (PFHxS)	0.961	J	ng/g	2.24	0.136	1
Perfluorooctanoic Acid (PFOA)	3.40		ng/g	2.24	0.094	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.01	J	ng/g	2.24	0.402	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.24	0.306	1
Perfluorononanoic Acid (PFNA)	0.305	J	ng/g	2.24	0.168	1
Perfluorooctanesulfonic Acid (PFOS)	16.6		ng/g	2.24	0.291	1
Perfluorodecanoic Acid (PFDA)	0.672	J	ng/g	2.24	0.150	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.874	J	ng/g	2.24	0.643	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.24	0.670	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.35		ng/g	2.24	0.452	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	2.24	0.105	1
Perfluorodecanesulfonic Acid (PFDS)	1.43	J	ng/g	2.24	0.343	1
Perfluorooctanesulfonamide (FOSA)	2.73		ng/g	2.24	0.220	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.07	J	ng/g	2.24	0.189	1
Perfluorododecanoic Acid (PFDoA)	0.536	J	ng/g	2.24	0.157	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.24	0.458	1
Perfluorotetradecanoic Acid (PFTA)	0.248	J	ng/g	2.24	0.121	1
PFOA/PFOS, Total	20.0		ng/g	2.24	0.094	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-04  
 Client ID: CV\_03\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 12:00  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			31	Q		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			28	Q		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			93			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			171	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			27	Q		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			30	Q		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			98			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			35	Q		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			183	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			38	Q		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			93			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			47	Q		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			184			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			30	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			48	Q		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			1			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			44			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			51	Q		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			59			26-160



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1924538**Project Number:** 4536.00**Report Date:** 06/24/19**SAMPLE RESULTS**

Lab ID: L1924538-05  
 Client ID: FD\_CV\_03\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 12:00  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/20/19 15:43  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.636	J	ng/g	2.37	0.054	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	2.37	0.109	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.37	0.093	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.37	0.153	1
Perfluorohexanoic Acid (PFHxA)	1.27	J	ng/g	2.37	0.125	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.37	0.198	1
Perfluoroheptanoic Acid (PFHpA)	0.830	J	ng/g	2.37	0.107	1
Perfluorohexanesulfonic Acid (PFHxS)	0.935	J	ng/g	2.37	0.144	1
Perfluorooctanoic Acid (PFOA)	3.92		ng/g	2.37	0.100	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.794	J	ng/g	2.37	0.426	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.37	0.324	1
Perfluorononanoic Acid (PFNA)	0.312	J	ng/g	2.37	0.178	1
Perfluorooctanesulfonic Acid (PFOS)	17.1		ng/g	2.37	0.309	1
Perfluorodecanoic Acid (PFDA)	0.758	J	ng/g	2.37	0.159	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.769	J	ng/g	2.37	0.681	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.37	0.710	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.02	J	ng/g	2.37	0.478	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	2.37	0.111	1
Perfluorodecanesulfonic Acid (PFDS)	0.770	J	ng/g	2.37	0.363	1
Perfluorooctanesulfonamide (FOSA)	1.35	J	ng/g	2.37	0.233	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.98	J	ng/g	2.37	0.200	1
Perfluorododecanoic Acid (PFDoA)	0.559	J	ng/g	2.37	0.166	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.37	0.485	1
Perfluorotetradecanoic Acid (PFTA)	0.240	J	ng/g	2.37	0.128	1
PFOA/PFOS, Total	21.0		ng/g	2.37	0.100	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-05  
 Client ID: FD\_CV\_03\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 12:00  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	30	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	26	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	120		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	34	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	32	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	33	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	92		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	32	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	73		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	65		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	16	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	41	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	3		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	28	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	46	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	48		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-06  
**Client ID:** CV\_04\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 12:40  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/20/19 16:00  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	4.26		ng/g	2.16	0.049	1
Perfluoropentanoic Acid (PFPeA)	2.97		ng/g	2.16	0.099	1
Perfluorobutanesulfonic Acid (PFBS)	5.20		ng/g	2.16	0.084	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.16	0.139	1
Perfluorohexanoic Acid (PFHxA)	38.5		ng/g	2.16	0.114	1
Perfluoropentanesulfonic Acid (PFPeS)	2.12	J	ng/g	2.16	0.180	1
Perfluoroheptanoic Acid (PFHpA)	45.1		ng/g	2.16	0.098	1
Perfluorohexanesulfonic Acid (PFHxS)	19.4		ng/g	2.16	0.131	1
Perfluorooctanoic Acid (PFOA)	148		ng/g	2.16	0.091	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.789	J	ng/g	2.16	0.388	1
Perfluoroheptanesulfonic Acid (PFHpS)	6.83		ng/g	2.16	0.295	1
Perfluorononanoic Acid (PFNA)	2.32		ng/g	2.16	0.162	1
Perfluorooctanesulfonic Acid (PFOS)	513		ng/g	2.16	0.281	1
Perfluorodecanoic Acid (PFDA)	0.679	J	ng/g	2.16	0.145	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	2.16	0.620	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.16	0.646	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	236		ng/g	2.16	0.436	1
Perfluoroundecanoic Acid (PFUnA)	0.251	J	ng/g	2.16	0.101	1
Perfluorodecanesulfonic Acid (PFDS)	1.64	J	ng/g	2.16	0.331	1
Perfluorooctanesulfonamide (FOSA)	14.5		ng/g	2.16	0.212	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.05	J	ng/g	2.16	0.183	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	2.16	0.151	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.16	0.442	1
Perfluorotetradecanoic Acid (PFTA)	0.125	J	ng/g	2.16	0.117	1
PFOA/PFOS, Total	661		ng/g	2.16	0.091	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-06  
 Client ID: CV\_04\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 12:40  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			79			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			70			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			128			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>256</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			136			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			126			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			153			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			81			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			140			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			124			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			106			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			89			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			81			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			94			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			97			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			13			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			75			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			<b>44</b>	Q		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			99			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-07  
**Client ID:** CV\_05\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 14:30  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/20/19 16:16  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.898	J	ng/g	1.23	0.028	1
Perfluoropentanoic Acid (PFPeA)	0.191	J	ng/g	1.23	0.057	1
Perfluorobutanesulfonic Acid (PFBS)	1.76		ng/g	1.23	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.23	0.080	1
Perfluorohexanoic Acid (PFHxA)	1.68		ng/g	1.23	0.065	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.23	0.103	1
Perfluoroheptanoic Acid (PFHpA)	0.169	J	ng/g	1.23	0.056	1
Perfluorohexanesulfonic Acid (PFHxS)	0.167	J	ng/g	1.23	0.075	1
Perfluorooctanoic Acid (PFOA)	0.364	J	ng/g	1.23	0.052	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.23	0.222	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.23	0.168	1
Perfluorononanoic Acid (PFNA)	0.129	J	ng/g	1.23	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	1.18	J	ng/g	1.23	0.160	1
Perfluorodecanoic Acid (PFDA)	0.140	J	ng/g	1.23	0.083	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.23	0.354	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.23	0.369	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.709	J	ng/g	1.23	0.249	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.23	0.058	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.23	0.189	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.23	0.121	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.23	0.104	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.23	0.086	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.23	0.252	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.23	0.067	1
PFOA/PFOS, Total	1.54	J	ng/g	1.23	0.052	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-07  
 Client ID: CV\_05\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 14:30  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	86		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>152</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	176		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	49		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-08  
**Client ID:** CV\_06\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 15:35  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/20/19 16:33  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.054	J	ng/g	1.17	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.17	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.17	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.17	0.075	1
Perfluorohexanoic Acid (PFHxA)	0.113	J	ng/g	1.17	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.17	0.097	1
Perfluoroheptanoic Acid (PFHpA)	0.081	J	ng/g	1.17	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	0.227	J	ng/g	1.17	0.071	1
Perfluorooctanoic Acid (PFOA)	0.288	J	ng/g	1.17	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.17	0.209	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.17	0.159	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.17	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	0.491	J	ng/g	1.17	0.152	1
Perfluorodecanoic Acid (PFDA)	0.095	J	ng/g	1.17	0.078	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.17	0.335	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.17	0.349	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.17	0.235	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.17	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.17	0.178	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.17	0.114	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.17	0.099	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.17	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.17	0.238	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.17	0.063	1
PFOA/PFOS, Total	0.779	J	ng/g	1.17	0.049	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-08  
**Client ID:** CV\_06\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 15:35  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			84			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			93			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			104			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>267</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			92			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			86			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			126			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			83			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			<b>196</b>	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			88			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			103			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			86			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			126			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			104			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			103			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			57			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			117			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			68			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			63			26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

**Lab ID:** L1924538-09  
**Client ID:** FB\_20190606  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/06/19 09:00  
**Date Received:** 06/07/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/21/19 11:33  
**Analyst:** PB

**Extraction Method:** EPA 537  
**Extraction Date:** 06/19/19 10:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.87	0.382	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.87	0.371	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.87	0.223	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.87	0.423	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.87	0.307	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.87	0.230	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.87	0.211	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.87	0.352	1
Perfluorooctanoic Acid (PFOA)	0.221	J	ng/l	1.87	0.221	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.87	1.25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.87	0.644	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.87	0.292	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.87	0.472	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.87	0.285	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.33	J	ng/l	1.87	1.13	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.87	1.05	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.87	0.607	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.87	0.243	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.87	0.918	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.87	0.543	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.87	0.753	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.87	0.348	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.87	0.306	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.87	0.232	1
PFOA/PFOS, Total	0.221	J	ng/l	1.87	0.221	1
PFAS, Total (5)	0.221	J	ng/l	1.87	0.211	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-09  
 Client ID: FB\_20190606  
 Sample Location: COVENTRY, VT

Date Collected: 06/06/19 09:00  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			97		2-156	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			94		16-173	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			110		31-159	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			64		1-313	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			114		21-145	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			96		30-139	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			112		47-153	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			86		36-149	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			40		1-244	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			79		34-146	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			89		42-146	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			85		38-144	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			39		7-170	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			55		1-181	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			82		40-144	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			42		1-87	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			50		23-146	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			72		24-161	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			62		33-143	

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1924538**Project Number:** 4536.00**Report Date:** 06/24/19**SAMPLE RESULTS**

Lab ID: L1924538-10  
 Client ID: Redacted\_01\_20190604  
 Sample Location: COVENTRY, VT

Date Collected: 06/04/19 10:00  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/20/19 23:46  
 Analyst: PB  
 Percent Solids: 89%

Extraction Method: EPA 537(M)  
 Extraction Date: 06/18/19 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.023	J	ng/g	0.850	0.019	1
Perfluoropentanoic Acid (PFPeA)	0.041	J	ng/g	0.850	0.039	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.850	0.033	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.850	0.055	1
Perfluorohexanoic Acid (PFHxA)	0.046	J	ng/g	0.850	0.045	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.850	0.071	1
Perfluoroheptanoic Acid (PFHpA)	0.046	J	ng/g	0.850	0.038	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.850	0.051	1
Perfluorooctanoic Acid (PFOA)	0.238	J	ng/g	0.850	0.036	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	24.4		ng/g	0.850	0.152	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.850	0.116	1
Perfluorononanoic Acid (PFNA)	0.101	J	ng/g	0.850	0.064	1
Perfluorooctanesulfonic Acid (PFOS)	1.07		ng/g	0.850	0.110	1
Perfluorodecanoic Acid (PFDA)	0.105	J	ng/g	0.850	0.057	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.850	0.244	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.850	0.254	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.850	0.171	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.850	0.040	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.850	0.130	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.850	0.083	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.850	0.072	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.850	0.060	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.850	0.174	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.850	0.046	1
PFOA/PFOS, Total	1.31	J	ng/g	0.850	0.036	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1924538**Project Number:** 4536.00**Report Date:** 06/24/19**SAMPLE RESULTS**

Lab ID: L1924538-10  
 Client ID: Redacted\_01\_20190604  
 Sample Location: COVENTRY, VT

Date Collected: 06/04/19 10:00  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	59		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	62		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	45		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	83		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-11  
 Client ID: FD\_Redacted\_01\_20190604  
 Sample Location: COVENTRY, VT

Date Collected: 06/04/19 10:10  
 Date Received: 06/07/19  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/21/19 00:02  
 Analyst: PB  
 Percent Solids: 83%

Extraction Method: EPA 537(M)  
 Extraction Date: 06/18/19 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.023	J	ng/g	0.911	0.021	1
Perfluoropentanoic Acid (PFPeA)	0.057	J	ng/g	0.911	0.042	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.911	0.036	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.911	0.059	1
Perfluorohexanoic Acid (PFHxA)	0.057	J	ng/g	0.911	0.048	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.911	0.076	1
Perfluoroheptanoic Acid (PFHpA)	0.060	J	ng/g	0.911	0.041	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.911	0.055	1
Perfluorooctanoic Acid (PFOA)	0.246	J	ng/g	0.911	0.038	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.63		ng/g	0.911	0.164	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.911	0.124	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.911	0.068	1
Perfluorooctanesulfonic Acid (PFOS)	1.04		ng/g	0.911	0.118	1
Perfluorodecanoic Acid (PFDA)	0.123	J	ng/g	0.911	0.061	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.911	0.262	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.911	0.272	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.911	0.184	1
Perfluoroundecanoic Acid (PFUnA)	0.055	J	ng/g	0.911	0.043	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.911	0.139	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.911	0.089	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.911	0.077	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.911	0.064	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.911	0.186	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.911	0.049	1
PFOA/PFOS, Total	1.29	J	ng/g	0.911	0.038	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-11  
 Client ID: FD\_Redacted\_01\_20190604  
 Sample Location: COVENTRY, VT

Date Collected: 06/04/19 10:10  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	110		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	42		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	49		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	97		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1924538**Project Number:** 4536.00**Report Date:** 06/24/19**SAMPLE RESULTS**

Lab ID: L1924538-12  
 Client ID: Redacted\_SLUDGE\_01\_20190604  
 Sample Location: COVENTRY, VT

Date Collected: 06/04/19 12:45  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/20/19 12:00  
 Analyst: PB  
 Percent Solids: 18%

Extraction Method: EPA 537(M)  
 Extraction Date: 06/18/19 16:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.099	J	ng/g	2.66	0.060	1
Perfluoropentanoic Acid (PFPeA)	0.270	J	ng/g	2.66	0.122	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.66	0.104	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.66	0.172	1
Perfluorohexanoic Acid (PFHxA)	1.69	J	ng/g	2.66	0.140	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.66	0.222	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	2.66	0.120	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	2.66	0.161	1
Perfluorooctanoic Acid (PFOA)	1.29	J	ng/g	2.66	0.112	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	2.66	0.478	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.66	0.363	1
Perfluorononanoic Acid (PFNA)	1.05	J	ng/g	2.66	0.200	1
Perfluorooctanesulfonic Acid (PFOS)	8.62		ng/g	2.66	0.346	1
Perfluorodecanoic Acid (PFDA)	5.10		ng/g	2.66	0.178	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.31		ng/g	2.66	0.764	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.66	0.796	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	15.2		ng/g	2.66	0.536	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	2.66	0.124	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	2.66	0.407	1
Perfluorooctanesulfonamide (FOSA)	1.52	J	ng/g	2.66	0.261	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	10.1		ng/g	2.66	0.225	1
Perfluorododecanoic Acid (PFDoA)	2.19	J	ng/g	2.66	0.186	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.66	0.544	1
Perfluorotetradecanoic Acid (PFTA)	0.744	J	ng/g	2.66	0.144	1
PFOA/PFOS, Total	9.91	J	ng/g	2.66	0.112	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**SAMPLE RESULTS**

Lab ID: L1924538-12  
 Client ID: Redacted\_SLUDGE\_01\_20190604  
 Sample Location: COVENTRY, VT

Date Collected: 06/04/19 12:45  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	47	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	41	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	168	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	208	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	185		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	49	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	30	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	32	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/20/19 17:08  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 06/18/19 12:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 10-11 Batch: WG1249811-1					
Perfluorobutanoic Acid (PFBA)	0.082	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/20/19 17:08  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 06/18/19 12:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 10-11 Batch: WG1249811-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	119		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	122		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	135		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	46		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	50		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/20/19 10:54  
**Analyst:** PB

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/18/19 16:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 12 Batch: WG1249956-1					
Perfluorobutanoic Acid (PFBA)	0.071	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/20/19 10:54  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 06/18/19 16:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 12 Batch: WG1249956-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	65		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	38		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	42		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/20/19 13:30  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03-08 Batch: WG1250020-1					
Perfluorobutanoic Acid (PFBA)	0.094	J	ng/g	1.33	0.030
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.33	0.061
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.33	0.052
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.33	0.086
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.33	0.070
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.33	0.111
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.33	0.060
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.33	0.081
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.33	0.056
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.33	0.239
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.33	0.182
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.33	0.100
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.33	0.173
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.33	0.089
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.33	0.383
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.33	0.399
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.33	0.269
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.33	0.062
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.33	0.204
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.33	0.131
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.134	J	ng/g	1.33	0.113
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.33	0.093
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.33	0.273
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.33	0.072
PFOA/PFOS, Total	ND		ng/g	1.33	0.056

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/20/19 13:30  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 06/18/19 18:19

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03-08 Batch: WG1250020-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	90		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	116		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	43		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	41		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	3		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/21/19 09:05  
Analyst: PB

Extraction Method: EPA 537  
Extraction Date: 06/19/19 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 09 Batch: WG1250266-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 06/21/19 09:05  
Analyst: PB

Extraction Method: EPA 537  
Extraction Date: 06/19/19 10:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 09 Batch: WG1250266-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	73		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	128		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	110		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	112		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	46		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	38		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	58		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/24/19 01:58  
Analyst: PB  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 06/21/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1251702-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.88	0.383
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.88	0.372
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.88	0.224
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.88	0.425
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.88	0.308
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.88	0.230
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.88	0.212
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.353
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	0.222
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.647
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.293
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.88	0.474
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.286
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	1.14
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.88	1.05
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.616	J	ng/l	1.88	0.609
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.244
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.921
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.545
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.756
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.350
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.88	0.308
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	1.88	0.233
PFOA/PFOS, Total	ND		ng/l	1.88	0.222
PFAS, Total (5)	ND		ng/l	1.88	0.212

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/24/19 01:58  
Analyst: PB  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 06/21/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1251702-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	81		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	130		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	81		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	57		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	76		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	58		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	46		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	40		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/24/19 02:14  
Analyst: PB  
TCLP/SPLP Extraction Date: 06/17/19 14:43

Extraction Method: EPA 537  
Extraction Date: 06/21/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1251702-2					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.06		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 06/24/19 02:14  
Analyst: PB  
TCLP/SPLP Extraction Date: 06/17/19 14:43

Extraction Method: EPA 537  
Extraction Date: 06/21/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1251702-2					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	139		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	123		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	127		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	54		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	43		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	60		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

Report Date: 06/24/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-11 Batch: WG1249811-2 WG1249811-3								
Perfluorobutanoic Acid (PFBA)	95		98		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	93		96		69-132	3		30
Perfluorobutanesulfonic Acid (PFBS)	92		96		72-128	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	95		90		62-145	5		30
Perfluorohexanoic Acid (PFHxA)	108		113		70-132	5		30
Perfluoropentanesulfonic Acid (PFPeS)	87		87		73-123	0		30
Perfluoroheptanoic Acid (PFHpA)	99		105		71-131	6		30
Perfluorohexanesulfonic Acid (PFHxS)	97		97		67-130	0		30
Perfluorooctanoic Acid (PFOA)	100		106		69-133	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	75		107		64-140	35	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	108		96		70-132	12		30
Perfluorononanoic Acid (PFNA)	102		112		72-129	9		30
Perfluorooctanesulfonic Acid (PFOS)	92		92		68-136	0		30
Perfluorodecanoic Acid (PFDA)	107		115		69-133	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	92		70		65-137	27		30
Perfluorononanesulfonic Acid (PFNS)	117		108		69-125	8		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	97		104		63-144	7		30
Perfluoroundecanoic Acid (PFUnA)	93		97		64-136	4		30
Perfluorodecanesulfonic Acid (PFDS)	142	Q	126		59-134	12		30
Perfluorooctanesulfonamide (FOSA)	101		118		67-137	16		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	91		99		61-139	8		30
Perfluorododecanoic Acid (PFDoA)	99		111		69-135	11		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

Report Date: 06/24/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 10-11 Batch: WG1249811-2 WG1249811-3								
Perfluorotridecanoic Acid (PFTTrDA)	94		105		66-139	11		30
Perfluorotetradecanoic Acid (PFTA)	113		119		69-133	5		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		95		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		93		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	116		113		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	68		63		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	120		115		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	108		105		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	129		127		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		45		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		107		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		101		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	48		48		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		76		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		108		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41		15		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		75		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		100		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		91		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

Report Date: 06/24/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 Batch: WG1249956-2 WG1249956-3								
Perfluorobutanoic Acid (PFBA)	110		110		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	109		112		69-132	3		30
Perfluorobutanesulfonic Acid (PFBS)	108		112		72-128	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	100		112		62-145	11		30
Perfluorohexanoic Acid (PFHxA)	130		126		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	105		106		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	117		117		71-131	0		30
Perfluorohexanesulfonic Acid (PFHxS)	113		113		67-130	0		30
Perfluorooctanoic Acid (PFOA)	119		117		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		106		64-140	7		30
Perfluoroheptanesulfonic Acid (PFHpS)	121		117		70-132	3		30
Perfluorononanoic Acid (PFNA)	121		124		72-129	2		30
Perfluorooctanesulfonic Acid (PFOS)	102		99		68-136	3		30
Perfluorodecanoic Acid (PFDA)	120		124		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	85		110		65-137	26		30
Perfluorononanesulfonic Acid (PFNS)	125		124		69-125	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		108		63-144	2		30
Perfluoroundecanoic Acid (PFUnA)	110		104		64-136	6		30
Perfluorodecanesulfonic Acid (PFDS)	149	Q	133		59-134	11		30
Perfluorooctanesulfonamide (FOSA)	168	Q	111		67-137	41	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	102		134		61-139	27		30
Perfluorododecanoic Acid (PFDoA)	131		125		69-135	5		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 Batch: WG1249956-2 WG1249956-3								
Perfluorotridecanoic Acid (PFTrDA)	132		117		66-139	12		30
Perfluorotetradecanoic Acid (PFTA)	132		138	Q	69-133	4		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		74		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		80		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		110		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		53	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		105		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		118		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		36		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		79		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		101		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		93		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		32		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	124		70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	0	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	117		59		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		93		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		84		26-160



## Lab Control Sample Analysis

### Batch Quality Control

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Project Number: 4536.00

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Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03-08 Batch: WG1250020-2 WG1250020-3								
Perfluorobutanoic Acid (PFBA)	103		101		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	101		100		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	101		101		72-128	0		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	103		100		62-145	3		30
Perfluorohexanoic Acid (PFHxA)	123		117		70-132	5		30
Perfluoropentanesulfonic Acid (PFPeS)	97		95		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	110		107		71-131	3		30
Perfluorohexanesulfonic Acid (PFHxS)	107		102		67-130	5		30
Perfluorooctanoic Acid (PFOA)	114		107		69-133	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	90		84		64-140	7		30
Perfluoroheptanesulfonic Acid (PFHpS)	106		100		70-132	6		30
Perfluorononanoic Acid (PFNA)	113		112		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	89		86		68-136	3		30
Perfluorodecanoic Acid (PFDA)	113		105		69-133	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	116		128		65-137	10		30
Perfluorononanesulfonic Acid (PFNS)	111		105		69-125	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	87		85		63-144	2		30
Perfluoroundecanoic Acid (PFUnA)	94		97		64-136	3		30
Perfluorodecanesulfonic Acid (PFDS)	125		120		59-134	4		30
Perfluorooctanesulfonamide (FOSA)	108		95		67-137	13		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	133		126		61-139	5		30
Perfluorododecanoic Acid (PFDoA)	122		115		69-135	6		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

Report Date: 06/24/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03-08 Batch: WG1250020-2 WG1250020-3								
Perfluorotridecanoic Acid (PFTrDA)	117		115		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	128		122		69-133	5		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		94		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		92		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		110		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		68		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		110		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		96		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	114		122		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	42		47		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		79		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		108		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		100		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	37		34		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		77		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	105		98		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		60		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		93		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		89		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09 Batch: WG1250266-2 WG1250266-3								
Perfluorobutanoic Acid (PFBA)	100		108		67-148	8		30
Perfluoropentanoic Acid (PFPeA)	101		108		63-161	7		30
Perfluorobutanesulfonic Acid (PFBS)	105		110		65-157	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	93		100		37-219	7		30
Perfluorohexanoic Acid (PFHxA)	116		123		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	109		120		52-156	10		30
Perfluoroheptanoic Acid (PFHpA)	106		114		58-159	7		30
Perfluorohexanesulfonic Acid (PFHxS)	110		122		69-177	10		30
Perfluorooctanoic Acid (PFOA)	108		116		63-159	7		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	82		105		49-187	25		30
Perfluoroheptanesulfonic Acid (PFHpS)	106		111		61-179	5		30
Perfluorononanoic Acid (PFNA)	110		113		68-171	3		30
Perfluorooctanesulfonic Acid (PFOS)	90		90		52-151	0		30
Perfluorodecanoic Acid (PFDA)	109		124		63-171	13		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	74		78		56-173	5		30
Perfluorononanesulfonic Acid (PFNS)	106		111		48-150	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	86		103		60-166	18		30
Perfluoroundecanoic Acid (PFUnA)	92		108		60-153	16		30
Perfluorodecanesulfonic Acid (PFDS)	113		124		38-156	9		30
Perfluorooctanesulfonamide (FOSA)	103		111		46-170	7		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	99		124		45-170	22		30
Perfluorododecanoic Acid (PFDoA)	112		123		67-153	9		30

## Lab Control Sample Analysis

### Batch Quality Control

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Project Number: 4536.00

Report Date: 06/24/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09 Batch: WG1250266-2 WG1250266-3								
Perfluorotridecanoic Acid (PFTTrDA)	114		121		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	121		130		59-182	7		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		94		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	120		113		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		71		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	121		124		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		105		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		101		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	44		37		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		81		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		93		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		84		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	38		36		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		65		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53		41		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		53		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		78		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	70		71		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

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Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1251702-3 WG1251702-4								
Perfluorobutanoic Acid (PFBA)	105		108		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	106		108		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	108		111		65-157	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	105		96		37-219	9		30
Perfluorohexanoic Acid (PFHxA)	119		123		69-168	3		30
Perfluoropentanesulfonic Acid (PFPeS)	113		110		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	110		114		58-159	4		30
Perfluorohexanesulfonic Acid (PFHxS)	111		109		69-177	2		30
Perfluorooctanoic Acid (PFOA)	112		115		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	90		131		49-187	37	Q	30
Perfluoroheptanesulfonic Acid (PFHpS)	106		117		61-179	10		30
Perfluorononanoic Acid (PFNA)	115		120		68-171	4		30
Perfluorooctanesulfonic Acid (PFOS)	88		91		52-151	3		30
Perfluorodecanoic Acid (PFDA)	114		125		63-171	9		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		100		56-173	7		30
Perfluorononanesulfonic Acid (PFNS)	114		111		48-150	3		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		111		60-166	10		30
Perfluoroundecanoic Acid (PFUnA)	99		94		60-153	5		30
Perfluorodecanesulfonic Acid (PFDS)	114		127		38-156	11		30
Perfluorooctanesulfonamide (FOSA)	116		110		46-170	5		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	110		107		45-170	3		30
Perfluorododecanoic Acid (PFDoA)	118		128		67-153	8		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

Report Date: 06/24/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1251702-3 WG1251702-4								
Perfluorotridecanoic Acid (PFTTrDA)	102		110		48-158	8		30
Perfluorotetradecanoic Acid (PFTA)	131		131		59-182	0		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		107		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		107		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128		132		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	80		83		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	129		132		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		113		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		123		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		100		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		60		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	107		105		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		96		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	57		50		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		66		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		108		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	68		71		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		53		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62		64		33-143

## Matrix Spike Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1924538

**Project Number:** 4536.00

**Report Date:** 06/24/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1249956-4 QC Sample: L1924538-12 Client ID: Redacted_SLUDGE_01_20190604												
Perfluorobutanoic Acid (PFBA)	0.099J	13.8	14.9	108		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.270J	13.8	15.2	110		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	13.8	14.4	104		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	13.8	14.2	103		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	1.69J	13.8	19.0	137	Q	-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	13.8	12.0	87		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	13.8	16.1	116		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	13.8	15.9	115		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	1.29J	13.8	17.9	129		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	13.8	14.4	104		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	13.8	13.4	97		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	1.05J	13.8	17.8	129		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	8.62	13.8	21.0	90		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	5.10	13.8	21.5	119		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.31	13.8	17.4	102		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	13.8	13.9	101		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	15.2	13.8	30.5	111		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	13.8	ND	0	Q	-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	13.8	ND	0	Q	-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	1.52J	13.8	18.6	135		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	10.1	13.8	25.8	114		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	2.19J	13.8	20.6	149	Q	-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1924538

**Project Number:** 4536.00

**Report Date:** 06/24/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1249956-4 QC Sample: L1924538-12 Client ID: Redacted_SLUDGE_01_20190604												
Perfluorotridecanoic Acid (PFTrDA)	ND	13.8	18.0	130		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	0.744J	13.8	19.4	140	Q	-	-		69-133	-		30

Surrogate (Extracted Internal Standard)	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	176				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	195	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	209	Q			32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	33	Q			42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62				45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	51	Q			64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	31	Q			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	45				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	90				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	48	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	37	Q			70-151



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1924538

**Project Number:** 4536.00

**Report Date:** 06/24/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03-08 QC Batch ID: WG1250020-4 QC Sample: L1924538-01 Client ID: CV_01_20190606												
Perfluorobutanoic Acid (PFBA)	0.278J	5.63	5.78	103		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.355J	5.63	6.00	107		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.170J	5.63	6.12	109		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	5.63	5.18	92		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	1.77	5.63	8.78	124		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	5.63	4.99	89		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.948J	5.63	7.24	129		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	0.411J	5.63	6.46	115		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	1.96	5.63	8.50	116		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.363J	5.63	5.54	98		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	5.63	6.09	108		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.273J	5.63	6.32	112		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	4.26	5.63	10.4	109		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	0.740J	5.63	6.96	124		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	5.63	5.32	94		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	5.63	5.61	100		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.232J	5.63	5.10	91		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.139J	5.63	5.67	101		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	1.30	5.63	6.77	97		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	0.327J	5.63	6.17	110		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.746J	5.63	6.35	113		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	0.568J	5.63	7.06	125		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1924538

**Project Number:** 4536.00

**Report Date:** 06/24/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03-08 QC Batch ID: WG1250020-4 QC Sample: L1924538-01 Client ID: CV_01_20190606												
Perfluorotridecanoic Acid (PFTTrDA)	0.357J	5.63	23.1	410	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.354J	5.63	7.38	131		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	45				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	165	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	179				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	153	Q			42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	247	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	168	Q			64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	246	Q			26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	97				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89				65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	64				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96				70-151

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1924538

Report Date: 06/24/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03-08 QC Batch ID: WG1250020-5 QC Sample: L1924538-03 Client ID: CV_02_20190606						
Perfluorobutanoic Acid (PFBA)	4.83	10.4	ng/g	73	Q	30
Perfluoropentanoic Acid (PFPeA)	9.33	18.2	ng/g	64	Q	30
Perfluorobutanesulfonic Acid (PFBS)	3.77	9.30	ng/g	85	Q	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	0.086J	0.108J	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	55.9	126	ng/g	77	Q	30
Perfluoropentanesulfonic Acid (PFPeS)	4.68	12.3	ng/g	90	Q	30
Perfluoroheptanoic Acid (PFHpA)	64.8	137	ng/g	72	Q	30
Perfluorohexanesulfonic Acid (PFHxS)	13.2	31.1	ng/g	81	Q	30
Perfluorooctanoic Acid (PFOA)	268	593E	ng/g	75	Q	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.15	5.58	ng/g	29		30
Perfluoroheptanesulfonic Acid (PFHpS)	5.34	13.2	ng/g	85	Q	30
Perfluorononanoic Acid (PFNA)	12.5	18.7	ng/g	40	Q	30
Perfluorooctanesulfonic Acid (PFOS)	299	678E	ng/g	78	Q	30
Perfluorodecanoic Acid (PFDA)	25.5	38.0	ng/g	39	Q	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	5.05	4.59	ng/g	10		30
Perfluorononanesulfonic Acid (PFNS)	ND	0.866J	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	111	274	ng/g	85	Q	30
Perfluoroundecanoic Acid (PFUnA)	6.10	7.36	ng/g	19		30
Perfluorodecanesulfonic Acid (PFDS)	0.401J	1.74	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	18.6	35.7	ng/g	63	Q	30

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03-08 QC Batch ID: WG1250020-5 QC Sample: L1924538-03 Client ID: CV_02_20190606						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	9.92	20.1	ng/g	68	Q	30
Perfluorododecanoic Acid (PFDoA)	15.2	24.0	ng/g	45	Q	30
Perfluorotridecanoic Acid (PFTTrDA)	10.3	9.46	ng/g	9		30
Perfluorotetradecanoic Acid (PFTA)	8.42	12.1	ng/g	36	Q	30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	56	Q	67		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	40	Q	48	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		156	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	225	Q	299	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		107		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	59	Q	75		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		132		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		72		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	182		263	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		77		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		104		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	140		192	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		89		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	101		105		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		34		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		80		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	49	Q	54	Q	56-148

**Lab Duplicate Analysis**  
Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1924538

**Report Date:** 06/24/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03-08 QC Batch ID: WG1250020-5 QC Sample: L1924538-03						
Client ID: CV_02_20190606						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	118		102		26-160

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1924538

Report Date: 06/24/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1251702-5 QC Sample: L1924538-02						
Client ID: SPLP_CV_01_20190606						
Perfluorobutanoic Acid (PFBA)	7.57	7.09	ng/l	7		30
Perfluoropentanoic Acid (PFPeA)	7.40	7.61	ng/l	3		30
Perfluorobutanesulfonic Acid (PFBS)	3.80	3.53	ng/l	7		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	44.0	42.6	ng/l	3		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	19.5	20.3	ng/l	4		30
Perfluorohexanesulfonic Acid (PFHxS)	21.9	20.7	ng/l	6		30
Perfluorooctanoic Acid (PFOA)	31.6	29.6	ng/l	7		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	8.44	7.66B	ng/l	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	3.42	3.59	ng/l	5		30
Perfluorooctanesulfonic Acid (PFOS)	36.2	37.1	ng/l	2		30
Perfluorodecanoic Acid (PFDA)	7.53	7.57	ng/l	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.24	3.81	ng/l	16		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.62	3.15	ng/l	18		30
Perfluoroundecanoic Acid (PFUnA)	0.804J	0.622J	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	0.845J	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1251702-5 QC Sample: L1924538-02 Client ID: SPLP_CV_01_20190606						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	7.73	6.25	ng/l	21		30
Perfluorododecanoic Acid (PFDoA)	2.12	1.58J	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	0.782J	0.544J	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	1.69J	1.58J	ng/l	NC		30
PFOA/PFOS, Total	67.8	66.7	ng/l	0		30
PFAS, Total (5)	113	111	ng/l	0		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		92		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	51		52		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		97		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	147		141		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		85		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	60		59		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		147		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		99		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	98		96		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	173	Q	183	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	181		167		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	203	Q	194	Q	40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	131	Q	121	Q	1-87

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1251702-5 QC Sample: L1924538-02						
Client ID: SPLP_CV_01_20190606						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	178	Q	170	Q	23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	116		122		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	117		117		33-143





# **INORGANICS & MISCELLANEOUS**

Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

Report Date: 06/24/19

## SAMPLE RESULTS

Lab ID: L1924538-10

Date Collected: 06/04/19 10:00

Client ID: Redacted\_01\_20190604

Date Received: 06/07/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	88.5		%	0.100	0.100	1	-	06/14/19 01:00	121,2540G	CC



Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1924538

Report Date: 06/24/19

## SAMPLE RESULTS

Lab ID: L1924538-11  
 Client ID: FD\_Redacted\_01\_20190604  
 Sample Location: COVENTRY, VT

Date Collected: 06/04/19 10:10  
 Date Received: 06/07/19  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	82.8		%	0.100	0.100	1	-	06/14/19 01:00	121,2540G	CC



Project Name: NEWSVT LANDFILL

Lab Number: L1924538

Project Number: 4536.00

Report Date: 06/24/19

## SAMPLE RESULTS

Lab ID: L1924538-12

Date Collected: 06/04/19 12:45

Client ID: Redacted\_SLUDGE\_01\_20190604

Date Received: 06/07/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	17.6		%	0.100	0.100	1	-	06/14/19 01:00	121,2540G	CC



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1924538**Project Number:** 4536.00**Report Date:** 06/24/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1924538-01A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-02A	Plastic 250ml unpreserved	A	NA		4.2	Y	Absent		-
L1924538-02X	Plastic 250ml unpreserved Extracts	A	NA		4.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1924538-02X1	Plastic 250ml unpreserved Extracts	A	NA		4.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1924538-02X2	Plastic 250ml unpreserved Extracts	A	NA		4.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1924538-02X3	Plastic 250ml unpreserved Extracts	A	NA		4.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1924538-02X9	Tumble Vessel	A	NA		4.2	Y	Absent		-
L1924538-03A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-04A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-05A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-06A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-07A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-08A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-09A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(14)
L1924538-10A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-10B	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		A2-TS(7)
L1924538-11A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-11B	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		A2-TS(7)
L1924538-12A	Plastic 8oz unpreserved	A	NA		4.2	Y	Absent		A2-537-ISOTOPE(28)
L1924538-12B	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		A2-TS(7)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1924538  
**Report Date:** 06/24/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



WESTBORO, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

MANSFIELD, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

# MANSFIELD CHAIN OF CUSTODY

PAGE 1 OF 2

Date Rec'd in Lab: 6/8/19

ALPHA Job #: L1924538

### Project Information

Project Name: NEWSVT Landfill  
 Project Location: Coventry, VT  
 Project #: 4536.00  
 Project Manager: Matt Estabrooks  
 ALPHA Quote #:

### Report Information - Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

### Billing Information

Same as Client info PO #: 4536.00

### Client Information

Client: Sanborn, Head & Associates, Inc.  
 Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
 Phone: 802-391-8504  
 Fax:  
 Email: mestabrooks@sanbornhead.com

### Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)  
 Date Due: Time:

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

### PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here:

ANALYSIS  
 EPA-537(M) <sup>200ppb</sup> Dilution  
 SPLP PFAS-537

### SAMPLE HANDLING

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials			Sample Specific Comments
		Date	Time					
<u>24538.01</u>	<u>CV_01-20190606</u>	<u>6/6/19</u>	<u>0945</u>	<u>Carpet</u>	<u>JHG</u>	<u>X</u>		
<u>.02</u>	<u>SPLP_CV_01-20190606</u>	<u>6/6/19</u>	<u>0950</u>	<u>Carpet</u>	<u>JHG</u>	<u>X</u>		
<u>.03</u>	<u>CV_02-20190606</u>	<u>6/6/19</u>	<u>1130</u>	<u>Furniture</u>	<u>JHG</u>	<u>X</u>		
<u>.04</u>	<u>CV_03-20190606</u>	<u>6/6/19</u>	<u>1200</u>	<u>Mattresses</u>	<u>JHG</u>	<u>X</u>		
<u>.05</u>	<u>FD_CV_03-20190606</u>	<u>6/6/19</u>	<u>1200</u>	<u>Mattresses</u>	<u>JHG</u>	<u>X</u>		
<u>.06</u>	<u>CV_04-20190606</u>	<u>6/6/19</u>	<u>12:40</u>	<u>Carpet</u>	<u>JHG</u>	<u>X</u>		
<u>.07</u>	<u>CV_05-20190606</u>	<u>6/6/19</u>	<u>14:30</u>	<u>Carpet</u>	<u>JHG</u>	<u>X</u>		
<u>.08</u>	<u>CV_06-20190606</u>	<u>6/6/19</u>	<u>15:35</u>	<u>Fabrics</u>	<u>JHG</u>	<u>X</u>		
<u>.09</u>	<u>FB-20190606</u>	<u>6/6/19</u>	<u>0900</u>	<u>Water</u>	<u>JHG</u>	<u>X</u>		

Container Type  
 Preservative

Relinquished By: [Signature] Date/Time: 6/7/19 11:07 AM  
 Received By: [Signature] Date/Time: 6/7/19 11:07 AM  
[Signature] 6/7/19 11:35  
[Signature] 6/10/19 11:20

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.





**MANSFIELD CHAIN OF CUSTODY**

PAGE 2 OF 2

WESTBORO, MA  
 TEL: 508-896-9220  
 FAX: 508-898-9193

MANSFIELD, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3286

**Client Information**

Client: Sunborn, Head & Associates, Inc.  
 Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
 Phone: 802-391-8504  
 Fax:  
 Email: mestabrooks@sunbornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**PLEASE NOTE**

MS/MSD (at unit cost) will be omitted unless you check here:

**Project Information**

Project Name: NEWSIT Landfill  
 Project Location: Coventry, VT  
 Project #: 4536.00  
 Project Manager: Matt Estabrooks  
 ALPHA Quote #:

**Turn-Around Time**

Standard  RUSH (only confirmed if pre-approved!)

Date Due: Time:

Date Rec'd in Lab: 6/8/19

**Report Information - Data Deliverables**

FAX  EMAIL  
 ADEx  Add'l Deliverables

ALPHA Job #: L1924538

**Billing Information**

Same as Client Info PO #: 4536.00

**Regulatory Requirements/Report Limits**

State /Fed Program Criteria

ANALYSIS EPA 334(m) 10/19/19 TS-SM 2540	<b>SAMPLE HANDLING</b>	TOTAL # BOTTLES
	Filtration _____ <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not needed <input type="checkbox"/> Lab to do Preservation _____ <input type="checkbox"/> Lab to do (Please specify below)	
Sample Specific Comments		

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials		
		Date	Time				
<u>24538.10</u>	<u>[REDACTED]-01-20190604</u>	<u>6/4/19</u>	<u>10:00</u>	<u>Soil</u>	<u>JHG</u>	<u>X</u>	<u>X</u>
<u>.11</u>	<u>FD-[REDACTED]-01-20190604</u>	<u>6/4/19</u>	<u>10:10</u>	<u>Soil</u>	<u>JHG</u>	<u>X</u>	<u>X</u>
<u>.12</u>	<u>[REDACTED]-Sludge-01-20190604</u>	<u>6/4/19</u>	<u>12:45</u>	<u>Sludge</u>	<u>JHG</u>	<u>X</u>	<u>X</u>

Container Type	
Preservative	

Relinquished By: <u>[Signature]</u>	Date/Time: <u>6/7/19 11:07AM</u>	Received By: <u>[Signature]</u>	Date/Time: <u>6/7/19 11:07AM</u>
	<u>6/7/19 14:35</u>		<u>6/8/19 01:20</u>
	<u>6/10/19 11:20</u>	<u>[Signature]</u>	<u>6/10/19 11:20</u>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



## ANALYTICAL REPORT

Lab Number:	L1925459
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	06/30/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1925459-01	Redacted_01_20190611	SOIL	COVENTRY, VT	06/11/19 07:40	06/13/19
L1925459-02	Redacted_01_20190611	SLUDGE	COVENTRY, VT	06/11/19 10:20	06/13/19
L1925459-03	Redacted_01_20190611	SOIL	COVENTRY, VT	06/11/19 11:40	06/13/19



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

---

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L1925459-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1925459-02: The sample has elevated detection limit for PFHxS due to the presence of a non-target interference.

WG1253994-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1925459-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1249956-2, WG1249956-3, and WG1249956-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details. The WG1249956-2 LCS recoveries, associated with L1925459-02, are above the acceptance criteria for perfluorodecanesulfonic acid (pfd) (149%) and perfluorooctanesulfonamide (fosa) (168%); however, the associated samples are non-detect to the RL for these target analytes. The results of the original analysis are reported.

The WG1249956-3 LCSD recovery, associated with L1925459-02, is above the acceptance criteria for perfluorotetradecanoic acid (pfta) (138%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1249956-3 LCS/LCSD RPD(s), associated with L1925459-02, are above the acceptance criteria for perfluorooctanesulfonamide (fosa) (41%).

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Susan E. O'Neil*

Susan O'Neil

Title: Technical Director/Representative

Date: 06/30/19

# ORGANICS



# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**SAMPLE RESULTS**

**Lab ID:** L1925459-01  
**Client ID:** Redacted\_01\_201906  
**Sample Location:** 11 COVENTRY, VT

**Date Collected:** 06/11/19 07:40  
**Date Received:** 06/13/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/24/19 20:31  
**Analyst:** AJ  
**Percent Solids:** 82%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/21/19 15:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.046	J	ng/g	1.14	0.026	1
Perfluoropentanoic Acid (PFPeA)	0.192	J	ng/g	1.14	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.14	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.14	0.074	1
Perfluorohexanoic Acid (PFHxA)	0.324	J	ng/g	1.14	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.14	0.095	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.14	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.14	0.069	1
Perfluorooctanoic Acid (PFOA)	0.167	J	ng/g	1.14	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.14	0.205	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.14	0.156	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.14	0.086	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.14	0.148	1
Perfluorodecanoic Acid (PFDA)	0.097	J	ng/g	1.14	0.076	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.14	0.327	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.14	0.341	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.333	J	ng/g	1.14	0.230	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.14	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.14	0.174	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.14	0.112	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.243	J	ng/g	1.14	0.096	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.14	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.14	0.233	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.14	0.062	1
PFOA/PFOS, Total	0.167	J	ng/g	1.14	0.048	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**SAMPLE RESULTS**

Lab ID: L1925459-01  
 Client ID: Redacted\_01\_201906  
 Sample Location: 11 COVENTRY, VT

Date Collected: 06/11/19 07:40  
 Date Received: 06/13/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	121		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	91		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	133		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	80		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	79		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	84		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	104		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**SAMPLE RESULTS**

**Lab ID:** L1925459-02  
**Client ID:** Redacted\_01\_20190611  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/11/19 10:20  
**Date Received:** 06/13/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Sludge  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/29/19 16:10  
**Analyst:** JW  
**Percent Solids:** 28%  
**TCLP/SPLP Ext. Date:** 06/24/19 12:46

**Extraction Method:** EPA 537  
**Extraction Date:** 06/27/19 16:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	9.12		ng/l	1.95	0.398	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.95	0.387	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.95	0.232	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.95	0.441	1
Perfluorohexanoic Acid (PFHxA)	9.70		ng/l	1.95	0.320	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.95	0.239	1
Perfluoroheptanoic Acid (PFHpA)	1.05	J	ng/l	1.95	0.220	1
Perfluorohexanesulfonic Acid (PFHxS)	19.8		ng/l	20.0	0.367	1
Perfluorooctanoic Acid (PFOA)	4.15		ng/l	1.95	0.230	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.11		ng/l	1.95	1.30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.95	0.672	1
Perfluorononanoic Acid (PFNA)	0.828	J	ng/l	1.95	0.305	1
Perfluorooctanesulfonic Acid (PFOS)	9.01		ng/l	1.95	0.492	1
Perfluorodecanoic Acid (PFDA)	0.711	J	ng/l	1.95	0.297	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.95	1.18	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.95	1.09	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.95	0.633	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.95	0.254	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.95	0.957	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.95	0.566	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.980	J	ng/l	1.95	0.785	1
Perfluorododecanoic Acid (PFDoA)	0.473	J	ng/l	1.95	0.363	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.95	0.320	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.95	0.242	1
PFOA/PFOS, Total	13.2		ng/l	1.95	0.230	1
PFAS, Total (5)	34.8	J	ng/l	1.95	0.220	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**SAMPLE RESULTS**

Lab ID: L1925459-02  
 Client ID: Redacted\_01\_20190611  
 Sample Location: COVENTRY, VT

Date Collected: 06/11/19 10:20  
 Date Received: 06/13/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	128		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	65		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	118		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	172		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	121		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	71		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>229</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	115		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	49		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	56		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	33		33-143

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1925459**Project Number:** 4536.00**Report Date:** 06/30/19**SAMPLE RESULTS**

Lab ID: L1925459-02  
 Client ID: Redacted\_01\_20190611  
 Sample Location: COVENTRY, VT

Date Collected: 06/11/19 10:20  
 Date Received: 06/13/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/20/19 12:16  
 Analyst: PB  
 Percent Solids: 28%

Extraction Method: EPA 537(M)  
 Extraction Date: 06/18/19 16:37

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.53	0.035	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.53	0.070	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.53	0.060	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.53	0.099	1
Perfluorohexanoic Acid (PFHxA)	0.698	J	ng/g	1.53	0.080	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.53	0.128	1
Perfluoroheptanoic Acid (PFHpA)	0.145	J	ng/g	1.53	0.069	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.53	0.093	1
Perfluorooctanoic Acid (PFOA)	0.702	J	ng/g	1.53	0.064	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.749	J	ng/g	1.53	0.275	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.53	0.209	1
Perfluorononanoic Acid (PFNA)	0.350	J	ng/g	1.53	0.115	1
Perfluorooctanesulfonic Acid (PFOS)	9.81		ng/g	1.53	0.199	1
Perfluorodecanoic Acid (PFDA)	1.32	J	ng/g	1.53	0.102	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.535	J	ng/g	1.53	0.439	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.53	0.458	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.14		ng/g	1.53	0.308	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.53	0.072	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.53	0.234	1
Perfluorooctanesulfonamide (FOSA)	0.740	J	ng/g	1.53	0.150	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.23		ng/g	1.53	0.129	1
Perfluorododecanoic Acid (PFDoA)	0.967	J	ng/g	1.53	0.107	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.53	0.313	1
Perfluorotetradecanoic Acid (PFTA)	0.372	J	ng/g	1.53	0.083	1
PFOA/PFOS, Total	10.5	J	ng/g	1.53	0.064	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1925459**Project Number:** 4536.00**Report Date:** 06/30/19**SAMPLE RESULTS**

Lab ID: L1925459-02  
 Client ID: Redacted\_01\_20190611  
 Sample Location: COVENTRY, VT

Date Collected: 06/11/19 10:20  
 Date Received: 06/13/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	128		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	44	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	27	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	28	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**SAMPLE RESULTS**

Lab ID: L1925459-03  
 Client ID: Redacted\_01\_20190611  
 Sample Location: COVENTRY, VT

Date Collected: 06/11/19 11:40  
 Date Received: 06/13/19  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Soil  
 Analytical Method: 122,537(M)  
 Analytical Date: 06/24/19 20:48  
 Analyst: AJ  
 Percent Solids: 91%

Extraction Method: EPA 537(M)  
 Extraction Date: 06/21/19 15:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	0.826	0.019	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.826	0.038	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.826	0.032	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.826	0.053	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.826	0.043	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.826	0.069	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.826	0.037	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.826	0.050	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.826	0.035	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.826	0.148	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.826	0.113	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.826	0.062	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.826	0.107	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.826	0.055	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.826	0.237	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	0.826	0.247	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.826	0.166	1
Perfluoroundecanoic Acid (PFUnA)	0.043	J	ng/g	0.826	0.039	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.826	0.126	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.826	0.081	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.826	0.070	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.826	0.058	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	0.826	0.169	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.826	0.045	1
PFOA/PFOS, Total	ND		ng/g	0.826	0.035	1



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1925459**Project Number:** 4536.00**Report Date:** 06/30/19**SAMPLE RESULTS**

Lab ID: L1925459-03  
 Client ID: Redacted\_01\_20190611  
 Sample Location: COVENTRY, VT

Date Collected: 06/11/19 11:40  
 Date Received: 06/13/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	109		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	107		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	136		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	76		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	79		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	112		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	102		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/20/19 10:54  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 06/18/19 16:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1249956-1					
Perfluorobutanoic Acid (PFBA)	0.071	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/20/19 10:54  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 06/18/19 16:37

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1249956-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	65		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	69		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	38		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	42		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	65		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	89		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 122,537(M)  
**Analytical Date:** 06/24/19 17:13  
**Analyst:** AJ

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 06/21/19 15:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1251609-1					
Perfluorobutanoic Acid (PFBA)	0.101	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/24/19 17:13  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 06/21/19 15:55

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03 Batch: WG1251609-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	106		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	128		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	134		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	115		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	147		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	38		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	110		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	38		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	108		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 06/28/19 23:03  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/24/19 12:46

Extraction Method: EPA 537  
Extraction Date: 06/27/19 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1253994-1					
Perfluorobutanoic Acid (PFBA)	0.604	J	ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid 1.84 (NEtFOSAA)		J	ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 06/28/19 23:03  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/24/19 12:46

Extraction Method: EPA 537  
Extraction Date: 06/27/19 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1253994-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	123		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	63		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	113		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/29/19 02:21  
Analyst: JW  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 06/27/19 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1253994-2					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.10	J	ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.65	J	ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 06/29/19 02:21  
Analyst: JW  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 06/27/19 16:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1253994-2					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	129		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	98		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	94		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	87		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	73		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	115		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1925459

Project Number: 4536.00

Report Date: 06/30/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1249956-2 WG1249956-3								
Perfluorobutanoic Acid (PFBA)	110		110		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	109		112		69-132	3		30
Perfluorobutanesulfonic Acid (PFBS)	108		112		72-128	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	100		112		62-145	11		30
Perfluorohexanoic Acid (PFHxA)	130		126		70-132	3		30
Perfluoropentanesulfonic Acid (PFPeS)	105		106		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	117		117		71-131	0		30
Perfluorohexanesulfonic Acid (PFHxS)	113		113		67-130	0		30
Perfluorooctanoic Acid (PFOA)	119		117		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	99		106		64-140	7		30
Perfluoroheptanesulfonic Acid (PFHpS)	121		117		70-132	3		30
Perfluorononanoic Acid (PFNA)	121		124		72-129	2		30
Perfluorooctanesulfonic Acid (PFOS)	102		99		68-136	3		30
Perfluorodecanoic Acid (PFDA)	120		124		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	85		110		65-137	26		30
Perfluorononanesulfonic Acid (PFNS)	125		124		69-125	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		108		63-144	2		30
Perfluoroundecanoic Acid (PFUnA)	110		104		64-136	6		30
Perfluorodecanesulfonic Acid (PFDS)	149	Q	133		59-134	11		30
Perfluorooctanesulfonamide (FOSA)	168	Q	111		67-137	41	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	102		134		61-139	27		30
Perfluorododecanoic Acid (PFDoA)	131		125		69-135	5		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1925459

Project Number: 4536.00

Report Date: 06/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1249956-2 WG1249956-3								
Perfluorotridecanoic Acid (PFTTrDA)	132		117		66-139	12		30
Perfluorotetradecanoic Acid (PFTA)	132		138	Q	69-133	4		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		74		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		80		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		110		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		53	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		105		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		118		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		36		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		79		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		101		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		93		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		32		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	124		70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	0	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	117		59		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		93		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	77		84		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1925459

Project Number: 4536.00

Report Date: 06/30/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1251609-2 WG1251609-3								
Perfluorobutanoic Acid (PFBA)	90		93		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	89		90		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	87		88		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	77		89		62-145	14		30
Perfluorohexanoic Acid (PFHxA)	102		109		70-132	7		30
Perfluoropentanesulfonic Acid (PFPeS)	82		82		73-123	0		30
Perfluoroheptanoic Acid (PFHpA)	95		100		71-131	5		30
Perfluorohexanesulfonic Acid (PFHxS)	88		88		67-130	0		30
Perfluorooctanoic Acid (PFOA)	100		100		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	73		74		64-140	1		30
Perfluoroheptanesulfonic Acid (PFHpS)	91		102		70-132	11		30
Perfluorononanoic Acid (PFNA)	98		98		72-129	0		30
Perfluorooctanesulfonic Acid (PFOS)	80		82		68-136	2		30
Perfluorodecanoic Acid (PFDA)	101		104		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	75		94		65-137	22		30
Perfluorononanesulfonic Acid (PFNS)	93		97		69-125	4		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	84		98		63-144	15		30
Perfluoroundecanoic Acid (PFUnA)	87		91		64-136	4		30
Perfluorodecanesulfonic Acid (PFDS)	118		127		59-134	7		30
Perfluorooctanesulfonamide (FOSA)	103		100		67-137	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	102		93		61-139	9		30
Perfluorododecanoic Acid (PFDoA)	106		102		69-135	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1925459

Project Number: 4536.00

Report Date: 06/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03 Batch: WG1251609-2 WG1251609-3								
Perfluorotridecanoic Acid (PFTTrDA)	99		95		66-139	4		30
Perfluorotetradecanoic Acid (PFTA)	109		115		69-133	5		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		86		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	124		124		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		74		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	130		117		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	111		101		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	136		137		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	46		43		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		108		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		100		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	46		49		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	84		73		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		106		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		64		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		94		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		92		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1925459

Project Number: 4536.00

Report Date: 06/30/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1253994-3 WG1253994-4								
Perfluorobutanoic Acid (PFBA)	98		99		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	98		98		63-161	0		30
Perfluorobutanesulfonic Acid (PFBS)	99		105		65-157	6		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	104		101		37-219	3		30
Perfluorohexanoic Acid (PFHxA)	108		109		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	102		101		52-156	1		30
Perfluoroheptanoic Acid (PFHpA)	97		98		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	113		108		69-177	5		30
Perfluorooctanoic Acid (PFOA)	96		98		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	94		116		49-187	21		30
Perfluoroheptanesulfonic Acid (PFHpS)	92		94		61-179	2		30
Perfluorononanoic Acid (PFNA)	107		106		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	85		81		52-151	5		30
Perfluorodecanoic Acid (PFDA)	104		105		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	97		94		56-173	3		30
Perfluorononanesulfonic Acid (PFNS)	99		96		48-150	3		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	104		99		60-166	5		30
Perfluoroundecanoic Acid (PFUnA)	90		91		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	102		98		38-156	4		30
Perfluorooctanesulfonamide (FOSA)	98		100		46-170	2		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	93		94		45-170	1		30
Perfluorododecanoic Acid (PFDoA)	100		101		67-153	1		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1925459

Project Number: 4536.00

Report Date: 06/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1253994-3 WG1253994-4								
Perfluorotridecanoic Acid (PFTrDA)	143		140		48-158	2		30
Perfluorotetradecanoic Acid (PFTA)	115		117		59-182	2		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		100		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	127		124		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		95		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		74		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		97		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		96		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	79		72		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		107		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		99		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		91		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		84		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110		109		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	78		76		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		82		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	106		110		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	122		120		33-143

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1925459

**Project Number:** 4536.00

**Report Date:** 06/30/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1253994-5 QC Sample: L1925459-02 Client ID: Redacted_01_20190611												
Perfluorobutanoic Acid (PFBA)	9.12	40.2	44.8	89		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	40.2	38.6	96		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	40.2	41.3	103		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	40.2	41.3	103		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	9.70	40.2	53.2	108		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	40.2	41.0	102		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	1.05J	40.2	39.7	99		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	19.8	40.2	47.5	69		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	4.15	40.2	42.3	95		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.11	40.2	44.1	100		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	40.2	46.5	116		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	0.828J	40.2	42.4	106		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	9.01	40.2	49.7	101		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	0.711J	40.2	41.3	103		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	40.2	39.0	97		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	40.2	30.2	75		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	40.2	38.6	96		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	40.2	34.2	85		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	40.2	23.4	58		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	40.2	38.6	96		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.980J	40.2	40.8	102		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	0.473J	40.2	40.1	100		-	-		67-153	-		30



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1925459

**Project Number:** 4536.00

**Report Date:** 06/30/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1253994-5 QC Sample: L1925459-02 Client ID: Redacted_01_20190611												
Perfluorotridecanoic Acid (PFTTrDA)	ND	40.2	31.7	79		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	40.2	45.8	114		-	-		59-182	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	272	Q			7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	191				1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	255	Q			1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	79				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	104				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	53				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	28	Q			33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	14				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	18				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78				31-159

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1925459

Report Date: 06/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1249956-5 QC Sample: L1925459-02 Client ID: Redacted_01_20190611						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	0.698J	0.548J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.145J	0.138J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	0.702J	0.676J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.749J	0.625J	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	0.350J	0.356J	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	9.81	9.58	ng/g	2		30
Perfluorodecanoic Acid (PFDA)	1.32J	1.36J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.535J	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	2.14	2.24	ng/g	5		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	0.740J	0.655J	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1249956-5 QC Sample: L1925459-02 Client ID: Redacted_01_20190611						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.23	2.25	ng/g	1		30
Perfluorododecanoic Acid (PFDoA)	0.967J	0.907J	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.372J	0.397J	ng/g	NC		30
PFOA/PFOS, Total	10.5J	10.3J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	87		88		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		79		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	73		67	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		112		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		70		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	65		73		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		84		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	139		135		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		78		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		79		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	128		140		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43	Q	57		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	44	Q	46	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	27	Q	30	Q	42-136

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1925459

**Report Date:** 06/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1249956-5 QC Sample: L1925459-02 Client ID: Redacted_01_20190611						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	28	Q	25	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		35		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**SAMPLE RESULTS**

Lab ID: L1925459-01  
 Client ID: Redacted\_01\_20190611  
 Sample Location: COVENTRY, VT

Date Collected: 06/11/19 07:40  
 Date Received: 06/13/19  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	81.6		%	0.100	0.100	1	-	06/18/19 03:32	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

**SAMPLE RESULTS**

**Lab ID:** L1925459-02  
**Client ID:** Redacted\_01\_20190611  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/11/19 10:20  
**Date Received:** 06/13/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	28.4		%	0.100	0.100	1	-	06/18/19 03:32	121,2540G	CC



Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1925459

Report Date: 06/30/19

## SAMPLE RESULTS

Lab ID: L1925459-03

Client ID: Redacted\_01\_20190611

Sample Location: COVENTRY, VT

Date Collected: 06/11/19 11:40

Date Received: 06/13/19

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	91.0		%	0.100	0.100	1	-	06/18/19 03:32	121,2540G	CC





## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1925459

Report Date: 06/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1249657-1 QC Sample: L1925307-10 Client ID: DUP Sample						
Solids, Total	42.2	42.4	%	0		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1925459**Project Number:** 4536.00**Report Date:** 06/30/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1925459-01A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1925459-01B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1925459-02A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1925459-02A1	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		-
L1925459-02B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1925459-02W	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1925459-02X	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1925459-02X9	Tumble Vessel	A	NA		2.3	Y	Absent		-
L1925459-02Y	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1925459-02Z	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1925459-02Z1	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1925459-03A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1925459-03B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1925459  
**Report Date:** 06/30/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





**MANSFIELD CHAIN OF CUSTODY**

PAGE 1 OF 1

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9183

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

**Client Information**

Client: Sanborn, Head & Associates, Inc  
Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
Phone: 802-391-8504  
Fax:  
Email: mestabrooks@sanbornhead.com

**Project Information**

Project Name: NEWSVT Landfill  
Project Location: Coventry, VT  
Project #: 4536.00  
Project Manager: Matt Estabrooks  
ALPHA Quote #:

**Turn-Around Time**

Standard  RUSH (only confirmed if pre-approved)  
Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 6/14/19

ALPHA Job #: L1928459

**Report Information - Data Deliverables**

FAX  EMAIL  
 ADEX  Add'l Deliverables

**Billing Information**

Same as Client info PO #: 4536.00

**Regulatory Requirements/Report Limits**

State /Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**PLEASE NOTE**

MS/MSD (at unit cost) will be omitted unless you check here:

ANALYSIS  
EPA-537(M) <sup>2500K</sup> <sub>10/10/18</sub>  
TS-SM 2540  
SPLP FTAS-537

**SAMPLE HANDLING**

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Sample Specific Comments		
		Date	Time					
925491-01	[REDACTED]-01-20190611	6/11	7:40	Soil	JHG	X	X	
-02	[REDACTED]-01-20190611	6/11	10:20	Sledge	JHG	X	X	X
-03	[REDACTED]-01-20190611	6/11	11:40	Soil	JHG	X	X	

Container Type \_\_\_\_\_  
Preservative \_\_\_\_\_

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By: <u>Timothy Leht</u>	Date/Time: <u>6/13/19 12:22 AM</u>	Received By: <u>[Signature]</u>	Date/Time: <u>6/13/19 12:22 AM</u>
	<u>6/13/19 15:45</u>		<u>6/14/19 06:50</u>
	<u>06/14/19 05:55</u>		<u>6/14/19 05:55</u>



## ANALYTICAL REPORT

Lab Number:	L1927149
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	07/22/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

---

Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1927149-01	AC_06_20190618	SOLID	COVENTRY, VT	06/18/19 09:05	06/21/19
L1927149-02	AC_07_20190618	SOLID	COVENTRY, VT	06/18/19 10:20	06/21/19
L1927149-03	AC_08_20190618	SOLID	COVENTRY, VT	06/18/19 10:43	06/21/19
L1927149-04	AC_09_20190618	SOLID	COVENTRY, VT	06/18/19 11:15	06/21/19
L1927149-05	FD_AC_09_20190618	SOLID	COVENTRY, VT	06/18/19 11:15	06/21/19
L1927149-06	Redacted_20190619	SLUDGE	COVENTRY, VT	06/19/19 07:00	06/21/19
L1927149-07	FD_Redacted_20190619	SLUDGE	COVENTRY, VT	06/19/19 07:00	06/21/19
L1927149-08	Redacted_GNT_20190619	SOLID	COVENTRY, VT	06/19/19 09:24	06/21/19
L1927149-09	Redacted_20190619	SLUDGE	COVENTRY, VT	06/19/19 13:06	06/21/19
L1927149-10	RT_01_20190620	SOLID	COVENTRY, VT	06/20/19 10:30	06/21/19
L1927149-11	RT_02_20190620	SOLID	COVENTRY, VT	06/20/19 11:55	06/21/19
L1927149-12	RT_03_20190620	SOLID	COVENTRY, VT	06/20/19 12:50	06/21/19
L1927149-13	RT_04_20190620	SOLID	COVENTRY, VT	06/20/19 13:35	06/21/19
L1927149-14	FD_RT_04_20190620	SOLID	COVENTRY, VT	06/20/19 13:35	06/21/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1927149-01, -02, -03, -06, -07, -08, -09, -11, -13, and -14: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1258258-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1927149-03: The RL was raised for the following compounds due to matrix interference: PFDA, PFTTrDA, and PFTA.

L1927149-12: The sample has elevated detection limits due to the dilution required by the sample matrix. The WG1258186-2 LCS recoveries, associated with L1927149-01, -02, -03, -04, -05, -10, -11, -12, -13, and -14, are above the acceptance criteria for perfluoropentanesulfonic acid (pfpes) (126%), perfluorohexanesulfonic acid (pfhxs) (139%), perfluorononanoic acid (pfna) (130%) and perfluorotetradecanoic acid (pfta) (140%); however, the associated samples are non-detect to the RL for these target analytes. The results of the original analysis are reported.

The WG1258186-3 LCSD recoveries, associated with L1927149-01, -02, -03, -04, -05, -10, -11, -12, -13, and -14, are above the acceptance criteria for perfluorohexanoic acid (pfhxa) (134%), perfluorohexanesulfonic acid (pfhxs) (133%), 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (157%), perfluorononanoic acid (pfna) (130%), 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (138%), perfluorononanesulfonic acid (pfns) (132%) and perfluorotetradecanoic acid (pfta) (137%); however, the associated samples are non-detect to the RL for these target analytes. The results of the original analysis are reported.

The WG1258252-2/-3 LCS/LCSD RPD, associated with L1927149-08, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (46%).

The WG1258258-2/-3 LCS/LCSD RPD, associated with L1927149-06, -07, and -09, is above the acceptance

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

### Case Narrative (continued)

criteria for perfluorooctanesulfonamide (fosa) (47%).

The WG1260037-2 LCS recoveries, associated with L1927149-01, -02, and -03, were outside the acceptance criteria for individual target compounds; however, re-extraction achieved similar results. The LCSD has acceptable recoveries, however, all results are considered to have a potentially high bias for perfluorobutanesulfonic acid (pfbs) (133%), perfluorohexanoic acid (pfhxa) (141%), perfluoropentanesulfonic acid (pfpes) (127%), perfluorohexanesulfonic acid (pfhxs) (133%), perfluoroheptanesulfonic acid (pfhps) (141%), perfluorononanoic acid (pfna) (140%), perfluorononanesulfonic acid (pfns) (137%) and perfluorodecanesulfonic acid (pfds) (142%).

WG1259118-2: The continuing calibration standard had the response for M2-8:2FTS outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1259118-3: The continuing calibration standard had the response for M2-8:2FTS, d3-NMeFOSAA and d5-NEtFOSAA outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.

WG1259685-1: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1259685-2: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L1927149-12: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1257763-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1258087-7: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

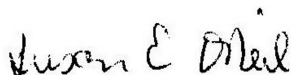
**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Case Narrative (continued)**

Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 07/22/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-01 RE  
 Client ID: AC\_06\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 09:05  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/17/19 01:35  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/15/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.14	J	ng/g	7.21	0.164	1
Perfluoropentanoic Acid (PFPeA)	3.47	J	ng/g	7.21	0.332	1
Perfluorobutanesulfonic Acid (PFBS)	3.71	J	ng/g	7.21	0.281	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	7.21	0.465	1
Perfluorohexanoic Acid (PFHxA)	19.1		ng/g	7.21	0.378	1
Perfluoropentanesulfonic Acid (PFPeS)	3.66	J	ng/g	7.21	0.602	1
Perfluoroheptanoic Acid (PFHpA)	21.4		ng/g	7.21	0.325	1
Perfluorohexanesulfonic Acid (PFHxS)	21.0		ng/g	7.21	0.436	1
Perfluorooctanoic Acid (PFOA)	127		ng/g	7.21	0.302	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.69	J	ng/g	7.21	1.29	1
Perfluoroheptanesulfonic Acid (PFHpS)	3.16	J	ng/g	7.21	0.984	1
Perfluorononanoic Acid (PFNA)	1.57	J	ng/g	7.21	0.540	1
Perfluorooctanesulfonic Acid (PFOS)	441		ng/g	7.21	0.937	1
Perfluorodecanoic Acid (PFDA)	1.90	J	ng/g	7.21	0.483	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	7.21	2.07	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	7.21	2.15	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	35.6		ng/g	7.21	1.45	1
Perfluoroundecanoic Acid (PFUnA)	0.602	J	ng/g	7.21	0.337	1
Perfluorodecanesulfonic Acid (PFDS)	3.48	J	ng/g	7.21	1.10	1
Perfluorooctanesulfonamide (FOSA)	20.4		ng/g	7.21	0.706	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.91	J	ng/g	7.21	0.609	1
Perfluorododecanoic Acid (PFDoA)	1.08	J	ng/g	7.21	0.504	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	7.21	1.47	1
Perfluorotetradecanoic Acid (PFTA)	0.587	J	ng/g	7.21	0.389	1
PFOA/PFOS, Total	568		ng/g	7.21	0.302	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-01 RE  
 Client ID: AC\_06\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 09:05  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	63		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	75		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>200</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	140		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	108		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>205</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	91		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>52</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	92		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-02 RE  
 Client ID: AC\_07\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 10:20  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/17/19 01:51  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/15/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	7.05	J	ng/g	7.69	0.175	1
Perfluoropentanoic Acid (PFPeA)	3.83	J	ng/g	7.69	0.354	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	7.69	0.300	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	7.69	0.496	1
Perfluorohexanoic Acid (PFHxA)	14.1		ng/g	7.69	0.404	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	7.69	0.642	1
Perfluoroheptanoic Acid (PFHpA)	13.7		ng/g	7.69	0.347	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	7.69	0.465	1
Perfluorooctanoic Acid (PFOA)	33.3		ng/g	7.69	0.322	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.38	J	ng/g	7.69	1.38	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	7.69	1.05	1
Perfluorononanoic Acid (PFNA)	7.23	J	ng/g	7.69	0.577	1
Perfluorooctanesulfonic Acid (PFOS)	1400		ng/g	7.69	1.00	1
Perfluorodecanoic Acid (PFDA)	4.43	J	ng/g	7.69	0.515	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	4.27	J	ng/g	7.69	2.21	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	7.69	2.30	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	7.69	1.55	1
Perfluoroundecanoic Acid (PFUnA)	3.45	J	ng/g	7.69	0.360	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	7.69	1.18	1
Perfluorooctanesulfonamide (FOSA)	1.15	J	ng/g	7.69	0.754	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	32.5		ng/g	7.69	0.650	1
Perfluorododecanoic Acid (PFDoA)	2.40	J	ng/g	7.69	0.538	1
Perfluorotridecanoic Acid (PFTrDA)	6.10	J	ng/g	7.69	1.57	1
Perfluorotetradecanoic Acid (PFTA)	4.45	J	ng/g	7.69	0.415	1
PFOA/PFOS, Total	1430		ng/g	7.69	0.322	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-02 RE  
 Client ID: AC\_07\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 10:20  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	58	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	58	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	162	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	547	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	153	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	118		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	191	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	75		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	188	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	87		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	39		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	118		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	52		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	125		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	138		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	335	Q	26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-03 RE  
 Client ID: AC\_08\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 10:43  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/17/19 02:08  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/15/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	4.35		ng/g	4.00	0.091	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	4.00	0.184	1
Perfluorobutanesulfonic Acid (PFBS)	3.81	J	ng/g	4.00	0.156	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	4.00	0.258	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	4.00	0.210	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	4.00	0.334	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	4.00	0.180	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	4.00	0.242	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	4.00	0.168	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	4.00	0.718	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	4.00	0.546	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	4.00	0.300	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	4.00	0.520	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	86.0	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	4.00	1.15	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	4.00	1.20	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	4.00	0.806	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	4.00	0.187	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	4.00	0.612	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	4.00	0.392	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	4.00	0.338	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	4.00	0.280	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	9.00	0.818	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	8.00	0.216	1
PFOA/PFOS, Total	ND		ng/g	4.00	0.168	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-03 RE  
 Client ID: AC\_08\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 10:43  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	76		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>169</b>	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>350</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	112		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>236</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	163		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-04  
**Client ID:** AC\_09\_20190618  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/18/19 11:15  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/14/19 11:38  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.147	J	ng/g	1.14	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.14	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.14	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.14	0.073	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.14	0.060	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.14	0.095	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.14	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.14	0.069	1
Perfluorooctanoic Acid (PFOA)	0.124	J	ng/g	1.14	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.14	0.204	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.14	0.155	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.14	0.085	1
Perfluorooctanesulfonic Acid (PFOS)	0.178	J	ng/g	1.14	0.148	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.14	0.076	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.14	0.326	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.14	0.340	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.14	0.229	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.14	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.14	0.174	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.14	0.111	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.14	0.096	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.14	0.080	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.14	0.232	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.14	0.061	1
PFOA/PFOS, Total	0.302	J	ng/g	1.14	0.048	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-04  
**Client ID:** AC\_09\_20190618  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/18/19 11:15  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1927149**Project Number:** 4536.00**Report Date:** 07/22/19**SAMPLE RESULTS**

Lab ID: L1927149-05  
 Client ID: FD\_AC\_09\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 11:15  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/14/19 11:54  
 Analyst: JW  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.156	J	ng/g	1.18	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.18	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.18	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.18	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.098	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.18	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.18	0.071	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.18	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.18	0.211	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.18	0.160	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.18	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.18	0.153	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.18	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.18	0.338	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.352	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.18	0.237	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.18	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.18	0.180	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.18	0.115	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.18	0.099	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.18	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.18	0.240	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.18	0.064	1
PFOA/PFOS, Total	ND		ng/g	1.18	0.049	1



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1927149**Project Number:** 4536.00**Report Date:** 07/22/19**SAMPLE RESULTS**

Lab ID: L1927149-05  
 Client ID: FD\_AC\_09\_20190618  
 Sample Location: COVENTRY, VT

Date Collected: 06/18/19 11:15  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	90		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-06  
 Client ID: Redacted\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 07:00  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/13/19 01:27  
 Analyst: AJ  
 Percent Solids: 16%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/10/19 18:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.360	J	ng/g	5.80	0.132	1
Perfluoropentanoic Acid (PFPeA)	0.394	J	ng/g	5.80	0.267	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	5.80	0.226	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	5.80	0.374	1
Perfluorohexanoic Acid (PFHxA)	1.29	J	ng/g	5.80	0.304	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	5.80	0.484	1
Perfluoroheptanoic Acid (PFHpA)	0.270	J	ng/g	5.80	0.262	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	5.80	0.351	1
Perfluorooctanoic Acid (PFOA)	2.54	J	ng/g	5.80	0.243	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.09	J	ng/g	5.80	1.04	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	5.80	0.792	1
Perfluorononanoic Acid (PFNA)	1.89	J	ng/g	5.80	0.435	1
Perfluorooctanesulfonic Acid (PFOS)	34.8		ng/g	5.80	0.754	1
Perfluorodecanoic Acid (PFDA)	4.68	J	ng/g	5.80	0.389	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	5.80	1.66	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	5.80	1.73	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	8.86		ng/g	5.80	1.17	1
Perfluoroundecanoic Acid (PFUnA)	1.33	J	ng/g	5.80	0.272	1
Perfluorodecanesulfonic Acid (PFDS)	12.4		ng/g	5.80	0.888	1
Perfluorooctanesulfonamide (FOSA)	0.600	J	ng/g	5.80	0.568	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	9.71		ng/g	5.80	0.490	1
Perfluorododecanoic Acid (PFDoA)	2.12	J	ng/g	5.80	0.406	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	5.80	1.19	1
Perfluorotetradecanoic Acid (PFTA)	1.11	J	ng/g	5.80	0.313	1
PFOA/PFOS, Total	37.3	J	ng/g	5.80	0.243	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-06  
 Client ID: Redacted\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 07:00  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>183</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>277</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	108		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>354</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>46</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>37</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>29</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	50		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1927149**Project Number:** 4536.00**Report Date:** 07/22/19**SAMPLE RESULTS**

Lab ID: L1927149-07  
 Client ID: FD\_Redacted\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 07:00  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/13/19 01:44  
 Analyst: AJ  
 Percent Solids: 17%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/10/19 18:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.356	J	ng/g	5.94	0.135	1
Perfluoropentanoic Acid (PFPeA)	0.395	J	ng/g	5.94	0.273	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	5.94	0.232	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	5.94	0.383	1
Perfluorohexanoic Acid (PFHxA)	1.10	J	ng/g	5.94	0.312	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	5.94	0.496	1
Perfluoroheptanoic Acid (PFHpA)	0.273	J	ng/g	5.94	0.268	1
Perfluorohexanesulfonic Acid (PFHxS)	0.588	J	ng/g	5.94	0.359	1
Perfluorooctanoic Acid (PFOA)	3.41	J	ng/g	5.94	0.249	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.76		ng/g	5.94	1.07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	5.94	0.811	1
Perfluorononanoic Acid (PFNA)	1.54	J	ng/g	5.94	0.446	1
Perfluorooctanesulfonic Acid (PFOS)	34.2		ng/g	5.94	0.772	1
Perfluorodecanoic Acid (PFDA)	4.29	J	ng/g	5.94	0.398	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	5.94	1.70	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	5.94	1.78	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	7.94		ng/g	5.94	1.20	1
Perfluoroundecanoic Acid (PFUnA)	2.61	J	ng/g	5.94	0.278	1
Perfluorodecanesulfonic Acid (PFDS)	10.4		ng/g	5.94	0.909	1
Perfluorooctanesulfonamide (FOSA)	1.59	J	ng/g	5.94	0.582	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	6.68		ng/g	5.94	0.502	1
Perfluorododecanoic Acid (PFDoA)	1.90	J	ng/g	5.94	0.416	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	5.94	1.22	1
Perfluorotetradecanoic Acid (PFTA)	0.603	J	ng/g	5.94	0.321	1
PFOA/PFOS, Total	37.6	J	ng/g	5.94	0.249	1

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

## SAMPLE RESULTS

Lab ID: L1927149-07  
 Client ID: FD\_Redacted\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 07:00  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	180	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	60	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	372	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	412	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	98		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	46	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	35	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-08  
**Client ID:** Redacted\_GNT\_20190619  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/19/19 09:24  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/12/19 22:42  
**Analyst:** AJ  
**Percent Solids:** 59%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/10/19 18:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.320	J	ng/g	1.45	0.033	1
Perfluoropentanoic Acid (PFPeA)	1.05	J	ng/g	1.45	0.067	1
Perfluorobutanesulfonic Acid (PFBS)	0.182	J	ng/g	1.45	0.057	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.45	0.094	1
Perfluorohexanoic Acid (PFHxA)	1.12	J	ng/g	1.45	0.076	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.45	0.121	1
Perfluoroheptanoic Acid (PFHpA)	0.196	J	ng/g	1.45	0.066	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.45	0.088	1
Perfluorooctanoic Acid (PFOA)	0.892	J	ng/g	1.45	0.061	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.45	0.261	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.45	0.198	1
Perfluorononanoic Acid (PFNA)	0.163	J	ng/g	1.45	0.109	1
Perfluorooctanesulfonic Acid (PFOS)	0.892	J	ng/g	1.45	0.189	1
Perfluorodecanoic Acid (PFDA)	0.433	J	ng/g	1.45	0.097	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.45	0.417	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.45	0.434	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.950	J	ng/g	1.45	0.293	1
Perfluoroundecanoic Acid (PFUnA)	0.162	J	ng/g	1.45	0.068	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.45	0.222	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.45	0.142	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.04	J	ng/g	1.45	0.123	1
Perfluorododecanoic Acid (PFDoA)	0.182	J	ng/g	1.45	0.102	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.45	0.297	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.45	0.079	1
PFOA/PFOS, Total	1.78	J	ng/g	1.45	0.061	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-08  
 Client ID: Redacted\_GNT\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 09:24  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>159</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	169		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	110		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	134		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	123		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	101		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-09  
 Client ID: Redacted\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 13:06  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/13/19 02:17  
 Analyst: AJ  
 Percent Solids: 23%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/10/19 18:40

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.936	J	ng/g	4.23	0.096	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	4.23	0.194	1
Perfluorobutanesulfonic Acid (PFBS)	0.294	J	ng/g	4.23	0.165	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	4.23	0.273	1
Perfluorohexanoic Acid (PFHxA)	3.07	J	ng/g	4.23	0.222	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	4.23	0.353	1
Perfluoroheptanoic Acid (PFHpA)	0.585	J	ng/g	4.23	0.191	1
Perfluorohexanesulfonic Acid (PFHxS)	0.693	J	ng/g	4.23	0.256	1
Perfluorooctanoic Acid (PFOA)	19.9		ng/g	4.23	0.177	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	4.17	J	ng/g	4.23	0.759	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	4.23	0.577	1
Perfluorononanoic Acid (PFNA)	6.71		ng/g	4.23	0.317	1
Perfluorooctanesulfonic Acid (PFOS)	56.5		ng/g	4.23	0.550	1
Perfluorodecanoic Acid (PFDA)	6.41		ng/g	4.23	0.283	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.90	J	ng/g	4.23	1.21	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	4.23	1.26	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	30.0		ng/g	4.23	0.852	1
Perfluoroundecanoic Acid (PFUnA)	4.19	J	ng/g	4.23	0.198	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	4.23	0.647	1
Perfluorooctanesulfonamide (FOSA)	4.02	J	ng/g	4.23	0.414	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	11.2		ng/g	4.23	0.357	1
Perfluorododecanoic Acid (PFDoA)	3.12	J	ng/g	4.23	0.296	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	4.23	0.864	1
Perfluorotetradecanoic Acid (PFTA)	1.02	J	ng/g	4.23	0.228	1
PFOA/PFOS, Total	76.4		ng/g	4.23	0.177	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-09  
 Client ID: Redacted\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 13:06  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>220</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>301</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>246</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>18</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>36</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	8		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>22</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>30</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	45		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-10  
**Client ID:** RT\_01\_20190620  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/20/19 10:30  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/14/19 12:11  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.20	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.20	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.20	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.20	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.100	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.20	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.20	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.20	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.20	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.20	0.163	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.20	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.20	0.156	1
Perfluorodecanoic Acid (PFDA)	0.625	J	ng/g	1.20	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.20	0.344	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.358	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.20	0.241	1
Perfluoroundecanoic Acid (PFUnA)	0.139	J	ng/g	1.20	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.20	0.183	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.20	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.20	0.101	1
Perfluorododecanoic Acid (PFDoA)	0.218	J	ng/g	1.20	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	0.414	J	ng/g	1.20	0.245	1
Perfluorotetradecanoic Acid (PFTa)	0.522	J	ng/g	1.20	0.065	1
PFOA/PFOS, Total	ND		ng/g	1.20	0.050	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-10  
 Client ID: RT\_01\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 10:30  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	93		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	81		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-11  
**Client ID:** RT\_02\_20190620  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/20/19 11:55  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/14/19 12:27  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.368	J	ng/g	1.10	0.025	1
Perfluoropentanoic Acid (PFPeA)	0.174	J	ng/g	1.10	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	0.197	J	ng/g	1.10	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.10	0.071	1
Perfluorohexanoic Acid (PFHxA)	0.484	J	ng/g	1.10	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.10	0.092	1
Perfluoroheptanoic Acid (PFHpA)	0.274	J	ng/g	1.10	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.10	0.067	1
Perfluorooctanoic Acid (PFOA)	0.921	J	ng/g	1.10	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.396	J	ng/g	1.10	0.198	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.10	0.150	1
Perfluorononanoic Acid (PFNA)	0.367	J	ng/g	1.10	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	0.145	J	ng/g	1.10	0.143	1
Perfluorodecanoic Acid (PFDA)	0.396	J	ng/g	1.10	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.10	0.316	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.10	0.329	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.10	0.222	1
Perfluoroundecanoic Acid (PFUnA)	0.207	J	ng/g	1.10	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.10	0.168	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.10	0.108	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.10	0.093	1
Perfluorododecanoic Acid (PFDoA)	0.194	J	ng/g	1.10	0.077	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.10	0.225	1
Perfluorotetradecanoic Acid (PFTA)	0.095	J	ng/g	1.10	0.060	1
PFOA/PFOS, Total	1.07	J	ng/g	1.10	0.046	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-11  
 Client ID: RT\_02\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 11:55  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	67		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	73		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>162</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	<b>60</b>	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	63		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	70		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>197</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	74		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	71		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>207</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	85		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>47</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	83		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-12  
**Client ID:** RT\_03\_20190620  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/20/19 12:50  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/11/19 11:40  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 07/10/19 11:00

**Percent Solids:** Results reported on an 'AS RECEIVED' basis.  
**TCLP/SPLP Ext. Date:** 06/26/19 14:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	0.540	J	ng/l	1.82	0.217	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	0.412	1
Perfluorohexanoic Acid (PFHxA)	1.65	J	ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.224	1
Perfluoroheptanoic Acid (PFHpA)	1.07	J	ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	0.850	J	ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	7.65		ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.14		ng/l	1.82	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.628	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	6.29		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.52		ng/l	1.82	1.10	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.734	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1
PFOA/PFOS, Total	13.9		ng/l	1.82	0.215	1
PFAS, Total (5)	15.9	J	ng/l	1.82	0.205	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-12  
 Client ID: RT\_03\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 12:50  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	135		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	277		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	74		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>324</b>	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>242</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-12 D  
**Client ID:** RT\_03\_20190620  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/20/19 12:50  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/14/19 11:05  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	11.8	0.269	10
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	11.8	0.544	10
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	11.8	0.462	10
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	11.8	0.763	10
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	11.8	0.621	10
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	11.8	0.988	10
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	11.8	0.534	10
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	11.8	0.716	10
Perfluorooctanoic Acid (PFOA)	0.586	J	ng/g	11.8	0.496	10
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	11.8	2.12	10
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	11.8	1.62	10
Perfluorononanoic Acid (PFNA)	ND		ng/g	11.8	0.888	10
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	11.8	1.54	10
Perfluorodecanoic Acid (PFDA)	ND		ng/g	11.8	0.793	10
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	11.8	3.40	10
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	11.8	3.54	10
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	11.8	2.38	10
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	11.8	0.554	10
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	11.8	1.81	10
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	11.8	1.16	10
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	4.51	J	ng/g	11.8	1.00	10
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	11.8	0.828	10
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	11.8	2.42	10
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	11.8	0.639	10
PFOA/PFOS, Total	0.586	J	ng/g	11.8	0.496	10



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-12 D  
 Client ID: RT\_03\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 12:50  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>148</b>		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	94		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	129		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	101		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	96		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	171		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	96		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	61		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	99		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	61		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-13  
 Client ID: RT\_04\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 13:35  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/14/19 12:44  
 Analyst: JW  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.31	0.030	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.31	0.060	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.31	0.051	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.31	0.084	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.31	0.069	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.31	0.109	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.31	0.059	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.31	0.079	1
Perfluorooctanoic Acid (PFOA)	0.159	J	ng/g	1.31	0.055	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.09	J	ng/g	1.31	0.235	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.31	0.178	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.31	0.098	1
Perfluorooctanesulfonic Acid (PFOS)	0.184	J	ng/g	1.31	0.170	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.31	0.088	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.31	0.375	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.31	0.391	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.31	0.263	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.31	0.061	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.31	0.200	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.31	0.128	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.31	0.110	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.31	0.092	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.31	0.267	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.31	0.071	1
PFOA/PFOS, Total	0.343	J	ng/g	1.31	0.055	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

Lab ID: L1927149-13  
 Client ID: RT\_04\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 13:35  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			76			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			94			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			78			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>185</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			70			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			73			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			76			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			75			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			138			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			88			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			82			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			77			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			<b>203</b>	Q		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			97			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			100			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			33			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			116			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			91			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			91			26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1927149**Project Number:** 4536.00**Report Date:** 07/22/19**SAMPLE RESULTS**

Lab ID: L1927149-14  
 Client ID: FD\_RT\_04\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 13:35  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/14/19 13:01  
 Analyst: JW  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.18	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.18	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.18	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.18	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.098	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.18	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.18	0.071	1
Perfluorooctanoic Acid (PFOA)	0.073	J	ng/g	1.18	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.06	J	ng/g	1.18	0.211	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.18	0.160	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.18	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.18	0.153	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.18	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.18	0.338	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.352	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.18	0.237	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.18	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.18	0.180	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.18	0.115	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.18	0.099	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.18	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.18	0.240	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.18	0.064	1
PFOA/PFOS, Total	0.073	J	ng/g	1.18	0.049	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1927149**Project Number:** 4536.00**Report Date:** 07/22/19**SAMPLE RESULTS**

Lab ID: L1927149-14  
 Client ID: FD\_RT\_04\_20190620  
 Sample Location: COVENTRY, VT

Date Collected: 06/20/19 13:35  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	96		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>183</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	66		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	74		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>198</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>276</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	36		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	116		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	84		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:14  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 12 Batch: WG1257763-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:14  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 12 Batch: WG1257763-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:30  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 12 Batch: WG1257763-5					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.385
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.374
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.224
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.89	0.426
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	0.309
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.89	0.231
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.212
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.355
Perfluorooctanoic Acid (PFOA)	0.672	J	ng/l	1.89	0.223
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.649
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.294
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.475
Perfluorodecanoic Acid (PFDA)	1.70	J	ng/l	1.89	0.287
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.14
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.89	1.06
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.611
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.245
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.924
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.547
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.758
Perfluorododecanoic Acid (PFDoA)	0.985	J	ng/l	1.89	0.351
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.89	0.309
Perfluorotetradecanoic Acid (PFTA)	0.445	J	ng/l	1.89	0.234
PFOA/PFOS, Total	0.672	J	ng/l	1.89	0.223
PFAS, Total (5)	0.672	J	ng/l	1.89	0.212



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:30  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 12 Batch: WG1257763-5					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	52		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	55		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	52		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	38		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/12/19 21:20  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04-05,10-14 Batch: WG1258186-1					
Perfluorobutanoic Acid (PFBA)	0.095	J	ng/g	1.33	0.030
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.33	0.061
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.33	0.052
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.33	0.086
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.33	0.070
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.33	0.111
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.33	0.060
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.33	0.081
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.33	0.056
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.33	0.239
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.33	0.182
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.33	0.100
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.33	0.173
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.33	0.089
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.33	0.383
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.33	0.399
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.33	0.269
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.33	0.062
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.33	0.204
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.33	0.131
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.33	0.113
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.33	0.093
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.33	0.273
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/g	1.33	0.072
PFOA/PFOS, Total	ND		ng/g	1.33	0.056

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/12/19 21:20  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/10/19 15:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04-05,10-14 Batch: WG1258186-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	80		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	83		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/12/19 21:52  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 07/10/19 18:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1258252-1					
Perfluorobutanoic Acid (PFBA)	0.206	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	0.044	J	ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	0.044	J	ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/12/19 21:52  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 07/10/19 18:10

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1258252-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/12/19 21:52  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 07/10/19 18:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 06-07,09 Batch: WG1258258-1					
Perfluorobutanoic Acid (PFBA)	0.206	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	0.044	J	ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	0.044	J	ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/12/19 21:52  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 07/10/19 18:40

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 06-07,09 Batch: WG1258258-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	79		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	76		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	95		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/17/19 00:45  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 07/15/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1260037-1					
Perfluorobutanoic Acid (PFBA)	0.102	J	ng/g	4.00	0.091
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	4.00	0.184
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	4.00	0.156
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	4.00	0.258
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	4.00	0.210
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	4.00	0.334
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	4.00	0.180
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	4.00	0.242
Perfluorooctanoic Acid (PFOA)	ND		ng/g	4.00	0.168
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	4.00	0.718
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	4.00	0.546
Perfluorononanoic Acid (PFNA)	ND		ng/g	4.00	0.300
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	4.00	0.520
Perfluorodecanoic Acid (PFDA)	ND		ng/g	4.00	0.268
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	4.00	1.15
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	4.00	1.20
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	4.00	0.806
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	4.00	0.187
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	4.00	0.612
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	4.00	0.392
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	4.00	0.338
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	4.00	0.280
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	4.00	0.818
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	4.00	0.216
PFOA/PFOS, Total	ND		ng/g	4.00	0.168



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/17/19 00:45  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 07/15/19 16:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1260037-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	92		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	83		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	52		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	102		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	104		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 Batch: WG1257763-2 WG1257763-3								
Perfluorobutanoic Acid (PFBA)	106		107		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	107		108		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	98		99		65-157	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	111		120		37-219	8		30
Perfluorohexanoic Acid (PFHxA)	116		117		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	110		110		52-156	0		30
Perfluoroheptanoic Acid (PFHpA)	105		106		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	117		129		69-177	10		30
Perfluorooctanoic Acid (PFOA)	106		111		63-159	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	114		126		49-187	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		103		61-179	1		30
Perfluorononanoic Acid (PFNA)	115		114		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	98		100		52-151	2		30
Perfluorodecanoic Acid (PFDA)	116		120		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		104		56-173	10		30
Perfluorononanesulfonic Acid (PFNS)	106		107		48-150	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	108		108		60-166	0		30
Perfluoroundecanoic Acid (PFUnA)	100		103		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	106		109		38-156	3		30
Perfluorooctanesulfonamide (FOSA)	100		100		46-170	0		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	102		101		45-170	1		30
Perfluorododecanoic Acid (PFDoA)	110		106		67-153	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 Batch: WG1257763-2 WG1257763-3								
Perfluorotridecanoic Acid (PFTrDA)	114		108		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	120		120		59-182	0		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		71		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		96		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		69		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		107		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		90		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		93		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		34		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		69		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEA)	87		89		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04-05,10-14 Batch: WG1258186-2 WG1258186-3								
Perfluorobutanoic Acid (PFBA)	119		119		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	121		123		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	113		114		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	133		132		62-145	1		30
Perfluorohexanoic Acid (PFHxA)	131		134	Q	70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	126	Q	120		73-123	5		30
Perfluoroheptanoic Acid (PFHpA)	118		119		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	139	Q	133	Q	67-130	4		30
Perfluorooctanoic Acid (PFOA)	125		125		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	130		157	Q	64-140	19		30
Perfluoroheptanesulfonic Acid (PFHpS)	119		128		70-132	7		30
Perfluorononanoic Acid (PFNA)	130	Q	130	Q	72-129	0		30
Perfluorooctanesulfonic Acid (PFOS)	105		117		68-136	11		30
Perfluorodecanoic Acid (PFDA)	132		131		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	124		138	Q	65-137	11		30
Perfluorononanesulfonic Acid (PFNS)	124		132	Q	69-125	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	128		127		63-144	1		30
Perfluoroundecanoic Acid (PFUnA)	113		114		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	127		132		59-134	4		30
Perfluorooctanesulfonamide (FOSA)	109		104		67-137	5		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	116		125		61-139	7		30
Perfluorododecanoic Acid (PFDoA)	119		126		69-135	6		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04-05,10-14 Batch: WG1258186-2 WG1258186-3								
Perfluorotridecanoic Acid (PFTrDA)	118		122		66-139	3		30
Perfluorotetradecanoic Acid (PFTA)	140	Q	137	Q	69-133	2		30

Surrogate (Extracted Internal Standard)	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	80		77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		85		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		85		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	80		77		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		82		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		84		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	81		81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	69		59		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		84		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		81		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	81		80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78		66		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		75		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		84		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		72		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		78		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	79		76		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08 Batch: WG1258252-2 WG1258252-3								
Perfluorobutanoic Acid (PFBA)	112		114		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	110		113		69-132	3		30
Perfluorobutanesulfonic Acid (PFBS)	109		110		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	109		116		62-145	6		30
Perfluorohexanoic Acid (PFHxA)	120		119		70-132	1		30
Perfluoropentanesulfonic Acid (PFPeS)	102		110		73-123	8		30
Perfluoroheptanoic Acid (PFHpA)	105		114		71-131	8		30
Perfluorohexanesulfonic Acid (PFHxS)	100		108		67-130	8		30
Perfluorooctanoic Acid (PFOA)	109		113		69-133	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	125		108		64-140	15		30
Perfluoroheptanesulfonic Acid (PFHpS)	109		109		70-132	0		30
Perfluorononanoic Acid (PFNA)	122		117		72-129	4		30
Perfluorooctanesulfonic Acid (PFOS)	90		96		68-136	6		30
Perfluorodecanoic Acid (PFDA)	112		114		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		102		65-137	3		30
Perfluorononanesulfonic Acid (PFNS)	106		103		69-125	3		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	119		124		63-144	4		30
Perfluoroundecanoic Acid (PFUnA)	102		113		64-136	10		30
Perfluorodecanesulfonic Acid (PFDS)	109		104		59-134	5		30
Perfluorooctanesulfonamide (FOSA)	115		72		67-137	46	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		90		61-139	13		30
Perfluorododecanoic Acid (PFDoA)	91		94		69-135	3		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08 Batch: WG1258252-2 WG1258252-3								
Perfluorotridecanoic Acid (PFTrDA)	114		109		66-139	4		30
Perfluorotetradecanoic Acid (PFTA)	116		115		69-133	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		83		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		94		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		88		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		73		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		75		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		104		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		82		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		136		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		94		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		109		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		105		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	75		72		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		85		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		78		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		91		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		98		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-07,09 Batch: WG1258258-2 WG1258258-3								
Perfluorobutanoic Acid (PFBA)	112		114		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	111		114		69-132	3		30
Perfluorobutanesulfonic Acid (PFBS)	109		112		72-128	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	109		116		62-145	6		30
Perfluorohexanoic Acid (PFHxA)	120		120		70-132	0		30
Perfluoropentanesulfonic Acid (PFPeS)	102		110		73-123	8		30
Perfluoroheptanoic Acid (PFHpA)	107		116		71-131	8		30
Perfluorohexanesulfonic Acid (PFHxS)	104		113		67-130	8		30
Perfluorooctanoic Acid (PFOA)	108		112		69-133	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	125		110		64-140	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	109		110		70-132	1		30
Perfluorononanoic Acid (PFNA)	122		117		72-129	4		30
Perfluorooctanesulfonic Acid (PFOS)	90		96		68-136	6		30
Perfluorodecanoic Acid (PFDA)	112		115		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	105		103		65-137	2		30
Perfluorononanesulfonic Acid (PFNS)	106		104		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	118		127		63-144	7		30
Perfluoroundecanoic Acid (PFUnA)	102		114		64-136	11		30
Perfluorodecanesulfonic Acid (PFDS)	108		105		59-134	3		30
Perfluorooctanesulfonamide (FOSA)	116		72		67-137	47	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		91		61-139	12		30
Perfluorododecanoic Acid (PFDoA)	92		94		69-135	2		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-07,09 Batch: WG1258258-2 WG1258258-3								
Perfluorotridecanoic Acid (PFTTrDA)	114		109		66-139	4		30
Perfluorotetradecanoic Acid (PFTA)	116		115		69-133	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	85		83		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		94		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		88		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	77		73		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		75		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	103		104		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		82		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	105		136		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		94		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		109		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		105		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	75		72		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	91		85		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		78		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		91		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		98		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1260037-2 WG1260037-3								
Perfluorobutanoic Acid (PFBA)	128		115		71-135	11		30
Perfluoropentanoic Acid (PFPeA)	132		121		69-132	9		30
Perfluorobutanesulfonic Acid (PFBS)	133	Q	120		72-128	10		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	126		119		62-145	6		30
Perfluorohexanoic Acid (PFHxA)	141	Q	129		70-132	9		30
Perfluoropentanesulfonic Acid (PFPeS)	127	Q	110		73-123	14		30
Perfluoroheptanoic Acid (PFHpA)	124		116		71-131	7		30
Perfluorohexanesulfonic Acid (PFHxS)	133	Q	112		67-130	17		30
Perfluorooctanoic Acid (PFOA)	126		116		69-133	8		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	131		108		64-140	19		30
Perfluoroheptanesulfonic Acid (PFHpS)	141	Q	127		70-132	10		30
Perfluorononanoic Acid (PFNA)	140	Q	127		72-129	10		30
Perfluorooctanesulfonic Acid (PFOS)	126		112		68-136	12		30
Perfluorodecanoic Acid (PFDA)	127		125		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	131		102		65-137	25		30
Perfluorononanesulfonic Acid (PFNS)	137	Q	123		69-125	11		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	124		116		63-144	7		30
Perfluoroundecanoic Acid (PFUnA)	123		117		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	142	Q	130		59-134	9		30
Perfluorooctanesulfonamide (FOSA)	135		115		67-137	16		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	101		100		61-139	1		30
Perfluorododecanoic Acid (PFDoA)	110		96		69-135	14		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1260037-2 WG1260037-3								
Perfluorotridecanoic Acid (PFTTrDA)	136		122		66-139	11		30
Perfluorotetradecanoic Acid (PFTA)	119		119		69-133	0		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		96		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		109		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		112		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	81		114		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		100		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		100		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	98		132		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		99		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	86		118		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		96		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	89		113		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		98		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		96		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	85		87		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		99		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53		58		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	97		91		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		100		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		105		26-160

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1927149

Report Date: 07/22/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1257763-4 QC Sample: L1927149-12						
Client ID: RT_03_20190620						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	0.540J	0.371J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	1.65J	1.71J	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	1.07J	1.22J	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.850J	1.02J	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	7.65	7.90	ng/l	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.14	3.64	ng/l	15		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	6.29	5.67	ng/l	10		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	3.52	3.89	ng/l	10		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1257763-4 QC Sample: L1927149-12 Client ID: RT_03_20190620						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	13.9	13.6	ng/l	0		30
PFAS, Total (5)	15.9J	15.8J	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		79		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	135		135		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85		92		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	277		299		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	61		65		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	74		78		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		94		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		93		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>324</b>	Q	<b>326</b>	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		88		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>242</b>	Q	<b>242</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		71		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	80		89		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		29		1-87

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1927149

Report Date: 07/22/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1257763-4 QC Sample: L1927149-12						
Client ID: RT_03_20190620						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		72		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	72		89		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	47		55		33-143

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1927149

Report Date: 07/22/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-07,09 QC Batch ID: WG1258258-4 QC Sample: L1927149-07						
Client ID: FD_Redacted_20190619						
Perfluorobutanoic Acid (PFBA)	0.356J	0.302J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.395J	0.358J	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	1.10J	1.16J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.273J	0.281J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.588J	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	3.41J	3.21J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.76	7.49	ng/g	4		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	1.54J	2.58J	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	34.2	37.0	ng/g	8		30
Perfluorodecanoic Acid (PFDA)	4.29J	5.37	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	1.92J	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	7.94	6.37	ng/g	22		30
Perfluoroundecanoic Acid (PFUnA)	2.61J	2.61J	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	10.4	9.96	ng/g	4		30
Perfluorooctanesulfonamide (FOSA)	1.59J	ND	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-07,09 QC Batch ID: WG1258258-4 QC Sample: L1927149-07						
Client ID: FD_Redacted_20190619						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	6.68	8.33	ng/g	22		30
Perfluorododecanoic Acid (PFDoA)	1.90J	1.78J	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.603J	0.712J	ng/g	NC		30
PFOA/PFOS, Total	37.6J	40.2J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	71		70		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		76		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>180</b>	Q	<b>170</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	<b>60</b>	Q	<b>59</b>	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		73		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		100		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	84		89		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>372</b>	Q	<b>334</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		95		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		80		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>412</b>	Q	<b>268</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	98		111		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>46</b>	Q	<b>50</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>39</b>	Q	47		42-136



**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1927149

**Report Date:** 07/22/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 06-07,09 QC Batch ID: WG1258258-4 QC Sample: L1927149-07						
Client ID: FD_Redacted_20190619						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	35	Q	39	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		55		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-06  
**Client ID:** Redacted\_20190619  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/19/19 07:00  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	16.3		%	0.100	0.100	1	-	06/27/19 02:49	121,2540G	CC



Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

## SAMPLE RESULTS

Lab ID: L1927149-07

Date Collected: 06/19/19 07:00

Client ID: FD\_Redacted\_20190619

Date Received: 06/21/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	16.5		%	0.100	0.100	1	-	06/27/19 02:49	121,2540G	CC



Project Name: NEWSVT LANDFILL

Lab Number: L1927149

Project Number: 4536.00

Report Date: 07/22/19

## SAMPLE RESULTS

Lab ID: L1927149-08  
 Client ID: Redacted\_GNT\_20190619  
 Sample Location: COVENTRY, VT

Date Collected: 06/19/19 09:24  
 Date Received: 06/21/19  
 Field Prep: Not Specified

Sample Depth:  
 Matrix: Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	59.2		%	0.100	0.100	1	-	06/27/19 02:49	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

**SAMPLE RESULTS**

**Lab ID:** L1927149-09  
**Client ID:** Redacted\_20190619  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/19/19 13:06  
**Date Received:** 06/21/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	22.8		%	0.100	0.100	1	-	06/27/19 02:49	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1927149

**Report Date:** 07/22/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 06-09 QC Batch ID: WG1253619-1 QC Sample: L1925810-09 Client ID: DUP Sample						
Solids, Total	36.4	36.4	%	0		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1927149**Project Number:** 4536.00**Report Date:** 07/22/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1927149-01A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-02A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-03A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-04A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-05A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-06A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-06B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1927149-07A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-07B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1927149-08A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-08B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1927149-09A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-09B	Plastic 2oz unpreserved for TS	A	NA		3.8	Y	Absent		A2-TS(7)
L1927149-10A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-11A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-12A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1927149-12B	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		-
L1927149-12L	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1927149-12M	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1927149-12N	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1927149-12O	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1927149-12X9	Tumble Vessel	A	NA		3.8	Y	Absent		-
L1927149-13A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

Serial\_No:07221915:08  
**Lab Number:** L1927149  
**Report Date:** 07/22/19

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1927149-14A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

## GLOSSARY

### Acronyms

- DL** - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- EDL** - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
- EMPC** - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- LFB** - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LOD** - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- LOQ** - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NDPA/DPA** - N-Nitrosodiphenylamine/Diphenylamine.
- NI** - Not Ignitable.
- NP** - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
- SRM** - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
- STLP** - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
- TEF** - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
- TEQ** - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
- TIC** - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1927149  
**Report Date:** 07/22/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

**Westborough Facility**

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

**Mansfield Facility**

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

**Westborough Facility:**

**Drinking Water**

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

**Non-Potable Water**

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

**Mansfield Facility:**

**Drinking Water**

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

**Non-Potable Water**

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# MANSFIELD CHAIN OF CUSTODY

PAGE 1 OF 2

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

### Project Information

Project Name: **NEWSVT Landfill**  
 Project Location: **Coventry, VT**  
 Project #: **4536.08**  
 Project Manager: **Matt Estabrooks**  
 ALPHA Quote #:

### Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)  
 Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: **6/22/19**

ALPHA Job #: **L1927149**

### Report Information - Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

### Billing Information

Same as Client info PO #: **4536.00**

### Client Information

Client: **Sanborn, Head & Assoc, Inc.**  
 Address: **187 Saint Paul Street**  
**Suite 4-C, Burlington, VT 05401**  
 Phone: **802-391-8564**  
 Fax:

Email: **mestabrooks@sanbornhead.com**

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

### PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here:

ANALYSIS  
EPA-537(M)-ISOCYANATE Dilution  
IS-SM 2540

### SAMPLE HANDLING

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do  
 Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials		
		Date	Time				
-01	AC-06-20190618	6/18	0905	carpet	LET	X	
-02	AC-07-20190618	6/18	1020	Fabric	LET	X	
-03	<del>AC</del> AC-08-20190618	6/18	1043	Tarp	LET	X	
-04	AC-09-20190618	6/18	1115	Shingles	LET	X	
-05	FD-AC-09-20190618	6/18	1115	Shingles	LET	X	
-06	[REDACTED]-20190619	6/19	0700	Sludge	LET	X	X
-07	FD-[REDACTED]-20190619	6/19	0700	Sludge	LET	X	X
-08	[REDACTED]-Grit-20190619	6/19	0924	Grit	LET	X	X
-09	[REDACTED]-20190619	6/19	1306	Sludge	LET	X	X

Container Type	
Preservative	

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	6/21/19 10:15A	<i>[Signature]</i>	6/21/19 10:15
	6/21/19 16:08		6/21/19 01:05
	6-22-19 20:53		6/22/19 20:53





# MANSFIELD CHAIN OF CUSTODY

PAGE 2 OF 2

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

### Project Information

Project Name: **NEWSVT Landfill**  
 Project Location: **Coventry, VT**  
 Project #: **4536.00**  
 Project Manager: **Matt Estabrooks**  
 ALPHA Quote #:

Date Rec'd in Lab: **6/22/19**

ALPHA Job #: **L1927149**

### Report Information - Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

### Billing Information

Same as Client info PO #: **4536.00**

### Client Information

Client: **Sanborn, Head & Assoc, Inc.**  
 Address: **187 Saint Paul Street**  
**Suite 4-C, Burlington, VT 0540**  
 Phone: **802-391-8504**

### Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)  
 Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Email: **mestabrooks@sanbornhead.com**

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

### PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here:

ANALYSIS  
 EPA-537(M)-Isotopic Dilution  
 SPLP PFAS-537

### SAMPLE HANDLING

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do  
 Lab to do  
 Preservation  
 Lab to do  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials		
		Date	Time				
-10	RT_01_20190620	6/20	1030	Siding	LET	X	
-11	RT_02_20190620	6/20	1155	Fabric	LET	X	
-12	RT_03_20190620	6/20	1250	Flooring	LET	X	X
-13	RT_04_20190620	6/20	1335	Tarp	LET	X	
-14	FD-RT-04_20190620	6/20	1335	Tarp	LET	X	

Container Type

Preservative

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:

Date/Time

Received By:

Date/Time

*[Signature]*  
 6/21/19 10:15 AM  
 6/21/19 16:08  
 6/22/19 20:52

*[Signature]*  
 6/21/19 10:15  
 6/22/19 10:15  
 6/22/19 20:52



## ANALYTICAL REPORT

Lab Number:	L1928945
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	07/23/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1928945-01	Redacted_20190625	SOIL	COVENTRY, VT	06/25/19 11:55	07/02/19
L1928945-02	Redacted_20190625	SLUDGE	COVENTRY, VT	06/25/19 12:16	07/02/19
L1928945-03	Redacted_20190625	SOIL	COVENTRY, VT	06/25/19 12:42	07/02/19
L1928945-04	Redacted_20190701	SLUDGE	COVENTRY, VT	07/01/19 06:50	07/02/19
L1928945-05	FD_Redacted_20190701	SLUDGE	COVENTRY, VT	07/01/19 06:50	07/02/19
L1928945-06	Redacted_20190701	SOIL	COVENTRY, VT	07/01/19 07:12	07/02/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1928945-01, -02, -04, -05, -06, and WG1262022-1, WG1262022-2/-3, WG1262022-4/-5, and WG1262237-4: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1262022-2/-3 LCS/LCSD recoveries, associated with L1928945-02, -04, and -05, is above the acceptance criteria for perfluorohexanesulfonic acid (pfhxs) (134%/138%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1262022-4 MS recoveries, performed on L1928945-02, are outside the acceptance criteria for perfluorononanoic acid (pfna) (131%), 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (140%) and perfluorotetradecanoic acid (pfta) (135%).

The WG1262022-5 Laboratory Duplicate RPDs for perfluorobutanoic acid (pfba) (37%), perfluoropentanoic acid (pfpea) (47%), perfluorobutanesulfonic acid (pfbs) (46%), perfluorohexanoic acid (pfhxa) (47%), perfluorooctanoic acid (pfoa) (48%), perfluorononanoic acid (pfna) (51%), perfluorooctanesulfonic acid (pfos) (44%), perfluorodecanoic acid (pfda) (56%), perfluoroundecanoic acid (pfuna) (59%), perfluorooctanesulfonamide (fosa) (59%), n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa) (46%) and perfluorododecanoic acid (pfdoa) (56%), performed on L1928945-04, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

WG1258087-7: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Lisa Westerlind

Title: Technical Director/Representative

Date: 07/23/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-01  
**Client ID:** Redacted\_20190625  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/25/19 11:55  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/22/19 16:39  
**Analyst:** JW  
**Percent Solids:** 63%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/19/19 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.195	J	ng/g	1.50	0.034	1
Perfluoropentanoic Acid (PFPeA)	0.209	J	ng/g	1.50	0.069	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.50	0.058	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.50	0.096	1
Perfluorohexanoic Acid (PFHxA)	0.132	J	ng/g	1.50	0.079	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.50	0.125	1
Perfluoroheptanoic Acid (PFHpA)	0.124	J	ng/g	1.50	0.067	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.50	0.090	1
Perfluorooctanoic Acid (PFOA)	0.584	J	ng/g	1.50	0.063	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.50	0.268	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.50	0.204	1
Perfluorononanoic Acid (PFNA)	0.227	J	ng/g	1.50	0.112	1
Perfluorooctanesulfonic Acid (PFOS)	3.66		ng/g	1.50	0.194	1
Perfluorodecanoic Acid (PFDA)	0.368	J	ng/g	1.50	0.100	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.50	0.429	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.50	0.447	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.50	0.301	1
Perfluoroundecanoic Acid (PFUnA)	0.177	J	ng/g	1.50	0.070	1
Perfluorodecanesulfonic Acid (PFDS)	0.326	J	ng/g	1.50	0.229	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.50	0.146	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.50	0.126	1
Perfluorododecanoic Acid (PFDoA)	0.194	J	ng/g	1.50	0.105	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.50	0.306	1
Perfluorotetradecanoic Acid (PFTA)	0.088	J	ng/g	1.50	0.081	1
PFOA/PFOS, Total	4.24	J	ng/g	1.50	0.063	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

Lab ID: L1928945-01  
 Client ID: Redacted\_20190625  
 Sample Location: COVENTRY, VT

Date Collected: 06/25/19 11:55  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	46	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	49	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	56	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	59	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	58		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	25	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	66		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	26	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	61		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	37		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

Lab ID: L1928945-02  
 Client ID: Redacted\_20190625  
 Sample Location: COVENTRY, VT

Date Collected: 06/25/19 12:16  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/22/19 10:14  
 Analyst: JW  
 Percent Solids: 14%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/19/19 11:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.362	J	ng/g	3.48	0.079	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	3.48	0.160	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	3.48	0.136	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.48	0.224	1
Perfluorohexanoic Acid (PFHxA)	0.697	J	ng/g	3.48	0.182	1
Perfluoropentanesulfonic Acid (PFPeS)	0.341	J	ng/g	3.48	0.290	1
Perfluoroheptanoic Acid (PFHpA)	0.310	J	ng/g	3.48	0.157	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	3.48	0.210	1
Perfluorooctanoic Acid (PFOA)	2.38	J	ng/g	3.48	0.146	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	3.48	0.624	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	3.48	0.475	1
Perfluorononanoic Acid (PFNA)	2.10	J	ng/g	3.48	0.261	1
Perfluorooctanesulfonic Acid (PFOS)	6.38		ng/g	3.48	0.452	1
Perfluorodecanoic Acid (PFDA)	1.50	J	ng/g	3.48	0.233	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	3.48	0.998	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	3.48	1.04	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	3.48	0.701	1
Perfluoroundecanoic Acid (PFUnA)	0.854	J	ng/g	3.48	0.163	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	3.48	0.532	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	3.48	0.341	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	14.5		ng/g	3.48	0.294	1
Perfluorododecanoic Acid (PFDoA)	0.551	J	ng/g	3.48	0.243	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	3.48	0.711	1
Perfluorotetradecanoic Acid (PFTA)	0.386	J	ng/g	3.48	0.188	1
PFOA/PFOS, Total	8.76	J	ng/g	3.48	0.146	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

Lab ID: L1928945-02  
 Client ID: Redacted\_20190625  
 Sample Location: COVENTRY, VT

Date Collected: 06/25/19 12:16  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	34	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	35	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	35	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	64		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	35	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	35	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	34	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	34	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	32		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	32	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	33	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	34	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	27		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	31	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	37	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	34	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	38	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	36		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-03  
**Client ID:** Redacted\_20190625  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/25/19 12:42  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/11/19 11:24  
**Analyst:** JW  
**Percent Solids:** 82%  
**TCLP/SPLP Ext. Date:** 07/08/19 17:00

**Extraction Method:** EPA 537  
**Extraction Date:** 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.80	0.368	1
Perfluoropentanoic Acid (PFPeA)	3.58		ng/l	1.80	0.357	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.80	0.215	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.80	0.408	1
Perfluorohexanoic Acid (PFHxA)	3.02		ng/l	1.80	0.296	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.80	0.221	1
Perfluoroheptanoic Acid (PFHpA)	2.81		ng/l	1.80	0.203	1
Perfluorohexanesulfonic Acid (PFHxS)	2.77		ng/l	1.80	0.339	1
Perfluorooctanoic Acid (PFOA)	12.8		ng/l	1.80	0.213	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.80	1.20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.80	0.621	1
Perfluorononanoic Acid (PFNA)	0.906	J	ng/l	1.80	0.282	1
Perfluorooctanesulfonic Acid (PFOS)	18.2		ng/l	1.80	0.455	1
Perfluorodecanoic Acid (PFDA)	2.04		ng/l	1.80	0.274	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.80	1.09	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.80	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.80	0.585	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.80	0.235	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.80	0.884	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.80	0.523	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.80	0.726	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.80	0.336	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.80	0.295	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.80	0.224	1
PFOA/PFOS, Total	31.0		ng/l	1.80	0.213	1
PFAS, Total (5)	37.5	J	ng/l	1.80	0.203	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

Lab ID: L1928945-03  
 Client ID: Redacted\_20190625  
 Sample Location: COVENTRY, VT

Date Collected: 06/25/19 12:42  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	76		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	100		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	41		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	38		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-03  
**Client ID:** Redacted\_20190625  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/25/19 12:42  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/22/19 16:55  
**Analyst:** JW  
**Percent Solids:** 82%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/19/19 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.17	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.104	J	ng/g	1.17	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.17	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.17	0.075	1
Perfluorohexanoic Acid (PFHxA)	0.098	J	ng/g	1.17	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.17	0.098	1
Perfluoroheptanoic Acid (PFHpA)	0.091	J	ng/g	1.17	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	0.165	J	ng/g	1.17	0.071	1
Perfluorooctanoic Acid (PFOA)	0.448	J	ng/g	1.17	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.17	0.210	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.17	0.159	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.17	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	1.42		ng/g	1.17	0.152	1
Perfluorodecanoic Acid (PFDA)	0.208	J	ng/g	1.17	0.078	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.17	0.335	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.17	0.349	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.17	0.235	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.17	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.17	0.179	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.17	0.114	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.17	0.099	1
Perfluorododecanoic Acid (PFDoA)	0.118	J	ng/g	1.17	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.17	0.239	1
Perfluorotetradecanoic Acid (PFTTA)	0.071	J	ng/g	1.17	0.063	1
PFOA/PFOS, Total	1.87	J	ng/g	1.17	0.049	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1928945**Project Number:** 4536.00**Report Date:** 07/23/19**SAMPLE RESULTS**

Lab ID: L1928945-03  
 Client ID: Redacted\_20190625  
 Sample Location: COVENTRY, VT

Date Collected: 06/25/19 12:42  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

Lab ID: L1928945-04  
 Client ID: Redacted\_20190701  
 Sample Location: COVENTRY, VT

Date Collected: 07/01/19 06:50  
 Date Received: 07/02/19  
 Field Prep: Not Specified

## Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/22/19 10:31  
 Analyst: JW  
 Percent Solids: 42%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/19/19 11:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.70		ng/g	1.13	0.026	1
Perfluoropentanoic Acid (PFPeA)	2.84		ng/g	1.13	0.052	1
Perfluorobutanesulfonic Acid (PFBS)	2.83		ng/g	1.13	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.13	0.073	1
Perfluorohexanoic Acid (PFHxA)	8.28		ng/g	1.13	0.059	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.13	0.094	1
Perfluoroheptanoic Acid (PFHpA)	0.739	J	ng/g	1.13	0.051	1
Perfluorohexanesulfonic Acid (PFHxS)	0.240	J	ng/g	1.13	0.068	1
Perfluorooctanoic Acid (PFOA)	7.73		ng/g	1.13	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.13	0.203	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.13	0.154	1
Perfluorononanoic Acid (PFNA)	3.42		ng/g	1.13	0.085	1
Perfluorooctanesulfonic Acid (PFOS)	30.4		ng/g	1.13	0.147	1
Perfluorodecanoic Acid (PFDA)	9.77		ng/g	1.13	0.076	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.350	J	ng/g	1.13	0.324	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.13	0.338	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	16.9		ng/g	1.13	0.228	1
Perfluoroundecanoic Acid (PFUnA)	1.22		ng/g	1.13	0.053	1
Perfluorodecanesulfonic Acid (PFDS)	0.882	J	ng/g	1.13	0.173	1
Perfluorooctanesulfonamide (FOSA)	2.78		ng/g	1.13	0.111	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	6.18		ng/g	1.13	0.096	1
Perfluorododecanoic Acid (PFDoA)	2.16		ng/g	1.13	0.079	1
Perfluorotridecanoic Acid (PFTrDA)	0.237	J	ng/g	1.13	0.231	1
Perfluorotetradecanoic Acid (PFTA)	0.596	J	ng/g	1.13	0.061	1
PFOA/PFOS, Total	38.1		ng/g	1.13	0.047	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

Lab ID: L1928945-04  
 Client ID: Redacted\_20190701  
 Sample Location: COVENTRY, VT

Date Collected: 07/01/19 06:50  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	31	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	31	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	45	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	53	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	30	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	29	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	44	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	28	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	33		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	29	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	43	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	29	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	21	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	26	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	36	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	32	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	38	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	37		26-160

Project Name: NEWSVT LANDFILL

Lab Number: L1928945

Project Number: 4536.00

Report Date: 07/23/19

## SAMPLE RESULTS

Lab ID: L1928945-05  
 Client ID: FD\_Redacted\_20190701  
 Sample Location: COVENTRY, VT

Date Collected: 07/01/19 06:50  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/22/19 11:04  
 Analyst: JW  
 Percent Solids: 40%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/19/19 11:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	2.24		ng/g	1.21	0.028	1
Perfluoropentanoic Acid (PFPeA)	2.84		ng/g	1.21	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	2.66		ng/g	1.21	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.21	0.078	1
Perfluorohexanoic Acid (PFHxA)	8.06		ng/g	1.21	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.21	0.101	1
Perfluoroheptanoic Acid (PFHpA)	0.748	J	ng/g	1.21	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	0.276	J	ng/g	1.21	0.074	1
Perfluorooctanoic Acid (PFOA)	7.79		ng/g	1.21	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.21	0.218	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.230	J	ng/g	1.21	0.166	1
Perfluorononanoic Acid (PFNA)	3.58		ng/g	1.21	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	32.1		ng/g	1.21	0.158	1
Perfluorodecanoic Acid (PFDA)	10.1		ng/g	1.21	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.360	J	ng/g	1.21	0.349	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.21	0.363	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	17.0		ng/g	1.21	0.245	1
Perfluoroundecanoic Acid (PFUnA)	1.28		ng/g	1.21	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	1.13	J	ng/g	1.21	0.186	1
Perfluorooctanesulfonamide (FOSA)	4.80		ng/g	1.21	0.119	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	6.02		ng/g	1.21	0.103	1
Perfluorododecanoic Acid (PFDoA)	2.37		ng/g	1.21	0.085	1
Perfluorotridecanoic Acid (PFTTrDA)	0.276	J	ng/g	1.21	0.248	1
Perfluorotetradecanoic Acid (PFTA)	0.724	J	ng/g	1.21	0.066	1
PFOA/PFOS, Total	39.9		ng/g	1.21	0.051	1



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1928945**Project Number:** 4536.00**Report Date:** 07/23/19**SAMPLE RESULTS**

Lab ID: L1928945-05  
 Client ID: FD\_Redacted\_20190701  
 Sample Location: COVENTRY, VT

Date Collected: 07/01/19 06:50  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	35	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	37	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	49	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	54	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	36	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	36	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	51	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	36	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	35		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	35	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	47	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	37	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	23	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	32	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	44	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	3		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	34	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	42	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-06  
**Client ID:** Redacted\_20190701  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/01/19 07:12  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Soil  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/22/19 17:28  
**Analyst:** JW  
**Percent Solids:** 83%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/19/19 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.130	J	ng/g	1.10	0.025	1
Perfluoropentanoic Acid (PFPeA)	0.904	J	ng/g	1.10	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.10	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.10	0.071	1
Perfluorohexanoic Acid (PFHxA)	0.495	J	ng/g	1.10	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.10	0.092	1
Perfluoroheptanoic Acid (PFHpA)	0.170	J	ng/g	1.10	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.10	0.067	1
Perfluorooctanoic Acid (PFOA)	0.057	J	ng/g	1.10	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.29		ng/g	1.10	0.198	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.10	0.151	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.10	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	0.809	J	ng/g	1.10	0.144	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.10	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.10	0.317	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.10	0.330	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.10	0.222	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.10	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.10	0.169	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.10	0.108	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.10	0.093	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.10	0.077	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.10	0.226	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.10	0.060	1
PFOA/PFOS, Total	0.866	J	ng/g	1.10	0.046	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

Lab ID: L1928945-06  
 Client ID: Redacted\_20190701  
 Sample Location: COVENTRY, VT

Date Collected: 07/01/19 07:12  
 Date Received: 07/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			68		60-153	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			68		65-182	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			80		70-151	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			70		56-138	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			69		61-147	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			68		62-149	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			78		63-166	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			68		62-152	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			67		32-182	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			70		61-154	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			79		65-151	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			69		65-150	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			69		25-186	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			<b>25</b>	Q	45-137	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			72		64-158	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			6		1-125	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			<b>28</b>	Q	42-136	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			69		56-148	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			57		26-160	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:14  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1257755-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:14  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1257755-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:30  
Analyst: JW  
TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1257755-5					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.385
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.374
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.224
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.89	0.426
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.89	0.309
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.89	0.231
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.212
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.355
Perfluorooctanoic Acid (PFOA)	0.672	J	ng/l	1.89	0.223
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.649
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.294
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.475
Perfluorodecanoic Acid (PFDA)	1.70	J	ng/l	1.89	0.287
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.14
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.89	1.06
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.611
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.245
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.924
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.547
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.758
Perfluorododecanoic Acid (PFDoA)	0.985	J	ng/l	1.89	0.351
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.89	0.309
Perfluorotetradecanoic Acid (PFTA)	0.445	J	ng/l	1.89	0.234
PFOA/PFOS, Total	0.672	J	ng/l	1.89	0.223
PFAS, Total (5)	0.672	J	ng/l	1.89	0.212

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
 Analytical Date: 07/11/19 12:30  
 Analyst: JW  
 TCLP/SPLP Extraction Date: 06/26/19 14:22

Extraction Method: EPA 537  
 Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1257755-5					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	52		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	65		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	55		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	52		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	58		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	66		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	44		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	38		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/11/19 12:47  
Analyst: JW  
TCLP/SPLP Extraction Date: 07/08/19 17:00

Extraction Method: EPA 537  
Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1257755-6					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.371
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.82	0.360
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.216
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	0.411
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	0.298
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.223
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	0.205
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.342
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	0.214
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.21
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.625
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.458
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.276
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.589
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.236
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.891
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.527
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.731
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.338
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.297
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	1.82	0.225
PFOA/PFOS, Total	ND		ng/l	1.82	0.214
PFAS, Total (5)	ND		ng/l	1.82	0.205



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis  
 Batch Quality Control**

Analytical Method: 122,537(M)  
 Analytical Date: 07/11/19 12:47  
 Analyst: JW  
 TCLP/SPLP Extraction Date: 07/08/19 17:00

Extraction Method: EPA 537  
 Extraction Date: 07/10/19 11:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1257755-6					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	94		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	73		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	68		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	67		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	84		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	80		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/22/19 11:54  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/19/19 11:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04-05 Batch: WG1262022-1					
Perfluorobutanoic Acid (PFBA)	0.091	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.035
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.027
PFOA/PFOS, Total	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
 Analytical Date: 07/22/19 11:54  
 Analyst: JW

Extraction Method: EPA 537(M)  
 Extraction Date: 07/19/19 11:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02,04-05 Batch: WG1262022-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	40	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	43	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	45	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	33	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	45	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	44	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	45	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	42	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	27	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	42	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	47	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	42	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	21	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	33	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	42	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	3		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	32	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	39	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	32		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/22/19 19:41  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/19/19 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03,06 Batch: WG1262237-1					
Perfluorobutanoic Acid (PFBA)	0.100	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/22/19 19:41  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/19/19 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01,03,06 Batch: WG1262237-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	85		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	66		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	77		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1928945

Project Number: 4536.00

Report Date: 07/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1257755-2 WG1257755-3								
Perfluorobutanoic Acid (PFBA)	106		107		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	107		108		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	98		99		65-157	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	111		120		37-219	8		30
Perfluorohexanoic Acid (PFHxA)	116		117		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	110		110		52-156	0		30
Perfluoroheptanoic Acid (PFHpA)	105		106		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	117		129		69-177	10		30
Perfluorooctanoic Acid (PFOA)	106		111		63-159	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	114		126		49-187	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		103		61-179	1		30
Perfluorononanoic Acid (PFNA)	115		114		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	98		100		52-151	2		30
Perfluorodecanoic Acid (PFDA)	116		120		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	94		104		56-173	10		30
Perfluorononanesulfonic Acid (PFNS)	106		107		48-150	1		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	108		108		60-166	0		30
Perfluoroundecanoic Acid (PFUnA)	100		103		60-153	3		30
Perfluorodecanesulfonic Acid (PFDS)	106		109		38-156	3		30
Perfluorooctanesulfonamide (FOSA)	100		100		46-170	0		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	102		101		45-170	1		30
Perfluorododecanoic Acid (PFDoA)	110		106		67-153	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1928945

Project Number: 4536.00

Report Date: 07/23/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1257755-2 WG1257755-3								
Perfluorotridecanoic Acid (PFTrDA)	114		108		48-158	5		30
Perfluorotetradecanoic Acid (PFTA)	120		120		59-182	0		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		114		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	67		71		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	93		96		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	93		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65		69		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		107		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		101		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		93		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		90		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		93		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		34		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		69		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		90		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		89		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1928945

Project Number: 4536.00

Report Date: 07/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05 Batch: WG1262022-2 WG1262022-3								
Perfluorobutanoic Acid (PFBA)	115		114		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	110		108		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	104		103		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	121		117		62-145	3		30
Perfluorohexanoic Acid (PFHxA)	123		121		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	111		121		73-123	9		30
Perfluoroheptanoic Acid (PFHpA)	115		111		71-131	4		30
Perfluorohexanesulfonic Acid (PFHxS)	134	Q	138	Q	67-130	3		30
Perfluorooctanoic Acid (PFOA)	116		115		69-133	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	123		117		64-140	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	113		109		70-132	4		30
Perfluorononanoic Acid (PFNA)	122		122		72-129	0		30
Perfluorooctanesulfonic Acid (PFOS)	100		96		68-136	4		30
Perfluorodecanoic Acid (PFDA)	121		124		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	92		111		65-137	19		30
Perfluorononanesulfonic Acid (PFNS)	114		107		69-125	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	111		99		63-144	11		30
Perfluoroundecanoic Acid (PFUnA)	109		117		64-136	7		30
Perfluorodecanesulfonic Acid (PFDS)	118		104		59-134	13		30
Perfluorooctanesulfonamide (FOSA)	102		126		67-137	21		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	98		100		61-139	2		30
Perfluorododecanoic Acid (PFDoA)	115		112		69-135	3		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1928945

Project Number: 4536.00

Report Date: 07/23/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05 Batch: WG1262022-2 WG1262022-3								
Perfluorotridecanoic Acid (PFTrDA)	98		95		66-139	3		30
Perfluorotetradecanoic Acid (PFTA)	126		129		69-133	2		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	43	Q	39	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	45	Q	40	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	45	Q	43	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	39	Q	39	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	48	Q	44	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	46	Q	42	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	43	Q	39	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	44	Q	40	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	29	Q	29	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	44	Q	40	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	46	Q	44	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	44	Q	40	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	33		28		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	37	Q	37	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	44	Q	38	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	39	Q	31	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	41	Q	37	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		31		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1928945

Project Number: 4536.00

Report Date: 07/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06 Batch: WG1262237-2 WG1262237-3								
Perfluorobutanoic Acid (PFBA)	107		109		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	103		105		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	96		99		72-128	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	114		123		62-145	8		30
Perfluorohexanoic Acid (PFHxA)	115		116		70-132	1		30
Perfluoropentanesulfonic Acid (PFPeS)	101		108		73-123	7		30
Perfluoroheptanoic Acid (PFHpA)	104		109		71-131	5		30
Perfluorohexanesulfonic Acid (PFHxS)	116		120		67-130	3		30
Perfluorooctanoic Acid (PFOA)	109		112		69-133	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	118		121		64-140	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		107		70-132	3		30
Perfluorononanoic Acid (PFNA)	112		113		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	103		95		68-136	8		30
Perfluorodecanoic Acid (PFDA)	117		118		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	122		93		65-137	27		30
Perfluorononanesulfonic Acid (PFNS)	106		111		69-125	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	116		116		63-144	0		30
Perfluoroundecanoic Acid (PFUnA)	104		103		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	113		104		59-134	8		30
Perfluorooctanesulfonamide (FOSA)	104		90		67-137	14		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		99		61-139	11		30
Perfluorododecanoic Acid (PFDoA)	105		108		69-135	3		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1928945

Project Number: 4536.00

Report Date: 07/23/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06 Batch: WG1262237-2 WG1262237-3								
Perfluorotridecanoic Acid (PFTrDA)	100		100		66-139	0		30
Perfluorotetradecanoic Acid (PFTA)	118		121		69-133	3		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		80		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		80		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		86		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	83		82		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		86		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		83		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		84		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		83		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		68		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		87		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		87		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	74		81		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		71		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	87		85		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		4		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		65		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		79		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		68		26-160

## Matrix Spike Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1928945

**Project Number:** 4536.00

**Report Date:** 07/23/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05 QC Batch ID: WG1262022-4 QC Sample: L1928945-02 Client ID: Redacted_20190625												
Perfluorobutanoic Acid (PFBA)	0.362J	17.3	19.1	110		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	17.3	18.7	108		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	17.3	17.5	101		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	17.3	21.4	124		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	0.697J	17.3	21.6	125		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.341J	17.3	18.6	107		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.310J	17.3	20.2	117		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	17.3	20.8	120		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	2.38J	17.3	22.5	130		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	17.3	23.7	137		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	17.3	17.0	98		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	2.10J	17.3	22.6	131	Q	-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	6.38	17.3	20.4	81		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	1.50J	17.3	22.8	132		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	17.3	24.2	140	Q	-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	17.3	17.7	102		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	17.3	24.6	142		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	0.854J	17.3	20.7	120		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	17.3	18.7	108		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	17.3	20.7	120		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	14.5	17.3	33.1	107		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	0.551J	17.3	19.0	110		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1928945

**Project Number:** 4536.00

**Report Date:** 07/23/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05 QC Batch ID: WG1262022-4 QC Sample: L1928945-02 Client ID: Redacted_20190625												
Perfluorotridecanoic Acid (PFTTrDA)	ND	17.3	15.9	92		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.386J	17.3	23.4	135	Q	-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	31				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58				56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	35				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	29	Q			42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	28	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	34	Q			64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	33	Q			65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	33	Q			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	32	Q			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	35	Q			63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	41	Q			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	32				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	34	Q			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	34	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	39	Q			65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	33	Q			62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	32	Q			61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	34	Q			70-151

## Matrix Spike Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1928945

**Project Number:** 4536.00

**Report Date:** 07/23/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06 QC Batch ID: WG1262237-4 QC Sample: L1928945-01 Client ID: Redacted_20190625												
Perfluorobutanoic Acid (PFBA)	0.195J	6.89	7.80	113	-	-	-	-	71-135	-	-	30
Perfluoropentanoic Acid (PFPeA)	0.209J	6.89	7.71	112	-	-	-	-	69-132	-	-	30
Perfluorobutanesulfonic Acid (PFBS)	ND	6.89	7.10	103	-	-	-	-	72-128	-	-	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	6.89	8.54	124	-	-	-	-	62-145	-	-	30
Perfluorohexanoic Acid (PFHxA)	0.132J	6.89	8.35	121	-	-	-	-	70-132	-	-	30
Perfluoropentanesulfonic Acid (PFPeS)	ND	6.89	7.98	116	-	-	-	-	73-123	-	-	30
Perfluoroheptanoic Acid (PFHpA)	0.124J	6.89	7.63	111	-	-	-	-	71-131	-	-	30
Perfluorohexanesulfonic Acid (PFHxS)	ND	6.89	8.94	130	-	-	-	-	67-130	-	-	30
Perfluorooctanoic Acid (PFOA)	0.584J	6.89	8.14	118	-	-	-	-	69-133	-	-	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	6.89	8.64	125	-	-	-	-	64-140	-	-	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	6.89	7.56	110	-	-	-	-	70-132	-	-	30
Perfluorononanoic Acid (PFNA)	0.227J	6.89	8.33	121	-	-	-	-	72-129	-	-	30
Perfluorooctanesulfonic Acid (PFOS)	3.66	6.89	11.4	112	-	-	-	-	68-136	-	-	30
Perfluorodecanoic Acid (PFDA)	0.368J	6.89	8.56	124	-	-	-	-	69-133	-	-	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	6.89	8.37	121	-	-	-	-	65-137	-	-	30
Perfluorononanesulfonic Acid (PFNS)	ND	6.89	7.51	109	-	-	-	-	69-125	-	-	30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	6.89	8.09	117	-	-	-	-	63-144	-	-	30
Perfluoroundecanoic Acid (PFUnA)	0.177J	6.89	7.51	109	-	-	-	-	64-136	-	-	30
Perfluorodecanesulfonic Acid (PFDS)	0.326J	6.89	7.69	112	-	-	-	-	59-134	-	-	30
Perfluorooctanesulfonamide (FOSA)	ND	6.89	9.12	132	-	-	-	-	67-137	-	-	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	6.89	7.81	113	-	-	-	-	61-139	-	-	30
Perfluorododecanoic Acid (PFDoA)	0.194J	6.89	7.97	116	-	-	-	-	69-135	-	-	30

## Matrix Spike Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1928945

**Project Number:** 4536.00

**Report Date:** 07/23/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06 QC Batch ID: WG1262237-4 QC Sample: L1928945-01 Client ID: Redacted_20190625												
Perfluorotridecanoic Acid (PFTTrDA)	ND	6.89	6.78	98		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	0.088J	6.89	8.81	128		-	-		69-133	-		30

Surrogate (Extracted Internal Standard)	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	78				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	80				56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	65				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	28	Q			42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	25	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUDA)	67				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	66				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	55	Q			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	57	Q			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	62				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	38				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	46	Q			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	46	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q			1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	60	Q			62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	65				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81				70-151

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1928945

Report Date: 07/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05 QC Batch ID: WG1262022-5 QC Sample: L1928945-04 Client ID: Redacted_20190701						
Perfluorobutanoic Acid (PFBA)	2.70	3.92	ng/g	37	Q	30
Perfluoropentanoic Acid (PFPeA)	2.84	4.58	ng/g	47	Q	30
Perfluorobutanesulfonic Acid (PFBS)	2.83	4.54	ng/g	46	Q	30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	8.28	13.3	ng/g	47	Q	30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.739J	1.14J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.240J	0.432J	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	7.73	12.6	ng/g	48	Q	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	3.42	5.78	ng/g	51	Q	30
Perfluorooctanesulfonic Acid (PFOS)	30.4	47.4	ng/g	44	Q	30
Perfluorodecanoic Acid (PFDA)	9.77	17.3	ng/g	56	Q	30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.350J	0.421J	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	16.9	22.7	ng/g	29		30
Perfluoroundecanoic Acid (PFUnA)	1.22	2.23	ng/g	59	Q	30
Perfluorodecanesulfonic Acid (PFDS)	0.882J	1.19	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	2.78	5.08	ng/g	59	Q	30



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05 QC Batch ID: WG1262022-5 QC Sample: L1928945-04 Client ID: Redacted_20190701						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	6.18	9.88	ng/g	46	Q	30
Perfluorododecanoic Acid (PFDoA)	2.16	3.85	ng/g	56	Q	30
Perfluorotridecanoic Acid (PFTTrDA)	0.237J	0.456J	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.596J	0.989J	ng/g	NC		30
PFOA/PFOS, Total	38.1	60.0	ng/g	0		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	31	Q	21	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	31	Q	21	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	45	Q	28	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	53	Q	35	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	30	Q	22	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	29	Q	21	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	44	Q	26	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	28	Q	19	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	33		19	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	29	Q	20	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	43	Q	30	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	29	Q	19	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	21	Q	19	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	26	Q	19	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	36	Q	24	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	2		2		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	32	Q	20	Q	42-136

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1928945

**Report Date:** 07/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02,04-05 QC Batch ID: WG1262022-5 QC Sample: L1928945-04						
Client ID: Redacted_20190701						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	38	Q	25	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	37		21	Q	26-160

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1928945

Report Date: 07/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06 QC Batch ID: WG1262237-5 QC Sample: L1928945-03 Client ID: Redacted_20190625						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.104J	0.094J	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	0.098J	0.094J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.091J	0.086J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	0.165J	0.103J	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	0.448J	0.482J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	1.42	0.880J	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	0.208J	0.162J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06 QC Batch ID: WG1262237-5 QC Sample: L1928945-03 Client ID: Redacted_20190625						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	0.118J	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.071J	ND	ng/g	NC		30
PFOA/PFOS, Total	1.87J	1.36J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		79		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		81		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		86		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		77		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	94		87		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90		83		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	90		83		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		81		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		62		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		84		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		89		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73		68		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		49		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	89		81		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	54		51		42-136

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1928945

Report Date: 07/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01,03,06 QC Batch ID: WG1262237-5 QC Sample: L1928945-03						
Client ID: Redacted_20190625						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	85		76		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		69		26-160

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-01  
**Client ID:** Redacted\_20190625  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/25/19 11:55  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	63.1		%	0.100	0.100	1	-	07/09/19 00:50	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-02  
**Client ID:** Redacted\_20190625  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/25/19 12:16  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	14.2		%	0.100	0.100	1	-	07/09/19 00:50	121,2540G	CC





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-03  
**Client ID:** Redacted\_20190625  
**Sample Location:** COVENTRY, VT

**Date Collected:** 06/25/19 12:42  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	82.1		%	0.100	NA	1	-	07/04/19 04:38	121,2540G	YA



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-04  
**Client ID:** Redacted\_20190701  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/01/19 06:50  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	41.8		%	0.100	0.100	1	-	07/09/19 00:50	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-05  
**Client ID:** FD\_Redacted\_20190701  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/01/19 06:50  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	40.2		%	0.100	0.100	1	-	07/09/19 00:50	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

**SAMPLE RESULTS**

**Lab ID:** L1928945-06  
**Client ID:** Redacted\_20190701  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/01/19 07:12  
**Date Received:** 07/02/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	82.7		%	0.100	0.100	1	-	07/09/19 00:50	121,2540G	CC



### Lab Duplicate Analysis *Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1928945

**Report Date:** 07/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 03 QC Batch ID: WG1256509-1 QC Sample: L1929167-01 Client ID: DUP Sample						
Solids, Total	79.5	86.6	%	9		20
General Chemistry - Mansfield Lab Associated sample(s): 01-02,04-06 QC Batch ID: WG1257299-1 QC Sample: L1928689-01 Client ID: DUP Sample						
Solids, Total	69.8	69.6	%	0		10



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1928945**Project Number:** 4536.00**Report Date:** 07/23/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1928945-01A	Plastic 2oz unpreserved for TS	A	NA		5.5	Y	Absent		A2-TS(7)
L1928945-01B	Plastic 8oz unpreserved	A	NA		5.5	Y	Absent		A2-537-ISOTOPE(28)
L1928945-02A	Plastic 2oz unpreserved for TS	A	NA		5.5	Y	Absent		A2-TS(7)
L1928945-02B	Plastic 8oz unpreserved	A	NA		5.5	Y	Absent		A2-537-ISOTOPE(28)
L1928945-03A	Plastic 2oz unpreserved for TS	A	NA		5.5	Y	Absent		TS(7)
L1928945-03A1	Plastic 2oz unpreserved for TS	A	NA		5.5	Y	Absent		TS(7)
L1928945-03B	Plastic 8oz unpreserved	A	NA		5.5	Y	Absent		A2-537-ISOTOPE(28)
L1928945-03C	Plastic 8oz unpreserved	A	NA		5.5	Y	Absent		-
L1928945-03X	Plastic 250ml unpreserved Extracts	A	NA		5.5	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1928945-03X1	Plastic 250ml unpreserved Extracts	A	NA		5.5	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1928945-03X2	Plastic 250ml unpreserved Extracts	A	NA		5.5	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1928945-03X3	Plastic 250ml unpreserved Extracts	A	NA		5.5	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1928945-03X9	Tumble Vessel	A	NA		5.5	Y	Absent		-
L1928945-04A	Plastic 2oz unpreserved for TS	A	NA		5.5	Y	Absent		A2-TS(7)
L1928945-04B	Plastic 8oz unpreserved	A	NA		5.5	Y	Absent		A2-537-ISOTOPE(28)
L1928945-05A	Plastic 2oz unpreserved for TS	A	NA		5.5	Y	Absent		A2-TS(7)
L1928945-05B	Plastic 8oz unpreserved	A	NA		5.5	Y	Absent		A2-537-ISOTOPE(28)
L1928945-06A	Plastic 2oz unpreserved for TS	A	NA		5.5	Y	Absent		A2-TS(7)
L1928945-06B	Plastic 8oz unpreserved	A	NA		5.5	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1928945  
**Report Date:** 07/23/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**EPA 6860:** SCM: Perchlorate

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology:** **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology:** **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1 Hg.**

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





**MANSFIELD CHAIN OF CUSTODY**

PAGE 1 OF 1

WESTBORO, MA  
TEL: 508-888-8220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

**Client Information**

Client: Sauborn, Head & Assoc. Inc.  
Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
Phone: 802-391-8504  
Fax:

Email: mestabrooks@saubornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**PLEASE NOTE**

MS/MSD (at unit cost) will be omitted unless you check here:

**Project Information**

Project Name: NEWSVT Landfill  
Project Location: Coventry, VT  
Project #: 4536.00  
Project Manager: Matt Estabrooks  
ALPHA Quote #:

**Turn-Around Time**

Standard  RUSH (only confirmed if pre-approved)  
Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 7/3/19

**Report Information - Data Deliverables**

FAX  EMAIL  
 ADEx  Add'l Deliverables

ALPHA Job #: L1928945

**Billing Information**

Same as Client info PO #: 4536.00

**Regulatory Requirements/Report Limits**

State /Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

<p><b>ANALYSIS</b></p> <p><u>EPA-537(M) In Situ</u> <u>TS-SM 2540</u> <u>SPLP PFAS-537</u></p>	<p><b>SAMPLE HANDLING</b></p> <p>Filtration _____</p> <p><input type="checkbox"/> Done</p> <p><input type="checkbox"/> Not needed</p> <p><input type="checkbox"/> Lab to do</p> <p><input type="checkbox"/> Preservation</p> <p><input type="checkbox"/> Lab to do</p> <p><small>(Please specify below)</small></p>
<p>Sample Specific Comments</p>	<p>TOTAL # BOTTLES</p>

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS			Sample Specific Comments
		Date	Time			EPA-537(M)	TS-SM	SPLP PFAS-537	
28945-01	[REDACTED]-20190625	6/25/19	11:55	Soil	LET	X	X		
02	[REDACTED]-20190625	6/25/19	12:16	Sludge	LET	X	X		
03	[REDACTED]-20190625	6/25/19	12:42	Soil	LET	X	X	X	
04	[REDACTED]-20190701	7/1/19	06:50	Sludge	LET	X	X		
05	FD-[REDACTED]-20190701	7/1/19	06:50	Sludge	LET	X	X		
06	[REDACTED]-20190701	7/1/19	07:12	Soil	LET	X	X		

Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
<u>[Signature]</u>	<u>7/2/19 12:23 PM</u>	<u>[Signature]</u>	<u>7/2/19 12:23 PM</u>
	<u>7/2/19 15:50</u>	<u>[Signature]</u>	<u>7/3/19 02:50</u>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



## ANALYTICAL REPORT

Lab Number:	L1930748
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	07/30/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1930748-01	Redacted_20190709	SOIL	COVENTRY, VT	07/09/19 06:54	07/12/19
L1930748-02	FD_Redacted_20190709	SOIL	COVENTRY, VT	07/09/19 06:54	07/12/19
L1930748-03	Redacted_20190709	SOLID	COVENTRY, VT	07/09/19 07:24	07/12/19
L1930748-04	Redacted_01_20190709	SOLID	COVENTRY, VT	07/09/19 07:30	07/12/19
L1930748-05	Redacted_02_20190709	SOLID	COVENTRY, VT	07/09/19 07:40	07/12/19
L1930748-06	FD_Redacted_02_20190709	SOLID	COVENTRY, VT	07/09/19 07:40	07/12/19
L1930748-07	Redacted__20190709	SLUDGE	COVENTRY, VT	07/09/19 11:27	07/12/19
L1930748-08	Redacted__20190709	SLUDGE	COVENTRY, VT	07/09/19 12:20	07/12/19
L1930748-09	FB__20190709	WATER	COVENTRY, VT	07/09/19 07:44	07/12/19
L1930748-10	EB__20190709	WATER	COVENTRY, VT	07/09/19 12:57	07/12/19
L1930748-11	CV_07__20190711	SOLID	COVENTRY, VT	07/11/19 09:20	07/12/19
L1930748-12	CV_08__20190711	SOLID	COVENTRY, VT	07/11/19 09:25	07/12/19
L1930748-13	CV_09_20190711	SOLID	COVENTRY, VT	07/11/19 09:35	07/12/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1930748-03, -04, -05, -06, -07, -08, -11, -12, and -13: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1265098-1, WG1265098-2, WG1265098-3, WG1265098-5, WG1265102-1, WG1265102-2, WG1265102-3, WG1265102-4, WG1265102-5, and WG1265193-2: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1265098-2 LCS recovery, associated with L1930748-07 and -08, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (193%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1265098-2/-3 LCS/LCSD RPD, associated with L1930748-07 and -08, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (47%).

The WG1265193-2/-3 LCS/LCSD RPD, associated with L1930748-01 and -02, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (34%).

The WG1265102-4 MS recoveries, performed on L1930748-04, are outside the acceptance criteria for perfluorobutanesulfonic acid (pfbs) (130%), perfluorohexanoic acid (pfhxa) (136%), perfluorohexanesulfonic acid (pfhxs) (152%), perfluorooctanoic acid (pfoa) (271%), 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (161%), perfluoroheptanesulfonic acid (pfhps) (23%), perfluorooctanesulfonic acid (pfos) (61%), 1h,1h,2h,2h-perfluorodecanesulfonic acid (8:2fts) (147%), perfluorononanesulfonic acid (pfns) (17%), perfluorodecanesulfonic acid (pfds) (19%) and perfluorotridecanoic acid (pftrda) (184%).

The WG1265102-5 Laboratory Duplicate RPDs for perfluorooctanoic acid (pfoa) (37%), perfluorodecanesulfonic acid (pfds) (56%) and n-ethyl perfluorooctanesulfonamidoacetic acid (netfosaa)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

### Case Narrative (continued)

(37%), performed on L1930748-05, are outside the acceptance criteria. The elevated RPDs have been attributed to the non-homogeneous nature of the native sample.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L1930748-08: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

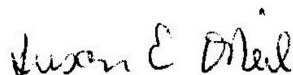
WG1265891-7: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1266192-1: The continuing calibration standard had the response for NEtFOSAA outside the acceptance criteria for the method. This value represents less than 10% of all compounds; therefore, the calibration was accepted.

WG1266192-2: The continuing calibration standard had the response for Perfluorohexanesulfonic Acid-Branched (br-PFHxS), outside of acceptance criteria. The response for Perfluorohexanesulfonic Acid (PFHxS) was within acceptance criteria; therefore, no further action was taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 07/30/19



# ORGANICS

# SEMIVOLATILES

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

## SAMPLE RESULTS

Lab ID: L1930748-01  
 Client ID: Redacted\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 06:54  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/30/19 05:05  
 Analyst: JW  
 Percent Solids: 72%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.065	J	ng/g	1.22	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.22	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.22	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.22	0.079	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.22	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.22	0.102	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.22	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.22	0.074	1
Perfluorooctanoic Acid (PFOA)	0.154	J	ng/g	1.22	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.22	0.219	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.22	0.166	1
Perfluorononanoic Acid (PFNA)	0.109	J	ng/g	1.22	0.092	1
Perfluorooctanesulfonic Acid (PFOS)	0.406	J	ng/g	1.22	0.159	1
Perfluorodecanoic Acid (PFDA)	0.090	J	ng/g	1.22	0.082	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.22	0.350	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.22	0.365	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.22	0.246	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.22	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.22	0.187	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.22	0.120	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.22	0.103	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.22	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.22	0.250	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.22	0.066	1
PFOA/PFOS, Total	0.560	J	ng/g	1.22	0.051	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-01  
 Client ID: Redacted\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 06:54  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	94		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	82		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	91		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	54		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	86		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	66		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	53		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		26-160

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

## SAMPLE RESULTS

Lab ID: L1930748-02  
 Client ID: FD\_Redacted\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 06:54  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/30/19 05:21  
 Analyst: JW  
 Percent Solids: 70%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	0.083	J	ng/g	1.23	0.028	1
Perfluoropentanoic Acid (PFPeA)	0.068	J	ng/g	1.23	0.057	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.23	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.23	0.080	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.23	0.065	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.23	0.103	1
Perfluoroheptanoic Acid (PFHpA)	0.073	J	ng/g	1.23	0.056	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.23	0.075	1
Perfluorooctanoic Acid (PFOA)	0.219	J	ng/g	1.23	0.052	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.23	0.221	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.23	0.168	1
Perfluorononanoic Acid (PFNA)	0.121	J	ng/g	1.23	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	0.566	J	ng/g	1.23	0.160	1
Perfluorodecanoic Acid (PFDA)	0.102	J	ng/g	1.23	0.083	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.23	0.354	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.23	0.369	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.23	0.248	1
Perfluoroundecanoic Acid (PFUnA)	0.061	J	ng/g	1.23	0.058	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.23	0.189	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.23	0.121	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.23	0.104	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.23	0.086	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.23	0.252	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.23	0.067	1
PFOA/PFOS, Total	0.785	J	ng/g	1.23	0.052	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-02  
 Client ID: FD\_Redacted\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 06:54  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			79		60-153	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			83		65-182	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			82		70-151	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			88		56-138	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			74		61-147	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			79		62-149	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			86		63-166	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			78		62-152	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			83		32-182	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			83		61-154	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			82		65-151	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			77		65-150	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			101		25-186	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			57		45-137	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			80		64-158	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			8		1-125	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			57		42-136	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			75		56-148	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			74		26-160	

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1930748**Project Number:** 4536.00**Report Date:** 07/30/19**SAMPLE RESULTS**

Lab ID: L1930748-03  
 Client ID: Redacted\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:24  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/29/19 21:05  
 Analyst: JW  
 Percent Solids: 85%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.127	J	ng/g	1.36	0.031	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.36	0.063	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.36	0.053	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.36	0.088	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.36	0.072	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.36	0.114	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.36	0.061	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.36	0.082	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.36	0.057	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.36	0.244	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.36	0.186	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.36	0.102	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.36	0.177	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.36	0.091	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.36	0.391	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.36	0.407	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.36	0.274	1
Perfluoroundecanoic Acid (PFUnA)	0.114	J	ng/g	1.36	0.064	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.36	0.208	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.36	0.134	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.115	J	ng/g	1.36	0.115	1
Perfluorododecanoic Acid (PFDoA)	0.179	J	ng/g	1.36	0.095	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.36	0.279	1
Perfluorotetradecanoic Acid (PFTA)	0.154	J	ng/g	1.36	0.074	1
PFOA/PFOS, Total	ND		ng/g	1.36	0.057	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-03  
 Client ID: Redacted\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:24  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	42	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	50	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	43	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	33	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	43	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	41	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	39	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	42	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	26	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	43	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	42	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	42	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	35		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	34	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	44	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	38	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	40	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	41		26-160



Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

## SAMPLE RESULTS

Lab ID: L1930748-04  
 Client ID: Redacted\_01\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:30  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/29/19 21:22  
 Analyst: JW  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.685	J	ng/g	1.09	0.025	1
Perfluoropentanoic Acid (PFPeA)	0.378	J	ng/g	1.09	0.050	1
Perfluorobutanesulfonic Acid (PFBS)	0.481	J	ng/g	1.09	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.09	0.071	1
Perfluorohexanoic Acid (PFHxA)	1.88		ng/g	1.09	0.057	1
Perfluoropentanesulfonic Acid (PFPeS)	0.403	J	ng/g	1.09	0.091	1
Perfluoroheptanoic Acid (PFHpA)	0.876	J	ng/g	1.09	0.049	1
Perfluorohexanesulfonic Acid (PFHxS)	1.64		ng/g	1.09	0.066	1
Perfluorooctanoic Acid (PFOA)	57.6		ng/g	1.09	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	17.8		ng/g	1.09	0.196	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.09	0.149	1
Perfluorononanoic Acid (PFNA)	0.410	J	ng/g	1.09	0.082	1
Perfluorooctanesulfonic Acid (PFOS)	11.3		ng/g	1.09	0.142	1
Perfluorodecanoic Acid (PFDA)	0.794	J	ng/g	1.09	0.073	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	6.27		ng/g	1.09	0.314	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.09	0.327	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.09	0.220	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.09	0.051	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.09	0.167	1
Perfluorooctanesulfonamide (FOSA)	0.326	J	ng/g	1.09	0.107	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.48		ng/g	1.09	0.092	1
Perfluorododecanoic Acid (PFDoA)	0.350	J	ng/g	1.09	0.077	1
Perfluorotridecanoic Acid (PFTrDA)	0.261	J	ng/g	1.09	0.223	1
Perfluorotetradecanoic Acid (PFTA)	0.148	J	ng/g	1.09	0.059	1
PFOA/PFOS, Total	68.9		ng/g	1.09	0.046	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1930748**Project Number:** 4536.00**Report Date:** 07/30/19**SAMPLE RESULTS**

Lab ID: L1930748-04  
 Client ID: Redacted\_01\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:30  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	35	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	38	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	40	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	137		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	38	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	40	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	41	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	40	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	126		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	43	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	170	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	42	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	49		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	52	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	13		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	25	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	57		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1930748**Project Number:** 4536.00**Report Date:** 07/30/19**SAMPLE RESULTS**

Lab ID: L1930748-05  
 Client ID: Redacted\_02\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:40  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/29/19 21:38  
 Analyst: JW  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.23	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.23	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.23	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.23	0.079	1
Perfluorohexanoic Acid (PFHxA)	0.688	J	ng/g	1.23	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.23	0.102	1
Perfluoroheptanoic Acid (PFHpA)	0.640	J	ng/g	1.23	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.23	0.074	1
Perfluorooctanoic Acid (PFOA)	3.09		ng/g	1.23	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.23	0.220	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.23	0.167	1
Perfluorononanoic Acid (PFNA)	0.227	J	ng/g	1.23	0.092	1
Perfluorooctanesulfonic Acid (PFOS)	10.6		ng/g	1.23	0.160	1
Perfluorodecanoic Acid (PFDA)	0.193	J	ng/g	1.23	0.082	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.23	0.352	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.23	0.367	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.44		ng/g	1.23	0.247	1
Perfluoroundecanoic Acid (PFUnA)	0.208	J	ng/g	1.23	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	5.80		ng/g	1.23	0.188	1
Perfluorooctanesulfonamide (FOSA)	0.458	J	ng/g	1.23	0.120	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	11.1		ng/g	1.23	0.104	1
Perfluorododecanoic Acid (PFDoA)	0.272	J	ng/g	1.23	0.086	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.23	0.251	1
Perfluorotetradecanoic Acid (PFTA)	0.128	J	ng/g	1.23	0.066	1
PFOA/PFOS, Total	13.7		ng/g	1.23	0.051	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1930748**Project Number:** 4536.00**Report Date:** 07/30/19**SAMPLE RESULTS**

Lab ID: L1930748-05  
 Client ID: Redacted\_02\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:40  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	37	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	38	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	46	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	132		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	39	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	43	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	45	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	41	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	32	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	47	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	41	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	109		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1930748**Project Number:** 4536.00**Report Date:** 07/30/19**SAMPLE RESULTS**

Lab ID: L1930748-06  
 Client ID: FD\_Redacted\_02\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:40  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/29/19 22:11  
 Analyst: JW  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.31	0.030	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.31	0.060	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.31	0.051	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.31	0.084	1
Perfluorohexanoic Acid (PFHxA)	0.603	J	ng/g	1.31	0.069	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.31	0.109	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.31	0.059	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.31	0.079	1
Perfluorooctanoic Acid (PFOA)	2.86		ng/g	1.31	0.055	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.275	J	ng/g	1.31	0.235	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.31	0.178	1
Perfluorononanoic Acid (PFNA)	0.225	J	ng/g	1.31	0.098	1
Perfluorooctanesulfonic Acid (PFOS)	7.18		ng/g	1.31	0.170	1
Perfluorodecanoic Acid (PFDA)	0.208	J	ng/g	1.31	0.088	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.31	0.375	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.31	0.391	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.33		ng/g	1.31	0.263	1
Perfluoroundecanoic Acid (PFUnA)	0.201	J	ng/g	1.31	0.061	1
Perfluorodecanesulfonic Acid (PFDS)	5.46		ng/g	1.31	0.200	1
Perfluorooctanesulfonamide (FOSA)	0.422	J	ng/g	1.31	0.128	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	11.0		ng/g	1.31	0.110	1
Perfluorododecanoic Acid (PFDoA)	0.194	J	ng/g	1.31	0.092	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.31	0.267	1
Perfluorotetradecanoic Acid (PFTA)	0.175	J	ng/g	1.31	0.071	1
PFOA/PFOS, Total	10.0		ng/g	1.31	0.055	1

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

## SAMPLE RESULTS

Lab ID: L1930748-06  
 Client ID: FD\_Redacted\_02\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:40  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	39	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	41	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	48	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	133		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	46	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	49	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	46	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	43	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	144		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	37	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	45	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	77		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	15		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	48	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-07  
 Client ID: Redacted\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 11:27  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge  
 Analytical Method: 122,537(M)  
 Analytical Date: 07/29/19 17:46  
 Analyst: JW  
 Percent Solids: 18%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 15:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.380	J	ng/g	2.71	0.062	1
Perfluoropentanoic Acid (PFPeA)	0.269	J	ng/g	2.71	0.125	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	2.71	0.106	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	2.71	0.175	1
Perfluorohexanoic Acid (PFHxA)	1.03	J	ng/g	2.71	0.142	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	2.71	0.226	1
Perfluoroheptanoic Acid (PFHpA)	0.126	J	ng/g	2.71	0.122	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	2.71	0.164	1
Perfluorooctanoic Acid (PFOA)	0.650	J	ng/g	2.71	0.114	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	2.71	0.487	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	2.71	0.370	1
Perfluorononanoic Acid (PFNA)	0.478	J	ng/g	2.71	0.204	1
Perfluorooctanesulfonic Acid (PFOS)	9.59		ng/g	2.71	0.353	1
Perfluorodecanoic Acid (PFDA)	1.52	J	ng/g	2.71	0.182	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	2.71	0.779	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	2.71	0.811	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.99		ng/g	2.71	0.547	1
Perfluoroundecanoic Acid (PFUnA)	0.798	J	ng/g	2.71	0.127	1
Perfluorodecanesulfonic Acid (PFDS)	0.760	J	ng/g	2.71	0.415	1
Perfluorooctanesulfonamide (FOSA)	0.483	J	ng/g	2.71	0.266	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.76	J	ng/g	2.71	0.229	1
Perfluorododecanoic Acid (PFDoA)	0.863	J	ng/g	2.71	0.190	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	2.71	0.555	1
Perfluorotetradecanoic Acid (PFTA)	0.353	J	ng/g	2.71	0.146	1
PFOA/PFOS, Total	10.2	J	ng/g	2.71	0.114	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-07  
 Client ID: Redacted\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 11:27  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	34	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	29	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	39	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	33	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	33	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	38	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	34	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	34	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	38	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	34	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	39	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	38	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	28	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	24	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	23	Q	26-160



Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

## SAMPLE RESULTS

Lab ID: L1930748-08  
 Client ID: Redacted\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 12:20  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge 122,537(M)  
 Analytical Method: 07/29/19 18:19 JW  
 Analytical Date:  
 Analyst:  
 Percent Solids: 35%

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 15:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	3.08		ng/g	1.44	0.033	1
Perfluoropentanoic Acid (PFPeA)	2.23		ng/g	1.44	0.066	1
Perfluorobutanesulfonic Acid (PFBS)	3.25		ng/g	1.44	0.056	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.44	0.093	1
Perfluorohexanoic Acid (PFHxA)	4.31		ng/g	1.44	0.075	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.44	0.120	1
Perfluoroheptanoic Acid (PFHpA)	3.38		ng/g	1.44	0.065	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.44	0.087	1
Perfluorooctanoic Acid (PFOA)	6.02		ng/g	1.44	0.060	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.44	0.258	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.44	0.196	1
Perfluorononanoic Acid (PFNA)	7.09		ng/g	1.44	0.108	1
Perfluorooctanesulfonic Acid (PFOS)	3.32		ng/g	1.44	0.187	1
Perfluorodecanoic Acid (PFDA)	15.2		ng/g	1.44	0.096	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.44	0.412	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.44	0.430	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.44	0.289	1
Perfluoroundecanoic Acid (PFUnA)	31.5		ng/g	1.44	0.067	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.44	0.220	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.44	0.141	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.32	J	ng/g	1.44	0.121	1
Perfluorododecanoic Acid (PFDoA)	53.5		ng/g	1.44	0.100	1
Perfluorotridecanoic Acid (PFTrDA)	72.0		ng/g	1.44	0.294	1
Perfluorotetradecanoic Acid (PFTA)	67.1		ng/g	1.44	0.078	1
PFOA/PFOS, Total	9.34		ng/g	1.44	0.060	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-08  
 Client ID: Redacted\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 12:20  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	29	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	31	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	26	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	22	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	33	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	32	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	27	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	32	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	18	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	34	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	30	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	31	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	23	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	24	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	31	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	22		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	20	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	28	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	24	Q	26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-08  
 Client ID: Redacted\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 12:20  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Sludge 122,537(M)  
 Analytical Method: 07/30/19 14:02 JW  
 Analytical Date:  
 Analyst:  
 Percent Solids: 35%

Extraction Method: EPA 537  
 Extraction Date: 07/29/19 17:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	45.6		ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	24.4		ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	19.6		ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	39.0		ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	14.8		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	15.7		ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	9.53		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	3.42		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	10.3		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	5.02		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	1.78		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	0.601	J	ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1
PFOA/PFOS, Total	19.1		ng/l	1.78	0.210	1
PFAS, Total (5)	43.5		ng/l	1.78	0.200	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1930748**Project Number:** 4536.00**Report Date:** 07/30/19**SAMPLE RESULTS**

Lab ID: L1930748-08  
 Client ID: Redacted\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 12:20  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	15		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	8	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	177		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	149		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	171	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	113		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	68		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-09  
**Client ID:** FB\_\_20190709  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/09/19 07:44  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/19/19 15:17  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 07/18/19 07:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.372	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.82	0.361	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.217	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	0.412	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	0.299	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.224	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	0.205	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.343	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	0.215	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.22	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.628	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.285	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.460	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.277	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.591	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.237	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.894	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.529	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.734	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.339	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.82	0.298	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.82	0.226	1
PFOA/PFOS, Total	ND		ng/l	1.82	0.215	1
PFAS, Total (5)	ND		ng/l	1.82	0.205	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-09  
 Client ID: FB\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 07:44  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	77		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	96		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	63		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	70		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-10  
**Client ID:** EB\_\_20190709  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/09/19 12:57  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/19/19 15:34  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 07/18/19 07:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.76	0.359	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.76	0.348	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.76	0.210	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.76	0.398	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.76	0.289	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.76	0.216	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.76	0.198	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.76	0.331	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.76	0.208	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.76	1.17	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.76	0.606	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.76	0.275	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.76	0.444	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.76	0.268	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.76	1.07	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.76	0.986	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.76	0.570	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.76	0.229	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.76	0.863	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.76	0.510	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.76	0.708	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.76	0.327	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.76	0.288	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.76	0.218	1
PFOA/PFOS, Total	ND		ng/l	1.76	0.208	1
PFAS, Total (5)	ND		ng/l	1.76	0.198	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-10  
 Client ID: EB\_\_20190709  
 Sample Location: COVENTRY, VT

Date Collected: 07/09/19 12:57  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			96		2-156	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			110		16-173	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			90		31-159	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			82		1-313	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			96		21-145	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			94		30-139	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			93		47-153	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			94		36-149	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			85		1-244	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			105		34-146	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			98		42-146	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			92		38-144	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			114		7-170	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			69		1-181	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			96		40-144	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			38		1-87	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			69		23-146	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			82		24-161	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			70		33-143	



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-11  
**Client ID:** CV\_07\_\_20190711  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/11/19 09:20  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/29/19 22:28  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.11	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.11	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.11	0.043	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.11	0.072	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.11	0.058	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.11	0.093	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.11	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.11	0.067	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.11	0.046	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.11	0.199	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.11	0.151	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.11	0.083	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.11	0.144	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.11	0.074	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.11	0.318	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.11	0.331	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.11	0.223	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.11	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.11	0.170	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.11	0.108	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.11	0.094	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.11	0.078	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.11	0.226	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.11	0.060	1
PFOA/PFOS, Total	ND		ng/g	1.11	0.046	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-11  
 Client ID: CV\_07\_\_20190711  
 Sample Location: COVENTRY, VT

Date Collected: 07/11/19 09:20  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	44	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	50	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	45	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	152	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	36	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	36	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	41	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	44	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	167		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	44	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	43	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	48		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	72		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	42	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-12  
**Client ID:** CV\_08\_\_20190711  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/11/19 09:25  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/29/19 22:44  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.03	J	ng/g	1.30	0.030	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.30	0.060	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.30	0.051	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.30	0.084	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.30	0.068	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.30	0.108	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.30	0.059	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.30	0.079	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.30	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.30	0.233	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.30	0.177	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.30	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.30	0.169	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.30	0.087	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.30	0.373	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.30	0.388	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.30	0.262	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.30	0.061	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.30	0.199	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.30	0.127	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.30	0.110	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.30	0.091	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.30	0.266	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.30	0.070	1
PFOA/PFOS, Total	ND		ng/g	1.30	0.054	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-12  
 Client ID: CV\_08\_\_20190711  
 Sample Location: COVENTRY, VT

Date Collected: 07/11/19 09:25  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	45	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	46	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	48	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	42	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	42	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	49	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	45	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	64		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	49	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	50	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	44	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	81		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	47		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	48	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	16		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	41	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	37		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-13  
**Client ID:** CV\_09\_20190711  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/11/19 09:35  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/29/19 23:01  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.243	J	ng/g	1.27	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.27	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.27	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.27	0.082	1
Perfluorohexanoic Acid (PFHxA)	0.176	J	ng/g	1.27	0.067	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.27	0.106	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.27	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.27	0.077	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.27	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.27	0.228	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.27	0.173	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.27	0.095	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.27	0.165	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.27	0.085	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.27	0.364	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.27	0.380	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.27	0.256	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.27	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.27	0.194	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.27	0.124	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.27	0.107	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.27	0.089	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.27	0.260	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.27	0.069	1
PFOA/PFOS, Total	ND		ng/g	1.27	0.053	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

Lab ID: L1930748-13  
 Client ID: CV\_09\_20190711  
 Sample Location: COVENTRY, VT

Date Collected: 07/11/19 09:35  
 Date Received: 07/12/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	44	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	17	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	47	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	171	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	36	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	37	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	46	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	43	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	227	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	48	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	44	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	292	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	107		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	43	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	39	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	37		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/19/19 16:57  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 07/18/19 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 09-10 Batch: WG1261362-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/19/19 16:57  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 07/18/19 07:25

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 09-10 Batch: WG1261362-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	55		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	76		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	60		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	50		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/29/19 15:50  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/26/19 15:56

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 07-08 Batch: WG1265098-1					
Perfluorobutanoic Acid (PFBA)	0.095	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	0.500	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.035
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.027
PFOA/PFOS, Total	ND		ng/g	0.500	0.021

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/29/19 15:50  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/26/19 15:56

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 07-08 Batch: WG1265098-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	35	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	40	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	41	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	27	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	38	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	38	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	43	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	39	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	23	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	40	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	45	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	41	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	27		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	41	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	31	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	37	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	30		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/29/19 23:17  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03-06,11-13 Batch: WG1265102-1					
Perfluorobutanoic Acid (PFBA)	0.119	J	ng/g	1.33	0.030
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.33	0.061
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.33	0.052
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.33	0.086
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.33	0.070
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.33	0.111
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.33	0.060
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.33	0.081
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.33	0.056
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.33	0.239
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.33	0.182
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.33	0.100
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.33	0.173
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.33	0.089
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.33	0.383
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.33	0.399
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.33	0.269
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.33	0.062
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.33	0.204
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.33	0.131
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.33	0.113
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.33	0.093
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.33	0.273
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.33	0.072
PFOA/PFOS, Total	ND		ng/g	1.33	0.056

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/29/19 23:17  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/26/19 17:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03-06,11-13 Batch: WG1265102-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	41	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	45	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	44	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	41	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	42	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	40	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	43	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	40	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	39		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	42	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	45	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	41	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	43	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	47	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	44		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	48	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/30/19 01:13  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/26/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1265193-1					
Perfluorobutanoic Acid (PFBA)	0.102	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
 Analytical Date: 07/30/19 01:13  
 Analyst: JW

Extraction Method: EPA 537(M)  
 Extraction Date: 07/26/19 19:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-02 Batch: WG1265193-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	74		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	83		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	80		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	72		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	79		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	80		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	68		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/30/19 15:09  
Analyst: JW  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 07/29/19 17:47

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1265891-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
 Analytical Date: 07/30/19 15:09  
 Analyst: JW  
 TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
 Extraction Date: 07/29/19 17:47

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1265891-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	73		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	88		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	79		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/30/19 15:26  
Analyst: JW  
TCLP/SPLP Extraction Date: 07/15/19 16:59

Extraction Method: EPA 537  
Extraction Date: 07/29/19 17:47

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1265891-2					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.82	0.371
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.82	0.360
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.82	0.216
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.82	0.411
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.82	0.298
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.82	0.223
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.82	0.205
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.82	0.342
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.82	0.214
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.82	1.21
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.82	0.625
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.82	0.284
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.82	0.458
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.82	0.276
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.82	1.10
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.82	1.02
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.82	0.589
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.82	0.236
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.82	0.891
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.82	0.527
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.82	0.731
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.82	0.338
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.82	0.297
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	1.82	0.225
PFOA/PFOS, Total	ND		ng/l	1.82	0.214
PFAS, Total (5)	ND		ng/l	1.82	0.205

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/30/19 15:26  
Analyst: JW  
TCLP/SPLP Extraction Date: 07/15/19 16:59

Extraction Method: EPA 537  
Extraction Date: 07/29/19 17:47

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1265891-2					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	66		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	81		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	53		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	53		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/30/19 15:42  
Analyst: JW  
TCLP/SPLP Extraction Date: 07/25/19 15:42

Extraction Method: EPA 537  
Extraction Date: 07/29/19 17:47

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1265891-3					
Perfluorobutanoic Acid (PFBA)	0.449	J	ng/l	1.74	0.355
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.74	0.345
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.207
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.394
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.74	0.286
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.214
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.74	0.196
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.328
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.74	0.206
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.599
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.74	0.439
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.976
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.564
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.854
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.505
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.700
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.74	0.285
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216
PFOA/PFOS, Total	ND		ng/l	1.74	0.206
PFAS, Total (5)	ND		ng/l	1.74	0.196

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
 Analytical Date: 07/30/19 15:42  
 Analyst: JW  
 TCLP/SPLP Extraction Date: 07/25/19 15:42

Extraction Method: EPA 537  
 Extraction Date: 07/29/19 17:47

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 08 Batch: WG1265891-3					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	73		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	87		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	63		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	79		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	56		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	81		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	92		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	63		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	58		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	78		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09-10 Batch: WG1261362-2 WG1261362-3								
Perfluorobutanoic Acid (PFBA)	98		101		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	91		96		63-161	5		30
Perfluorobutanesulfonic Acid (PFBS)	82		84		65-157	2		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	106		107		37-219	1		30
Perfluorohexanoic Acid (PFHxA)	105		109		69-168	4		30
Perfluoropentanesulfonic Acid (PFPeS)	96		93		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	99		100		58-159	1		30
Perfluorohexanesulfonic Acid (PFHxS)	114		112		69-177	2		30
Perfluorooctanoic Acid (PFOA)	101		102		63-159	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	102		105		49-187	3		30
Perfluoroheptanesulfonic Acid (PFHpS)	86		87		61-179	1		30
Perfluorononanoic Acid (PFNA)	104		106		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	87		92		52-151	6		30
Perfluorodecanoic Acid (PFDA)	102		107		63-171	5		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	104		101		56-173	3		30
Perfluorononanesulfonic Acid (PFNS)	80		82		48-150	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	89		102		60-166	14		30
Perfluoroundecanoic Acid (PFUnA)	91		98		60-153	7		30
Perfluorodecanesulfonic Acid (PFDS)	88		93		38-156	6		30
Perfluorooctanesulfonamide (FOSA)	77		82		46-170	6		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	77		103		45-170	29		30
Perfluorododecanoic Acid (PFDoA)	94		101		67-153	7		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 09-10 Batch: WG1261362-2 WG1261362-3								
Perfluorotridecanoic Acid (PFTTrDA)	93		99		48-158	6		30
Perfluorotetradecanoic Acid (PFTA)	104		113		59-182	8		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	82		80		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		90		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	78		76		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	63		63		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		83		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	81		80		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	76		75		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	77		78		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	62		59		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		84		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	76		79		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	73		73		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	69		70		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		63		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	71		69		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	35		34		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		56		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65		67		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		66		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 07-08 Batch: WG1265098-2 WG1265098-3								
Perfluorobutanoic Acid (PFBA)	99		100		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	93		95		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	87		86		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	107		103		62-145	4		30
Perfluorohexanoic Acid (PFHxA)	104		108		70-132	4		30
Perfluoropentanesulfonic Acid (PFPeS)	93		91		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	100		99		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	104		109		67-130	5		30
Perfluorooctanoic Acid (PFOA)	95		100		69-133	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100		102		64-140	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	88		87		70-132	1		30
Perfluorononanoic Acid (PFNA)	101		105		72-129	4		30
Perfluorooctanesulfonic Acid (PFOS)	84		86		68-136	2		30
Perfluorodecanoic Acid (PFDA)	102		107		69-133	5		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	91		107		65-137	16		30
Perfluorononanesulfonic Acid (PFNS)	86		84		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	93		102		63-144	9		30
Perfluoroundecanoic Acid (PFUnA)	93		94		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	94		96		59-134	2		30
Perfluorooctanesulfonamide (FOSA)	193	Q	120		67-137	47	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	101		86		61-139	16		30
Perfluorododecanoic Acid (PFDoA)	100		99		69-135	1		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 07-08 Batch: WG1265098-2 WG1265098-3								
Perfluorotridecanoic Acid (PFTrDA)	89		94		66-139	5		30
Perfluorotetradecanoic Acid (PFTA)	108		109		69-133	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	29	Q	38	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	35	Q	43	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	41	Q	42	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	28	Q	29	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	35	Q	41	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	34	Q	40	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	43	Q	44	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	36	Q	42	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	25	Q	25	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	39	Q	43	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	46	Q	47	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	40	Q	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	29		27		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	32	Q	30	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	41	Q	42	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	0	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	27	Q	33	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	37	Q	39	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEA)	30		33		26-160



## Lab Control Sample Analysis Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06,11-13 Batch: WG1265102-2 WG1265102-3								
Perfluorobutanoic Acid (PFBA)	101		102		71-135	1		30
Perfluoropentanoic Acid (PFPeA)	102		103		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	99		98		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	109		107		62-145	2		30
Perfluorohexanoic Acid (PFHxA)	113		111		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	98		104		73-123	6		30
Perfluoroheptanoic Acid (PFHpA)	100		104		71-131	4		30
Perfluorohexanesulfonic Acid (PFHxS)	106		110		67-130	4		30
Perfluorooctanoic Acid (PFOA)	99		105		69-133	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	113		124		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	100		104		70-132	4		30
Perfluorononanoic Acid (PFNA)	110		108		72-129	2		30
Perfluorooctanesulfonic Acid (PFOS)	92		90		68-136	2		30
Perfluorodecanoic Acid (PFDA)	113		115		69-133	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	96		103		65-137	7		30
Perfluorononanesulfonic Acid (PFNS)	105		113		69-125	7		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	99		108		63-144	9		30
Perfluoroundecanoic Acid (PFUnA)	94		99		64-136	5		30
Perfluorodecanesulfonic Acid (PFDS)	102		112		59-134	9		30
Perfluorooctanesulfonamide (FOSA)	102		109		67-137	7		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	97		103		61-139	6		30
Perfluorododecanoic Acid (PFDoA)	101		103		69-135	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06,11-13 Batch: WG1265102-2 WG1265102-3								
Perfluorotridecanoic Acid (PFTTrDA)	105		104		66-139	1		30
Perfluorotetradecanoic Acid (PFTA)	114		115		69-133	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	42	Q	43	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	45	Q	47	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	46	Q	49	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	46	Q	47	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	42	Q	44	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	41	Q	42	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	47	Q	47	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	43	Q	42	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	43		40		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	42	Q	44	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	47	Q	47	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	40	Q	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	48		55		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	35	Q	34	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	44	Q	44	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		25		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	35	Q	34	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	44	Q	43	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54		49		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1265193-2 WG1265193-3								
Perfluorobutanoic Acid (PFBA)	102		104		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	103		104		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	100		105		72-128	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	115		111		62-145	4		30
Perfluorohexanoic Acid (PFHxA)	110		114		70-132	4		30
Perfluoropentanesulfonic Acid (PFPeS)	103		99		73-123	4		30
Perfluoroheptanoic Acid (PFHpA)	101		105		71-131	4		30
Perfluorohexanesulfonic Acid (PFHxS)	109		105		67-130	4		30
Perfluorooctanoic Acid (PFOA)	102		106		69-133	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	98		108		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	106		101		70-132	5		30
Perfluorononanoic Acid (PFNA)	106		111		72-129	5		30
Perfluorooctanesulfonic Acid (PFOS)	93		91		68-136	2		30
Perfluorodecanoic Acid (PFDA)	111		110		69-133	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		110		65-137	3		30
Perfluorononanesulfonic Acid (PFNS)	103		107		69-125	4		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		101		63-144	5		30
Perfluoroundecanoic Acid (PFUnA)	98		99		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	109		106		59-134	3		30
Perfluorooctanesulfonamide (FOSA)	80		113		67-137	34	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		114		61-139	19		30
Perfluorododecanoic Acid (PFDoA)	98		107		69-135	9		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 Batch: WG1265193-2 WG1265193-3								
Perfluorotridecanoic Acid (PFTrDA)	101		103		66-139	2		30
Perfluorotetradecanoic Acid (PFTA)	116		118		69-133	2		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	70		68		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		76		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		85		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	86		88		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		73		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		75		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	85		87		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		77		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	87		86		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		81		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		88		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	90		87		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	62		67		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		83		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	0	Q	1		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	60		56		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		76		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		69		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08 Batch: WG1265891-4 WG1265891-5								
Perfluorobutanoic Acid (PFBA)	103		102		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	98		97		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	87		84		65-157	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	112		96		37-219	15		30
Perfluorohexanoic Acid (PFHxA)	113		112		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	90		95		52-156	5		30
Perfluoroheptanoic Acid (PFHpA)	103		101		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	118		123		69-177	4		30
Perfluorooctanoic Acid (PFOA)	102		100		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	104		102		49-187	2		30
Perfluoroheptanesulfonic Acid (PFHpS)	84		80		61-179	5		30
Perfluorononanoic Acid (PFNA)	104		104		68-171	0		30
Perfluorooctanesulfonic Acid (PFOS)	91		91		52-151	0		30
Perfluorodecanoic Acid (PFDA)	109		108		63-171	1		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	87		83		56-173	5		30
Perfluorononanesulfonic Acid (PFNS)	90		87		48-150	3		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	104		97		60-166	7		30
Perfluoroundecanoic Acid (PFUnA)	93		92		60-153	1		30
Perfluorodecanesulfonic Acid (PFDS)	101		106		38-156	5		30
Perfluorooctanesulfonamide (FOSA)	75		80		46-170	6		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	92		105		45-170	13		30
Perfluorododecanoic Acid (PFDoA)	99		95		67-153	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08 Batch: WG1265891-4 WG1265891-5								
Perfluorotridecanoic Acid (PFTrDA)	86		89		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	114		115		59-182	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		87		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95		100		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76		80		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		72		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		87		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	78		83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	83		81		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		84		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	53		58		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		86		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		86		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78		80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	71		75		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	46		45		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		67		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		78		33-143

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1930748

**Project Number:** 4536.00

**Report Date:** 07/30/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06,11-13 QC Batch ID: WG1265102-4 QC Sample: L1930748-04 Client ID: Redacted_01_20190709												
Perfluorobutanoic Acid (PFBA)	0.685J	6.54	7.68	118		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	0.378J	6.54	7.96	122		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	0.481J	6.54	8.47	130	Q	-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	6.54	7.16	110		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	1.88	6.54	10.8	136	Q	-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	0.403J	6.54	7.47	114		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	0.876J	6.54	8.06	123		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	1.64	6.54	11.6	152	Q	-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	57.6	6.54	75.3	271	Q	-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	17.8	6.54	28.3	161	Q	-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	6.54	1.52	23	Q	-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.410J	6.54	7.73	118		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	11.3	6.54	15.3	61	Q	-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	0.794J	6.54	8.30	127		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	6.27	6.54	15.9	147	Q	-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	6.54	1.10J	17	Q	-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	6.54	7.14	109		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	6.54	6.72	103		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	6.54	1.23J	19	Q	-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	0.326J	6.54	8.47	130		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.48	6.54	11.5	123		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	0.350J	6.54	7.38	113		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1930748

**Project Number:** 4536.00

**Report Date:** 07/30/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06,11-13 QC Batch ID: WG1265102-4 QC Sample: L1930748-04 Client ID: Redacted_01_20190709												
Perfluorotridecanoic Acid (PFTrDA)	0.261J	6.54	12.0	184	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTA)	0.148J	6.54	7.92	121		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	166	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	164				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	45				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	34	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	54	Q			64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	41	Q			65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	36	Q			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	38	Q			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	45	Q			63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	32	Q			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	54				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	33	Q			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	34	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	11				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	264	Q			65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	39	Q			62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	41	Q			61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	46	Q			70-151



## Matrix Spike Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1930748

**Project Number:** 4536.00

**Report Date:** 07/30/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1265193-4 QC Sample: L1930748-01 Client ID: Redacted_20190709												
Perfluorobutanoic Acid (PFBA)	0.065J	6.22	6.36	102		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	6.22	6.52	105		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	6.22	6.48	104		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	6.22	6.98	112		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	6.22	6.99	112		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	6.22	6.14	99		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	6.22	6.34	102		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	6.22	6.71	108		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	0.154J	6.22	6.79	109		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	6.22	6.42	103		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	6.22	6.92	111		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	0.109J	6.22	6.84	110		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.406J	6.22	6.18	99		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	0.090J	6.22	6.83	110		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	6.22	6.40	103		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	6.22	6.88	111		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	6.22	6.63	107		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	6.22	6.15	99		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	6.22	6.81	109		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	6.22	6.60	106		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	6.22	7.17	115		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	6.22	6.43	103		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1930748

**Project Number:** 4536.00

**Report Date:** 07/30/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1265193-4 QC Sample: L1930748-01 Client ID: Redacted_20190709												
Perfluorotridecanoic Acid (PFTTrDA)	ND	6.22	6.54	105		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	6.22	7.64	123		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	88				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	91				56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	81				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	52				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55				45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	79				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	78				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	76				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	82				65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	85				70-151

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1930748

Report Date: 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 07-08 QC Batch ID: WG1265098-5 QC Sample: L1930748-07 Client ID: Redacted__20190709						
Perfluorobutanoic Acid (PFBA)	0.380J	0.563J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.269J	0.230J	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	1.03J	0.994J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.126J	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	0.650J	0.678J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	0.478J	0.510J	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	9.59	7.52	ng/g	24		30
Perfluorodecanoic Acid (PFDA)	1.52J	1.58J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	3.99	4.12	ng/g	3		30
Perfluoroundecanoic Acid (PFUnA)	0.798J	0.718J	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	0.760J	0.950J	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	0.483J	0.703J	ng/g	NC		30

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 07-08 QC Batch ID: WG1265098-5 QC Sample: L1930748-07 Client ID: Redacted__20190709						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.76J	2.42J	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	0.863J	0.756J	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.353J	0.302J	ng/g	NC		30
PFOA/PFOS, Total	10.2J	8.20J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	34	Q	35	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	29	Q	30	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	39	Q	39	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	57		55	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	33	Q	34	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	33	Q	34	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	38	Q	39	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	34	Q	35	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		49		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	34	Q	35	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	38	Q	39	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	34	Q	35	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		63		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	39	Q	37	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFU DA)	38	Q	41	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		17		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	28	Q	26	Q	42-136

**Lab Duplicate Analysis**  
Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 07-08 QC Batch ID: WG1265098-5 QC Sample: L1930748-07 Client ID: Redacted__20190709						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	24	Q	26	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	23	Q	23	Q	26-160

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1930748

Report Date: 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06,11-13 QC Batch ID: WG1265102-5 QC Sample: L1930748-05						
Client ID: Redacted_02_20190709						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	0.688J	1.40	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.640J	1.12J	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	0.674J	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	3.09	4.48	ng/g	37	Q	30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	0.266J	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	0.227J	0.242J	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	10.6	11.2	ng/g	6		30
Perfluorodecanoic Acid (PFDA)	0.193J	0.264J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.44	1.66	ng/g	14		30
Perfluoroundecanoic Acid (PFUnA)	0.208J	0.177J	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	5.80	3.26	ng/g	56	Q	30
Perfluorooctanesulfonamide (FOSA)	0.458J	0.443J	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06,11-13 QC Batch ID: WG1265102-5 QC Sample: L1930748-05						
Client ID: Redacted_02_20190709						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	11.1	7.66	ng/g	37	Q	30
Perfluorododecanoic Acid (PFDoA)	0.272J	0.192J	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	0.128J	0.156J	ng/g	NC		30
PFOA/PFOS, Total	13.7	15.7	ng/g	0		30

Surrogate (Extracted Internal Standard)	%Recovery		Qualifier		Acceptance
	%Recovery	Qualifier	%Recovery	Qualifier	Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	37	Q	40	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	38	Q	43	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	46	Q	45	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	132		126		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	39	Q	45	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	43	Q	52	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	45	Q	40	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	41	Q	43	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	123		108		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	32	Q	45	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	47	Q	45	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	41	Q	44	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		72		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	109		70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUA)	71		78		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		73		42-136

### Lab Duplicate Analysis Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

**Lab Number:** L1930748

**Report Date:** 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03-06,11-13 QC Batch ID: WG1265102-5 QC Sample: L1930748-05						
Client ID: Redacted_02_20190709						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	51	Q	58		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		78		26-160



## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1930748

Report Date: 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1265193-5 QC Sample: L1930748-02 Client ID: FD_Redacted_20190709						
Perfluorobutanoic Acid (PFBA)	0.083J	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	0.068J	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	0.073J	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	0.219J	0.146J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	0.121J	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	0.566J	0.374J	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	0.102J	0.091J	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	0.061J	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1265193-5 QC Sample: L1930748-02 Client ID: FD_Redacted_20190709						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
PFOA/PFOS, Total	0.785J	0.520J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		84		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	83		90		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		92		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		100		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	74		87		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		86		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	86		93		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		86		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	83		92		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83		90		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	82		88		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		84		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	101		107		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	57		58		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		86		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	8		5		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	57		55		42-136

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1930748

Report Date: 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-02 QC Batch ID: WG1265193-5 QC Sample: L1930748-02 Client ID: FD_Redacted_20190709						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		80		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	74		77		26-160

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08 QC Batch ID: WG1265891-7 QC Sample: L1930748-08						
Client ID: Redacted__20190709						
Perfluorobutanoic Acid (PFBA)	45.6	42.7	ng/l	7		30
Perfluoropentanoic Acid (PFPeA)	24.4	23.7	ng/l	3		30
Perfluorobutanesulfonic Acid (PFBS)	19.6	18.6	ng/l	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	39.0	37.0	ng/l	5		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	14.8	14.2	ng/l	4		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	15.7	14.8	ng/l	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	9.53	9.30	ng/l	2		30
Perfluorooctanesulfonic Acid (PFOS)	3.42	3.28	ng/l	4		30
Perfluorodecanoic Acid (PFDA)	10.3	11.1	ng/l	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	5.02	6.20	ng/l	21		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08 QC Batch ID: WG1265891-7 QC Sample: L1930748-08 Client ID: Redacted__20190709						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	0.890J	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	1.78	1.96	ng/l	10		30
Perfluorotridecanoic Acid (PFTTrDA)	0.601J	0.770J	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	19.1	18.1	ng/l	0		30
PFAS, Total (5)	43.5	41.6	ng/l	0		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	15		14		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	8	Q	7	Q	16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		62		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	177		134		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		61		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		78		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		89		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	115		90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	149		128		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	118		94		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	171	Q	134		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	113		77		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	107		80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	68		50		1-87

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1930748

Report Date: 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 08 QC Batch ID: WG1265891-7 QC Sample: L1930748-08						
Client ID: Redacted__20190709						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	99		69		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		68		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		65		33-143

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-01  
**Client ID:** Redacted\_20190709  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/09/19 06:54  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	72.2		%	0.100	0.100	1	-	07/16/19 00:13	121,2540G	CC





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-02  
**Client ID:** FD\_Redacted\_20190709  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/09/19 06:54  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	69.6		%	0.100	0.100	1	-	07/16/19 00:13	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

### SAMPLE RESULTS

**Lab ID:** L1930748-03  
**Client ID:** Redacted\_20190709  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/09/19 07:24  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	84.6		%	0.100	0.100	1	-	07/16/19 00:13	121,2540G	CC



Project Name: NEWSVT LANDFILL

Lab Number: L1930748

Project Number: 4536.00

Report Date: 07/30/19

## SAMPLE RESULTS

Lab ID: L1930748-07

Date Collected: 07/09/19 11:27

Client ID: Redacted\_\_20190709

Date Received: 07/12/19

Sample Location: COVENTRY, VT

Field Prep: Not Specified

Sample Depth:

Matrix: Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	18.2		%	0.100	0.100	1	-	07/16/19 00:13	121,2540G	CC



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

**SAMPLE RESULTS**

**Lab ID:** L1930748-08  
**Client ID:** Redacted\_\_20190709  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/09/19 12:20  
**Date Received:** 07/12/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Sludge

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	34.5		%	0.100	0.100	1	-	07/16/19 00:13	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1930748

Report Date: 07/30/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01-03,07-08 QC Batch ID: WG1260202-1 QC Sample: L1930339-01 Client ID: DUP Sample						
Solids, Total	39.8	38.4	%	4		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1930748**Project Number:** 4536.00**Report Date:** 07/30/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

Cooler	Custody Seal
A	Absent

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1930748-01A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-01B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1930748-02A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-02B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1930748-03A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-03B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1930748-04A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-05A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-06A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-07A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-07B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1930748-08A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-08B	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1930748-08B1	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		A2-TS(7)
L1930748-08C	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		-
L1930748-08L	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1930748-08M	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1930748-08N	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1930748-08O	Plastic 250ml unpreserved Extracts	A	NA		2.3	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1930748-08X9	Tumble Vessel	A	NA		2.3	Y	Absent		-
L1930748-09A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(14)
L1930748-10A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(14)
L1930748-11A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

Serial\_No:07301918:28

**Lab Number:** L1930748

**Report Date:** 07/30/19

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1930748-12A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)
L1930748-13A	Plastic 8oz unpreserved	A	NA		2.3	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1930748  
**Report Date:** 07/30/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





**MANSFIELD CHAIN OF CUSTODY**

PAGE 1 OF 2

WESTBORO, MA  
TEL: 508-898-5220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3289

**Client Information**

Client: Sanborn, Head & Associates  
Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
Phone: 802-391-8504

Fax:  
Email: mestabrooks@sanbornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**PLEASE NOTE**

MS/MSD (at unit cost) will be omitted unless you check here:

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	Analysis		Sample Specific Comments	TOTAL # BOTTLES
		Date	Time			IS-2012540	EPA-537(M) Isotope Dilution		
930748-01	[REDACTED]-20190709	7/19/19	06:54	Soil	LET	X	X		2
102	FD [REDACTED]-20190709	7/19/19	06:54	Soil	LET	X	X		2
103	[REDACTED]-20190709	7/19/19	07:24	Grit	LET	X	X		2
104	[REDACTED]-20190709	7/19/19	07:30	Leather	LET		X		1
105	[REDACTED]-20190709	7/19/19	07:40	Carpet	LET		X		1
106	FD [REDACTED]-20190709	7/19/19	07:40	Carpet	LET		X		1
107	[REDACTED]-20190709	7/19/19	11:27	Sludge	LET	X	X		2
108	[REDACTED]-20190709	7/19/19	12:20	Sludge	LET	X	X	X	4
109	FB-20190709	7/19/19	07:44	Water	LET		X		1
110	EB-20190709	7/19/19	12:57	Water	LET		X		1

Container Type	
Preservative	

Relinquished By: <i>Jana Fry</i>	Date/Time: 7/12/19 16:10 @ 12:30	Received By: <i>[Signature]</i>	Date/Time: 7/13/19 00:30
	0711344 0630		7/13/19 06:35

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.





# MANSFIELD CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 7/13/19

ALPHA Job #: L1930748

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NEWSVT Landfill

Project Location: Coventry, VT

Project #: 4536.00

Project Manager: Matt Estabrooks

ALPHA Quote #:

## Report Information - Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #: 4536.00

## Client Information

Client: Sanborn, Head & Associates

Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401

Phone: 862-391-8504

Fax:

Email: mestabrooks@sanbornhead.com

These samples have been previously analyzed by Alpha

## Turn-Around Time

Standard  RUSH (only confirmed if pre-approved!)

Date Due: Time:

Other Project Specific Requirements/Comments/Detection Limits:

### PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here:

## Regulatory Requirements/Report Limits

State /Fed Program Criteria

ANALYSIS  
EPA-559/MSB dilution

### SAMPLE HANDLING

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials						Sample Specific Comments	TOTAL # BOTTLES
		Date	Time									
-11	CV_07_20190711	7/11/19	0920	Paint	LET	X						1
-12	CV_08_20190711	7/11/19	0925	Cardboard	LET	X						1
-13	CV_09_20190711	7/11/19	0935	Card-board	LET	X						1

Container Type	
Preservative	

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time
<u>Jana Fry</u>	<u>7/12/19 13:30</u>	<u>[Signature]</u>	<u>7/12/19 12:30</u>
<u>[Signature]</u>	<u>7/12/19 16:10</u>	<u>[Signature]</u>	<u>7/13/19 00:40</u>
<u>[Signature]</u>	<u>07/15/19</u>	<u>[Signature]</u>	<u>7/15/19 00:30</u>



## ANALYTICAL REPORT

Lab Number:	L1931976
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	08/02/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1931976-01	HP_01_20190717	SOLID	COVENTRY, VT	07/17/19 10:43	07/19/19
L1931976-02	FD_HP_01_20190717	SOLID	COVENTRY, VT	07/17/19 10:45	07/19/19
L1931976-03	HP_02_20190717	SOLID	COVENTRY, VT	07/17/19 11:20	07/19/19
L1931976-04	FB_20190717	WATER	COVENTRY, VT	07/17/19 11:39	07/19/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

### Case Narrative (continued)

#### Report Submission

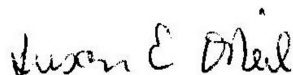
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1931976-01, -02, and -03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 08/02/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**SAMPLE RESULTS**

**Lab ID:** L1931976-01  
**Client ID:** HP\_01\_20190717  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/17/19 10:43  
**Date Received:** 07/19/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/02/19 05:55  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/31/19 11:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.15	0.026	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.15	0.053	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.15	0.045	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.15	0.074	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.15	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.15	0.096	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.15	0.052	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.15	0.070	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.15	0.048	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	20.4		ng/g	1.15	0.207	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.15	0.157	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.15	0.086	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.15	0.150	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.15	0.077	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.15	0.331	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.15	0.345	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.15	0.232	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.15	0.054	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.15	0.176	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.15	0.113	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.15	0.097	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.15	0.081	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.15	0.236	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.15	0.062	1
PFOA/PFOS, Total	ND		ng/g	1.15	0.048	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**SAMPLE RESULTS**

Lab ID: L1931976-01  
 Client ID: HP\_01\_20190717  
 Sample Location: COVENTRY, VT

Date Collected: 07/17/19 10:43  
 Date Received: 07/19/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	89		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>308</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	108		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>566</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	117		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>542</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	128		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	78		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	99		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1931976**Project Number:** 4536.00**Report Date:** 08/02/19**SAMPLE RESULTS**

Lab ID: L1931976-02  
 Client ID: FD\_HP\_01\_20190717  
 Sample Location: COVENTRY, VT

Date Collected: 07/17/19 10:45  
 Date Received: 07/19/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/02/19 06:12  
 Analyst: JW  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 07/31/19 11:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.19	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.19	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.19	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.19	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.100	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.19	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.19	0.072	1
Perfluorooctanoic Acid (PFOA)	0.434	J	ng/g	1.19	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.49		ng/g	1.19	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.19	0.163	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.19	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	0.496	J	ng/g	1.19	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.19	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.19	0.343	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.357	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.19	0.240	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.19	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.19	0.183	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.19	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	1.63		ng/g	1.19	0.101	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.19	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.19	0.244	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.19	0.065	1
PFOA/PFOS, Total	0.930	J	ng/g	1.19	0.050	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1931976**Project Number:** 4536.00**Report Date:** 08/02/19**SAMPLE RESULTS**

Lab ID: L1931976-02  
 Client ID: FD\_HP\_01\_20190717  
 Sample Location: COVENTRY, VT

Date Collected: 07/17/19 10:45  
 Date Received: 07/19/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	80		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	101		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>327</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	69		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	80		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	98		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>363</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>326</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	136		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	25		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	122		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	129		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	122		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**SAMPLE RESULTS**

**Lab ID:** L1931976-03  
**Client ID:** HP\_02\_20190717  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/17/19 11:20  
**Date Received:** 07/19/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/02/19 06:28  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 07/31/19 11:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.19	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.19	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	0.053	J	ng/g	1.19	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	0.063	J	ng/g	1.19	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.099	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.19	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.19	0.072	1
Perfluorooctanoic Acid (PFOA)	0.196	J	ng/g	1.19	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.17		ng/g	1.19	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.19	0.162	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.19	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	0.156	J	ng/g	1.19	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.19	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.19	0.342	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.356	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.19	0.240	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.19	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.19	0.182	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.19	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.19	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.19	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.19	0.243	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.19	0.064	1
PFOA/PFOS, Total	0.352	J	ng/g	1.19	0.050	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**SAMPLE RESULTS**

Lab ID: L1931976-03  
 Client ID: HP\_02\_20190717  
 Sample Location: COVENTRY, VT

Date Collected: 07/17/19 11:20  
 Date Received: 07/19/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	72		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>287</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	79		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	68		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	62		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>400</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	69		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>58</b>	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>431</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>57</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	46		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>53</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	65		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**SAMPLE RESULTS**

**Lab ID:** L1931976-04  
**Client ID:** FB\_20190717  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/17/19 11:39  
**Date Received:** 07/19/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 07/30/19 14:55  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 07/29/19 09:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.92	0.391	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.92	0.379	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.92	0.228	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.92	0.433	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.92	0.314	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.92	0.235	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.92	0.216	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.92	0.360	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.92	0.226	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.92	1.28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.92	0.659	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.92	0.299	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.92	0.483	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.92	0.291	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.92	1.16	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.92	1.07	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.92	0.621	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.92	0.249	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.92	0.939	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.92	0.556	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.92	0.770	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.92	0.356	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.92	0.313	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.92	0.238	1
PFOA/PFOS, Total	ND		ng/l	1.92	0.226	1
PFAS, Total (5)	ND		ng/l	1.92	0.216	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**SAMPLE RESULTS**

Lab ID: L1931976-04  
 Client ID: FB\_20190717  
 Sample Location: COVENTRY, VT

Date Collected: 07/17/19 11:39  
 Date Received: 07/19/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	111		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	101		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	88		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	105		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	94		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	93		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	84		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/30/19 14:05  
Analyst: AJ

Extraction Method: EPA 537  
Extraction Date: 07/29/19 09:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04 Batch: WG1265710-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 07/30/19 14:05  
Analyst: AJ

Extraction Method: EPA 537  
Extraction Date: 07/29/19 09:45

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 04 Batch: WG1265710-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	98		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	75		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	97		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	77		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	91		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	86		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	67		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	69		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	75		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	79		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/02/19 03:26  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/31/19 11:49

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1266820-1					
Perfluorobutanoic Acid (PFBA)	0.102	J	ng/g	1.00	0.023
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.00	0.046
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.00	0.039
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.00	0.065
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.00	0.053
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.00	0.084
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.00	0.045
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.00	0.061
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.00	0.042
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.00	0.180
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.00	0.136
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.00	0.075
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.00	0.130
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.00	0.067
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.00	0.287
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.00	0.299
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.00	0.202
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.00	0.047
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.00	0.153
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.00	0.098
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.00	0.085
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.00	0.070
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.00	0.204
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.00	0.054
PFOA/PFOS, Total	ND		ng/g	1.00	0.042

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/02/19 03:26  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 07/31/19 11:49

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-03 Batch: WG1266820-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	97		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	103		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	91		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	95		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	96		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	103		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	114		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	19		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	95		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1931976

Project Number: 4536.00

Report Date: 08/02/19

Parameter	LCS	Qual	LCS	Qual	%Recovery	RPD	Qual	RPD
	%Recovery		%Recovery		Limits			Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 Batch: WG1265710-2 WG1265710-3								
Perfluorobutanoic Acid (PFBA)	111		108		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	112		108		63-161	4		30
Perfluorobutanesulfonic Acid (PFBS)	100		98		65-157	2		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	106		100		37-219	6		30
Perfluorohexanoic Acid (PFHxA)	123		119		69-168	3		30
Perfluoropentanesulfonic Acid (PFPeS)	102		95		52-156	7		30
Perfluoroheptanoic Acid (PFHpA)	118		112		58-159	5		30
Perfluorohexanesulfonic Acid (PFHxS)	85		82		69-177	4		30
Perfluorooctanoic Acid (PFOA)	119		111		63-159	7		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		107		49-187	0		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		100		61-179	4		30
Perfluorononanoic Acid (PFNA)	114		110		68-171	4		30
Perfluorooctanesulfonic Acid (PFOS)	78		75		52-151	4		30
Perfluorodecanoic Acid (PFDA)	118		116		63-171	2		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	110		92		56-173	18		30
Perfluorononanesulfonic Acid (PFNS)	86		81		48-150	6		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	99		102		60-166	3		30
Perfluoroundecanoic Acid (PFUnA)	113		106		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	83		83		38-156	0		30
Perfluorooctanesulfonamide (FOSA)	112		95		46-170	16		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	89		103		45-170	15		30
Perfluorododecanoic Acid (PFDoA)	96		94		67-153	2		30



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1931976

Project Number: 4536.00

Report Date: 08/02/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 04 Batch: WG1265710-2 WG1265710-3								
Perfluorotridecanoic Acid (PFTTrDA)	122		104		48-158	16		30
Perfluorotetradecanoic Acid (PFTA)	111		104		59-182	7		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		108		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		92		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	74		93		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		97		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		100		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		115		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		98		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	85		100		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		98		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		95		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72		89		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		84		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		94		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		39		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	80		70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	103		98		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1931976

Project Number: 4536.00

Report Date: 08/02/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1266820-2 WG1266820-3								
Perfluorobutanoic Acid (PFBA)	104		102		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	107		106		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	102		99		72-128	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	111		114		62-145	3		30
Perfluorohexanoic Acid (PFHxA)	114		112		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	98		98		73-123	0		30
Perfluoroheptanoic Acid (PFHpA)	102		101		71-131	1		30
Perfluorohexanesulfonic Acid (PFHxS)	105		106		67-130	1		30
Perfluorooctanoic Acid (PFOA)	106		104		69-133	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	109		104		64-140	5		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		106		70-132	2		30
Perfluorononanoic Acid (PFNA)	110		109		72-129	1		30
Perfluorooctanesulfonic Acid (PFOS)	89		89		68-136	0		30
Perfluorodecanoic Acid (PFDA)	109		113		69-133	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		105		65-137	2		30
Perfluorononanesulfonic Acid (PFNS)	112		107		69-125	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		110		63-144	10		30
Perfluoroundecanoic Acid (PFUnA)	97		98		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	109		112		59-134	3		30
Perfluorooctanesulfonamide (FOSA)	108		111		67-137	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	94		108		61-139	14		30
Perfluorododecanoic Acid (PFDoA)	101		102		69-135	1		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1931976

Project Number: 4536.00

Report Date: 08/02/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-03 Batch: WG1266820-2 WG1266820-3								
Perfluorotridecanoic Acid (PFTTrDA)	100		100		66-139	0		30
Perfluorotetradecanoic Acid (PFTA)	114		115		69-133	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		88		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		91		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	100		97		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	112		101		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		86		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		87		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100		98		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		90		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		97		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		98		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		93		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		88		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	110		107		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		76		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		93		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	12		16		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		72		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		91		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	94		92		26-160

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

Serial\_No:08021915:20

**Lab Number:** L1931976

**Report Date:** 08/02/19

**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

**Cooler**                      **Custody Seal**

A                                      Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1931976-01A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1931976-02A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1931976-03A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1931976-04A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(14)

\*Values in parentheses indicate holding time in days



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1931976  
**Report Date:** 08/02/19

## REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.





# MANSFIELD CHAIN OF CUSTODY

PAGE \_\_\_\_\_ OF \_\_\_\_\_

Date Rec'd in Lab: 7/20/19

ALPHA Job #: L1931976

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

### Project Information

Project Name: **NEWSVT Landfill**  
Project Location: **Coventry, VT**  
Project #: **4536.00**  
Project Manager: **Matt Estabrooks**  
ALPHA Quote #:

### Report Information - Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

### Billing Information

Same as Client info PO #: **4536.00**

### Client Information

Client: **Sanborn, Heald & Assoc. Inc.**  
Address: **187 Saint Paul Street**  
**Suite 4C, Burlington, VT 05401**  
Phone: **802-391-8504**

### Turn-Around Time

Standard  RUSH (only confirmed if pre-approved)

Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

### PLEASE NOTE

MS/MSD (at unit cost) will be omitted unless you check here:

ANALYSIS

EPA-537(M) Isotope Dilution

TOTAL # BOTTLES

**SAMPLE HANDLING**

Filtration \_\_\_\_\_

Done

Not needed

Lab to do

Preservation

Lab to do

(Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials					
		Date	Time							
931976-01	HP-01-20190717	7/17/19	10:43	Solid	MEE	X				
-02	FO-HP-01-20190717	7/17/19	10:43	Solid	MEE	X				
-03	HP-02-20190717	7/17/19	11:20	Solid	MEE	X				
-04	FB-20190717	7/17/19	11:39	Water	MEE	X				

Container Type		
Preservative		

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7-19-19/10:26	<i>[Signature]</i>	7/19/19 10:26
<i>[Signature]</i>	7/19/19 11:26	<i>[Signature]</i>	7/20/19 00:20
<i>[Signature]</i>	07/19/19 05:50	<i>[Signature]</i>	7/19/19 05:50

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



## ANALYTICAL REPORT

Lab Number:	L1933047
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	08/14/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1933047-01	AC_10_20190723	SOLID	COVENTRY, VT	07/23/19 09:25	07/25/19
L1933047-02	AC_11_20190723	SOLID	COVENTRY, VT	07/23/19 11:55	07/25/19
L1933047-03	AC_12_20190723	SOLID	COVENTRY, VT	07/23/19 12:10	07/25/19
L1933047-04	AC_13_20190723	SOLID	COVENTRY, VT	07/23/19 12:12	07/25/19
L1933047-05	AC_14_20190723	SOLID	COVENTRY, VT	07/23/19 13:12	07/25/19
L1933047-06	FD_AC_14_20190723	SOLID	COVENTRY, VT	07/23/19 13:12	07/25/19
L1933047-07	AC_15_20190723	SOLID	COVENTRY, VT	07/23/19 14:48	07/25/19
L1933047-08	AC_16_20190723	SOLID	COVENTRY, VT	07/23/19 14:58	07/25/19
L1933047-09	AC_17_20190723	SOLID	COVENTRY, VT	07/23/19 15:00	07/25/19
L1933047-10	AC_18_20190723	SOLID	COVENTRY, VT	07/23/19 15:50	07/25/19
L1933047-11	H6_01_20190724	SOLID	COVENTRY, VT	07/24/19 09:20	07/25/19
L1933047-12	FD_H6_01_20190724	SOLID	COVENTRY, VT	07/24/19 09:20	07/25/19
L1933047-13	H6_02_20190724	SOLID	COVENTRY, VT	07/24/19 09:30	07/25/19
L1933047-14	EB_20190724	WATER	COVENTRY, VT	07/24/19 09:40	07/25/19
L1933047-15	WR_01_20190725	WATER	COVENTRY, VT	07/25/19 09:15	07/25/19
L1933047-16	WR_02_20190725	SOLID	COVENTRY, VT	07/25/19 10:33	07/25/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1933047-01, -02, -05, -06, -08, -09, -10, -11, -12, -13, -15, and -16: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1933047-05, -06 and -13: The sample has elevated detection limits for PFOS due to the dilution required by the sample matrix.

L1933047-14: The Equipment Blank has a concentration above the reporting limit for 6:2FTS. The results were confirmed.

L1933047-15: The sample has elevated detection limits due to the dilution required by the sample matrix.

L1933047-16: The sample has elevated detection limits for PFHxS due interferences in the sample matrix.

WG1269534-4, WG1269534-5, WG1269720-1, WG1269720-2, WG1269720-3, WG1269755-1, WG1269755-2, WG1269755-3, and WG1269755-6: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L1933047-02: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1270732-2 and -3: These blanks represent the SPLP tumbling blanks associated with L1933047-02.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Susan O'Neil*

Susan O'Neil

Title: Technical Director/Representative

Date: 08/14/19

# ORGANICS

# SEMIVOLATILES



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-01  
**Client ID:** AC\_10\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 09:25  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/09/19 22:47  
**Analyst:** PB  
**Percent Solids:** 94%

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	3.62	0.082	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	3.62	0.166	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	3.62	0.141	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.62	0.234	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	3.62	0.190	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	3.62	0.302	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	3.62	0.163	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	3.62	0.219	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	3.62	0.152	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	3.62	0.650	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	3.62	0.494	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	3.62	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	3.62	0.471	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	3.62	0.243	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	3.62	1.04	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	3.62	1.08	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	3.62	0.730	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	3.62	0.169	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	3.62	0.554	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	3.62	0.355	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	3.62	0.306	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	3.62	0.254	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	3.62	0.741	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	3.62	0.196	1
PFOA/PFOS, Total	ND		ng/g	3.62	0.152	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-01  
 Client ID: AC\_10\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 09:25  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	77		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	93		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	171	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	65		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	193	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	240	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	76		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	81		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	18		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	94		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-02  
 Client ID: AC\_11\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 11:55  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/09/19 22:14  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.278	J	ng/g	1.19	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.19	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.19	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.19	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.099	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.19	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.19	0.072	1
Perfluorooctanoic Acid (PFOA)	0.063	J	ng/g	1.19	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.19	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.19	0.162	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.19	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	4.27		ng/g	1.19	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.19	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.19	0.342	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.356	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.19	0.240	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.19	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.19	0.182	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.19	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.19	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.19	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.19	0.243	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.19	0.064	1
PFOA/PFOS, Total	4.33	J	ng/g	1.19	0.050	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-02  
 Client ID: AC\_11\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 11:55  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>291</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>309</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>239</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>150</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	127		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>161</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	132		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-02  
**Client ID:** AC\_11\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 11:55  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/13/19 05:25  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537  
**Extraction Date:** 08/09/19 15:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	14.6		ng/l	1.98	0.403	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.98	0.391	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.98	0.235	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.98	0.447	1
Perfluorohexanoic Acid (PFHxA)	7.82		ng/l	1.98	0.324	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.98	0.242	1
Perfluoroheptanoic Acid (PFHpA)	0.929	J	ng/l	1.98	0.222	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.98	0.372	1
Perfluorooctanoic Acid (PFOA)	1.60	J	ng/l	1.98	0.233	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.98	1.32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.98	0.680	1
Perfluorononanoic Acid (PFNA)	0.826	J	ng/l	1.98	0.308	1
Perfluorooctanesulfonic Acid (PFOS)	228		ng/l	1.98	0.498	1
Perfluorodecanoic Acid (PFDA)	7.59		ng/l	1.98	0.300	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.98	1.20	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.98	1.11	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.61	J	ng/l	1.98	0.640	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.98	0.257	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.98	0.968	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.98	0.573	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.98	0.794	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.98	0.368	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.98	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.98	0.245	1
PFOA/PFOS, Total	230	J	ng/l	1.98	0.233	1
PFAS, Total (5)	231	J	ng/l	1.98	0.222	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-02  
 Client ID: AC\_11\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 11:55  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	115		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	78		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	127		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	263		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>324</b>	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	70		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	72		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>238</b>	Q	1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>269</b>	Q	40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>162</b>	Q	1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>440</b>	Q	23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>323</b>	Q	24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	<b>441</b>	Q	33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-03  
 Client ID: AC\_12\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 12:10  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/09/19 17:06  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.778	J	ng/g	1.22	0.028	1
Perfluoropentanoic Acid (PFPeA)	1.15	J	ng/g	1.22	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.22	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.22	0.078	1
Perfluorohexanoic Acid (PFHxA)	1.92		ng/g	1.22	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.22	0.102	1
Perfluoroheptanoic Acid (PFHpA)	0.691	J	ng/g	1.22	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.22	0.074	1
Perfluorooctanoic Acid (PFOA)	0.338	J	ng/g	1.22	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	43.6		ng/g	1.22	0.218	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.22	0.166	1
Perfluorononanoic Acid (PFNA)	0.185	J	ng/g	1.22	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.22	0.158	1
Perfluorodecanoic Acid (PFDA)	0.138	J	ng/g	1.22	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.22	0.349	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.22	0.364	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.22	0.245	1
Perfluoroundecanoic Acid (PFUnA)	0.209	J	ng/g	1.22	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.22	0.186	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.22	0.119	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.22	0.103	1
Perfluorododecanoic Acid (PFDoA)	0.137	J	ng/g	1.22	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.22	0.249	1
Perfluorotetradecanoic Acid (PFTA)	0.153	J	ng/g	1.22	0.066	1
PFOA/PFOS, Total	0.338	J	ng/g	1.22	0.051	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-03  
 Client ID: AC\_12\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 12:10  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	95		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	74		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	62		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-04  
**Client ID:** AC\_13\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 12:12  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/09/19 17:22  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.429	J	ng/g	1.58	0.036	1
Perfluoropentanoic Acid (PFPeA)	0.564	J	ng/g	1.58	0.073	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.58	0.062	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.58	0.102	1
Perfluorohexanoic Acid (PFHxA)	1.22	J	ng/g	1.58	0.083	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.58	0.132	1
Perfluoroheptanoic Acid (PFHpA)	0.400	J	ng/g	1.58	0.071	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.58	0.096	1
Perfluorooctanoic Acid (PFOA)	0.160	J	ng/g	1.58	0.066	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	7.23		ng/g	1.58	0.284	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.58	0.216	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.58	0.118	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.58	0.206	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.58	0.106	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.58	0.454	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.58	0.473	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.58	0.318	1
Perfluoroundecanoic Acid (PFUnA)	0.082	J	ng/g	1.58	0.074	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.58	0.242	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.58	0.155	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.58	0.134	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.58	0.111	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.58	0.323	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.58	0.085	1
PFOA/PFOS, Total	0.160	J	ng/g	1.58	0.066	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-04  
 Client ID: AC\_13\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 12:12  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	61		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	95		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	109		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	59		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	104		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	70		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	81		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	62		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	77		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-05  
**Client ID:** AC\_14\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 13:12  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/09/19 17:49  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.28		ng/g	1.20	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.504	J	ng/g	1.20	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	0.228	J	ng/g	1.20	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.078	1
Perfluorohexanoic Acid (PFHxA)	2.74		ng/g	1.20	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.100	1
Perfluoroheptanoic Acid (PFHpA)	2.15		ng/g	1.20	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	1.52		ng/g	1.20	0.073	1
Perfluorooctanoic Acid (PFOA)	8.75		ng/g	1.20	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.99		ng/g	1.20	0.216	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.20	0.164	1
Perfluorononanoic Acid (PFNA)	1.20		ng/g	1.20	0.090	1
Perfluorodecanoic Acid (PFDA)	1.68		ng/g	1.20	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	2.52		ng/g	1.20	0.345	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.359	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	1.36		ng/g	1.20	0.242	1
Perfluoroundecanoic Acid (PFUnA)	0.390	J	ng/g	1.20	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	0.909	J	ng/g	1.20	0.184	1
Perfluorooctanesulfonamide (FOSA)	0.588	J	ng/g	1.20	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	5.25		ng/g	1.20	0.102	1
Perfluorododecanoic Acid (PFDoA)	0.883	J	ng/g	1.20	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	0.350	J	ng/g	1.20	0.246	1
Perfluorotetradecanoic Acid (PFTA)	0.439	J	ng/g	1.20	0.065	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-05  
 Client ID: AC\_14\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 13:12  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	40	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	37	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	44	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	195	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	38	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	45	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	45	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	43	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	184	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	59	Q	61-154
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	46	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	105		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	24		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	35	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-05 D  
 Client ID: AC\_14\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 13:12  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/11/19 08:20  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	60.1	7.81	50
<b>Surrogate (Extracted Internal Standard)</b>			<b>% Recovery</b>	<b>Qualifier</b>	<b>Acceptance Criteria</b>	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			104		65-151	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-06  
**Client ID:** FD\_AC\_14\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 13:12  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/09/19 18:05  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.546	J	ng/g	1.20	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.306	J	ng/g	1.20	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	0.154	J	ng/g	1.20	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.077	1
Perfluorohexanoic Acid (PFHxA)	1.59		ng/g	1.20	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.100	1
Perfluoroheptanoic Acid (PFHpA)	1.28		ng/g	1.20	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	0.768	J	ng/g	1.20	0.072	1
Perfluorooctanoic Acid (PFOA)	5.44		ng/g	1.20	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.424	J	ng/g	1.20	0.215	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.20	0.163	1
Perfluorononanoic Acid (PFNA)	1.18	J	ng/g	1.20	0.090	1
Perfluorodecanoic Acid (PFDA)	1.17	J	ng/g	1.20	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.50		ng/g	1.20	0.344	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.358	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.924	J	ng/g	1.20	0.241	1
Perfluoroundecanoic Acid (PFUnA)	0.487	J	ng/g	1.20	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	0.371	J	ng/g	1.20	0.183	1
Perfluorooctanesulfonamide (FOSA)	0.335	J	ng/g	1.20	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	3.78		ng/g	1.20	0.101	1
Perfluorododecanoic Acid (PFDoA)	0.595	J	ng/g	1.20	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	0.306	J	ng/g	1.20	0.245	1
Perfluorotetradecanoic Acid (PFTA)	0.396	J	ng/g	1.20	0.065	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-06  
 Client ID: FD\_AC\_14\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 13:12  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	42	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	42	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	41	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	169	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	33	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	40	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	41	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	44	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	186	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	55	Q	61-154
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	139		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	99		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	56	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	36	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	45		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-06 D  
 Client ID: FD\_AC\_14\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 13:12  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/11/19 08:03  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	29.9	3.89	25
PFOA/PFOS, Total	5.44		ng/g	1.20	0.050	25

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		65-151

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-07  
**Client ID:** AC\_15\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 14:48  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/09/19 18:22  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.157	J	ng/g	1.20	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.175	J	ng/g	1.20	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.20	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.078	1
Perfluorohexanoic Acid (PFHxA)	0.566	J	ng/g	1.20	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.101	1
Perfluoroheptanoic Acid (PFHpA)	1.49		ng/g	1.20	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.20	0.073	1
Perfluorooctanoic Acid (PFOA)	81.6		ng/g	1.20	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.20	0.216	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.20	0.164	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.20	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.20	0.157	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.20	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.20	0.346	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.360	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.20	0.243	1
Perfluoroundecanoic Acid (PFUnA)	0.060	J	ng/g	1.20	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.20	0.184	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.20	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.20	0.102	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.20	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.20	0.246	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.20	0.065	1
PFOA/PFOS, Total	81.6		ng/g	1.20	0.051	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-07  
 Client ID: AC\_15\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 14:48  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			90		60-153	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			108		65-182	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			87		70-151	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			83		56-138	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			100		61-147	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			98		62-149	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			94		63-166	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			90		62-152	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			56		32-182	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			117		61-154	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			98		65-151	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			90		65-150	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			89		25-186	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			74		45-137	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			98		64-158	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			55		1-125	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			100		42-136	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			122		56-148	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			94		26-160	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-08  
**Client ID:** AC\_16\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 14:58  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/09/19 18:38  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.19	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.19	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.19	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.19	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.099	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.19	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.19	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.19	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.19	0.213	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.19	0.162	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.19	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.19	0.154	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.19	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.19	0.341	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.355	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.19	0.239	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.19	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.19	0.182	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.19	0.116	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.19	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.19	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.19	0.243	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.19	0.064	1
PFOA/PFOS, Total	ND		ng/g	1.19	0.050	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-08  
**Client ID:** AC\_16\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 14:58  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			82			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			93			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			86			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			53	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			80			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			82			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			84			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			81			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			53			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			88			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			89			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			81			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			53			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			72			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			86			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			42			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			65			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			85			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			85			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-09  
 Client ID: AC\_17\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 15:00  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/09/19 18:55  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.59	0.036	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.59	0.073	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.59	0.062	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.59	0.102	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.59	0.083	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.59	0.132	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.59	0.072	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.59	0.096	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.59	0.067	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.59	0.285	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.59	0.217	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.59	0.119	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.59	0.206	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.59	0.106	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.59	0.456	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.59	0.475	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.59	0.320	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.59	0.074	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.59	0.243	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.59	0.156	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.156	J	ng/g	1.59	0.134	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.59	0.111	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.59	0.325	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.59	0.086	1
PFOA/PFOS, Total	ND		ng/g	1.59	0.067	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-09  
 Client ID: AC\_17\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 15:00  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			96		60-153	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			111		65-182	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			100		70-151	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			68		56-138	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			94		61-147	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			94		62-149	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			97		63-166	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			96		62-152	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			65		32-182	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			106		61-154	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			103		65-151	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			94		65-150	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			<b>486</b>	Q	25-186	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			52		45-137	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			66		64-158	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			26		1-125	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			59		42-136	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			64		56-148	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			62		26-160	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-10  
 Client ID: AC\_18\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 15:50  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/09/19 20:01  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.177	J	ng/g	1.29	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.29	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.29	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.29	0.083	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.29	0.068	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.29	0.107	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.29	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.29	0.078	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.29	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.851	J	ng/g	1.29	0.231	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.29	0.176	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.29	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.29	0.167	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.29	0.086	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.29	0.369	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.29	0.384	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	0.374	J	ng/g	1.29	0.259	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.29	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.29	0.197	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.29	0.126	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.594	J	ng/g	1.29	0.109	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.29	0.090	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.29	0.263	1
Perfluorotetradecanoic Acid (PFTA)	0.105	J	ng/g	1.29	0.069	1
PFOA/PFOS, Total	ND		ng/g	1.29	0.054	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-10  
 Client ID: AC\_18\_20190723  
 Sample Location: COVENTRY, VT

Date Collected: 07/23/19 15:50  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	97		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>192</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	64		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	148		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	123		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	143		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	119		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	115		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	42		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>144</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	119		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-11  
 Client ID: H6\_01\_20190724  
 Sample Location: COVENTRY, VT

Date Collected: 07/24/19 09:20  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/09/19 20:18  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.84	0.042	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.84	0.085	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.84	0.072	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.84	0.119	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.84	0.097	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.84	0.154	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.84	0.083	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.84	0.112	1
Perfluorooctanoic Acid (PFOA)	0.105	J	ng/g	1.84	0.077	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.84	0.331	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.84	0.252	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.84	0.138	1
Perfluorooctanesulfonic Acid (PFOS)	0.564	J	ng/g	1.84	0.240	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.84	0.124	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.84	0.529	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.84	0.551	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.84	0.371	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.84	0.086	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.84	0.282	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.84	0.181	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.184	J	ng/g	1.84	0.156	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.84	0.129	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.84	0.377	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.84	0.100	1
PFOA/PFOS, Total	0.669	J	ng/g	1.84	0.077	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-11  
 Client ID: H6\_01\_20190724  
 Sample Location: COVENTRY, VT

Date Collected: 07/24/19 09:20  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			92			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			108			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			111			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			101			56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			76			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			85			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			111			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			93			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			<b>191</b>	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			103			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			92			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			93			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			126			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			133			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			142			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			18			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			<b>161</b>	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			73			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			119			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-12  
 Client ID: FD\_H6\_01\_20190724  
 Sample Location: COVENTRY, VT

Date Collected: 07/24/19 09:20  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/09/19 20:34  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.96	0.045	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.96	0.090	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.96	0.077	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.96	0.126	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.96	0.103	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.96	0.164	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.96	0.088	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.96	0.119	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.96	0.082	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.504	J	ng/g	1.96	0.352	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.96	0.268	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.96	0.147	1
Perfluorooctanesulfonic Acid (PFOS)	0.687	J	ng/g	1.96	0.255	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.96	0.131	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.96	0.563	1
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.96	0.586	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.96	0.395	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.96	0.092	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.96	0.300	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.96	0.192	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.96	0.166	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.96	0.137	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.96	0.401	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.96	0.106	1
PFOA/PFOS, Total	0.687	J	ng/g	1.96	0.082	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-12  
 Client ID: FD\_H6\_01\_20190724  
 Sample Location: COVENTRY, VT

Date Collected: 07/24/19 09:20  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			89			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			105			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			103			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			96			56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			73			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			83			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			101			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			91			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			<b>187</b>	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			100			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			98			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			89			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			106			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			125			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			143			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			39			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			<b>160</b>	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			71			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			111			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-13 D  
**Client ID:** H6\_02\_20190724  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/24/19 09:30  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/11/19 08:37  
**Analyst:** PB  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	9.48	0.215	5
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	9.48	0.436	5
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	9.48	0.370	5
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	9.48	0.611	5
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	9.48	0.498	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	9.48	0.791	5
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	9.48	0.427	5
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	9.48	0.573	5
Perfluorooctanoic Acid (PFOA)	ND		ng/g	9.48	0.397	5
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	9.48	1.70	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	9.48	1.29	5
Perfluorononanoic Acid (PFNA)	ND		ng/g	9.48	0.711	5
Perfluorodecanoic Acid (PFDA)	ND		ng/g	9.48	0.635	5
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	9.48	2.72	5
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	9.48	2.83	5
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	9.48	1.91	5
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	9.48	0.444	5
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	9.48	1.45	5
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	9.48	0.929	5
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	9.48	0.801	5
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	9.48	0.664	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	9.48	1.94	5
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	9.48	0.512	5
PFOA/PFOS, Total	ND		ng/g	9.48	0.397	5

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-13 D  
 Client ID: H6\_02\_20190724  
 Sample Location: COVENTRY, VT

Date Collected: 07/24/19 09:30  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	98		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	125		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>388</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	<b>224</b>	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	<b>227</b>	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	118		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	99		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>316</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	<b>188</b>		61-154
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	160		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>201</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>647</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>250</b>	Q	1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	129		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	88		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-13 D  
 Client ID: H6\_02\_20190724  
 Sample Location: COVENTRY, VT

Date Collected: 07/24/19 09:30  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/11/19 08:58  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	250	12.3	50
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			102		65-151	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-14  
**Client ID:** EB\_20190724  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/24/19 09:40  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/08/19 20:48  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 08/07/19 18:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.79	0.366	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.79	0.355	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.79	0.213	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.79	0.405	1
Perfluorohexanoic Acid (PFHxA)	0.319	J	ng/l	1.79	0.294	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.79	0.220	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.79	0.202	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.79	0.337	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.79	0.211	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.80		ng/l	1.79	1.19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.79	0.616	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.79	0.280	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.79	0.452	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.79	0.272	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.79	1.09	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.79	1.00	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.79	0.581	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.79	0.233	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.79	0.878	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.79	0.520	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.79	0.720	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.79	0.333	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.79	0.293	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.79	0.222	1
PFOA/PFOS, Total	ND		ng/l	1.79	0.211	1
PFAS, Total (5)	ND		ng/l	1.79	0.202	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-14  
**Client ID:** EB\_20190724  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/24/19 09:40  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	107		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	50		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	89		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	44		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	66		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	100		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	33		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	81		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	91		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-15  
**Client ID:** WR\_01\_20190725  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/25/19 09:15  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/08/19 18:19  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 08/07/19 18:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	25000	5100	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	25000	4950	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	25000	2980	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	25000	5650	1
Perfluorohexanoic Acid (PFHxA)	4250	J	ng/l	25000	4100	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	25000	3060	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	25000	2820	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	25000	4700	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	25000	2950	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	25000	16600	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	25000	8600	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	25000	3900	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	25000	6300	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	25000	3800	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	25000	15200	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	25000	14000	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	25000	8100	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	25000	3250	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	25000	12200	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	25000	7250	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	25000	10000	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	25000	4650	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	25000	4090	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	25000	3100	1
PFOA/PFOS, Total	ND		ng/l	25000	2950	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-15  
**Client ID:** WR\_01\_20190725  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/25/19 09:15  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			100		2-156	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			109		16-173	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			93		31-159	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			49		1-313	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			90		21-145	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			96		30-139	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			97		47-153	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			103		36-149	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			54		1-244	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			141		34-146	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			102		42-146	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			104		38-144	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			119		7-170	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			52		1-181	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			88		40-144	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			56		1-87	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			88		23-146	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			121		24-161	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			<b>222</b>	Q	33-143	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-16  
 Client ID: WR\_02\_20190725  
 Sample Location: COVENTRY, VT

Date Collected: 07/25/19 10:33  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/09/19 21:41  
 Analyst: PB  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.462	J	ng/g	1.23	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.23	0.057	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.23	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.23	0.080	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.23	0.065	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.23	0.103	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.23	0.056	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	75.0	0.075	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.23	0.052	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.747	J	ng/g	1.23	0.222	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.23	0.168	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.23	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.23	0.160	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.23	0.083	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.23	0.354	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.23	0.369	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.23	0.249	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.23	0.058	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.23	0.189	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.23	0.121	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.23	0.104	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.23	0.086	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.23	0.252	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.23	0.067	1
PFOA/PFOS, Total	ND		ng/g	1.23	0.052	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

Lab ID: L1933047-16  
 Client ID: WR\_02\_20190725  
 Sample Location: COVENTRY, VT

Date Collected: 07/25/19 10:33  
 Date Received: 07/25/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	41	Q	60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	46	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	46	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	153	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	32	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	36	Q	62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	46	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	44	Q	62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	47	Q	61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	46	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	43	Q	65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	12	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	15	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	19	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	18	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	33		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/09/19 16:49  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-13,16 Batch: WG1269534-1					
Perfluorobutanoic Acid (PFBA)	0.097	J	ng/g	1.33	0.030
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.33	0.061
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.33	0.052
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.33	0.086
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.33	0.070
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.33	0.111
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.33	0.060
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.33	0.081
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.33	0.056
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.33	0.239
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.33	0.182
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.33	0.100
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.33	0.173
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.33	0.089
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.33	0.383
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.33	0.399
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.33	0.269
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.33	0.062
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.33	0.204
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.33	0.131
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.33	0.113
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.33	0.093
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.33	0.273
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/g	1.33	0.072
PFOA/PFOS, Total	ND		ng/g	1.33	0.056

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/09/19 16:49  
Analyst: PB

Extraction Method: EPA 537(M)  
Extraction Date: 08/07/19 11:29

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-13,16 Batch: WG1269534-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	96		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	60		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	104		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	62		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	90		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	56		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	74		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	88		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	85		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/08/19 14:27  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 08/07/19 18:09

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 14 Batch: WG1269720-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	0.348	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.42	J	ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/08/19 14:27  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 08/07/19 18:09

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 14 Batch: WG1269720-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	104		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	54		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	88		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	89		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	50		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	90		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	55		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	82		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	39		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	75		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/08/19 11:54  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 08/07/19 18:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 15 Batch: WG1269755-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	500	102.
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	500	99.0
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	500	59.5
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	500	113.
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	500	82.0
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	500	61.3
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	500	56.3
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	500	94.0
Perfluorooctanoic Acid (PFOA)	ND		ng/l	500	59.0
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	500	333.
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	500	172.
Perfluorononanoic Acid (PFNA)	ND		ng/l	500	78.0
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	500	126.
Perfluorodecanoic Acid (PFDA)	ND		ng/l	500	76.0
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	500	303.
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	500	280.
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	500	162.
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	500	65.0
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	500	245.
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	500	145.
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	500	201.
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	500	93.0
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	500	81.8
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	500	62.0
PFOA/PFOS, Total	ND		ng/l	500	59.0
PFAS, Total (5)	ND		ng/l	500	56.3

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/08/19 11:54  
Analyst: JW

Extraction Method: EPA 537  
Extraction Date: 08/07/19 18:00

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 15 Batch: WG1269755-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	104		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	69		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	106		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	111		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	85		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	<b>107</b>	Q	1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	96		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/11/19 09:14  
Analyst: PB  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 08/09/19 15:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1270732-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 08/11/19 09:14  
Analyst: PB  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 08/09/19 15:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1270732-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	112		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	127		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	113		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	82		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	109		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	109		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	69		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	110		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	106		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	100		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	84		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	86		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/11/19 09:31  
Analyst: PB  
TCLP/SPLP Extraction Date: 08/05/19 13:04

Extraction Method: EPA 537  
Extraction Date: 08/09/19 15:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1270732-2					
Perfluorobutanoic Acid (PFBA)	0.947	J	ng/l	1.88	0.383
Perfluoropentanoic Acid (PFPeA)	0.876	J	ng/l	1.88	0.372
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.88	0.224
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.88	0.425
Perfluorohexanoic Acid (PFHxA)	0.680	J	ng/l	1.88	0.308
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.88	0.230
Perfluoroheptanoic Acid (PFHpA)	0.372	J	ng/l	1.88	0.212
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.88	0.353
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.88	0.222
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.88	1.25
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.88	0.647
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.88	0.293
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.88	0.474
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.88	0.286
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.88	1.14
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.88	1.05
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.88	0.609
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.88	0.244
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.88	0.921
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.88	0.545
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.88	0.756
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.88	0.350
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.88	0.308
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	1.88	0.233
PFOA/PFOS, Total	ND		ng/l	1.88	0.222
PFAS, Total (5)	0.372	J	ng/l	1.88	0.212

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
Analytical Date: 08/11/19 09:31  
Analyst: PB  
TCLP/SPLP Extraction Date: 08/05/19 13:04

Extraction Method: EPA 537  
Extraction Date: 08/09/19 15:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1270732-2					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	99		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	71		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	70		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	95		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	76		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	26		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	69		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	69		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	71		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/11/19 09:47  
Analyst: PB  
TCLP/SPLP Extraction Date: 08/02/19 15:42

Extraction Method: EPA 537  
Extraction Date: 08/09/19 15:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1270732-3					
Perfluorobutanoic Acid (PFBA)	0.465	J	ng/l	1.74	0.354
Perfluoropentanoic Acid (PFPeA)	0.472	J	ng/l	1.74	0.344
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.206
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.392
Perfluorohexanoic Acid (PFHxA)	0.434	J	ng/l	1.74	0.285
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.213
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.74	0.195
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.326
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.74	0.205
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.597
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.271
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.74	0.438
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.264
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.05
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.972
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.562
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.851
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.503
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.698
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.323
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.74	0.284
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.215
PFOA/PFOS, Total	ND		ng/l	1.74	0.205
PFAS, Total (5)	ND		ng/l	1.74	0.195

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/11/19 09:47  
Analyst: PB  
TCLP/SPLP Extraction Date: 08/02/19 15:42

Extraction Method: EPA 537  
Extraction Date: 08/09/19 15:00

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 02 Batch: WG1270732-3					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	79		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	70		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	81		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	71		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	97		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	76		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	90		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	61		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	81		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	69		33-143



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1933047

Project Number: 4536.00

Report Date: 08/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-13,16 Batch: WG1269534-2 WG1269534-3								
Perfluorobutanoic Acid (PFBA)	103		106		71-135	3		30
Perfluoropentanoic Acid (PFPeA)	106		111		69-132	5		30
Perfluorobutanesulfonic Acid (PFBS)	98		103		72-128	5		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	110		122		62-145	10		30
Perfluorohexanoic Acid (PFHxA)	114		116		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	104		105		73-123	1		30
Perfluoroheptanoic Acid (PFHpA)	104		108		71-131	4		30
Perfluorohexanesulfonic Acid (PFHxS)	110		116		67-130	5		30
Perfluorooctanoic Acid (PFOA)	109		113		69-133	4		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	112		123		64-140	9		30
Perfluoroheptanesulfonic Acid (PFHpS)	101		105		70-132	4		30
Perfluorononanoic Acid (PFNA)	111		113		72-129	2		30
Perfluorooctanesulfonic Acid (PFOS)	88		101		68-136	14		30
Perfluorodecanoic Acid (PFDA)	113		116		69-133	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	106		115		65-137	8		30
Perfluorononanesulfonic Acid (PFNS)	108		113		69-125	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	99		116		63-144	16		30
Perfluoroundecanoic Acid (PFUnA)	94		106		64-136	12		30
Perfluorodecanesulfonic Acid (PFDS)	97		120		59-134	21		30
Perfluorooctanesulfonamide (FOSA)	106		105		67-137	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	92		108		61-139	16		30
Perfluorododecanoic Acid (PFDoA)	104		110		69-135	6		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-13,16 Batch: WG1269534-2 WG1269534-3								
Perfluorotridecanoic Acid (PFTrDA)	106		114		66-139	7		30
Perfluorotetradecanoic Acid (PFTA)	114		126		69-133	10		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		89		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		93		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	62		62		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	92		89		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	91		90		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		94		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	55		54		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98		98		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		94		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		91		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	68		70		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	80		74		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		90		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	44		47		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	83		81		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	93		90		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	91		88		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1933047

Project Number: 4536.00

Report Date: 08/14/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 14 Batch: WG1269720-2 WG1269720-3								
Perfluorobutanoic Acid (PFBA)	100		99		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	94		93		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	76		77		65-157	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	97		102		37-219	5		30
Perfluorohexanoic Acid (PFHxA)	100		97		69-168	3		30
Perfluoropentanesulfonic Acid (PFPeS)	93		90		52-156	3		30
Perfluoroheptanoic Acid (PFHpA)	100		100		58-159	0		30
Perfluorohexanesulfonic Acid (PFHxS)	102		99		69-177	3		30
Perfluorooctanoic Acid (PFOA)	100		98		63-159	2		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	124		117		49-187	6		30
Perfluoroheptanesulfonic Acid (PFHpS)	95		90		61-179	5		30
Perfluorononanoic Acid (PFNA)	96		97		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	102		98		52-151	4		30
Perfluorodecanoic Acid (PFDA)	100		97		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	82		81		56-173	1		30
Perfluorononanesulfonic Acid (PFNS)	102		89		48-150	14		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	100		94		60-166	6		30
Perfluoroundecanoic Acid (PFUnA)	96		96		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	96		90		38-156	6		30
Perfluorooctanesulfonamide (FOSA)	84		78		46-170	7		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	90		96		45-170	6		30
Perfluorododecanoic Acid (PFDoA)	103		99		67-153	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1933047

Project Number: 4536.00

Report Date: 08/14/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 14 Batch: WG1269720-2 WG1269720-3								
Perfluorotridecanoic Acid (PFTTrDA)	115		110		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	103		102		59-182	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		87		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	106		100		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		85		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	58		54		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		83		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	84		80		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		86		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	49		52		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	92		88		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	85		81		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85		82		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	75		66		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	73		70		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		32		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	76		70		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	82		77		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		80		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1933047

Project Number: 4536.00

Report Date: 08/14/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 15 Batch: WG1269755-2 WG1269755-3								
Perfluorobutanoic Acid (PFBA)	107		113		67-148	5		30
Perfluoropentanoic Acid (PFPeA)	107		112		63-161	5		30
Perfluorobutanesulfonic Acid (PFBS)	100		103		65-157	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	115		119		37-219	3		30
Perfluorohexanoic Acid (PFHxA)	118		125		69-168	6		30
Perfluoropentanesulfonic Acid (PFPeS)	108		113		52-156	5		30
Perfluoroheptanoic Acid (PFHpA)	105		113		58-159	7		30
Perfluorohexanesulfonic Acid (PFHxS)	120		124		69-177	3		30
Perfluorooctanoic Acid (PFOA)	108		114		63-159	5		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	116		126		49-187	8		30
Perfluoroheptanesulfonic Acid (PFHpS)	104		106		61-179	2		30
Perfluorononanoic Acid (PFNA)	114		120		68-171	5		30
Perfluorooctanesulfonic Acid (PFOS)	94		100		52-151	6		30
Perfluorodecanoic Acid (PFDA)	118		126		63-171	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	107		109		56-173	2		30
Perfluorononanesulfonic Acid (PFNS)	105		110		48-150	5		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	102		122		60-166	18		30
Perfluoroundecanoic Acid (PFUnA)	102		106		60-153	4		30
Perfluorodecanesulfonic Acid (PFDS)	109		116		38-156	6		30
Perfluorooctanesulfonamide (FOSA)	104		112		46-170	7		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	103		114		45-170	10		30
Perfluorododecanoic Acid (PFDoA)	108		115		67-153	6		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1933047

Project Number: 4536.00

Report Date: 08/14/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 15 Batch: WG1269755-2 WG1269755-3								
Perfluorotridecanoic Acid (PFTTrDA)	117		122		48-158	4		30
Perfluorotetradecanoic Acid (PFTA)	122		125		59-182	2		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		97		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		105		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		100		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	75		71		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		94		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		95		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	101		97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		97		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	72		70		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		101		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	109		103		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		95		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	82		72		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	91		85		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	103		98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	105	Q	101	Q	1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	82		79		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		93		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	90		90		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1933047

Project Number: 4536.00

Report Date: 08/14/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1270732-4 WG1270732-5								
Perfluorobutanoic Acid (PFBA)	100		101		67-148	1		30
Perfluoropentanoic Acid (PFPeA)	100		101		63-161	1		30
Perfluorobutanesulfonic Acid (PFBS)	91		93		65-157	2		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	107		105		37-219	2		30
Perfluorohexanoic Acid (PFHxA)	100		102		69-168	2		30
Perfluoropentanesulfonic Acid (PFPeS)	90		88		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	100		103		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	96		91		69-177	5		30
Perfluorooctanoic Acid (PFOA)	103		103		63-159	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	104		115		49-187	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	110		102		61-179	8		30
Perfluorononanoic Acid (PFNA)	103		101		68-171	2		30
Perfluorooctanesulfonic Acid (PFOS)	94		93		52-151	1		30
Perfluorodecanoic Acid (PFDA)	103		106		63-171	3		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	111		98		56-173	12		30
Perfluorononanesulfonic Acid (PFNS)	106		104		48-150	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	95		110		60-166	15		30
Perfluoroundecanoic Acid (PFUnA)	98		106		60-153	8		30
Perfluorodecanesulfonic Acid (PFDS)	106		101		38-156	5		30
Perfluorooctanesulfonamide (FOSA)	102		103		46-170	1		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	82		94		45-170	14		30
Perfluorododecanoic Acid (PFDoA)	104		104		67-153	0		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1933047

Project Number: 4536.00

Report Date: 08/14/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 02 Batch: WG1270732-4 WG1270732-5								
Perfluorotridecanoic Acid (PFTrDA)	118		115		48-158	3		30
Perfluorotetradecanoic Acid (PFTA)	102		108		59-182	6		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	105		115		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		132		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	111		118		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		97		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		108		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		111		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	105		119		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	100		111		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	80		90		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		115		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	101		118		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		110		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	83		103		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	89		95		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	94		108		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	48		41		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	89		97		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	87		103		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	86		97		33-143



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1933047

**Project Number:** 4536.00

**Report Date:** 08/14/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-13,16 QC Batch ID: WG1269534-4 QC Sample: L1933047-01 Client ID: AC_10_20190723												
Perfluorobutanoic Acid (PFBA)	ND	17.4	18.7	108		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	17.4	20.2	116		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	17.4	20.5	118		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	17.4	22.1	127		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	ND	17.4	21.1	122		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	17.4	18.9	109		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	17.4	19.2	111		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	17.4	21.6	124		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	17.4	20.2	116		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	17.4	21.8	126		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	17.4	19.5	112		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	17.4	20.5	118		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	17.4	17.8	102		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	17.4	20.9	120		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	17.4	19.5	112		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	17.4	20.0	115		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	17.4	20.1	116		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	17.4	18.3	105		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	17.4	18.9	109		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	17.4	20.8	120		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	17.4	17.0	98		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	17.4	18.9	109		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1933047

**Project Number:** 4536.00

**Report Date:** 08/14/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-13,16 QC Batch ID: WG1269534-4 QC Sample: L1933047-01 Client ID: AC_10_20190723												
Perfluorotridecanoic Acid (PFTTrDA)	ND	17.4	15.9	92		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	17.4	21.7	125		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	236	Q			25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	155	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	182				32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	87				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77				45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	80				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	62				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	70				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	73				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	70				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84				65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	17				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	78				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	72				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	83				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	76				70-151

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1933047

Report Date: 08/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-13,16 QC Batch ID: WG1269534-5 QC Sample: L1933047-02						
Client ID: AC_11_20190723						
Perfluorobutanoic Acid (PFBA)	0.278J	0.270J	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	ND	ND	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	0.063J	0.071J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	4.27	3.35	ng/g	24		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-13,16 QC Batch ID: WG1269534-5 QC Sample: L1933047-02 Client ID: AC_11_20190723						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
PFOA/PFOS, Total	4.33J	3.42J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	105		99		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		91		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>291</b>	Q	<b>297</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	70		68		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		78		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		85		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>309</b>	Q	<b>297</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		90		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	89		87		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>239</b>	Q	<b>207</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>150</b>	Q	<b>152</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUA)	127		129		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	21		25		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>161</b>	Q	<b>149</b>	Q	42-136

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1933047

Report Date: 08/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-13,16 QC Batch ID: WG1269534-5 QC Sample: L1933047-02						
Client ID: AC_11_20190723						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		87		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	132		133		26-160

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 15 QC Batch ID: WG1269755-6 QC Sample: L1933047-15 Client ID: WR_01_20190725						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/l	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	4250J	ND	ng/l	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/l	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/l	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	ND	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 15 QC Batch ID: WG1269755-6 QC Sample: L1933047-15 Client ID: WR_01_20190725						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	ND	ND	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		101		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	109		113		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		92		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	49		50		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	90		90		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	96		93		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		101		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	54		49		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	141		138		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		104		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		103		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	119		137		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	52		47		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUA)	88		80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	56		54		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	88		84		23-146

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1933047

Report Date: 08/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 15 QC Batch ID: WG1269755-6 QC Sample: L1933047-15 Client ID: WR_01_20190725						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	121		109		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	222	Q	196	Q	33-143



# **INORGANICS & MISCELLANEOUS**

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

**SAMPLE RESULTS**

**Lab ID:** L1933047-01  
**Client ID:** AC\_10\_20190723  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/23/19 09:25  
**Date Received:** 07/25/19  
**Field Prep:** Not Specified

**Sample Depth:**  
**Matrix:** Solid

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Mansfield Lab</b>										
Solids, Total	94.4		%	0.100	0.100	1	-	07/30/19 23:28	121,2540G	CC



## Lab Duplicate Analysis

*Batch Quality Control*

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1933047

Report Date: 08/14/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1266541-1 QC Sample: L1933047-01 Client ID: AC_10_20190723						
Solids, Total	94.4	94.6	%	0		10

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1933047**Project Number:** 4536.00**Report Date:** 08/14/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

Cooler	Custody Seal
A	Absent

**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1933047-01A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-01B	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		A2-TS(7)
L1933047-02A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-02B	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		-
L1933047-02L	Plastic 250ml unpreserved Extracts	A	NA		2.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1933047-02M	Plastic 250ml unpreserved Extracts	A	NA		2.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1933047-02N	Plastic 250ml unpreserved Extracts	A	NA		2.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1933047-02O	Plastic 250ml unpreserved Extracts	A	NA		2.2	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1933047-02X9	Tumble Vessel	A	NA		2.2	Y	Absent		-
L1933047-03A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-04A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-05A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-06A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-07A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-08A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-09A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-10A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-11A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-12A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-13A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)
L1933047-14A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(14)
L1933047-15A	2 Plastic/1 Plastic/1 H2O Plastic	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(14)
L1933047-16A	Plastic 8oz unpreserved	A	NA		2.2	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

Serial\_No:08141914:25  
**Lab Number:** L1933047  
**Report Date:** 08/14/19

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1933047  
**Report Date:** 08/14/19

## REFERENCES

- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.
- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.



**MANSFIELD CHAIN OF CUSTODY**

PAGE 1 OF 2

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

**Client Information**

Client: Sanborn, Head & Assoc. Inc.  
Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
Phone: 802-391-8504  
Fax:

Email: mestabrooks@sanbornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**PLEASE NOTE**

MS/MSD (at unit cost) will be omitted unless you check here:

**Project Information**

Project Name: NEWSVT Landfill  
Project Location: Coventry, VT  
Project #: 4536.00  
Project Manager: Matt Estabrooks  
ALPHA Quote #:

**Turn-Around Time**

Standard  RUSH (only confirmed if pre-approved)  
Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 7/26/19

ALPHA Job #: L1933047

**Report Information - Data Deliverables**

FAX  EMAIL  
 ADEX  Add'l Deliverables

**Billing Information**

Same as Client info PO #: 4536.00

**Regulatory Requirements/Report Limits**

State /Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

ANALYSIS  
EPA-537(M)  
Isotope Dilution  
TS-SM 2540  
SPLP PFAS-537(M)

**SAMPLE HANDLING**

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do  
 Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials				
		Date	Time						
933047-01	AC-10-20190723	7/23/19	09:25	Solid	MEE	X	X		
-02	AC-11-20190723	7/23/19	11:55	Solid	MEE	X	X		
-03	AC-12-20190723	7/23/19	12:10	Solid	MEE	X			
-04	AC-13-20190723	7/23/19	12:12	Solid	MEE	X			
-05	AC-14-20190723	7/23/19	13:12	Solid	MEE	X			
-06	FD-AC-14-20190723	7/23/19	13:12	Solid	MEE	X			
-07	AC-15-20190723	7/23/19	14:48	Solid	MEE	X			
-08	AC-16-20190723	7/23/19	14:58	Solid	MEE	X			
-09	AC-17-20190723	7/23/19	15:00	Solid	MEE	X			
-10	AC-18-20190723	7/23/19	15:50	Solid	MEE	X			

Container Type \_\_\_\_\_  
Preservative \_\_\_\_\_

Relinquished By: <u>Matt Estabrooks</u>	Date/Time: <u>7/25/19 1:50 AM</u>	Received By: <u>[Signature]</u>	Date/Time: <u>7/25/19 12:50</u>
	<u>7/25/19 18:26</u>		<u>7/26/19 01:50</u>
	<u>7/26/19 8:40</u>		<u>7/26/19 9:40</u>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.





# MANSFIELD CHAIN OF CUSTODY

PAGE 2 OF 2

WESTBORO, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

MANSFIELD, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

**Client Information**

Client: Sanborn, Head & Assoc, Inc.  
Address: 187 Saint Paul Street  
Suite 4-C, Burlington, VT 05401  
Phone: 802-391-8504  
Fax:

Email: mestabrooks@sanbornhead.com

These samples have been previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

**PLEASE NOTE**

MS/MSD (at unit cost) will be omitted unless you check here:

**Project Information**

Project Name: NEWSVT Landfill  
Project Location: Coventry, VT  
Project #: 4536.00  
Project Manager: Matt Estabrooks  
ALPHA Quote #:

**Turn-Around Time**

Standard  RUSH (only confirmed if pre-approved!)  
Date Due: \_\_\_\_\_ Time: \_\_\_\_\_

Date Rec'd in Lab: 7/26/19

**Report Information - Data Deliverables**

FAX  EMAIL  
 ADEX  Add'l Deliverables

**Regulatory Requirements/Report Limits**

State /Fed Program \_\_\_\_\_ Criteria \_\_\_\_\_

ALPHA Job #: L1933047

**Billing Information**

Same as Client info PO #: 4536.00

ANALYSIS  
EPA -537(m)  
Isotope Dilution

**SAMPLE HANDLING**

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do  
 Lab to do  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials															
		Date	Time																	
-11	HG_01-20190724	7/24/19	09:20	Solid	MEE	X														
-12	FD_HG_01-20190724	7/24/19	09:20	Solid	MEE	X														
-13	HG_02-20190724	7/24/19	09:30	Solid	MEE	X														
-14	EB_20190724	7/24/19	09:40	Water Solid MEE	MEE	X														
-15	WR_01-20190725	7/25/19	09:15	liquid	MEE	X														
-16	WR_02-20190725	7/25/19	10:33	Solid	MEE	X														

Container Type	
Preservative	

Relinquished By:	Date/Time	Received By:	Date/Time
<u>[Signature]</u>	<u>7/25/19 1:50 AM</u>	<u>[Signature]</u>	<u>7/25/19 13:50</u>
<u>[Signature]</u>	<u>7/25/19 18:26</u>	<u>[Signature]</u>	<u>7/26/19 01:50</u>
<u>[Signature]</u>	<u>7/26/19 8:40</u>	<u>[Signature]</u>	<u>7/26/19 9:40</u>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.



## ANALYTICAL REPORT

Lab Number:	L1934516
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	08/23/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1934516

Report Date: 08/23/19

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1934516-01	RT_05_20190726	SOLID	COVENTRY, VT	07/26/19 09:15	08/02/19
L1934516-02	RT_06_20190726	SOLID	COVENTRY, VT	07/26/19 09:20	08/02/19
L1934516-03	RT_07_20190726	SOLID	COVENTRY, VT	07/26/19 09:42	08/02/19
L1934516-04	RT_08_20190726	SOLID	COVENTRY, VT	07/26/19 10:40	08/02/19
L1934516-05	HP_03_20190729	SOLID	COVENTRY, VT	07/29/19 11:08	08/02/19
L1934516-06	HP_04_20190729	SOLID	COVENTRY, VT	07/29/19 12:40	08/02/19
L1934516-07	FD_HP_04_20190729	SOLID	COVENTRY, VT	07/29/19 12:40	08/02/19
L1934516-08	HP_05_20190729	SOLID	COVENTRY, VT	07/29/19 11:45	08/02/19
L1934516-09	HP_06_20190729	SOLID	COVENTRY, VT	07/29/19 12:21	08/02/19
L1934516-10	MA_02_20190730	SOLID	COVENTRY, VT	07/30/19 10:58	08/02/19
L1934516-11	MA_01_20190730	SOLID	COVENTRY, VT	07/30/19 10:38	08/02/19
L1934516-12	FD_MA_01_20190730	SOLID	COVENTRY, VT	07/30/19 10:38	08/02/19
L1934516-13	MA_03_20190730	SOLID	COVENTRY, VT	07/30/19 11:41	08/02/19
L1934516-14	FD_03_20190730	SOLID	COVENTRY, VT	07/30/19 11:41	08/02/19
L1934516-15	BT_01_20190731	SOLID	COVENTRY, VT	07/31/19 07:57	08/02/19
L1934516-16	BT_02_20190731	SOLID	COVENTRY, VT	07/31/19 08:57	08/02/19
L1934516-17	FD_BT_02_20190731	SOLID	COVENTRY, VT	07/31/19 08:57	08/02/19
L1934516-18	FB_BT_20190731	WATER	COVENTRY, VT	07/31/19 08:06	08/02/19
L1934516-19	EB_BT_20190731	WATER	COVENTRY, VT	07/31/19 09:46	08/02/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1934516-01, -02, -03, -04, -06, -07, -08, -09, -11, -13, -14, -15 and -19: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1934516-03 The reporting limit was elevated for NMeFOSAA and NEtFOSAA due to low recovery of the extracted internal standard. The low recovery was attributed to the sample matrix.

L1934516-09: The sample was re-analyzed on dilution in order to quantify the results within the calibration range. The result(s) should be considered estimated, and are qualified with an E flag, for any compound(s) that exceeded the calibration range in the initial analysis. The re-analysis was performed only for the compound(s) that exceeded the calibration range.

L1934516-19: The Equipment Blank has a concentration above the reporting limit for PFOS. There was no second bottle to confirm the results.

WG1271327-3, WG1271327-4, and WG1271327-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

The WG1271327-3 LCSD recovery, associated with L1934516-01 through -17, is below the acceptance criteria for perfluorooctanesulfonamide (fosa) (54%); however, it has been identified as a "difficult" analyte. The results of the associated samples are reported.

The WG1271327-2/-3 LCS/LCSD RPD, associated with L1934516-01 through -17, is above the acceptance criteria for perfluorooctanesulfonamide (fosa) (55%).

The WG1271327-4 MS recoveries, performed on L1934516-01, are outside the acceptance criteria for 1h,1h,2h,2h-perfluorooctanesulfonic acid (6:2fts) (548%) and perfluorotridecanoic acid (pfttrda) (196%).

WG1271799-1: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

### Case Narrative (continued)

was within acceptance criteria; therefore, no further action was taken.

WG1271799-2: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1271799-4: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

WG1271799-4: The continuing calibration standard had the response for PFHpS above the acceptance criteria for the method. The associated samples were non-detect; therefore, no further action was taken.

WG1271799-5: The continuing calibration standard had the response for d5-NEtFOSAA outside the acceptance criteria for the method. The associated target analytes were within acceptance criteria; therefore, no further action was taken.


WG1271799-5: The continuing calibration standard had the response for Perfluorooctanesulfonic Acid-Branched (br-PFOS) outside of acceptance criteria. The response for Perfluorooctanesulfonic Acid (PFOS) was within acceptance criteria; therefore, no further action was taken.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L1934516-11: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 08/23/19



# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-01  
**Client ID:** RT\_05\_20190726  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/26/19 09:15  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 08:42  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.102	J	ng/g	1.28	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.28	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.28	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.28	0.082	1
Perfluorohexanoic Acid (PFHxA)	0.116	J	ng/g	1.28	0.067	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.28	0.107	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.28	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.28	0.077	1
Perfluorooctanoic Acid (PFOA)	0.124	J	ng/g	1.28	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.12		ng/g	1.28	0.229	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.28	0.174	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.28	0.096	1
Perfluorooctanesulfonic Acid (PFOS)	0.393	J	ng/g	1.28	0.166	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.28	0.086	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.28	0.367	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.28	0.382	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.28	0.258	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.28	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.28	0.196	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.28	0.125	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.28	0.108	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.28	0.089	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.28	0.261	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.28	0.069	1
PFOA/PFOS, Total	0.517	J	ng/g	1.28	0.054	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-01  
 Client ID: RT\_05\_20190726  
 Sample Location: COVENTRY, VT

Date Collected: 07/26/19 09:15  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	112		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>376</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	121		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>592</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>471</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>153</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	53		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	132		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	76		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	93		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-02  
 Client ID: RT\_06\_20190726  
 Sample Location: COVENTRY, VT

Date Collected: 07/26/19 09:20  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/15/19 09:15  
 Analyst: RS  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.23	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.23	0.057	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.23	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.23	0.079	1
Perfluorohexanoic Acid (PFHxA)	0.071	J	ng/g	1.23	0.065	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.23	0.103	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.23	0.056	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.23	0.075	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.23	0.052	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.23	0.221	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.23	0.168	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.23	0.092	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.23	0.160	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.23	0.083	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.23	0.353	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.23	0.368	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.23	0.248	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.23	0.058	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.23	0.188	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.23	0.121	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.23	0.104	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.23	0.086	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.23	0.252	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.23	0.067	1
PFOA/PFOS, Total	ND		ng/g	1.23	0.052	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-02  
 Client ID: RT\_06\_20190726  
 Sample Location: COVENTRY, VT

Date Collected: 07/26/19 09:20  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			84			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			91			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			115			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>335</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			87			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			88			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			130			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			89			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			<b>221</b>	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			69			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			112			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			95			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			136			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			87			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			102			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			9			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			114			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			103			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			117			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-03  
**Client ID:** RT\_07\_20190726  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/26/19 09:42  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 09:49  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.26	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.26	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.26	0.049	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.26	0.081	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.26	0.066	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.26	0.105	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.26	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.26	0.076	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.26	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	33.1		ng/g	1.26	0.226	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.26	0.172	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.26	0.094	1
Perfluorooctanesulfonic Acid (PFOS)	1.84		ng/g	1.26	0.164	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.26	0.084	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.26	0.361	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.26	0.376	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	10.3		ng/g	12.6	0.253	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.26	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.26	0.192	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.26	0.123	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	12.6	0.106	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.26	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.26	0.257	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.26	0.068	1
PFOA/PFOS, Total	1.84		ng/g	1.26	0.053	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-03  
 Client ID: RT\_07\_20190726  
 Sample Location: COVENTRY, VT

Date Collected: 07/26/19 09:42  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			22	Q		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			21	Q		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			115			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			82			56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			16	Q		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			18	Q		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			112			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			22	Q		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			70			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			27	Q		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			112			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			35	Q		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			80			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			0	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			40	Q		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			1			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			1	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			47	Q		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			68			26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-04  
**Client ID:** RT\_08\_20190726  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/26/19 10:40  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 10:06  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.103	J	ng/g	1.24	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.24	0.057	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.24	0.048	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.24	0.080	1
Perfluorohexanoic Acid (PFHxA)	0.304	J	ng/g	1.24	0.065	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.24	0.104	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.24	0.056	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.24	0.075	1
Perfluorooctanoic Acid (PFOA)	0.198	J	ng/g	1.24	0.052	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.24	0.223	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.24	0.170	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.24	0.093	1
Perfluorooctanesulfonic Acid (PFOS)	0.631	J	ng/g	1.24	0.161	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.24	0.083	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.24	0.356	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.24	0.371	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.24	0.250	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.24	0.058	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.24	0.190	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.24	0.122	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.24	0.105	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.24	0.087	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.24	0.254	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.24	0.067	1
PFOA/PFOS, Total	0.829	J	ng/g	1.24	0.052	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-04  
 Client ID: RT\_08\_20190726  
 Sample Location: COVENTRY, VT

Date Collected: 07/26/19 10:40  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	115		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	109		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>274</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	107		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	94		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	104		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>294</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	97		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>281</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>186</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	38		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>173</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	110		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	111		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-05  
**Client ID:** HP\_03\_20190729  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/29/19 11:08  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 10:23  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.21	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.21	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.21	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.21	0.078	1
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.21	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.21	0.101	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.21	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.21	0.073	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.21	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.485	J	ng/g	1.21	0.217	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.21	0.165	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.21	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.21	0.157	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.21	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.21	0.347	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.21	0.361	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.21	0.244	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.21	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.21	0.185	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.21	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.21	0.102	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.21	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.21	0.247	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.21	0.065	1
PFOA/PFOS, Total	ND		ng/g	1.21	0.051	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-05  
 Client ID: HP\_03\_20190729  
 Sample Location: COVENTRY, VT

Date Collected: 07/29/19 11:08  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	100		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	110		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	117		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	111		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	100		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	100		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	122		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	109		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	147		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	132		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	111		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	134		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	112		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	129		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-06  
**Client ID:** HP\_04\_20190729  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/29/19 12:40  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 10:40  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.29	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.29	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.29	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.29	0.083	1
Perfluorohexanoic Acid (PFHxA)	0.071	J	ng/g	1.29	0.068	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.29	0.108	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.29	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.29	0.078	1
Perfluorooctanoic Acid (PFOA)	0.079	J	ng/g	1.29	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.940	J	ng/g	1.29	0.232	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.29	0.176	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.29	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.29	0.168	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.29	0.086	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.29	0.370	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.29	0.386	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.29	0.260	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.29	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.29	0.197	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.29	0.126	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.29	0.109	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.29	0.090	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.29	0.264	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.29	0.070	1
PFOA/PFOS, Total	0.079	J	ng/g	1.29	0.054	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-06  
 Client ID: HP\_04\_20190729  
 Sample Location: COVENTRY, VT

Date Collected: 07/29/19 12:40  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	89		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>176</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	78		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	83		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	102		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>232</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	82		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	87		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	56		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>213</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>174</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	102		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>191</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>164</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	<b>194</b>	Q	26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1934516**Project Number:** 4536.00**Report Date:** 08/23/19**SAMPLE RESULTS**

Lab ID: L1934516-07  
 Client ID: FD\_HP\_04\_20190729  
 Sample Location: COVENTRY, VT

Date Collected: 07/29/19 12:40  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/15/19 10:57  
 Analyst: RS  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.17	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.17	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.17	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.17	0.075	1
Perfluorohexanoic Acid (PFHxA)	0.101	J	ng/g	1.17	0.061	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.17	0.098	1
Perfluoroheptanoic Acid (PFHpA)	0.088	J	ng/g	1.17	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.17	0.071	1
Perfluorooctanoic Acid (PFOA)	0.209	J	ng/g	1.17	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.17	0.210	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.17	0.160	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.17	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	0.175	J	ng/g	1.17	0.152	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.17	0.078	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.17	0.336	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.17	0.350	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.17	0.236	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.17	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.17	0.179	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.17	0.115	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.17	0.099	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.17	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.17	0.239	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.17	0.063	1
PFOA/PFOS, Total	0.384	J	ng/g	1.17	0.049	1

Project Name: NEWSVT LANDFILL

Lab Number: L1934516

Project Number: 4536.00

Report Date: 08/23/19

## SAMPLE RESULTS

Lab ID: L1934516-07  
 Client ID: FD\_HP\_04\_20190729  
 Sample Location: COVENTRY, VT

Date Collected: 07/29/19 12:40  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			72			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			80			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			74			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>150</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			63			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			69			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			83			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			72			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			<b>219</b>	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			69			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			83			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			66			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			64			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			<b>162</b>	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			148			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			57			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			<b>252</b>	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			107			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			152			26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-08  
**Client ID:** HP\_05\_20190729  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/29/19 11:45  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 11:14  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.72		ng/g	1.21	0.027	1
Perfluoropentanoic Acid (PFPeA)	0.628	J	ng/g	1.21	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	1.10	J	ng/g	1.21	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.21	0.078	1
Perfluorohexanoic Acid (PFHxA)	1.65		ng/g	1.21	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.21	0.101	1
Perfluoroheptanoic Acid (PFHpA)	0.879	J	ng/g	1.21	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	15.2		ng/g	1.21	0.073	1
Perfluorooctanoic Acid (PFOA)	5.34		ng/g	1.21	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.57		ng/g	1.21	0.217	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.21	0.165	1
Perfluorononanoic Acid (PFNA)	0.260	J	ng/g	1.21	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	62.2		ng/g	1.21	0.157	1
Perfluorodecanoic Acid (PFDA)	1.10	J	ng/g	1.21	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	1.98		ng/g	1.21	0.347	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.21	0.361	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.21	0.244	1
Perfluoroundecanoic Acid (PFUnA)	0.119	J	ng/g	1.21	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	3.89		ng/g	1.21	0.185	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.21	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.21	0.102	1
Perfluorododecanoic Acid (PFDoA)	0.132	J	ng/g	1.21	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.21	0.247	1
Perfluorotetradecanoic Acid (PFTA)	0.309	J	ng/g	1.21	0.065	1
PFOA/PFOS, Total	67.5		ng/g	1.21	0.051	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-08  
 Client ID: HP\_05\_20190729  
 Sample Location: COVENTRY, VT

Date Collected: 07/29/19 11:45  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	60	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	134		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	296	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	242	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	147		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	88		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	64		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	65		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	29		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	9	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	57	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	37	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	57		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	102		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-09  
**Client ID:** HP\_06\_20190729  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/29/19 12:21  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 11:31  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	3.11		ng/g	1.18	0.027	1
Perfluoropentanoic Acid (PFPeA)	2.60		ng/g	1.18	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	18.9		ng/g	1.18	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	17.7		ng/g	1.18	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	19.7		ng/g	1.18	0.099	1
Perfluoroheptanoic Acid (PFHpA)	44.8		ng/g	1.18	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	77.2		ng/g	1.18	0.071	1
Perfluorooctanoic Acid (PFOA)	579	E	ng/g	1.18	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.18	0.212	1
Perfluoroheptanesulfonic Acid (PFHpS)	34.4		ng/g	1.18	0.161	1
Perfluorononanoic Acid (PFNA)	19.1		ng/g	1.18	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	705	E	ng/g	1.18	0.153	1
Perfluorodecanoic Acid (PFDA)	6.68		ng/g	1.18	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	0.395	J	ng/g	1.18	0.339	1
Perfluoronanesulfonic Acid (PFNS)	2.00		ng/g	1.18	0.353	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	337	E	ng/g	1.18	0.238	1
Perfluoroundecanoic Acid (PFUnA)	4.56		ng/g	1.18	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	0.854	J	ng/g	1.18	0.180	1
Perfluorooctanesulfonamide (FOSA)	95.6		ng/g	1.18	0.116	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	177		ng/g	1.18	0.100	1
Perfluorododecanoic Acid (PFDoA)	4.17		ng/g	1.18	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	7.98		ng/g	1.18	0.241	1
Perfluorotetradecanoic Acid (PFTA)	3.12		ng/g	1.18	0.064	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-09  
 Client ID: HP\_06\_20190729  
 Sample Location: COVENTRY, VT

Date Collected: 07/29/19 12:21  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	68		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	66		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>285</b>	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>850</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	<b>160</b>	Q	61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	132		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	<b>192</b>	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	67		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>563</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	113		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	83		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>448</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>34</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>58</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	28		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>20</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>15</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	30		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-09 D  
 Client ID: HP\_06\_20190729  
 Sample Location: COVENTRY, VT

Date Collected: 07/29/19 12:21  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/20/19 19:20  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorooctanoic Acid (PFOA)	508		ng/g	5.90	0.247	5
Perfluorooctanesulfonic Acid (PFOS)	810		ng/g	5.90	0.767	5
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	172		ng/g	5.90	1.19	5
PFOA/PFOS, Total	1320		ng/g	5.90	0.247	5

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	114		65-151
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	111		45-137

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-10  
**Client ID:** MA\_02\_20190730  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/30/19 10:58  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 12:05  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	3.05	0.069	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	3.05	0.140	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	3.05	0.119	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	3.05	0.197	1
Perfluorohexanoic Acid (PFHxA)	0.200	J	ng/g	3.05	0.160	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	3.05	0.255	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	3.05	0.138	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	3.05	0.185	1
Perfluorooctanoic Acid (PFOA)	0.204	J	ng/g	3.05	0.128	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	3.05	0.548	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	3.05	0.417	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	3.05	0.229	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	3.05	0.397	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	3.05	0.204	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	3.05	0.876	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	3.05	0.913	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	3.05	0.615	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	3.05	0.143	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	3.05	0.467	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	3.05	0.299	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	3.05	0.258	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	3.05	0.214	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	3.05	0.624	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	3.05	0.165	1
PFOA/PFOS, Total	0.204	J	ng/g	3.05	0.128	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-10  
 Client ID: MA\_02\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 10:58  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	88		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	91		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	109		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	122		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	82		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	115		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	100		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-11  
**Client ID:** MA\_01\_20190730  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/30/19 10:38  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/20/19 22:44  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 08/15/19 16:30

**Percent Solids:** Results reported on an 'AS RECEIVED' basis.  
**TCLP/SPLP Ext. Date:** 08/13/19 13:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.370	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	0.359	1
Perfluorobutanesulfonic Acid (PFBS)	12.7		ng/l	1.81	0.216	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.409	1
Perfluorohexanoic Acid (PFHxA)	2.52		ng/l	1.81	0.297	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222	1
Perfluoroheptanoic Acid (PFHpA)	0.764	J	ng/l	1.81	0.204	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.340	1
Perfluorooctanoic Acid (PFOA)	4.44		ng/l	1.81	0.214	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623	1
Perfluorononanoic Acid (PFNA)	2.21		ng/l	1.81	0.283	1
Perfluorooctanesulfonic Acid (PFOS)	0.898	J	ng/l	1.81	0.456	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.01	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.06		ng/l	1.81	0.728	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.81	0.296	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.81	0.225	1
PFOA/PFOS, Total	5.34	J	ng/l	1.81	0.214	1
PFAS, Total (5)	8.31	J	ng/l	1.81	0.204	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-11  
 Client ID: MA\_01\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 10:38  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	108		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	143		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	140		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	86		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	<b>160</b>	Q	47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	105		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	148		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	106		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	141		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	122		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	107		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	5		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	101		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	115		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-11  
**Client ID:** MA\_01\_20190730  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/30/19 10:38  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 12:22  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.29	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.29	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	0.999	J	ng/g	1.29	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.29	0.083	1
Perfluorohexanoic Acid (PFHxA)	0.125	J	ng/g	1.29	0.068	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.29	0.108	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.29	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.29	0.078	1
Perfluorooctanoic Acid (PFOA)	0.151	J	ng/g	1.29	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.29	0.232	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.29	0.176	1
Perfluorononanoic Acid (PFNA)	0.132	J	ng/g	1.29	0.097	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.29	0.168	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.29	0.086	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.29	0.370	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.29	0.386	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.29	0.260	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.29	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.29	0.197	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.29	0.126	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.565	J	ng/g	1.29	0.109	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.29	0.090	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.29	0.264	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.29	0.070	1
PFOA/PFOS, Total	0.151	J	ng/g	1.29	0.054	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-11  
 Client ID: MA\_01\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 10:38  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	110		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>163</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	107		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	129		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	103		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	102		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>265</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	64		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	34		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	116		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	94		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	109		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1934516**Project Number:** 4536.00**Report Date:** 08/23/19**SAMPLE RESULTS**

Lab ID: L1934516-12  
 Client ID: FD\_MA\_01\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 10:38  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/15/19 12:39  
 Analyst: RS  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.26	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.26	0.058	1
Perfluorobutanesulfonic Acid (PFBS)	0.456	J	ng/g	1.26	0.049	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.26	0.081	1
Perfluorohexanoic Acid (PFHxA)	0.108	J	ng/g	1.26	0.066	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.26	0.105	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.26	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.26	0.076	1
Perfluorooctanoic Acid (PFOA)	0.081	J	ng/g	1.26	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.26	0.226	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.26	0.172	1
Perfluorononanoic Acid (PFNA)	0.107	J	ng/g	1.26	0.095	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.26	0.164	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.26	0.085	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.26	0.362	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.26	0.377	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.26	0.254	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.26	0.059	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.26	0.193	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.26	0.124	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	0.226	J	ng/g	1.26	0.107	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.26	0.088	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.26	0.258	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.26	0.068	1
PFOA/PFOS, Total	0.081	J	ng/g	1.26	0.053	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-12  
 Client ID: FD\_MA\_01\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 10:38  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			99		60-153	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			110		65-182	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			110		70-151	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			127		56-138	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			102		61-147	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			99		62-149	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			95		63-166	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			100		62-152	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			104		32-182	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			114		61-154	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			120		65-151	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			100		65-150	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			138		25-186	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			57		45-137	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			101		64-158	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			30		1-125	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			111		42-136	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			95		56-148	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			113		26-160	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-13  
 Client ID: MA\_03\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 11:41  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/15/19 12:56  
 Analyst: RS  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.27	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.27	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.27	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.27	0.082	1
Perfluorohexanoic Acid (PFHxA)	0.071	J	ng/g	1.27	0.067	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.27	0.106	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.27	0.057	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.27	0.077	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.27	0.053	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.27	0.229	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.27	0.174	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.27	0.096	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.27	0.166	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.27	0.085	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.27	0.366	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.27	0.381	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.27	0.257	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.27	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.27	0.195	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.27	0.125	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.27	0.108	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.27	0.089	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.27	0.260	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.27	0.069	1
PFOA/PFOS, Total	ND		ng/g	1.27	0.053	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-13  
 Client ID: MA\_03\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 11:41  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	101		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	131		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>243</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	111		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	137		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	145		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	94		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	105		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	133		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	92		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	97		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	55		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	37		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-14  
**Client ID:** FD\_03\_20190730  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/30/19 11:41  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 13:13  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.22	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.22	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.22	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.22	0.078	1
Perfluorohexanoic Acid (PFHxA)	0.072	J	ng/g	1.22	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.22	0.102	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.22	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.22	0.074	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.22	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.22	0.218	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.22	0.166	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.22	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.22	0.158	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.22	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.22	0.349	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.22	0.364	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.22	0.245	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.22	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.22	0.186	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.22	0.119	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.22	0.103	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.22	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.22	0.249	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.22	0.066	1
PFOA/PFOS, Total	ND		ng/g	1.22	0.051	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-14  
 Client ID: FD\_03\_20190730  
 Sample Location: COVENTRY, VT

Date Collected: 07/30/19 11:41  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	151		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>286</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	114		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	104		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	162		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	97		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	160		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	95		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	117		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	107		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	128		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	95		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	59		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	72		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	90		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	34		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-15  
**Client ID:** BT\_01\_20190731  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/31/19 07:57  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/20/19 23:01  
**Analyst:** AJ

**Extraction Method:** EPA 537  
**Extraction Date:** 08/15/19 16:30

**Percent Solids:** Results reported on an 'AS RECEIVED' basis.  
**TCLP/SPLP Ext. Date:** 08/13/19 13:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.445	J	ng/l	1.78	0.363	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.78	0.352	1
Perfluorobutanesulfonic Acid (PFBS)	1.00	J	ng/l	1.78	0.212	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.78	0.402	1
Perfluorohexanoic Acid (PFHxA)	0.555	J	ng/l	1.78	0.292	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.78	0.218	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.78	0.200	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.78	0.334	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.78	0.210	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.78	1.18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.78	0.612	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.78	0.278	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.78	0.448	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.78	0.270	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.78	1.08	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.78	0.996	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.78	0.576	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.78	0.231	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.78	0.872	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.78	0.516	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.78	0.715	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.78	0.331	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.78	0.291	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.78	0.221	1
PFOA/PFOS, Total	ND		ng/l	1.78	0.210	1
PFAS, Total (5)	ND		ng/l	1.78	0.200	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-15  
 Client ID: BT\_01\_20190731  
 Sample Location: COVENTRY, VT

Date Collected: 07/31/19 07:57  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	111		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	88		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	84		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	79		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	99		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	109		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	87		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	92		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	6		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	90		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	74		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-15  
**Client ID:** BT\_01\_20190731  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/31/19 07:57  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 13:30  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.12	0.025	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.12	0.051	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.12	0.044	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.12	0.072	1
Perfluorohexanoic Acid (PFHxA)	0.075	J	ng/g	1.12	0.059	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.12	0.093	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.12	0.050	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.12	0.068	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.12	0.047	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.12	0.200	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.12	0.152	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.12	0.084	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.12	0.145	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.12	0.075	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.12	0.321	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.12	0.334	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.12	0.225	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.12	0.052	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.12	0.171	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.12	0.109	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.12	0.094	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.12	0.078	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.12	0.228	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.12	0.060	1
PFOA/PFOS, Total	ND		ng/g	1.12	0.047	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-15  
 Client ID: BT\_01\_20190731  
 Sample Location: COVENTRY, VT

Date Collected: 07/31/19 07:57  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			101			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			109			65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			107			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			<b>139</b>	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			109			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			104			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			115			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			97			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			103			32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			106			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			112			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			102			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			126			25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			84			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			96			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			60			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			85			42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			89			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			52			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-16  
**Client ID:** BT\_02\_20190731  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/31/19 08:57  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 13:47  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.22	0.028	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.22	0.056	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.22	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.22	0.078	1
Perfluorohexanoic Acid (PFHxA)	0.072	J	ng/g	1.22	0.064	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.22	0.102	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.22	0.055	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.22	0.074	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.22	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.22	0.218	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.22	0.166	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.22	0.091	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.22	0.158	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.22	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.22	0.349	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.22	0.364	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.22	0.245	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.22	0.057	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.22	0.186	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.22	0.119	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.22	0.103	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.22	0.085	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.22	0.249	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.22	0.066	1
PFOA/PFOS, Total	ND		ng/g	1.22	0.051	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-16  
 Client ID: BT\_02\_20190731  
 Sample Location: COVENTRY, VT

Date Collected: 07/31/19 08:57  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	120		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	104		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	103		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	111		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	134		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	102		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	95		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	65		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	56		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	41		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1934516**Project Number:** 4536.00**Report Date:** 08/23/19**SAMPLE RESULTS**

Lab ID: L1934516-17  
 Client ID: FD\_BT\_02\_20190731  
 Sample Location: COVENTRY, VT

Date Collected: 07/31/19 08:57  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/15/19 14:04  
 Analyst: RS  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.20	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.20	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.20	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.078	1
Perfluorohexanoic Acid (PFHxA)	0.081	J	ng/g	1.20	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.101	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.20	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.20	0.073	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.20	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.20	0.216	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.20	0.164	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.20	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.20	0.157	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.20	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.20	0.346	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.360	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.20	0.243	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.20	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.20	0.184	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.20	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.20	0.102	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.20	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.20	0.246	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.20	0.065	1
PFOA/PFOS, Total	ND		ng/g	1.20	0.051	1



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-17  
 Client ID: FD\_BT\_02\_20190731  
 Sample Location: COVENTRY, VT

Date Collected: 07/31/19 08:57  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	102		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	119		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	102		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	119		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	99		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	101		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	115		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	101		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	141		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	86		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	103		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	97		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	76		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	73		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	86		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	44		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-18  
**Client ID:** FB\_BT\_20190731  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/31/19 08:06  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/14/19 23:55  
**Analyst:** RS

**Extraction Method:** EPA 537  
**Extraction Date:** 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.89	0.385	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.89	0.374	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.89	0.224	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.89	0.426	1
Perfluorohexanoic Acid (PFHxA)	0.502	J	ng/l	1.89	0.309	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.89	0.231	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.89	0.212	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.89	0.355	1
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.89	0.223	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.89	1.26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.89	0.649	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.89	0.294	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.89	0.475	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.89	0.287	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.89	1.14	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.89	1.06	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.89	0.611	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.89	0.245	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.89	0.924	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.89	0.547	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.89	0.758	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.89	0.351	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.89	0.309	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.89	0.234	1
PFOA/PFOS, Total	ND		ng/l	1.89	0.223	1
PFAS, Total (5)	ND		ng/l	1.89	0.212	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-18  
 Client ID: FB\_BT\_20190731  
 Sample Location: COVENTRY, VT

Date Collected: 07/31/19 08:06  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier	Acceptance Criteria	
Perfluoro[13C4]Butanoic Acid (MPFBA)			105		2-156	
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			116		16-173	
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			145		31-159	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			144		1-313	
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			101		21-145	
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			100		30-139	
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			135		47-153	
Perfluoro[13C8]Octanoic Acid (M8PFOA)			99		36-149	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			182		1-244	
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			96		34-146	
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			122		42-146	
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			81		38-144	
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			138		7-170	
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			50		1-181	
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			85		40-144	
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			33		1-87	
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			75		23-146	
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			82		24-161	
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			105		33-143	

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

**Lab ID:** L1934516-19  
**Client ID:** EB\_BT\_20190731  
**Sample Location:** COVENTRY, VT

**Date Collected:** 07/31/19 09:46  
**Date Received:** 08/02/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Water  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/15/19 00:12  
**Analyst:** RS

**Extraction Method:** EPA 537  
**Extraction Date:** 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.74	0.355	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.74	0.345	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.74	0.207	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.74	0.394	1
Perfluorohexanoic Acid (PFHxA)	0.544	J	ng/l	1.74	0.286	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.74	0.214	1
Perfluoroheptanoic Acid (PFHpA)	0.220	J	ng/l	1.74	0.196	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.74	0.328	1
Perfluorooctanoic Acid (PFOA)	0.690	J	ng/l	1.74	0.206	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.74	1.16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.74	0.599	1
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.74	0.272	1
Perfluorooctanesulfonic Acid (PFOS)	4.84		ng/l	1.74	0.439	1
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.74	0.265	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.74	1.06	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	1.74	0.976	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.74	0.564	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.74	0.226	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.74	0.854	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.74	0.505	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.74	0.700	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.74	0.324	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	1.74	0.285	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	1.74	0.216	1
PFOA/PFOS, Total	5.53	J	ng/l	1.74	0.206	1
PFAS, Total (5)	5.75	J	ng/l	1.74	0.196	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**SAMPLE RESULTS**

Lab ID: L1934516-19  
 Client ID: EB\_BT\_20190731  
 Sample Location: COVENTRY, VT

Date Collected: 07/31/19 09:46  
 Date Received: 08/02/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			103			2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			116			16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			106			31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			118			1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			96			21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			97			30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			90			47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)			109			36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			196			1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			111			34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			92			42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			105			38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			175	Q		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			81			1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			77			40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			17			1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			49			23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			81			24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			99			33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/14/19 22:30  
Analyst: AJ

Extraction Method: EPA 537  
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 18-19 Batch: WG1271287-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	0.472	J	ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	ND		ng/l	2.00	0.236
PFAS, Total (5)	ND		ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/14/19 22:30  
Analyst: AJ

Extraction Method: EPA 537  
Extraction Date: 08/12/19 09:51

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 18-19 Batch: WG1271287-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	83		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	90		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	85		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	82		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	84		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	76		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	84		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	74		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	75		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	93		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	61		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	80		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	31		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	59		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	73		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	67		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/15/19 07:34  
Analyst: RS

Extraction Method: EPA 537(M)  
Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-17 Batch: WG1271327-1					
Perfluorobutanoic Acid (PFBA)	0.088	J	ng/g	0.500	0.011
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	0.500	0.023
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	0.500	0.020
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	0.500	0.032
Perfluorohexanoic Acid (PFHxA)	0.031	J	ng/g	0.500	0.026
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	0.500	0.042
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	0.500	0.023
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	0.500	0.030
Perfluorooctanoic Acid (PFOA)	ND		ng/g	0.500	0.021
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	0.500	0.090
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	0.500	0.068
Perfluorononanoic Acid (PFNA)	ND		ng/g	0.500	0.038
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	0.500	0.065
Perfluorodecanoic Acid (PFDA)	ND		ng/g	0.500	0.034
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	0.500	0.144
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	0.500	0.150
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	0.500	0.101
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	0.500	0.023
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	0.500	0.077
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	0.500	0.049
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	0.500	0.042
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	0.500	0.035
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	0.500	0.102
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	0.500	0.027
PFOA/PFOS, Total	ND		ng/g	0.500	0.021



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/15/19 07:34  
Analyst: RS

Extraction Method: EPA 537(M)  
Extraction Date: 08/12/19 16:30

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-17 Batch: WG1271327-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	103		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	120		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	114		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	107		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	97		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	98		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	117		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	107		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	113		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	111		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	86		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	110		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	27		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	95		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	107		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	129		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1934516

Project Number: 4536.00

Report Date: 08/23/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18-19 Batch: WG1271287-2 WG1271287-3								
Perfluorobutanoic Acid (PFBA)	106		108		67-148	2		30
Perfluoropentanoic Acid (PFPeA)	106		108		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	113		112		65-157	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	118		112		37-219	5		30
Perfluorohexanoic Acid (PFHxA)	110		109		69-168	1		30
Perfluoropentanesulfonic Acid (PFPeS)	128		118		52-156	8		30
Perfluoroheptanoic Acid (PFHpA)	107		110		58-159	3		30
Perfluorohexanesulfonic Acid (PFHxS)	128		115		69-177	11		30
Perfluorooctanoic Acid (PFOA)	109		119		63-159	9		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	132		112		49-187	16		30
Perfluoroheptanesulfonic Acid (PFHpS)	148		137		61-179	8		30
Perfluorononanoic Acid (PFNA)	110		106		68-171	4		30
Perfluorooctanesulfonic Acid (PFOS)	142		136		52-151	4		30
Perfluorodecanoic Acid (PFDA)	94		110		63-171	16		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	111		110		56-173	1		30
Perfluorononanesulfonic Acid (PFNS)	137		131		48-150	4		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		115		60-166	8		30
Perfluoroundecanoic Acid (PFUnA)	112		112		60-153	0		30
Perfluorodecanesulfonic Acid (PFDS)	134		130		38-156	3		30
Perfluorooctanesulfonamide (FOSA)	103		112		46-170	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	80		104		45-170	26		30
Perfluorododecanoic Acid (PFDoA)	97		96		67-153	1		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1934516

Project Number: 4536.00

Report Date: 08/23/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 18-19 Batch: WG1271287-2 WG1271287-3								
Perfluorotridecanoic Acid (PFTTrDA)	111		124		48-158	11		30
Perfluorotetradecanoic Acid (PFTA)	99		104		59-182	5		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	85		84		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	94		92		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		96		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	102		96		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	83		84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		82		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	91		95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	78		76		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	100		105		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	79		83		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	77		78		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	74		79		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	92		89		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	67		68		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	68		76		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	29		37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	70		63		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	107		81		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1934516

Project Number: 4536.00

Report Date: 08/23/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-17 Batch: WG1271327-2 WG1271327-3								
Perfluorobutanoic Acid (PFBA)	107		112		71-135	5		30
Perfluoropentanoic Acid (PFPeA)	101		104		69-132	3		30
Perfluorobutanesulfonic Acid (PFBS)	93		101		72-128	8		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	95		105		62-145	10		30
Perfluorohexanoic Acid (PFHxA)	103		111		70-132	7		30
Perfluoropentanesulfonic Acid (PFPeS)	94		100		73-123	6		30
Perfluoroheptanoic Acid (PFHpA)	105		113		71-131	7		30
Perfluorohexanesulfonic Acid (PFHxS)	84		90		67-130	7		30
Perfluorooctanoic Acid (PFOA)	103		109		69-133	6		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	107		126		64-140	16		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		98		70-132	5		30
Perfluorononanoic Acid (PFNA)	99		105		72-129	6		30
Perfluorooctanesulfonic Acid (PFOS)	86		93		68-136	8		30
Perfluorodecanoic Acid (PFDA)	109		105		69-133	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	100		106		65-137	6		30
Perfluorononanesulfonic Acid (PFNS)	82		91		69-125	10		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	106		124		63-144	16		30
Perfluoroundecanoic Acid (PFUnA)	101		114		64-136	12		30
Perfluorodecanesulfonic Acid (PFDS)	88		91		59-134	3		30
Perfluorooctanesulfonamide (FOSA)	95		54	Q	67-137	55	Q	30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	92		92		61-139	0		30
Perfluorododecanoic Acid (PFDoA)	86		92		69-135	7		30

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-17 Batch: WG1271327-2 WG1271327-3								
Perfluorotridecanoic Acid (PFTrDA)	94		109		66-139	15		30
Perfluorotetradecanoic Acid (PFTA)	102		93		69-133	9		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	96		98		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	103		106		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86		92		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	97		89		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		96		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	95		100		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	107		112		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	96		103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	98		84		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		110		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	105		109		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	97		100		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	98		91		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	101		107		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		115		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	23		11		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	118		194	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	118		113		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	116		127		26-160

## Matrix Spike Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1934516

**Project Number:** 4536.00

**Report Date:** 08/23/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1271327-4 QC Sample: L1934516-01 Client ID: RT_05_20190726												
Perfluorobutanoic Acid (PFBA)	0.102J	3.16	3.46	109		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	3.16	3.32	105		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	2.8	3.01	107		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	2.96	2.83	96		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	0.116J	3.16	3.58	113		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	2.85	2.76	97		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	3.16	3.57	113		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	2.89	3.03	105		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	0.124J	3.16	3.44	109		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.12	3.01	18.6	548	Q	-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	3.01	3.51	117		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	3.16	3.55	112		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.393J	2.93	3.92	134		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	3.16	2.80	89		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	3.04	2.90	96		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	3.04	3.42	113		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	3.16	3.24	102		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	3.16	3.63	115		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	3.06	3.31	108		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	3.16	3.67	116		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	3.16	2.97	94		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	3.16	3.04	96		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1934516

**Project Number:** 4536.00

**Report Date:** 08/23/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1271327-4 QC Sample: L1934516-01 Client ID: RT_05_20190726												
Perfluorotridecanoic Acid (PFTTrDA)	ND	3.16	6.20	196	Q	-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	3.16	3.36	106		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	475	Q			25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	347	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	443	Q			32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	110				42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	143	Q			45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUUDA)	85				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	104				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	90				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	113				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	56				56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	107				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	101				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121				65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	41				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	102				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	98				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93				70-151

## Matrix Spike Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1934516

**Project Number:** 4536.00

**Report Date:** 08/23/19

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 11,15 QC Batch ID: WG1272884-6 QC Sample: L1934516-11 Client ID: MA_01_20190730												
Perfluorobutanoic Acid (PFBA)	ND	34.5	32.3	94		-	-		67-148	-		30
Perfluoropentanoic Acid (PFPeA)	ND	34.5	31.1	90		-	-		63-161	-		30
Perfluorobutanesulfonic Acid (PFBS)	12.7	30.6	36.1	77		-	-		65-157	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	32.3	30.9	96		-	-		37-219	-		30
Perfluorohexanoic Acid (PFHxA)	2.52	34.5	34.8	94		-	-		69-168	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	31	28.1	90		-	-		52-156	-		30
Perfluoroheptanoic Acid (PFHpA)	0.764J	34.5	33.5	97		-	-		58-159	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	31.4	31.1	99		-	-		69-177	-		30
Perfluorooctanoic Acid (PFOA)	4.44	34.5	36.2	92		-	-		63-159	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	32.8	31.0	95		-	-		49-187	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	32.8	30.0	92		-	-		61-179	-		30
Perfluorononanoic Acid (PFNA)	2.21	34.5	34.6	94		-	-		68-171	-		30
Perfluorooctanesulfonic Acid (PFOS)	0.898J	31.9	31.8	100		-	-		52-151	-		30
Perfluorodecanoic Acid (PFDA)	ND	34.5	32.1	93		-	-		63-171	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	33.1	30.3	92		-	-		56-173	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	33.1	26.9	81		-	-		48-150	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	34.5	31.6	92		-	-		60-166	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	34.5	32.6	94		-	-		60-153	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	33.3	27.4	82		-	-		38-156	-		30
Perfluorooctanesulfonamide (FOSA)	ND	34.5	32.8	95		-	-		46-170	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	2.06	34.5	35.1	96		-	-		45-170	-		30
Perfluorododecanoic Acid (PFDoA)	ND	34.5	33.2	96		-	-		67-153	-		30



## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1934516

**Project Number:** 4536.00

**Report Date:** 08/23/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 11,15 QC Batch ID: WG1272884-6 QC Sample: L1934516-11 Client ID: MA_01_20190730												
Perfluorotridecanoic Acid (PFTTrDA)	ND	34.5	33.8	98		-	-		48-158	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	34.5	34.5	100		-	-		59-182	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	72				7-170
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	101				1-313
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	78				1-244
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	48				23-146
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	55				1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	75				40-144
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	82				38-144
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	72				21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	75				30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				47-153
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	65				24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	62				33-143
Perfluoro[13C4]Butanoic Acid (MPFBA)	71				2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	95				16-173
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	10				1-87
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				42-146
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80				36-149
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	84				34-146
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	98				31-159

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1934516

Report Date: 08/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1271327-5 QC Sample: L1934516-02 Client ID: RT_06_20190726						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	0.071J	0.076J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	0.297J	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND	2.33	ng/g	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1271327-5 QC Sample: L1934516-02 Client ID: RT_06_20190726						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
PFOA/PFOS, Total	ND	0.297J	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	84		94		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	91		97		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	115		107		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>335</b>	Q	<b>295</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	87		91		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	88		96		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	130		104		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		92		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>221</b>	Q	<b>228</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	69		79		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	112		99		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	95		96		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	136		124		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		87		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	102		109		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	9		14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	114		96		42-136

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1934516

Report Date: 08/23/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1271327-5 QC Sample: L1934516-02 Client ID: RT_06_20190726						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	103		103		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	117		119		26-160

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1934516**Project Number:** 4536.00**Report Date:** 08/23/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1934516-01A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-02A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-03A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-04A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-05A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-06A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-07A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-08A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-09A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-10A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-11A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-11B	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1934516-11B1	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1934516-11B2	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1934516-11B3	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1934516-11C	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		-
L1934516-11X9	Tumble Vessel	A	NA		3.6	Y	Absent		-
L1934516-12A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-13A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-14A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-15A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-15B	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1934516-15B1	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

Serial\_No:08231913:05  
**Lab Number:** L1934516  
**Report Date:** 08/23/19

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1934516-15B2	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1934516-15B3	Plastic 250ml unpreserved Extracts	A	NA		3.6	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1934516-15C	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		-
L1934516-15X9	Tumble Vessel	A	NA		3.6	Y	Absent		-
L1934516-16A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-17A	Plastic 8oz unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(28)
L1934516-18A	Plastic 250ml unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(14)
L1934516-19A	Plastic 250ml unpreserved	A	NA		3.6	Y	Absent		A2-537-ISOTOPE(14)

\*Values in parentheses indicate holding time in days



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
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**Report Date:** 08/23/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when using acetone as a solvent.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers





**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1934516  
**Report Date:** 08/23/19

## REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.


**EPA 245.1** Hg.

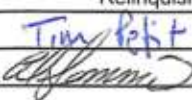

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.





 <b>NEW YORK CHAIN OF CUSTODY</b>	<b>Service Centers</b> Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105	Page <b>2</b> of <b>2</b>	Date Rec'd in Lab <b>8/31/19</b>	ALPHA Job # <b>L1934516</b>					
	Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193	Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288	<b>Project Information</b> Project Name: <b>NEWSVT Landfill</b> Project Location: <b>Coventry, VT</b> Project # <b>4536.00</b>		<b>Deliverables</b> <input type="checkbox"/> ASP-A <input type="checkbox"/> ASP-B <input type="checkbox"/> EQUIS (1 File) <input type="checkbox"/> EQUIS (4 File) <input checked="" type="checkbox"/> Other <b>Email, ADEX</b>	<b>Billing Information</b> <input checked="" type="checkbox"/> Same as Client Info PO # <b>4536.00</b>			
<b>Client Information</b> Client: <b>Sanborn, Head &amp; Assoc.</b> Address: <b>187 Saint Paul St</b> <b>Suite 4-C, Burlington VT 05401</b> Phone: <b>802-391-8504</b> Fax: Email: <b>me.stabrooks@sanbornhead.com</b>	(Use Project name as Project #) <input type="checkbox"/> Project Manager: <b>Matt Estabrooks</b> ALPHAQuote #: Turn-Around Time Standard <input checked="" type="checkbox"/> Due Date: (only if pre approved) <input type="checkbox"/> # of Days:	<b>Regulatory Requirement</b> <input type="checkbox"/> NY TOGS <input type="checkbox"/> NY Part 375 <input type="checkbox"/> AWQ Standards <input type="checkbox"/> NY CP-51 <input type="checkbox"/> NY Restricted Use <input type="checkbox"/> Other <input type="checkbox"/> NY Unrestricted Use <input type="checkbox"/> NYC Sewer Discharge		<b>Disposal Site Information</b> Please identify below location of applicable disposal facilities. Disposal Facility: <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> Other:					
These samples have been previously analyzed by Alpha <input type="checkbox"/>		<b>ANALYSIS</b>		<b>Sample Filtration</b> <input type="checkbox"/> Done <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please Specify below)					
Other project specific requirements/comments: Please specify Metals or TAL.									
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	EPA-537(M) Dilution	SPLP PFAAS-537(M)	Sample Specific Comments	Total
		Date	Time						
34516-	11 MA_01-20190730	7/30/19	1038	Solid	LET	X	X		2
	12 FD_MA_01-20190730	7/30/19	1038	Solid	LET	X			1
	13 MA_03-20190730	7/30/19	1141	Solid	LET	X			1
	14 FD_03-20190730	7/30/19	1141	Solid	LET	X			1
	15 BT_01-20190731	7/31/19	0757	Solid	LET	X	X		2
	16 BT_02-20190731	7/31/19	0857	Solid	LET	X			1
	17 FD_BT_02-20190731	7/31/19	0857	Solid	LET	X			1
	18 FB_BT-20190731	7/31/19	0806	Liq.	LET	X			1
	19 EB_BT-20190731	7/31/19	0946	Liq.	LET	X			1

Preservative Code: A = None B = HCl C = HNO <sub>3</sub> D = H <sub>2</sub> SO <sub>4</sub> E = NaOH F = MeOH G = NaHSO <sub>4</sub> H = Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> K/E = Zn Ac/NaOH O = Other	Container Code P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle	Westboro: Certification No: MA935 Mansfield: Certification No: MA015	Container Type Preservative	Relinquished By: 	Date/Time 8/2/19 11:51 AM 8/2/19 15:20	Received By: 	Date/Time 8/2/19 11:51 8/2/19 00:35
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Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)



## ANALYTICAL REPORT

Lab Number:	L1935885
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	08/27/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1935885-01	MA_04_20190808	SOLID	COVENTRY, VT	08/08/19 09:42	08/09/19
L1935885-02	FD_MA_04_20190808	SOLID	COVENTRY, VT	08/08/19 09:42	08/09/19
L1935885-03	MA_5_20190808	SOLID	COVENTRY, VT	08/08/19 12:35	08/09/19
L1935885-04	MA_05_20190808	SOLID	COVENTRY, VT	08/08/19 11:07	08/09/19
L1935885-05	MA_07_20190808	SOLID	COVENTRY, VT	08/08/19 13:00	08/09/19
L1935885-06	MA_08_20190808	SOLID	COVENTRY, VT	08/08/19 13:43	08/09/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Perfluorinated Alkyl Acids by Isotope Dilution

L1935885-01, -02, -03, -04, and -05: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

L1935885--03 and 04: The sample has elevated detection limits due to the dilution required by the sample matrix.

WG1272168-3, WG1272168-4, and WG1272168-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

#### SPLP Perfluorinated Alkyl Acids by Isotope Dilution

L1935885-03: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

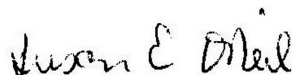
L1935885-03: The sample has elevated detection limits due to the dilution required by the sample matrix.

WG1276119-2 and WG1276119-5: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1276119-2: This blank represents the SPLP tumbling blank associated with L1935885-03.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 08/27/19



# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

**Lab ID:** L1935885-01  
**Client ID:** MA\_04\_20190808  
**Sample Location:** COVENTRY, VT

**Date Collected:** 08/08/19 09:42  
**Date Received:** 08/09/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/16/19 08:07  
**Analyst:** AJ  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.19	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.19	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.19	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.19	0.077	1
Perfluorohexanoic Acid (PFHxA)	0.326	J	ng/g	1.19	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.19	0.099	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.19	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.19	0.072	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.19	0.050	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.64		ng/g	1.19	0.214	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.19	0.162	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.19	0.089	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.19	0.155	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.19	0.080	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.19	0.342	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.19	0.356	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.19	0.240	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.19	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.19	0.182	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.19	0.117	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.19	0.100	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.19	0.083	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.19	0.243	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.19	0.064	1
PFOA/PFOS, Total	ND		ng/g	1.19	0.050	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-01  
 Client ID: MA\_04\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 09:42  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	92		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	46	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	106		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	284	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	75		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	67		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	119		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	91		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	536	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	96		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	92		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	157		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	158	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	142		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	297	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	149	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	144		26-160

Project Name: NEWSVT LANDFILL

Lab Number: L1935885

Project Number: 4536.00

Report Date: 08/27/19

## SAMPLE RESULTS

Lab ID: L1935885-02  
 Client ID: FD\_MA\_04\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 09:42  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/16/19 08:41  
 Analyst: RS  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.18	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.18	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.18	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	0.231	J	ng/g	1.18	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.098	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.18	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.18	0.071	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.18	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.65		ng/g	1.18	0.211	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.18	0.160	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.18	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.18	0.153	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.18	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.18	0.338	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.352	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.18	0.237	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.18	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.18	0.180	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.18	0.115	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.18	0.099	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.18	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.18	0.240	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.18	0.064	1
PFOA/PFOS, Total	ND		ng/g	1.18	0.049	1

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1935885**Project Number:** 4536.00**Report Date:** 08/27/19**SAMPLE RESULTS**

Lab ID: L1935885-02  
 Client ID: FD\_MA\_04\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 09:42  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						
Surrogate (Extracted Internal Standard)			% Recovery	Qualifier		Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)			90			60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)			40	Q		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)			104			70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)			277	Q		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)			73			61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)			62			62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)			106			63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)			86			62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)			591	Q		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)			100			61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)			122			65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)			91			65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)			210	Q		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)			139	Q		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)			139			64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)			45			1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)			248	Q		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)			144			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)			159			26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

**Lab ID:** L1935885-03 D  
**Client ID:** MA\_5\_20190808  
**Sample Location:** COVENTRY, VT

**Date Collected:** 08/08/19 12:35  
**Date Received:** 08/09/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/27/19 07:27  
**Analyst:** JW

**Extraction Method:** EPA 537  
**Extraction Date:** 08/23/19 14:15

**Percent Solids:** Results reported on an 'AS RECEIVED' basis.  
**TCLP/SPLP Ext. Date:** 08/14/19 15:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	19.5		ng/l	17.5	3.58	10
Perfluoropentanoic Acid (PFPeA)	12.7	J	ng/l	17.5	3.47	10
Perfluorobutanesulfonic Acid (PFBS)	16.3	J	ng/l	17.5	2.09	10
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	17.5	3.96	10
Perfluorohexanoic Acid (PFHxA)	45.5		ng/l	17.5	2.88	10
Perfluoropentanesulfonic Acid (PFPeS)	39.2		ng/l	17.5	2.15	10
Perfluoroheptanoic Acid (PFHpA)	30.3		ng/l	17.5	1.98	10
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	17.5	3.30	10
Perfluorooctanoic Acid (PFOA)	92.2		ng/l	17.5	2.07	10
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	15.3	J	ng/l	17.5	11.7	10
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	17.5	6.04	10
Perfluorononanoic Acid (PFNA)	15.7	J	ng/l	17.5	2.74	10
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	17.5	4.42	10
Perfluorodecanoic Acid (PFDA)	9.61	J	ng/l	17.5	2.67	10
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	17.5	10.6	10
Perfluoronanesulfonic Acid (PFNS)	ND		ng/l	17.5	9.82	10
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	17.5	5.68	10
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	17.5	2.28	10
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	17.5	8.60	10
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	17.5	5.09	10
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	17.5	7.05	10
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	17.5	3.26	10
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/l	17.5	2.87	10
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	17.5	2.18	10
PFOA/PFOS, Total	92.2		ng/l	17.5	2.07	10
PFAS, Total (5)	138	J	ng/l	17.5	1.98	10

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-03 D  
 Client ID: MA\_5\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 12:35  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>364</b>	Q	1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>254</b>	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	127		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>322</b>	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	98		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	117		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	115		33-143



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-03 D  
 Client ID: MA\_5\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 12:35  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/20/19 19:37  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	1.28	J	ng/g	6.10	0.138	5
Perfluoropentanoic Acid (PFPeA)	1.36	J	ng/g	6.10	0.280	5
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	6.10	0.238	5
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	6.10	0.393	5
Perfluorohexanoic Acid (PFHxA)	6.31		ng/g	6.10	0.320	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	6.10	0.509	5
Perfluoroheptanoic Acid (PFHpA)	4.87	J	ng/g	6.10	0.275	5
Perfluorohexanesulfonic Acid (PFHxS)	1.58	J	ng/g	6.10	0.369	5
Perfluorooctanoic Acid (PFOA)	16.5		ng/g	6.10	0.255	5
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	6.36		ng/g	6.10	1.09	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	6.10	0.832	5
Perfluorononanoic Acid (PFNA)	3.67	J	ng/g	6.10	0.457	5
Perfluorooctanesulfonic Acid (PFOS)	4.75	J	ng/g	6.10	0.793	5
Perfluorodecanoic Acid (PFDA)	7.96		ng/g	6.10	0.408	5
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	6.10	1.75	5
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	6.10	1.82	5
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	6.10	1.23	5
Perfluoroundecanoic Acid (PFUnA)	1.62	J	ng/g	6.10	0.285	5
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	6.10	0.933	5
Perfluorooctanesulfonamide (FOSA)	1.66	J	ng/g	6.10	0.598	5
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	27.6		ng/g	6.10	0.515	5
Perfluorododecanoic Acid (PFDoA)	3.01	J	ng/g	6.10	0.427	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	6.10	1.25	5
Perfluorotetradecanoic Acid (PFTA)	1.36	J	ng/g	6.10	0.329	5
PFOA/PFOS, Total	21.3	J	ng/g	6.10	0.255	5

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-03 D  
 Client ID: MA\_5\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 12:35  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	108		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	93		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>301</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	130		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	122		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	78		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	111		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>233</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	119		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	<b>305</b>	Q	65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	106		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	73		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	106		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	153		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	85		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>187</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>192</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	<b>253</b>	Q	26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-04 D  
 Client ID: MA\_05\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 11:07  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid  
 Analytical Method: 122,537(M)  
 Analytical Date: 08/20/19 19:54  
 Analyst: AJ  
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 537(M)  
 Extraction Date: 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.252	J	ng/g	6.01	0.136	5
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	6.01	0.276	5
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	6.01	0.234	5
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	6.01	0.387	5
Perfluorohexanoic Acid (PFHxA)	1.32	J	ng/g	6.01	0.315	5
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	6.01	0.502	5
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	6.01	0.271	5
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	6.01	0.363	5
Perfluorooctanoic Acid (PFOA)	0.670	J	ng/g	6.01	0.252	5
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.89	J	ng/g	6.01	1.08	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	6.01	0.820	5
Perfluorononanoic Acid (PFNA)	ND		ng/g	6.01	0.450	5
Perfluorooctanesulfonic Acid (PFOS)	0.853	J	ng/g	6.01	0.781	5
Perfluorodecanoic Acid (PFDA)	ND		ng/g	6.01	0.402	5
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	6.01	1.72	5
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	6.01	1.80	5
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	6.01	1.21	5
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	6.01	0.281	5
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	6.01	0.919	5
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	6.01	0.588	5
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	6.01	0.508	5
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	6.01	0.420	5
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	6.01	1.23	5
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	6.01	0.324	5
PFOA/PFOS, Total	1.52	J	ng/g	6.01	0.252	5

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-04 D  
 Client ID: MA\_05\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 11:07  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	107		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	121		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	<b>195</b>	Q	70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>479</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	93		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	99		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	<b>232</b>	Q	63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	109		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>568</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	109		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	119		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	108		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	86		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	130		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	109		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	69		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	129		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	108		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	120		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

**Lab ID:** L1935885-05  
**Client ID:** MA\_07\_20190808  
**Sample Location:** COVENTRY, VT

**Date Collected:** 08/08/19 13:00  
**Date Received:** 08/09/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/16/19 09:49  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.20	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.20	0.055	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.20	0.047	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.20	0.078	1
Perfluorohexanoic Acid (PFHxA)	0.065	J	ng/g	1.20	0.063	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.20	0.101	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.20	0.054	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.20	0.073	1
Perfluorooctanoic Acid (PFOA)	0.075	J	ng/g	1.20	0.051	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	0.658	J	ng/g	1.20	0.216	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.20	0.164	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.20	0.090	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.20	0.157	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.20	0.081	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.20	0.346	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.20	0.360	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.20	0.243	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.20	0.056	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.20	0.184	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.20	0.118	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.20	0.102	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.20	0.084	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.20	0.246	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.20	0.065	1
PFOA/PFOS, Total	0.075	J	ng/g	1.20	0.051	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-05  
 Client ID: MA\_07\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 13:00  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	116		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>156</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	87		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	108		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	89		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>214</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	90		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	99		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	93		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>270</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	116		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	99		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	126		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	98		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	89		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

**Lab ID:** L1935885-06  
**Client ID:** MA\_08\_20190808  
**Sample Location:** COVENTRY, VT

**Date Collected:** 08/08/19 13:43  
**Date Received:** 08/09/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/16/19 10:06  
**Analyst:** RS  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	ND		ng/g	1.28	0.029	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.28	0.059	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.28	0.050	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.28	0.083	1
Perfluorohexanoic Acid (PFHxA)	0.072	J	ng/g	1.28	0.067	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.28	0.107	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.28	0.058	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.28	0.078	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.28	0.054	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.87		ng/g	1.28	0.230	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.28	0.175	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.28	0.096	1
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.28	0.167	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.28	0.086	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.28	0.368	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.28	0.383	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.28	0.258	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.28	0.060	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.28	0.196	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.28	0.126	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.28	0.108	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.28	0.090	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.28	0.262	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.28	0.069	1
PFOA/PFOS, Total	ND		ng/g	1.28	0.054	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**SAMPLE RESULTS**

Lab ID: L1935885-06  
 Client ID: MA\_08\_20190808  
 Sample Location: COVENTRY, VT

Date Collected: 08/08/19 13:43  
 Date Received: 08/09/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	74		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	88		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	88		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	75		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	82		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	77		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	66		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	72		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	104		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	63		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	14		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	78		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	83		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	87		26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/16/19 07:16  
Analyst: AJ

Extraction Method: EPA 537(M)  
Extraction Date: 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-06 Batch: WG1272168-1					
Perfluorobutanoic Acid (PFBA)	0.115	J	ng/g	1.33	0.030
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.33	0.061
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.33	0.052
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.33	0.086
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.33	0.070
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.33	0.111
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.33	0.060
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.33	0.081
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.33	0.056
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.33	0.239
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.33	0.182
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.33	0.100
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.33	0.173
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.33	0.089
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.33	0.383
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.33	0.399
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.33	0.269
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.33	0.062
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.33	0.204
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.33	0.131
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.33	0.113
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.33	0.093
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/g	1.33	0.273
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.33	0.072
PFOA/PFOS, Total	ND		ng/g	1.33	0.056

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

### Method Blank Analysis Batch Quality Control

Analytical Method: 122,537(M)  
 Analytical Date: 08/16/19 07:16  
 Analyst: AJ

Extraction Method: EPA 537(M)  
 Extraction Date: 08/14/19 10:24

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01-06 Batch: WG1272168-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	99		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	113		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	103		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	100		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	106		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	103		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	102		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	99		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	102		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	101		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	105		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	106		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	47		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	107		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	101		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	110		26-160

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/27/19 08:33  
Analyst: JW  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 08/23/19 14:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1276119-1					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	2.00	0.408
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	2.00	0.396
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	2.00	0.238
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	2.00	0.452
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	2.00	0.328
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	2.00	0.245
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	2.00	0.225
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	2.00	0.376
Perfluorooctanoic Acid (PFOA)	ND		ng/l	2.00	0.236
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	2.00	1.33
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	2.00	0.688
Perfluorononanoic Acid (PFNA)	ND		ng/l	2.00	0.312
Perfluorooctanesulfonic Acid (PFOS)	0.520	J	ng/l	2.00	0.504
Perfluorodecanoic Acid (PFDA)	ND		ng/l	2.00	0.304
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	2.00	1.21
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	2.00	1.12
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	2.00	0.648
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	2.00	0.260
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	2.00	0.980
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	2.00	0.580
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	2.00	0.804
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	2.00	0.372
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	2.00	0.327
Perfluorotetradecanoic Acid (PFTA)	ND		ng/l	2.00	0.248
PFOA/PFOS, Total	0.520	J	ng/l	2.00	0.236
PFAS, Total (5)	0.520	J	ng/l	2.00	0.225

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/27/19 08:33  
Analyst: JW  
TCLP/SPLP Extraction Date:

Extraction Method: EPA 537  
Extraction Date: 08/23/19 14:15

Parameter	Result	Qualifier	Units	RL	MDL
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SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1276119-1

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	79		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	40		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	84		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	86		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	87		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	35		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	89		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	80		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	84		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	42		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	71		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	83		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	32		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	68		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	72		33-143

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/27/19 08:49  
Analyst: JW  
TCLP/SPLP Extraction Date: 08/14/19 15:47

Extraction Method: EPA 537  
Extraction Date: 08/23/19 14:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1276119-2					
Perfluorobutanoic Acid (PFBA)	ND		ng/l	1.81	0.370
Perfluoropentanoic Acid (PFPeA)	ND		ng/l	1.81	0.359
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/l	1.81	0.216
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/l	1.81	0.409
Perfluorohexanoic Acid (PFHxA)	ND		ng/l	1.81	0.297
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/l	1.81	0.222
Perfluoroheptanoic Acid (PFHpA)	ND		ng/l	1.81	0.204
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/l	1.81	0.340
Perfluorooctanoic Acid (PFOA)	ND		ng/l	1.81	0.214
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/l	1.81	1.21
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/l	1.81	0.623
Perfluorononanoic Acid (PFNA)	ND		ng/l	1.81	0.283
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/l	1.81	0.456
Perfluorodecanoic Acid (PFDA)	ND		ng/l	1.81	0.275
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/l	1.81	1.10
Perfluorononanesulfonic Acid (PFNS)	ND		ng/l	1.81	1.01
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/l	1.81	0.587
Perfluoroundecanoic Acid (PFUnA)	ND		ng/l	1.81	0.236
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/l	1.81	0.888
Perfluorooctanesulfonamide (FOSA)	ND		ng/l	1.81	0.525
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/l	1.81	0.728
Perfluorododecanoic Acid (PFDoA)	ND		ng/l	1.81	0.337
Perfluorotridecanoic Acid (PFTTrDA)	ND		ng/l	1.81	0.296
Perfluorotetradecanoic Acid (PFTTA)	ND		ng/l	1.81	0.225
PFOA/PFOS, Total	ND		ng/l	1.81	0.214
PFAS, Total (5)	ND		ng/l	1.81	0.204

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/27/19 08:49  
Analyst: JW  
TCLP/SPLP Extraction Date: 08/14/19 15:47

Extraction Method: EPA 537  
Extraction Date: 08/23/19 14:15

Parameter	Result	Qualifier	Units	RL	MDL
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 03 Batch: WG1276119-2					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	20		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	23		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	42		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	22		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	<b>25</b>	Q	30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	95		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	<b>29</b>	Q	36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	36		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	<b>31</b>	Q	34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	<b>32</b>	Q	38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	45		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	24		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>37</b>	Q	40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	4		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	23		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	40		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	52		33-143

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1935885

Project Number: 4536.00

Report Date: 08/27/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 Batch: WG1272168-2 WG1272168-3								
Perfluorobutanoic Acid (PFBA)	108		108		71-135	0		30
Perfluoropentanoic Acid (PFPeA)	105		106		69-132	1		30
Perfluorobutanesulfonic Acid (PFBS)	101		104		72-128	3		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	106		114		62-145	7		30
Perfluorohexanoic Acid (PFHxA)	108		110		70-132	2		30
Perfluoropentanesulfonic Acid (PFPeS)	102		104		73-123	2		30
Perfluoroheptanoic Acid (PFHpA)	112		110		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	91		96		67-130	5		30
Perfluorooctanoic Acid (PFOA)	115		115		69-133	0		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	111		123		64-140	10		30
Perfluoroheptanesulfonic Acid (PFHpS)	102		104		70-132	2		30
Perfluorononanoic Acid (PFNA)	101		111		72-129	9		30
Perfluorooctanesulfonic Acid (PFOS)	96		103		68-136	7		30
Perfluorodecanoic Acid (PFDA)	98		105		69-133	7		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	103		100		65-137	3		30
Perfluorononanesulfonic Acid (PFNS)	99		101		69-125	2		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	121		110		63-144	10		30
Perfluoroundecanoic Acid (PFUnA)	106		106		64-136	0		30
Perfluorodecanesulfonic Acid (PFDS)	99		103		59-134	4		30
Perfluorooctanesulfonamide (FOSA)	103		105		67-137	2		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	108		96		61-139	12		30
Perfluorododecanoic Acid (PFDoA)	87		101		69-135	15		30

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 Batch: WG1272168-2 WG1272168-3								
Perfluorotridecanoic Acid (PFTrDA)	98		105		66-139	7		30
Perfluorotetradecanoic Acid (PFTA)	96		99		69-133	3		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	97		101		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	102		108		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	92		93		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	87		88		56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	89		95		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	92		99		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	110		107		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		99		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	103		93		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102		102		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	104		104		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	99		99		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	95		100		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	87		97		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	104		118		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	43		56		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	120		178	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	111		116		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	114		126		26-160



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1935885

Project Number: 4536.00

Report Date: 08/27/19

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1276119-3 WG1276119-4								
Perfluorobutanoic Acid (PFBA)	126		122		67-148	3		30
Perfluoropentanoic Acid (PFPeA)	126		124		63-161	2		30
Perfluorobutanesulfonic Acid (PFBS)	138		132		65-157	4		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	142		132		37-219	7		30
Perfluorohexanoic Acid (PFHxA)	127		123		69-168	3		30
Perfluoropentanesulfonic Acid (PFPeS)	124		122		52-156	2		30
Perfluoroheptanoic Acid (PFHpA)	128		125		58-159	2		30
Perfluorohexanesulfonic Acid (PFHxS)	130		127		69-177	2		30
Perfluorooctanoic Acid (PFOA)	129		125		63-159	3		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	144		119		49-187	19		30
Perfluoroheptanesulfonic Acid (PFHpS)	132		126		61-179	5		30
Perfluorononanoic Acid (PFNA)	120		119		68-171	1		30
Perfluorooctanesulfonic Acid (PFOS)	131		126		52-151	4		30
Perfluorodecanoic Acid (PFDA)	130		125		63-171	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	114		105		56-173	8		30
Perfluorononanesulfonic Acid (PFNS)	138		128		48-150	8		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	117		131		60-166	11		30
Perfluoroundecanoic Acid (PFUnA)	126		119		60-153	6		30
Perfluorodecanesulfonic Acid (PFDS)	143		131		38-156	9		30
Perfluorooctanesulfonamide (FOSA)	129		133		46-170	3		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	136		111		45-170	20		30
Perfluorododecanoic Acid (PFDoA)	128		125		67-153	2		30

## Lab Control Sample Analysis Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 Batch: WG1276119-3 WG1276119-4								
Perfluorotridecanoic Acid (PFTTrDA)	118		104		48-158	13		30
Perfluorotetradecanoic Acid (PFTA)	133		132		59-182	1		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	93		94		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	101		102		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	84		88		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	44		45		1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	85		88		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	85		87		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	92		96		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	88		90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	41		46		1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	94		95		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	93		96		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	88		87		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	51		51		7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	77		67		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	85		86		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	30		37		1-87
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	65		78		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	80		75		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	76		58		33-143

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1935885

**Project Number:** 4536.00

**Report Date:** 08/27/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1272168-4 QC Sample: L1935885-01 Client ID: MA_04_20190808												
Perfluorobutanoic Acid (PFBA)	ND	3.06	2.57	84		-	-		71-135	-		30
Perfluoropentanoic Acid (PFPeA)	ND	3.06	3.17	104		-	-		69-132	-		30
Perfluorobutanesulfonic Acid (PFBS)	ND	2.71	2.95	109		-	-		72-128	-		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	2.86	3.02	106		-	-		62-145	-		30
Perfluorohexanoic Acid (PFHxA)	0.326J	3.06	3.64	119		-	-		70-132	-		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	2.75	2.64	96		-	-		73-123	-		30
Perfluoroheptanoic Acid (PFHpA)	ND	3.06	3.59	117		-	-		71-131	-		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	2.79	2.80	100		-	-		67-130	-		30
Perfluorooctanoic Acid (PFOA)	ND	3.06	3.31	108		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	1.64	2.9	5.08	118		-	-		64-140	-		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	2.9	3.30	114		-	-		70-132	-		30
Perfluorononanoic Acid (PFNA)	ND	3.06	3.29	108		-	-		72-129	-		30
Perfluorooctanesulfonic Acid (PFOS)	ND	2.83	3.48	123		-	-		68-136	-		30
Perfluorodecanoic Acid (PFDA)	ND	3.06	3.73	122		-	-		69-133	-		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	2.94	3.15	107		-	-		65-137	-		30
Perfluorononanesulfonic Acid (PFNS)	ND	2.94	2.71	92		-	-		69-125	-		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	3.06	4.38	143		-	-		63-144	-		30
Perfluoroundecanoic Acid (PFUnA)	ND	3.06	3.31	108		-	-		64-136	-		30
Perfluorodecanesulfonic Acid (PFDS)	ND	2.95	2.85	97		-	-		59-134	-		30
Perfluorooctanesulfonamide (FOSA)	ND	3.06	2.93	96		-	-		67-137	-		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	3.06	2.99	98		-	-		61-139	-		30
Perfluorododecanoic Acid (PFDoA)	ND	3.06	2.99	98		-	-		69-135	-		30

## Matrix Spike Analysis

*Batch Quality Control*

**Project Name:** NEWSVT LANDFILL

**Lab Number:** L1935885

**Project Number:** 4536.00

**Report Date:** 08/27/19

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1272168-4 QC Sample: L1935885-01 Client ID: MA_04_20190808												
Perfluorotridecanoic Acid (PFTTrDA)	ND	3.06	3.22	105		-	-		66-139	-		30
Perfluorotetradecanoic Acid (PFTTA)	ND	3.06	3.65	119		-	-		69-133	-		30

<i>Surrogate (Extracted Internal Standard)</i>	<i>MS % Recovery</i>	<i>Qualifier</i>	<i>MSD % Recovery</i>	<i>Qualifier</i>	<i>Acceptance Criteria</i>
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	157				25-186
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	244	Q			56-138
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	472	Q			32-182
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	253	Q			42-136
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	137				45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUADA)	143				64-158
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	85				65-150
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73				61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69				62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	100				63-166
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	157	Q			56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	159				26-160
Perfluoro[13C4]Butanoic Acid (MPFBA)	91				60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	43	Q			65-182
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	48				1-125
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	98				65-151
Perfluoro[13C8]Octanoic Acid (M8PFOA)	87				62-152
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	102				61-154
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	86				70-151

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1935885

Report Date: 08/27/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1272168-5 QC Sample: L1935885-02 Client ID: FD_MA_04_20190808						
Perfluorobutanoic Acid (PFBA)	ND	ND	ng/g	NC		30
Perfluoropentanoic Acid (PFPeA)	ND	ND	ng/g	NC		30
Perfluorobutanesulfonic Acid (PFBS)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/g	NC		30
Perfluorohexanoic Acid (PFHxA)	0.231J	0.214J	ng/g	NC		30
Perfluoropentanesulfonic Acid (PFPeS)	ND	ND	ng/g	NC		30
Perfluoroheptanoic Acid (PFHpA)	ND	ND	ng/g	NC		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/g	NC		30
Perfluorooctanoic Acid (PFOA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	2.65	2.05	ng/g	26		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/g	NC		30
Perfluorononanoic Acid (PFNA)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/g	NC		30
Perfluorodecanoic Acid (PFDA)	ND	ND	ng/g	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/g	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/g	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/g	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/g	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/g	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/g	NC		30

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1272168-5 QC Sample: L1935885-02 Client ID: FD_MA_04_20190808						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/g	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/g	NC		30
Perfluorotridecanoic Acid (PFTrDA)	ND	ND	ng/g	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/g	NC		30
PFOA/PFOS, Total	ND	ND	ng/g	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	90		90		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	40	Q	48	Q	65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	104		119		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	277	Q	314	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		73		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	62		71		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	106		122		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	86		86		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	591	Q	569	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	100		93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	122		100		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	91		88		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	210	Q	190	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	139	Q	168	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	139		138		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	45		36		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	248	Q	286	Q	42-136

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1935885

Report Date: 08/27/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1272168-5 QC Sample: L1935885-02 Client ID: FD_MA_04_20190808						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	144		141		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	159		162	Q	26-160

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1935885

Report Date: 08/27/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1276119-5 QC Sample: L1935885-03 Client ID: MA_5_20190808						
Perfluorobutanoic Acid (PFBA)	19.5	20.1	ng/l	3		30
Perfluoropentanoic Acid (PFPeA)	12.7J	12.2J	ng/l	NC		30
Perfluorobutanesulfonic Acid (PFBS)	16.3J	14.6J	ng/l	NC		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND	ND	ng/l	NC		30
Perfluorohexanoic Acid (PFHxA)	45.5	46.5	ng/l	2		30
Perfluoropentanesulfonic Acid (PFPeS)	39.2	42.2	ng/l	7		30
Perfluoroheptanoic Acid (PFHpA)	30.3	34.5	ng/l	13		30
Perfluorohexanesulfonic Acid (PFHxS)	ND	ND	ng/l	NC		30
Perfluorooctanoic Acid (PFOA)	92.2	123	ng/l	29		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	15.3J	17.9J	ng/l	NC		30
Perfluoroheptanesulfonic Acid (PFHpS)	ND	ND	ng/l	NC		30
Perfluorononanoic Acid (PFNA)	15.7J	23.3	ng/l	NC		30
Perfluorooctanesulfonic Acid (PFOS)	ND	ND	ng/l	NC		30
Perfluorodecanoic Acid (PFDA)	9.61J	13.9J	ng/l	NC		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND	ND	ng/l	NC		30
Perfluorononanesulfonic Acid (PFNS)	ND	ND	ng/l	NC		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND	ND	ng/l	NC		30
Perfluoroundecanoic Acid (PFUnA)	ND	ND	ng/l	NC		30
Perfluorodecanesulfonic Acid (PFDS)	ND	ND	ng/l	NC		30
Perfluorooctanesulfonamide (FOSA)	ND	ND	ng/l	NC		30



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1276119-5 QC Sample: L1935885-03 Client ID: MA_5_20190808						
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND	ND	ng/l	NC		30
Perfluorododecanoic Acid (PFDoA)	ND	ND	ng/l	NC		30
Perfluorotridecanoic Acid (PFTTrDA)	ND	ND	ng/l	NC		30
Perfluorotetradecanoic Acid (PFTA)	ND	ND	ng/l	NC		30
PFOA/PFOS, Total	92.2	123	ng/l	0		30
PFAS, Total (5)	138J	181	ng/l	NC		30

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	91		89		2-156
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	100		99		16-173
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	105		98		31-159
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	364	Q	340	Q	1-313
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	102		97		21-145
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	102		99		30-139
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	97		92		47-153
Perfluoro[13C8]Octanoic Acid (M8PFOA)	93		90		36-149
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	254	Q	222	Q	1-244
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	127		123		34-146
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	113		107		42-146
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	94		92		38-144
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	322	Q	294	Q	7-170
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	78		74		1-181
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUOA)	98		96		40-144
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	37		34	Q	1-87

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NEWSVT LANDFILL

Project Number: 4536.00

Lab Number: L1935885

Report Date: 08/27/19

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
SPLP Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1276119-5 QC Sample: L1935885-03						
Client ID: MA_5_20190808						

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	117		118		23-146
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	95		92		24-161
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	115		118		33-143

**Project Name:** NEWSVT LANDFILL**Lab Number:** L1935885**Project Number:** 4536.00**Report Date:** 08/27/19**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

<b>Cooler</b>	<b>Custody Seal</b>
A	Absent

**Container Information**

<b>Container ID</b>	<b>Container Type</b>	<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
L1935885-01A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1935885-02A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1935885-03A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1935885-03B	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		A2-SPLP-537-ISOTOPE(28)
L1935885-03B1	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		-
L1935885-03B2	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		-
L1935885-03B3	Plastic 250ml unpreserved Extracts	A	NA		3.8	Y	Absent		-
L1935885-03X9	Tumble Vessel	A	NA		3.8	Y	Absent		-
L1935885-04A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1935885-05A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)
L1935885-06A	Plastic 8oz unpreserved	A	NA		3.8	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when using acetone as a solvent.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1935885  
**Report Date:** 08/27/19

## REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



## Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

For a complete listing of analytes and methods, please contact your Alpha Project Manager.









## ANALYTICAL REPORT

Lab Number:	L1938032
Client:	Sanborn, Head & Associates, Inc. 187 Saint Paul Street Suite 4-C Burlington, VT 05401
ATTN:	Matt Estabrooks
Phone:	(802) 391-8504
Project Name:	NEWSVT LANDFILL
Project Number:	4536.00
Report Date:	08/30/19

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Matrix</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>	<b>Receive Date</b>
L1938032-01	AC_19_20190819	SOLID	COVENTRY, VT	08/19/19 10:20	08/22/19

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

**HOLD POLICY** - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

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**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

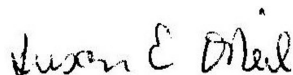
#### Perfluorinated Alkyl Acids by Isotope Dilution

L1938032-01: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

WG1276797-1, WG1276797-2, and WG1276797-3: Extracted Internal Standard recoveries were outside the acceptance criteria for individual analytes. Please refer to the surrogate section of the report for details.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Susan O'Neil

Title: Technical Director/Representative

Date: 08/30/19

# ORGANICS

# SEMIVOLATILES

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

**SAMPLE RESULTS**

**Lab ID:** L1938032-01  
**Client ID:** AC\_19\_20190819  
**Sample Location:** COVENTRY, VT

**Date Collected:** 08/19/19 10:20  
**Date Received:** 08/22/19  
**Field Prep:** Not Specified

**Sample Depth:**

**Matrix:** Solid  
**Analytical Method:** 122,537(M)  
**Analytical Date:** 08/29/19 02:50  
**Analyst:** JW  
**Percent Solids:** Results reported on an 'AS RECEIVED' basis.

**Extraction Method:** EPA 537(M)  
**Extraction Date:** 08/26/19 14:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab</b>						
Perfluorobutanoic Acid (PFBA)	0.443	J	ng/g	1.18	0.027	1
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.18	0.054	1
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.18	0.046	1
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.18	0.076	1
Perfluorohexanoic Acid (PFHxA)	0.264	J	ng/g	1.18	0.062	1
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.18	0.098	1
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.18	0.053	1
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.18	0.071	1
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.18	0.049	1
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.18	0.211	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.18	0.160	1
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.18	0.088	1
Perfluorooctanesulfonic Acid (PFOS)	1.27		ng/g	1.18	0.153	1
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.18	0.079	1
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.18	0.338	1
Perfluoronanesulfonic Acid (PFNS)	ND		ng/g	1.18	0.352	1
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.18	0.237	1
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.18	0.055	1
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.18	0.180	1
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.18	0.115	1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.18	0.099	1
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.18	0.082	1
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.18	0.240	1
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.18	0.064	1
PFOA/PFOS, Total	1.27		ng/g	1.18	0.049	1

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

**SAMPLE RESULTS**

Lab ID: L1938032-01  
 Client ID: AC\_19\_20190819  
 Sample Location: COVENTRY, VT

Date Collected: 08/19/19 10:20  
 Date Received: 08/22/19  
 Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab						

Surrogate (Extracted Internal Standard)	% Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	81		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	92		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	81		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	<b>229</b>	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	77		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	80		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	82		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	<b>206</b>	Q	32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	93		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	84		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	83		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	<b>207</b>	Q	25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	<b>195</b>	Q	45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	<b>201</b>	Q	64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	55		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	<b>317</b>	Q	42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	<b>234</b>	Q	56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	<b>218</b>	Q	26-160



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/29/19 02:17  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 08/26/19 14:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1276797-1					
Perfluorobutanoic Acid (PFBA)	0.083	J	ng/g	1.33	0.030
Perfluoropentanoic Acid (PFPeA)	ND		ng/g	1.33	0.061
Perfluorobutanesulfonic Acid (PFBS)	ND		ng/g	1.33	0.052
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	ND		ng/g	1.33	0.086
Perfluorohexanoic Acid (PFHxA)	ND		ng/g	1.33	0.070
Perfluoropentanesulfonic Acid (PFPeS)	ND		ng/g	1.33	0.111
Perfluoroheptanoic Acid (PFHpA)	ND		ng/g	1.33	0.060
Perfluorohexanesulfonic Acid (PFHxS)	ND		ng/g	1.33	0.081
Perfluorooctanoic Acid (PFOA)	ND		ng/g	1.33	0.056
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		ng/g	1.33	0.239
Perfluoroheptanesulfonic Acid (PFHpS)	ND		ng/g	1.33	0.182
Perfluorononanoic Acid (PFNA)	ND		ng/g	1.33	0.100
Perfluorooctanesulfonic Acid (PFOS)	ND		ng/g	1.33	0.173
Perfluorodecanoic Acid (PFDA)	ND		ng/g	1.33	0.089
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		ng/g	1.33	0.383
Perfluorononanesulfonic Acid (PFNS)	ND		ng/g	1.33	0.399
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		ng/g	1.33	0.269
Perfluoroundecanoic Acid (PFUnA)	ND		ng/g	1.33	0.062
Perfluorodecanesulfonic Acid (PFDS)	ND		ng/g	1.33	0.204
Perfluorooctanesulfonamide (FOSA)	ND		ng/g	1.33	0.131
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		ng/g	1.33	0.113
Perfluorododecanoic Acid (PFDoA)	ND		ng/g	1.33	0.093
Perfluorotridecanoic Acid (PFTrDA)	ND		ng/g	1.33	0.273
Perfluorotetradecanoic Acid (PFTA)	ND		ng/g	1.33	0.072
PFOA/PFOS, Total	ND		ng/g	1.33	0.056

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 122,537(M)  
Analytical Date: 08/29/19 02:17  
Analyst: JW

Extraction Method: EPA 537(M)  
Extraction Date: 08/26/19 14:26

Parameter	Result	Qualifier	Units	RL	MDL
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab for sample(s): 01 Batch: WG1276797-1					

Surrogate (Extracted Internal Standard)	%Recovery	Qualifier	Acceptance Criteria
Perfluoro[13C4]Butanoic Acid (MPFBA)	78		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	87		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	82		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	39	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	73		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	82		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	80		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	34		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	85		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	86		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	80		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	46		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	70		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	78		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	52		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	66		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	68		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	66		26-160

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1938032

Project Number: 4536.00

Report Date: 08/30/19

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1276797-2 WG1276797-3								
Perfluorobutanoic Acid (PFBA)	96		98		71-135	2		30
Perfluoropentanoic Acid (PFPeA)	90		92		69-132	2		30
Perfluorobutanesulfonic Acid (PFBS)	83		84		72-128	1		30
1H,1H,2H,2H-Perfluorohexanesulfonic Acid (4:2FTS)	98		100		62-145	2		30
Perfluorohexanoic Acid (PFHxA)	94		98		70-132	4		30
Perfluoropentanesulfonic Acid (PFPeS)	91		100		73-123	9		30
Perfluoroheptanoic Acid (PFHpA)	97		99		71-131	2		30
Perfluorohexanesulfonic Acid (PFHxS)	101		103		67-130	2		30
Perfluorooctanoic Acid (PFOA)	96		97		69-133	1		30
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	100		88		64-140	13		30
Perfluoroheptanesulfonic Acid (PFHpS)	93		82		70-132	13		30
Perfluorononanoic Acid (PFNA)	96		96		72-129	0		30
Perfluorooctanesulfonic Acid (PFOS)	94		96		68-136	2		30
Perfluorodecanoic Acid (PFDA)	97		101		69-133	4		30
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	98		88		65-137	11		30
Perfluorononanesulfonic Acid (PFNS)	91		94		69-125	3		30
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	99		98		63-144	1		30
Perfluoroundecanoic Acid (PFUnA)	94		93		64-136	1		30
Perfluorodecanesulfonic Acid (PFDS)	98		96		59-134	2		30
Perfluorooctanesulfonamide (FOSA)	82		89		67-137	8		30
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	92		102		61-139	10		30
Perfluorododecanoic Acid (PFDoA)	100		100		69-135	0		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: NEWSVT LANDFILL

Lab Number: L1938032

Project Number: 4536.00

Report Date: 08/30/19

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Perfluorinated Alkyl Acids by Isotope Dilution - Mansfield Lab Associated sample(s): 01 Batch: WG1276797-2 WG1276797-3								
Perfluorotridecanoic Acid (PFTrDA)	94		95		66-139	1		30
Perfluorotetradecanoic Acid (PFTA)	101		106		69-133	5		30

Surrogate (Extracted Internal Standard)	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Perfluoro[13C4]Butanoic Acid (MPFBA)	76		78		60-153
Perfluoro[13C5]Pentanoic Acid (M5PFPEA)	84		85		65-182
Perfluoro[2,3,4-13C3]Butanesulfonic Acid (M3PFBS)	72		73		70-151
1H,1H,2H,2H-Perfluoro[1,2-13C2]Hexanesulfonic Acid (M2-4:2FTS)	39	Q	37	Q	56-138
Perfluoro[1,2,3,4,6-13C5]Hexanoic Acid (M5PFHxA)	73		76		61-147
Perfluoro[1,2,3,4-13C4]Heptanoic Acid (M4PFHpA)	69		74		62-149
Perfluoro[1,2,3-13C3]Hexanesulfonic Acid (M3PFHxS)	77		71		63-166
Perfluoro[13C8]Octanoic Acid (M8PFOA)	74		79		62-152
1H,1H,2H,2H-Perfluoro[1,2-13C2]Octanesulfonic Acid (M2-6:2FTS)	34		34		32-182
Perfluoro[13C9]Nonanoic Acid (M9PFNA)	78		85		61-154
Perfluoro[13C8]Octanesulfonic Acid (M8PFOS)	81		84		65-151
Perfluoro[1,2,3,4,5,6-13C6]Decanoic Acid (M6PFDA)	77		77		65-150
1H,1H,2H,2H-Perfluoro[1,2-13C2]Decanesulfonic Acid (M2-8:2FTS)	37		39		25-186
N-Deuteriomethylperfluoro-1-octanesulfonamidoacetic Acid (d3-NMeFOSAA)	66		68		45-137
Perfluoro[1,2,3,4,5,6,7-13C7]Undecanoic Acid (M7-PFUDA)	74		77		64-158
Perfluoro[13C8]Octanesulfonamide (M8FOSA)	61		56		1-125
N-Deuterioethylperfluoro-1-octanesulfonamidoacetic Acid (d5-NEtFOSAA)	64		60		42-136
Perfluoro[1,2-13C2]Dodecanoic Acid (MPFDOA)	67		68		56-148
Perfluoro[1,2-13C2]Tetradecanoic Acid (M2PFTEDA)	63		63		26-160

**Project Name:** NEWSVT LANDFILL

**Project Number:** 4536.00

Serial\_No:08301910:00

**Lab Number:** L1938032

**Report Date:** 08/30/19

**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

**Cooler Information**

**Cooler**                      **Custody Seal**

A                                      Absent

**Container Information**

**Container ID**    **Container Type**

L1938032-01A    Plastic 8oz unpreserved

<b>Cooler</b>	<b>Initial pH</b>	<b>Final pH</b>	<b>Temp deg C</b>	<b>Pres</b>	<b>Seal</b>	<b>Frozen Date/Time</b>	<b>Analysis(*)</b>
A	NA		4.1	Y	Absent		A2-537-ISOTOPE(28)

**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

## GLOSSARY

### Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)  Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

### Footnotes

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL**Lab Number:** L1938032**Project Number:** 4536.00**Report Date:** 08/30/19

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

**Terms**

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1.8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

**Difference:** With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

**Final pH:** As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

**Frozen Date/Time:** With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

**Initial pH:** As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

**PFAS Total:** With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

**Total:** With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

**Data Qualifiers**

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedances are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers



**Project Name:** NEWSVT LANDFILL  
**Project Number:** 4536.00

**Lab Number:** L1938032  
**Report Date:** 08/30/19

## REFERENCES

- 122 Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). EPA Method 537, EPA/600/R-08/092. Version 1.1, September 2009.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at its own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.





## Certification Information

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The following analytes are not included in our Primary NELAP Scope of Accreditation:

### Westborough Facility

**EPA 624/624.1:** m/p-xylene, o-xylene

**EPA 8260C:** NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

**EPA 8270D:** NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

**SM4500:** NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO<sub>2</sub>, NO<sub>3</sub>.

### Mansfield Facility

**SM 2540D:** TSS

**EPA 8082A:** NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

**EPA TO-15:** Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

**Biological Tissue Matrix:** EPA 3050B

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The following analytes are included in our Massachusetts DEP Scope of Accreditation

### Westborough Facility:

#### Drinking Water

**EPA 300.0:** Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

**EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

**EPA 332:** Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

**Microbiology: SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

#### Non-Potable Water

**SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH:** Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

**SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

**EPA 624.1:** Volatile Halocarbons & Aromatics,

**EPA 608.3:** Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

**EPA 625.1:** SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

**Microbiology: SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

### Mansfield Facility:

#### Drinking Water

**EPA 200.7:** Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

**EPA 522.**

#### Non-Potable Water

**EPA 200.7:** Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.


**EPA 200.8:** Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

**EPA 245.1** Hg.

**SM2340B**

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For a complete listing of analytes and methods, please contact your Alpha Project Manager.

 <b>NEW YORK CHAIN OF CUSTODY</b> Westborough, MA 01581 8 Walkup Dr. TEL: 508-898-9220 FAX: 508-898-9193		Service Centers Mahwah, NJ 07430: 35 Whitney Rd, Suite 5 Albany, NY 12205: 14 Walker Way Tonawanda, NY 14150: 275 Cooper Ave, Suite 105		Page <u>1</u>		Date Rec'd in Lab <u>8/23/19</u>		ALPHA Job # <u>L1938032</u>	
				of <u>1</u>					
Mansfield, MA 02048 320 Forbes Blvd TEL: 508-822-9300 FAX: 508-822-3288		<b>Project Information</b> Project Name: <u>NEWSVT Landfill</u> Project Location: <u>Coventry, VT</u> Project # <u>4536.00</u> (Use Project name as Project #) <input type="checkbox"/>				<b>Deliverables</b> <input type="checkbox"/> ASP-A <input type="checkbox"/> ASP-B <input type="checkbox"/> EQuIS (1 File) <input type="checkbox"/> EQuIS (4 File) <input checked="" type="checkbox"/> Other <u>Email, ADEX</u>		<b>Billing Information</b> <input checked="" type="checkbox"/> Same as Client Info PO # <u>4536.00</u>	
<b>Client Information</b> Client: <u>Sanborn Head</u> Address: <u>187 Saint Paul St</u> <u>Suite 4-C Burlington, VT</u> Phone: <u>802-371-8504</u> <u>05401</u> Fax: _____ Email: <u>mestabrooks@sanbornhead.com</u>		Project Manager: <u>Matt Estabrooks</u> ALPHAQuote #: _____ Turn-Around Time _____ Standard <input checked="" type="checkbox"/> Due Date: _____ Rush (only if pre approved) <input type="checkbox"/> # of Days: _____		<b>Regulatory Requirement</b> <input type="checkbox"/> NY TOGS <input type="checkbox"/> NY Part 375 <input type="checkbox"/> AWQ Standards <input type="checkbox"/> NY CP-51 <input type="checkbox"/> NY Restricted Use <input type="checkbox"/> Other _____ <input type="checkbox"/> NY Unrestricted Use <input type="checkbox"/> NYC Sewer Discharge		<b>Disposal Site Information</b> Please identify below location of applicable disposal facilities. Disposal Facility: <input type="checkbox"/> NJ <input type="checkbox"/> NY <input type="checkbox"/> Other: _____			
These samples have been previously analyzed by Alpha <input type="checkbox"/> Other project specific requirements/comments: _____ _____ Please specify Metals or TAL. _____ _____				<b>ANALYSIS</b> EPA-537 (M) Isotope Dilution		<b>Sample Filtration</b> <input type="checkbox"/> Done <input type="checkbox"/> Lab to do <input type="checkbox"/> Preservation <input type="checkbox"/> Lab to do (Please Specify below) Sample Specific Comments			
ALPHA Lab ID (Lab Use Only) <u>938032-01</u>		Sample ID <u>AC-19-20190819</u>		Collection Date <u>8/19/19</u> Time <u>10:20</u>		Sample Matrix <u>Solid</u>		Sampler's Initials <u>MEE</u>	
Preservative Code: A = None B = HCl C = HNO <sub>3</sub> D = H <sub>2</sub> SO <sub>4</sub> E = NaOH F = MeOH G = NaHSO <sub>4</sub> H = Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> K/E = Zn Ac/NaOH O = Other		Container Code: P = Plastic A = Amber Glass V = Vial G = Glass B = Bacteria Cup C = Cube O = Other E = Encore D = BOD Bottle		Westboro: Certification No: MA935 Mansfield: Certification No: MA015		Container Type Preservative		Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)	
Relinquished By: <u>T. Petit</u> <u>T. Hurd</u>		Date/Time <u>8/22/19 10:03</u> <u>8/22/19 15:05</u> <u>8/23/19 04:02</u>		Received By: <u>[Signature]</u> <u>[Signature]</u> <u>[Signature]</u>		Date/Time <u>8/22/19 10:03</u> <u>8/23/19 01:10</u> <u>8/23/19 04:00</u>			