



October 2021

Bureau of Waste Site Cleanup
Southeast Regional Office
Massachusetts Department of Environmental Protection
C/o Angela Gallagher
Site Remediation Section
20 Riverside Drive
Lakeville, MA 02347

RE: Immediate Response Action Status and Remedial Monitoring Report #58
Former Barnstable County Fire Training Academy FTA Facility
155 South Flint Rock Road
Hyannis, Massachusetts
DEP Release Tracking No. 4-26179
Project Number #6206

Dear Ms. Gallagher:

BETA Group, Inc. (BETA) has prepared this Immediate Response Action (IRA) Status and Remedial Monitoring Report (RMR) for the Disposal Site (the Site) referenced as the former Barnstable Country Fire Training Academy (the FTA Facility) located at 155 South Flint Rock Road in Hyannis, MA on the behalf of Barnstable County. This report was completed on behalf of Barnstable County and in accordance with Massachusetts Contingency Plan (MCP) - 310 CMR 40.0000.

This is the 58th monthly IRA RMR Status report. It documents the IRA/RMR activities being conducted to address a release of PFOS/PFOA to groundwater, soils, surface water, and sediments located at the Site. A potential Imminent Hazard (IH) condition and Condition of Substantial Release Migration were previously identified at the Site. This letter report specifically addresses the status of the Site groundwater pumping and treatment systems (GWPTS) during the September 2021 monthly reporting period.

The completed BWSC105 Immediate Response Action (IRA) Transmittal Form and attached BWSC105A and BWSC105B IRA Remedial Monitoring Report Forms are being submitted to the MassDEP electronically via the eDEP system. This letter is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) as an attachment to those forms. Copies of these forms prior to electronic signature are included as Attachment A.

REMEDIAL MONITORING REPORT – SEPTEMBER 2021

During the September reporting period, the treatment systems (GWTS #1 and GWTS#2) were both in operation for all or portions of approximately 30 days. BETA collected performance samples from the systems on September 20, 2021; the systems were in operation at the time of sample collection.

Health Advisories and Regulatory Standards Used for Comparison

During the initial two years of the GWPTS operation (July 2016 through June 2018), the USEPA revised Health Advisory (HA) of 0.070 µg/L for two PFAS chemicals, Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS), was used for comparison to the analytical results of GWPTS performance samples. The HA (revised downward to 0.070 µg/L in July 2016) applied to each compound individually or for the total concentration of the two (PFOS and PFOA). Subsequently, MassDEP adopted the USEPA HA. The USEPA considers its HA to still be in effect. However, for MCP purposes it has been superseded by MassDEP guidelines and regulatory actions.

On June 11, 2018, MassDEP's Office of Research and Standards (ORS) issued an updated ORS Guideline/HA that applied to the individual concentrations, or the total summed of five PFAS chemicals: PFOS, PFOA, Perfluorononanoic Acid (PFNA), Perfluorohexanesulfonic Acid (PFHxS), and Perfluoroheptanoic Acid (PFHpA). From June 11, 2018, until December 2019, individual concentrations of any of these five compounds or the total concentrations of all were compared to the MassDEP ORS HA of 0.070 µg/L.

On April 19, 2019, MassDEP released the Public Comment Draft of proposed revisions to the MCP, which included proposed Method 1 groundwater risk standards for the five PFAS compounds, plus an additional PFAS compound, Perfluorodecanoic Acid (PFDA). A Method 1 GW-1 risk standard of 0.020 µg/L was proposed for the individual concentrations of any of these six compounds or the total concentrations of all six. In December 2019, MassDEP published final MCP Method 1 risk standards for the PFAS6 compounds with an effective implementation date of December 27, 2019. From May 2019 through the current reporting period, tabulated treatment system analytical results have been compared to the six regulated PFAS compounds. The final MCP PFAS risk standards for groundwater include the 6 PFAS compounds of concern (PFAS6) listed above and the 0.020 µg/L¹ which is the GW-1 numerical risk standard for each compound or for the total of the PFAS6. These MCP risk standards are included in all relevant tables in the monthly and quarterly monitoring reports.

Except where noted (due to older data), total PFAS concentrations reported and discussed in this report are the sum of concentrations of the PFAS6 compounds included in the final MCP risk standards of December 27, 2019.

¹ Concentrations of PFAS are presented in the data tables of this report in nanograms per liter (ng/L), also referred to as parts per trillion (ppt) and are reported by the laboratory in those units. However the published MCP Method GW-1 numerical risk standards for PFAS compounds (PFOS, PFOA, PFNA, PFHpA, PFHxS, and PFDA) are in presented in or micrograms per liter (µg/L), also referred to as parts per billion (ppb). In the relevant sections of this report, results are shown in both units.

GWTS # 1 System Monitoring Results – September 2021 Reporting Period

As previously stated, system samples were collected on September 20, 2021, from the Influent (PRW-4), Midpoint and Effluent ports and were submitted to Bureau Veritas Laboratories (formerly Maxxam Analytics) of Mississauga, Ontario (Bureau Veritas) for the laboratory analysis of Total PFAs via USEPA Method 537 M.

For the analysis of the treatment system performance samples, Bureau Veritas uses a low-level detection variant of the US EPA 537M to achieve the lowest method detection limits (MDLs) and reportable detection limits (RDLs) to allow for comparison to the MCP Method 1 GW-1 risk standards². This method provides RDLs in the range of 2 to 4 ng/L and MDLs below 1 ng/L for the list of PFAS analytes reported by the laboratory. Bureau Veritas reports the results for 21 PFAS compounds, including two (2) PFAS precursor fluorotelomers. Details are presented in the laboratory report attached in Appendix B.

The total sum of the six Massachusetts regulated PFAS concentrations (PFAS6) in the Influent (PRW-4) sample was 641.1 ng/L (0.641 µg/L), well above the GW-1 risk standards. The PFAS6 concentrations individually and as a total have been significantly lower since March 2021. Three of the six individually regulated PFAS compounds were detected at concentrations exceeding the new MCP GW-1 risk standard (20 ng/L): PFOS, PFHxS, and PFHpA. PFOA, PFNA, and PFDA were detected at concentrations below the applicable standard; however PFOA and PFNA were detected at concentrations (19 ng/L) just below the applicable GW-1 standard. Refer to the attached Table 1A, for a summary of the GWTS #1 PFAS analytical data. Recovery well PRW-4 is the source of the Influent groundwater. Based on the splitting of flow from PRW-4 to both groundwater treatment systems, the Influent analytical results apply to the Influent source of both GWTS#1 and GWTS #2.

The PFAS6 (six MA regulated PFAS compounds) were detected below laboratory detection limits both the Midpoint and Effluent Sample. Additionally, the remaining unregulated and laboratory reported 15 PFAS compounds were also not detected above the laboratory detection limits.

For the purposes of achieving the lowest MDLs and RDLs ³ (for comparison to the MCP Method 1 Groundwater standards), Bureau Veritas reports the results for 21 PFAS compounds, including two (2) PFAS precursors; this allows the laboratory to achieve RDLs as low as 2.0 ng/L. The laboratory report provides details of MDLs and RDLs for each PFAS compound included in the analyte list.

Refer to the attached Table 1A, for a summary of the GWTS #1 PFAS analytical data in the Influent, Midpoint and Effluent samples from April 2015 to this September 2021 reporting period. The complete laboratory report is attached in Appendix B.

² The RDL is the smallest (quantity) or concentration value that can be reliably reported (quantitated) by the laboratory and the MDL is the lowest concentration that can be detected using the specific method or instrumentation. The MDL is lower than the RDL. The RDL is a statistical calculation (typically the standard deviation of the results around the true concentration value) below the point of calibration.

³ Method Detection Limits and Reportable Detection Limits.

GWTS #1 Operational Details-September 2021 Reporting Period

The attached Table 2A presents the GWTS #1 performance data (from April 2018 through the September 2021 reporting periods).

The estimated, instantaneous influent flow rate for GWTS#1 observed during this August 2021 reporting period varied from approximately 8.2 gpm to 12.6 gpm.

For the September 2021 reporting period, the overall (average) system flow rate and gallons of groundwater treated are based on the effluent flow meter/totalizer readings reported for the system by the O&M contractor. On this basis, approximately 0.47 million gallons of groundwater were treated, at an average effluent flow rate of 10.8 gpm.

Variability in the flow through GWTS#1 continues to be observed; flow rate trends are consistent with the last reporting periods (July and August 2021). GWTT has continued to vary the flow rate at the transfer pump to increase effluent flow rate; however, it continues to be apparent that the lower influent volumes are impacting the total effluent volumes. Based on Site history, it is likely that continued iron fouling of the force mains and the recovery well pump and casing is adversely affecting influent flow volumes.

Based on the approximate 0.47 million gallons treated and total influent concentration of 641.1 ng/L (September 20, 2021 sample results), approximately 0.0011 kilograms of PFAS were estimated to have been removed from the groundwater during this reporting period.

GWTS # 2 Monitoring Results- September 2021 Reporting Period

As previously stated, system samples were collected on September 20, 2021, from the Influent (PRW-4), Midpoint and Effluent ports and were submitted to Bureau Veritas Laboratories (formerly Maxxam Analytics) of Mississauga, Ontario (Bureau Veritas) for the laboratory analysis of Total PFAs via USEPA Method 537 M.

For the analysis of the treatment system performance samples, Bureau Veritas uses a low-level detection variant of the US EPA 537M to achieve the lowest method detection limits (MDLs) and reportable detection limits (RDLs) to allow for comparison to the MCP Method 1 GW-1 risk standards⁴. This method provides RDLs in the range of 2 to 4 ng/L and MDLs below 1 ng/L for the list of PFAS analytes reported by the laboratory. Bureau Veritas reports the results for 21 PFAS compounds, including two (2) PFAS precursor fluorotelomers. Details are presented in the laboratory report attached in Appendix B.

The total sum of the six Massachusetts regulated PFAS concentrations (PFAS6) in the Influent (PRW-4) sample was 641.1 ng/L (0.641 µg/L), well above the GW-1 risk standards.

⁴ The RDL is the smallest (quantity) or concentration value that can be reliably reported (quantitated) by the laboratory and the MDL is the lowest concentration that can be detected using the specific method or instrumentation. The MDL is lower than the RDL. The RDL is a statistical calculation (typically the standard deviation of the results around the true concentration value) below the point of calibration.

The PFAS6 concentrations individually and as a total have been significantly lower since March 2021. Three of the six individually regulated PFAS compounds were detected at concentrations exceeding the new MCP GW-1 risk standard (0.020 µg/l): PFOS, PFHxS, and PFHpA. PFOA, PFNA, and PFDA were detected at concentrations below the applicable standard; however PFOA and PFNA were detected at concentrations just below the applicable GW-1 standard (19 ng/L). Refer to the attached Table 1B, for a summary of the GWTS #2 PFAS analytical data. Recovery well PRW-4 is the source of the Influent groundwater. Based on the splitting of flow from PRW-4 to both groundwater treatment systems, the Influent analytical results apply to the Influent source of both GWTS#1 and GWTS #2.

The PFAS6 (six MA regulated PFAS compounds) were detected above laboratory detection limits in the Midpoint Sample. The PFOS, PFHxS, PFHpA, and PFHxS compounds were detected at concentrations above the applicable MCP GW-1 risk standard. The sum of these detected PFAS6 compounds was above the applicable Method 1 GW-1 groundwater standard (697 ng/L).

The PFOS compound was detected above laboratory detection limits in the Effluent Sample; however the concentration was below the applicable Method 1 GW-1 groundwater standard (1.9 ng/L). The remaining four PFAS6 compounds (PFOA, PFHxS, PFNA, PFDA) and 15 unregulated reported PFAS compounds were not detected above the laboratory detection limits.

Although breakthrough was documented, complete changeout of the GAC in both systems occurred on July 6, 2021. It is unclear as to why detections in the midpoint and effluent sample are still observed. BETA has communicated this issue with Calgon and is working with Calgon to quickly rectify this problem.

For the purposes of achieving the lowest MDLs and RDLs ⁵ (for comparison to the MCP Method 1 Groundwater standards), Bureau Veritas reports the results for 21 PFAS compounds, including two (2) PFAS precursors; this allows the laboratory to achieve RDLs as low as 2.0 ng/L. The laboratory report provides details of MDLs and RDLs for each PFAS compound included in the analyte list.

Refer to the attached Table 1B, for a summary of the GWTS #2 PFAS analytical data in the Influent, Midpoint and Effluent samples from April 2015 to this September 2021 reporting period.

The complete laboratory report is attached in Appendix B. The laboratory report provides details of MDLs and RDLs for each PFAS compound included in the analyte list.

GWTS #2 Operational Details – August 2021 Reporting Period

The attached Table 2B presents the GWTS #2 performance data (from April 2018 through the September 2021 reporting periods).

The estimated, instantaneous influent flow rate for GWTS#2 observed during this September 2021 reporting period varied from approximately 8.2 gpm to 12.6 gpm.

⁵ Method Detection Limits and Reportable Detection Limits.

For the September 2021 reporting period, the overall (average) system flow rate and gallons of groundwater treated are based on the effluent flow meter/totalizer readings reported for the system by the O&M contractor. On this basis, approximately 0.28 million gallons of groundwater were treated, at an average effluent flow rate of 6.4 gpm.

Variability in the flow through GWTS#2 continues to be observed; however, flow rates significantly decrease during this September 2021 reporting period. Similarly to GWTS#1, decreased effluent rates appear to be impacted by lower influent volumes and significant iron conveyance from the recovery well.

Based on the approximate 0.28 million gallons treated and total influent concentration of 641.1 ng/L (September 20, 2021, sample results), approximately 0.001 kilograms of PFAS were estimated to have been removed from the plume area during this reporting period.

Refer to the attached Table 2B for a summary of the GWTS #2 performance details.

GROUNDWATER TREATMENT PUMPING AND TREATMENT SUMMARY

During the September reporting period, the treatment systems (GWTS #1 and GWTS#2) were both in operation for all or portions of approximately 30 days.

The overall (average) system flow rate and gallons of groundwater treated are based on the available Effluent flow totalizer readings reported by the O&M contractor. For the September 2021 reporting period GWTS#1 and GWTS#2 treated an approximate combined 0.74 million gallons of groundwater from the downgradient recovery well PRW-4 at an average, total combined effluent flow rate of 17.2 gpm. The average combined influent flow rate was measured to be 20.3 gpm. Based on the total of 0.74 million gallons treated, approximately 0.0021 kilograms of PFAS were estimated to have been removed from the plume area.

Ongoing IRA Activities

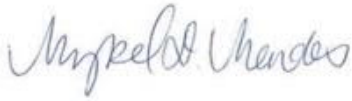
Sampling results, system performance, and additional assessment work related to the ongoing response actions, such as system improvement and enhancement details, will be presented in the next IRA Status and RMR Report for the October 2021 reporting period.

Public Involvement Activities

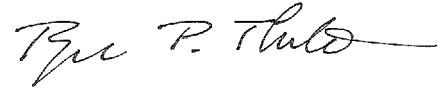
A copy of the municipal notification to the Barnstable Town Manager, with copies to other town officials, is included as Appendix C. The Site has been designated a Public Involvement Plan Site under the MCP. The Public Involvement Plan (PIP) was finalized in June 2019. Written correspondence will be sent to those listed on the PI Mailing List notifying them of the submission of this IRA Status report and availability of this report for review.

Sincerely,

BETA Group, Inc.



Mykel Mendes
Environmental Engineer



Roger Thibault, P.E., LSP
Associate

Copy: Steve Tebo, Barnstable County Asset and Infrastructure Manager

Attachments:

TABLES

Table 1A – Summary of Groundwater Pump and Treatment System PFAS Analytical Data – System #1

Table 1B - Summary of Groundwater Pump and Treatment System PFAS Analytical Data – System #2

Table 2A - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data-
System #1

Table 2B- Summary of Groundwater Pump and Treatment System Operating and Maintenance Data-
System #2

APPENDICES

A: BWSC 105, 105A, 105B Forms

B: Laboratory Reports

C: Municipal Notification Letter to Town Manager



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

4 - 26179

A. SITE LOCATION:

1. Release Name/Location Aid: BARNSTABLE COUNTY FIRE TRAINING ACADEMY

2. Street Address: 155 SOUTH FLINT ROCK ROAD

3. City/Town: BARNSTABLE 4. Zip Code: 026300000

☐ 5. Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114.

☐ a. CERCLA

☐ b. HSWA Corrective Action

☐ c. Solid Waste Management

☐ d. RCRA State Program (21C Facilities)

B. THIS FORM IS BEING USED TO: (check all that apply)

1. List Submittal Date of Initial IRA Written Plan (if previously submitted): 9/26/2016

☐ 2. Submit an **Initial IRA Plan**.

☐ 3. Submit a **Modified IRA Plan** of a previously submitted written IRA Plan.

☐ 4. Submit an **Imminent Hazard Evaluation**. (check one)

☐ a. An Imminent Hazard exists in connection with this Release or Threat of Release.

☐ b. An Imminent Hazard does not exist in connection with this Release or Threat of Release.

☐ c. It is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.

☐ d. It is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

☐ 5. Submit a request to **Terminate an Active Remedial System or Response Action(s) Taken to Address an Imminent Hazard**.

☒ 6. Submit an **IRA Status Report**

☒ 7. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP.)

a. Type of Report: (check one) ☐ i. Initial Report ☒ ii. Interim Report ☐ iii. Final Report

b. Frequency of Submittal: (check all that apply)

☒ i. A Remedial Monitoring Report(s) submitted monthly to address an Imminent Hazard.

☐ ii. A Remedial Monitoring Report(s) submitted monthly to address a Condition of Substantial Release Migration.

☐ iii. A Remedial Monitoring Report(s) submitted every six months, concurrent with an IRA Status Report.

☐ iv. A Remedial Monitoring Report(s) submitted annually, concurrent with an IRA Status Report.

c. Number of Remedial Systems and/or Monitoring Programs: 2

A separate BWSC105A, IRA Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

4

- 26179

☐ 8. Submit an **IRA Completion Statement**.

☐ a. Check here if future response actions addressing this Release or Threat of Release notification condition will be conducted as part of the Response Actions planned or ongoing at a Site that has already been Tier Classified under a different Release Tracking Number (RTN)

b. Provide Release Tracking Number of Tier Classified Site (Primary RTN): _____

These additional response actions must occur according to the deadlines applicable to the Primary RTN. Use the Primary RTN when making all future submittals for the site unless specifically relating to this Immediate Response Action.

☐ 9. Submit a **Revised IRA Completion Statement**.

☐ 10. Submit a **Plan for the Application of Remedial Additives** near a sensitive receptor, pursuant to 310 CMR 40.0046(3).

(All sections of this transmittal form must be filled out unless otherwise noted above)

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT IRA:

1. Media Impacted and Receptors Affected: (check all that apply)

- | | | |
|--|--|---|
| <input type="checkbox"/> a. Paved Surface | <input type="checkbox"/> b. Basement | <input type="checkbox"/> c. School |
| <input checked="" type="checkbox"/> d. Public Water Supply | <input checked="" type="checkbox"/> e. Surface Water | <input checked="" type="checkbox"/> f. Zone 2 |
| <input type="checkbox"/> g. Private Well | <input type="checkbox"/> h. Residence | <input checked="" type="checkbox"/> i. Soil |
| <input checked="" type="checkbox"/> j. Groundwater | <input checked="" type="checkbox"/> k. Sediments | <input type="checkbox"/> l. Wetland |
| <input type="checkbox"/> m. Storm Drain | <input type="checkbox"/> n. Indoor Air | <input type="checkbox"/> o. Air |
| <input type="checkbox"/> p. Soil Gas | <input type="checkbox"/> q. Sub-Slab Soil Gas | <input type="checkbox"/> r. Critical Exposure Pathway |
| <input type="checkbox"/> s. NAPL | <input type="checkbox"/> t. Unknown | |
| <input type="checkbox"/> r. Others | Specify: _____ | |

2. Sources of the Release or TOR: (check all that apply)

- | | | |
|--|---|-----------------------------------|
| <input type="checkbox"/> a. Transformer | <input type="checkbox"/> b. Fuel Tank | <input type="checkbox"/> c. Pipe |
| <input type="checkbox"/> d. OHM Delivery | <input type="checkbox"/> e. AST | <input type="checkbox"/> f. Drums |
| <input type="checkbox"/> g. Tanker Truck | <input type="checkbox"/> h. Hose | <input type="checkbox"/> i. Line |
| <input type="checkbox"/> j. UST | Describe: _____ | |
| <input type="checkbox"/> k. Vehicle | <input type="checkbox"/> l. Boat/Vessel | |
| <input type="checkbox"/> m. Unknown | <input checked="" type="checkbox"/> n. Other: | FIREFIGHTING FOAM |

3. Type of Release or TOR: (check all that apply)

- | | | | |
|--|---|---|--------------------------------------|
| <input type="checkbox"/> a. Dumping | <input type="checkbox"/> b. Fire | <input type="checkbox"/> c. AST Removal | <input type="checkbox"/> d. Overfill |
| <input type="checkbox"/> e. Rupture | <input type="checkbox"/> f. Vehicle Accident | <input type="checkbox"/> g. Leak | <input type="checkbox"/> h. Spill |
| <input type="checkbox"/> i. Test failure | <input type="checkbox"/> j. TOR Only | | |
| <input type="checkbox"/> k. UST Removal | Describe: _____ | | |
| <input type="checkbox"/> l. Unknown | <input checked="" type="checkbox"/> m. Other: | HISTORIC FOAM USE | |

4. Identify Oils and Hazardous Materials Released: (check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> a. Oils | <input type="checkbox"/> b. Chlorinated Solvents |
| <input type="checkbox"/> c. Heavy Metals | <input checked="" type="checkbox"/> d. Others |
| Specify: PFAS | |

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply, for volumes list cumulative amounts)

- | | |
|---|---|
| <input checked="" type="checkbox"/> 1. Assessment and/or Monitoring Only | <input checked="" type="checkbox"/> 2. Temporary Covers or Caps |
| <input type="checkbox"/> 3. Deployment of Absorbent or Containment Materials | <input type="checkbox"/> 4. Temporary Water Supplies |
| <input type="checkbox"/> 5. Structure Venting System/HVAC Modification System | <input type="checkbox"/> 6. Temporary Evacuation or Relocation of Residents |
| <input type="checkbox"/> 7. Product or NAPL Recovery | <input type="checkbox"/> 8. Fencing and Sign Posting |
| <input checked="" type="checkbox"/> 9. Groundwater Treatment Systems | <input type="checkbox"/> 10. Soil Vapor Extraction |
| <input type="checkbox"/> 11. Remedial Additives | <input type="checkbox"/> 12. Air Sparging |
| <input type="checkbox"/> 13. Active Exposure Pathway Mitigation System | <input type="checkbox"/> 14. Passive Exposure Pathway Mitigation System |



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

BWSC 105

Release Tracking Number

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26179

D. DESCRIPTION OF RESPONSE ACTIONS: (cont.)

☒ 15. Excavation of Contaminated Soils.

☐ a. Re-use, Recycling or Treatment

☐ i. On Site

Estimated volume in cubic yards

☐ ii. Off Site

Estimated volume in cubic yards

iiia. Receiving Facility:

Town:

State:

iiib. Receiving Facility:

Town:

State:

iiic. Describe:

☐ b. Store

☐ i. On Site

Estimated volume in cubic yards

☐ ii. Off Site

Estimated volume in cubic yards

iiia. Receiving Facility:

Town:

State:

iiib. Receiving Facility:

Town:

State:

☒ c. Landfill

☐ i. Cover

Estimated volume in cubic yards

Receiving Facility:

Town:

State:

☒ ii. Disposal

Estimated volume in cubic yards

200

Receiving Facility:

TAUNTON LANDFILL

Town:

TAUNTON

State:

MA

☐ 16. Removal of Drums, Tanks, or Containers:

a. Describe Quantity and Amount:

b. Receiving Facility:

Town:

State:

c. Receiving Facility:

Town:

State:

☐ 17. Removal of Other Contaminated Media:

a. Specify Type and Volume:

☐ 18. Other Response Actions:

Describe:

☐ 19. Use of Innovative Technologies:

Describe:



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

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E. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B of this form indicates that an **Immediate Response Action Plan** is being submitted, the response action(s) that is(are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is(are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that an **Imminent Hazard Evaluation** is being submitted, this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation comply(ies) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> if Section B of this form indicates that an **Immediate Response Action Status Report** and/or a **Remedial Monitoring Report** is(are) being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that an **Immediate Response Action Completion Statement** or a request to **Terminate an Active Remedial System or Response Action(s) Taken to Address an Imminent Hazard** is being submitted, the response action(s) that is(are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is(are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: 1443

2. First Name: ROGER P 3. Last Name: THIBAUT

4. Telephone: 508-331-2700 5. Ext: 6. Email:

7. Signature:

8. Date: (mm/dd/yyyy)

9. LSP Stamp:





Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

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F. PERSON UNDERTAKING IRA:

1. Check all that apply: ☒ a. change in contact name ☐ b. change of address ☐ c. change in the person undertaking response actions
2. Name of Organization: BARNSTABLE COUNTY COMMISSIONERS
3. Contact First Name: STEPHEN 4. Last Name: TEBO
5. Street: 3195 MAIN ST 6. Title: _____
7. City/Town: BARNSTABLE 8. State: MA 9. Zip Code: 026301105
10. Telephone: 508-375-6643 11. Ext: _____ 12. Email: stebo@BARNSTABLECOUNTY.ORG

G. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA:

- ☐ Check here to change relationship
- ☒ 1. RP or PRP ☒ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter
☐ e. Other RP or PRP Specify Relationship: _____
- ☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)
- ☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))
- ☐ 4. Any Other Person Undertaking Response Actions: _____ Specify Relationship: _____

H. REQUIRED ATTACHMENT AND SUBMITTALS:

- ☐ 1. Check here if any Remediation Waste, generated as a result of this IRA, will be stored, treated, managed, recycled or reused at the site following submission of the IRA Completion Statement. If this box is checked, you must submit one of the following plans, along with the appropriate transmittal form.
☐ a. A Release Abatement Measure (RAM) Plan (BWSC106) ☐ b. Phase IV Remedy Implementation Plan (BWSC108)
- ☒ 2. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by MassDEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.
- ☒ 3. Check here to certify that the Chief Municipal Officer and the Local Board of Health were notified of the implementation of an Immediate Response Action taken to control, prevent, abate or eliminate an Imminent Hazard.
- ☐ 4. Check here to certify that the Chief Municipal Officer and the Local Board of Health were notified of the submittal of a Completion Statement for an Immediate Response Action taken to control, prevent, abate or eliminate an Imminent Hazard.
- ☐ 5. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to BWSC.eDEP@state.ma.us.
- ☒ 6. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

4

-

26179

I. CERTIFICATION OF PERSON UNDERTAKING IRA:

1. I, _____, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form; (ii) that, based on my inquiry of the/those individual(s) immediately responsible for obtaining the information, the material information contained herein is, to the best of my knowledge, information and belief, true, accurate and complete; (iii) that, to the best of my knowledge, information and belief, I/the person(s) or entity(ies) on whose behalf this submittal is made satisfy(ies) the criteria in 310 CMR 40.0183(2); (iv) that I/the person(s) or entity(ies) on whose behalf this submittal is made have provided notice in accordance with 310 CMR 40.0183(5); and (v) that I am fully authorized to make this attestation on behalf of the person(s) or entity(ies) legally responsible for this submittal. I/the person(s) or entity(ies) on whose behalf this submittal is made is/are aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: _____ 3. Title: _____

4. For: BARNSTABLE COUNTY COMMISSIONERS 5. Date: _____ (mm/dd/yyyy)

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section F.

7. Street: _____

8. City/Town: _____ 9. State: _____ 10. Zip Code: _____

11. Telephone: _____ 12. Ext: _____ 13. Email: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY:)



IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Release Tracking Number

Remedial System or Monitoring Program: 1 of 2

4 - 26179

A. DESCRIPTION OF ACTIVE OPERATION AND MAINTENANCE ACTIVITY:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

☒ a. Active Remedial System: (check all that apply)☐ i. NAPL Recovery☐ ii. Soil Vapor Extraction/Bioventing☐ iii. Vapor-phase Carbon Adsorption☒ iv. Groundwater Recovery☐ v. Dual/Multi-phase Extraction☒ vi. Aqueous-phase Carbon Adsorption☐ vii. Air Stripping☐ viii. Sparging/Biosparging☐ ix. Cat/Thermal Oxidation☐ x. Other Describe: _____☐ b. Active Exposure Pathway Elimination MeasureActive Exposure Pathway Mitigation System to address (check one): ☐ i. Indoor Air ☐ ii. Drinking Water☐ c. Application of Remedial Additives: (check all that apply)☐ i. To the Subsurface☐ ii. To Groundwater (Injection)☐ iii. To the Surface☐ d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)☐ i. Reactive Wall☐ ii. Natural Attenuation☐ iii. Other

Describe: _____

2. Mode of Operation: (check one)

☒ a. Continuous☐ b. Intermittent☐ c. Pulsed☐ d. One-time Event Only☐ e. Other: _____

3. System Effluent/Discharge: (check all that apply)

☐ a. Sanitary Sewer/POTW☒ b. Groundwater Re-infiltration/Re-injection: (check one)☐ i. Downgradient☒ ii. Upgradient☐ c. Vapor-phase Discharge to Ambient Air: (check one)☐ i. Off-gas Controls☐ ii. No Off-gas Controls☐ d. Drinking Water Supply☐ e. Surface Water (including Storm Drains)☐ f. Other Describe: _____**B. MONITORING FREQUENCY:**

1. Reporting period that is the subject of this submittal:

From: 9/1/2021

To: 9/30/2021

(mm/dd/yyyy)

(mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

☐ a. System Startup: (if applicable)☐ i. Days 1, 3, 6, and then weekly thereafter, for the first month.☐ ii. Other Describe: _____☒ b. Post-system Startup (after first month) or Monitoring Program:☒ i. Monthly☐ ii. Quarterly☐ iii. Annually☐ iv. Other Describe: _____☒ 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.**C. EFFLUENT/DISCHARGE REGULATION:** (check one to indicate how the effluent/discharge limits were established)☐ 1. NPDES: (check one)☐ a. Remediation General Permit☐ b. Individual Permit☐ c. Emergency Exclusion

Effective Date of Permit: _____

(mm/dd/yyyy)

☐ 2. MCP Performance Standard

MCP Citations(s): _____

☒ 3. DEP Approval Letter

Date of Letter: 11/16/2018

(mm/dd/yyyy)

☐ 4. Other Describe: _____



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: 1 of 2

BWSC105 -A

Release Tracking Number

4 - 26179

D. WASTEWATER TREATMENT PLANT OPERATOR: (check one)

☒ 1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days.

a. Name: TJMCGOFF

b. Grade: 4

c. License No: 15570

d. License Exp. Date: 12/31/2021

(mm/dd/yyyy)

☐ 2. Not Required

☐ 3. Not Applicable

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (check all that apply)

☒ 1. The Active Remedial System was functional one or more days during the Reporting Period.

a. Days System was Fully Functional: 30

b. GW Recovered (gals): 466617

c. NAPL Recovered (gals):

d. GW Discharged (gals): 466617

e. Avg. Soil Gas Recovery Rate (scfm):

f. Avg. Sparging Rate (scfm):

☐ 2. Remedial Additives: (check all that apply)

☐ a. No Remedial Additives applied during the Reporting Period.

☐ b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Nitrogen/Phosphorus:

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units

☐ iii. Microorganisms:

☐ iv. Other:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units

☐ c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Permanganates:

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units

☐ iii. Persulfates:

☐ iv. Other:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105 -A

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: of

Release Tracking Number

-

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)

☐ d. Other additives applied: (total quantity applied at the site for the current reporting period)

Name of Additive	Date	Quantity	Units	Name of Additive	Date	Quantity	Units

☐ e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)

F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)

☐ 1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: _____ b. Total Number of Days of Unscheduled Shutdowns: _____

c. Reason(s) for Unscheduled Shutdowns: _____

☐ 2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Scheduled Shutdowns: _____ b. Total Number of Days of Scheduled Shutdowns: _____

c. Reason(s) for Scheduled Shutdowns: _____

☐ 3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.

a. Date of Final System or Monitoring Program Shutdown: _____
(mm/dd/yyyy)

☐ b. No Further Effluent Discharges.

☐ c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.

☐ d. No Further Submittals Planned.

☐ e. Other: Describe: _____

G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)

☒ 1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.

☒ 2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.

☒ 3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

☐ 5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.

**Massachusetts Department of Environmental Protection***Bureau of Waste Site Cleanup***IRA REMEDIAL MONITORING REPORT****MEASUREMENTS**

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program:

1

of:

2

BWSC105 -B

Release Tracking Number

4

26179

For each Point of Measurement, related to concentration indicate the highest concentration detected during the reporting period, of each oil, hazardous material and/or remedial additive.

For each Point of Measurement for pressure differentials, indicate the lowest pressure differential detected during the reporting period.

Point of Measurement	Date (mm/dd/yyyy)	Contaminant, Measurement and/or Indicator Parameter	Influent Concentration (where applicable)	Midpoint Concentration (where applicable)	(check one)	Check here, if ND/BDL	Permissible Concentration or Pressure Differential	Units	Within Permissible Limits? (Y/N)
					<input checked="" type="checkbox"/> Discharge <input type="checkbox"/> Ground Water Concentration Pressure Differential				
SYSTEM	09/20/2021	PFAS	0.641			<input checked="" type="checkbox"/>	0.020	UG/L	YES

☐ Check here if any additional BWSC105 B, Measurements Form(s), are needed.



Bureau of Waste Site Cleanup

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Release Tracking Number

Remedial System or Monitoring Program: 2 of 2

4 - 26179

A. DESCRIPTION OF ACTIVE OPERATION AND MAINTENANCE ACTIVITY:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

☒ a. Active Remedial System: (check all that apply)☐ i. NAPL Recovery☐ ii. Soil Vapor Extraction/Bioventing☐ iii. Vapor-phase Carbon Adsorption☒ iv. Groundwater Recovery☐ v. Dual/Multi-phase Extraction☒ vi. Aqueous-phase Carbon Adsorption☐ vii. Air Stripping☐ viii. Sparging/Biosparging☐ ix. Cat/Thermal Oxidation☐ x. Other Describe: _____☐ b. Active Exposure Pathway Elimination MeasureActive Exposure Pathway Mitigation System to address (check one): ☐ i. Indoor Air ☐ ii. Drinking Water☐ c. Application of Remedial Additives: (check all that apply)☐ i. To the Subsurface☐ ii. To Groundwater (Injection)☐ iii. To the Surface☐ d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)☐ i. Reactive Wall☐ ii. Natural Attenuation☐ iii. Other Describe: _____

2. Mode of Operation: (check one)

☒ a. Continuous☐ b. Intermittent☐ c. Pulsed☐ d. One-time Event Only☐ e. Other: _____

3. System Effluent/Discharge: (check all that apply)

☐ a. Sanitary Sewer/POTW☒ b. Groundwater Re-infiltration/Re-injection: (check one)☐ i. Downgradient☒ ii. Upgradient☐ c. Vapor-phase Discharge to Ambient Air: (check one)☐ i. Off-gas Controls☐ ii. No Off-gas Controls☐ d. Drinking Water Supply☐ e. Surface Water (including Storm Drains)☐ f. Other Describe: _____**B. MONITORING FREQUENCY:**

1. Reporting period that is the subject of this submittal:

From: 9/1/2021

To: 9/30/2021

(mm/dd/yyyy)

(mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

☐ a. System Startup: (if applicable)☐ i. Days 1, 3, 6, and then weekly thereafter, for the first month.☐ ii. Other Describe: _____☒ b. Post-system Startup (after first month) or Monitoring Program:☒ i. Monthly☐ ii. Quarterly☐ iii. Annually☐ iv. Other Describe: _____☒ 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.**C. EFFLUENT/DISCHARGE REGULATION:** (check one to indicate how the effluent/discharge limits were established)☐ 1. NPDES: (check one)☐ a. Remediation General Permit☐ b. Individual Permit☐ c. Emergency Exclusion

Effective Date of Permit: _____

(mm/dd/yyyy)

☐ 2. MCP Performance Standard

MCP Citations(s): _____

☒ 3. DEP Approval Letter

Date of Letter: 11/16/2018

(mm/dd/yyyy)

☐ 4. Other Describe: _____



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: 2 of 2

BWSC105 -A

Release Tracking Number

4 - 26179

D. WASTEWATER TREATMENT PLANT OPERATOR: (check one)

☒ 1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days.

a. Name: TJMCGOFF

b. Grade: 4

c. License No: 15570

d. License Exp. Date: 12/31/2021

(mm/dd/yyyy)

☐ 2. Not Required

☐ 3. Not Applicable

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (check all that apply)

☒ 1. The Active Remedial System was functional one or more days during the Reporting Period.

a. Days System was Fully Functional: 30

b. GW Recovered (gals): 277713

c. NAPL Recovered (gals):

d. GW Discharged (gals): 277713

e. Avg. Soil Gas Recovery Rate (scfm):

f. Avg. Sparging Rate (scfm):

☐ 2. Remedial Additives: (check all that apply)

☐ a. No Remedial Additives applied during the Reporting Period.

☐ b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Nitrogen/Phosphorus:

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units

☐ iii. Microorganisms:

☐ iv. Other:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units

☐ c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Permanganates:

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units

☐ iii. Persulfates:

☐ iv. Other:

Name of Additive	Date	Quantity	Units

Name of Additive	Date	Quantity	Units



IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: 2 of 2

Release Tracking Number

4 - 26179

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)☐ d. Other additives applied: (total quantity applied at the site for the current reporting period)

Name of Additive	Date	Quantity	Units	Name of Additive	Date	Quantity	Units

☐ e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)**F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)**☐ 1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: _____ b. Total Number of Days of Unscheduled Shutdowns: _____

c. Reason(s) for Unscheduled Shutdowns: _____

☐ 2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Scheduled Shutdowns: _____ b. Total Number of Days of Scheduled Shutdowns: _____

c. Reason(s) for Scheduled Shutdowns: _____

☐ 3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.a. Date of Final System or Monitoring Program Shutdown: _____
(mm/dd/yyyy)☐ b. No Further Effluent Discharges.☐ c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.☐ d. No Further Submittals Planned.☐ e. Other: Describe: _____**G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)**☒ 1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.☒ 2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.☒ 3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

CARBON BREAKTHROUGH WAS OBSERVED IN THE PRIMARY LGAC VESSEL OF GWTS#2.

☐ 5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC105 -B

IRA REMEDIAL MONITORING REPORT

MEASUREMENTS

Release Tracking Number

Pursuant to 310 CMR 40.0400 (SUBPART D)

4

26179

Remedial System or Monitoring Program:

2

of:

2

For each Point of Measurement, related to concentration indicate the highest concentration detected during the reporting period, of each oil, hazardous material and/or remedial additive.

For each Point of Measurement for pressure differentials, indicate the lowest pressure differential detected during the reporting period.

Point of Measurement	Date (mm/dd/yyyy)	Contaminant, Measurement and/or Indicator Parameter	Influent Concentration (where applicable)	Midpoint Concentration (where applicable)	(check one)	Check here, if ND/BDL	Permissible Concentration or Pressure Differential	Units	Within Permissible Limits? (Y/N)
					<input checked="" type="checkbox"/> Discharge <input type="checkbox"/> Ground Water Concentration <input type="checkbox"/> Pressure Differential				
SYSTEM	09/20/2021	PFAS	0.641	0.697	0.002	<input type="checkbox"/>	0.020	UG/L	YES

☐ Check here if any additional BWSC105 B, Measurements Form(s), are needed.



Your Project #: BFTA
Site#: 6206
Site Location: BARNSTABLE
Your C.O.C. #: 836599-02-01

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2021/10/18
Report #: R6856894
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1R3681

Received: 2021/09/22, 13:05

Sample Matrix: Ground Water
Samples Received: 5

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Low level PFOS and PFOA by SPE/LCMS (1)	1	2021/10/14	2021/10/15	CAM SOP-00894	EPA 537 m
Low level PFOS and PFOA by SPE/LCMS (1)	4	2021/10/02	2021/10/09	CAM SOP-00894	EPA 537 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: BFTA
Site#: 6206
Site Location: BARNSTABLE
Your C.O.C. #: 836599-02-01

Report Date: 2021/10/18
Report #: R6856894
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1R3681

Received: 2021/09/22, 13:05

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		QSL510			QSL511			
Sampling Date		2021/09/20 10:00			2021/09/20 10:05			
COC Number		836599-02-01			836599-02-01			
	UNITS	INFLUENT (PRW-4)	RDL	MDL	SYSTEM#1 MIDPOINT	RDL	MDL	QC Batch
Perfluorinated Compounds								
Perfluorobutanoic acid (PFBA)	ng/L	14	2.0	0.67	<0.67	2.0	0.67	7614764
Perfluoropentanoic acid (PFPeA)	ng/L	42	2.0	0.52	<0.52	2.0	0.52	7614764
Perfluorohexanoic acid (PFHxA)	ng/L	43	2.0	0.70	<0.70	2.0	0.70	7614764
Perfluoroheptanoic acid (PFHpA)	ng/L	28	2.0	0.51	<0.51	2.0	0.51	7614764
Perfluorooctanoic acid (PFOA)	ng/L	19	2.0	0.49	<0.49	2.0	0.49	7614764
Perfluorononanoic acid (PFNA)	ng/L	19	2.0	0.80	<0.80	2.0	0.80	7614764
Perfluorodecanoic acid (PFDA)	ng/L	5.1	2.0	0.64	<0.64	2.0	0.64	7614764
Perfluoroundecanoic acid (PFUnA)	ng/L	23	2.0	0.77	<0.77	2.0	0.77	7614764
Perfluorododecanoic acid (PFDoA)	ng/L	<0.59	2.0	0.59	<0.59	2.0	0.59	7614764
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.48	2.0	0.48	<0.48	2.0	0.48	7614764
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.37	2.0	0.37	<0.37	2.0	0.37	7614764
Perfluorobutanesulfonic acid (PFBS)	ng/L	5.9	2.0	0.47	<0.47	2.0	0.47	7614764
Perfluoropentanesulfonic acid (PFPeS)	ng/L	9.1	2.0	0.73	<0.73	2.0	0.73	7614764
Perfluorohexanesulfonic acid (PFHxS)	ng/L	90	2.0	0.53	<0.53	2.0	0.53	7614764
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	3.4	2.0	0.57	<0.57	2.0	0.57	7614764
Perfluorooctanesulfonic acid (PFOS)	ng/L	480	20	4.3	<0.43	2.0	0.43	7614764
Perfluorononanesulfonic acid (PFNS)	ng/L	<0.64	2.0	0.64	<0.64	2.0	0.64	7614764
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.53	2.0	0.53	<0.53	2.0	0.53	7614764
Perfluorooctane Sulfonamide (PFOSA)	ng/L	3.1	4.0	0.81	<0.81	4.0	0.81	7614764
6:2 Fluorotelomer sulfonic acid	ng/L	40	4.0	0.59	<0.59	4.0	0.59	7614764
8:2 Fluorotelomer sulfonic acid	ng/L	57	4.0	0.75	<0.75	4.0	0.75	7614764
Surrogate Recovery (%)								
13C2-6:2-Fluorotelomersulfonic Acid	%	85	N/A	N/A	109	N/A	N/A	7614764
13C2-8:2-Fluorotelomersulfonic Acid	%	88	N/A	N/A	109	N/A	N/A	7614764
13C2-Perfluorodecanoic acid	%	108	N/A	N/A	100	N/A	N/A	7614764
13C2-Perfluorododecanoic acid	%	100	N/A	N/A	91	N/A	N/A	7614764
13C2-Perfluorohexanoic acid	%	115	N/A	N/A	107	N/A	N/A	7614764
13C2-perfluorotetradecanoic acid	%	62	N/A	N/A	62	N/A	N/A	7614764
13C2-Perfluoroundecanoic acid	%	103	N/A	N/A	93	N/A	N/A	7614764
13C3-Perfluorobutanesulfonic acid	%	117	N/A	N/A	116	N/A	N/A	7614764
13C4-Perfluorobutanoic acid	%	102	N/A	N/A	109	N/A	N/A	7614764
13C4-Perfluoroheptanoic acid	%	120	N/A	N/A	111	N/A	N/A	7614764
13C4-Perfluorooctanesulfonic acid	%	62	N/A	N/A	105	N/A	N/A	7614764
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
N/A = Not Applicable								



**BUREAU
VERITAS**

Bureau Veritas Job #: C1R3681
Report Date: 2021/10/18

Barnstable County
Client Project #: BFTA
Site Location: BARNSTABLE
Sampler Initials: MM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		QSL510			QSL511			
Sampling Date		2021/09/20 10:00			2021/09/20 10:05			
COC Number		836599-02-01			836599-02-01			
	UNITS	INFLUENT (PRW-4)	RDL	MDL	SYSTEM#1 MIDPOINT	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	117	N/A	N/A	109	N/A	N/A	7614764
13C5-Perfluorononanoic acid	%	110	N/A	N/A	107	N/A	N/A	7614764
13C5-Perfluoropentanoic acid	%	107	N/A	N/A	108	N/A	N/A	7614764
13C8-Perfluorooctane Sulfonamide	%	58	N/A	N/A	29	N/A	N/A	7614764
18O2-Perfluorohexanesulfonic acid	%	119	N/A	N/A	121	N/A	N/A	7614764
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		QSL512				QSL513			
Sampling Date		2021/09/20 10:10				2021/09/20 09:52			
COC Number		836599-02-01				836599-02-01			
	UNITS	SYSTEM#1 EFFLUENT	RDL	MDL	QC Batch	SYSTEM#2 MIDPOINT	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ng/L	<0.67	2.0	0.67	7635696	14	2.0	0.67	7614764
Perfluoropentanoic acid (PFPeA)	ng/L	<0.52	2.0	0.52	7635696	39	2.0	0.52	7614764
Perfluorohexanoic acid (PFHxA)	ng/L	<0.70	2.0	0.70	7635696	41	2.0	0.70	7614764
Perfluoroheptanoic acid (PFHpA)	ng/L	<0.51	2.0	0.51	7635696	28	2.0	0.51	7614764
Perfluorooctanoic acid (PFOA)	ng/L	<0.49	2.0	0.49	7635696	19	2.0	0.49	7614764
Perfluorononanoic acid (PFNA)	ng/L	<0.80	2.0	0.80	7635696	22	2.0	0.80	7614764
Perfluorodecanoic acid (PFDA)	ng/L	<0.64	2.0	0.64	7635696	6.7	2.0	0.64	7614764
Perfluoroundecanoic acid (PFUnA)	ng/L	<0.77	2.0	0.77	7635696	41	2.0	0.77	7614764
Perfluorododecanoic acid (PFDoA)	ng/L	<0.59	2.0	0.59	7635696	<0.59	2.0	0.59	7614764
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.48	2.0	0.48	7635696	<0.48	2.0	0.48	7614764
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.37	2.0	0.37	7635696	<0.37	2.0	0.37	7614764
Perfluorobutanesulfonic acid (PFBS)	ng/L	<0.47	2.0	0.47	7635696	5.7	2.0	0.47	7614764
Perfluoropentanesulfonic acid (PFPeS)	ng/L	<0.73	2.0	0.73	7635696	9.8	2.0	0.73	7614764
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<0.53	2.0	0.53	7635696	91	2.0	0.53	7614764
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	<0.57	2.0	0.57	7635696	3.8	2.0	0.57	7614764
Perfluorooctanesulfonic acid (PFOS)	ng/L	<0.43	2.0	0.43	7635696	530	20	4.3	7614764
Perfluorononanesulfonic acid (PFNS)	ng/L	<0.64	2.0	0.64	7635696	1.2	2.0	0.64	7614764
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.53	2.0	0.53	7635696	<0.53	2.0	0.53	7614764
Perfluorooctane Sulfonamide (PFOSA)	ng/L	<0.81	4.0	0.81	7635696	3.5	4.0	0.81	7614764
6:2 Fluorotelomer sulfonic acid	ng/L	<0.59	4.0	0.59	7635696	40	4.0	0.59	7614764
8:2 Fluorotelomer sulfonic acid	ng/L	<0.75	4.0	0.75	7635696	70	4.0	0.75	7614764
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	103	N/A	N/A	7635696	78	N/A	N/A	7614764
13C2-8:2-Fluorotelomersulfonic Acid	%	92	N/A	N/A	7635696	92	N/A	N/A	7614764
13C2-Perfluorodecanoic acid	%	87	N/A	N/A	7635696	107	N/A	N/A	7614764
13C2-Perfluorododecanoic acid	%	69	N/A	N/A	7635696	96	N/A	N/A	7614764
13C2-Perfluorohexanoic acid	%	108	N/A	N/A	7635696	106	N/A	N/A	7614764
13C2-perfluorotetradecanoic acid	%	52	N/A	N/A	7635696	80	N/A	N/A	7614764
13C2-Perfluoroundecanoic acid	%	74	N/A	N/A	7635696	101	N/A	N/A	7614764
13C3-Perfluorobutanesulfonic acid	%	93	N/A	N/A	7635696	122	N/A	N/A	7614764
13C4-Perfluorobutanoic acid	%	94	N/A	N/A	7635696	93	N/A	N/A	7614764
13C4-Perfluoroheptanoic acid	%	112	N/A	N/A	7635696	109	N/A	N/A	7614764
13C4-Perfluorooctanesulfonic acid	%	92	N/A	N/A	7635696	76	N/A	N/A	7614764
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
N/A = Not Applicable									



**BUREAU
VERITAS**

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		QSL512				QSL513			
Sampling Date		2021/09/20 10:10				2021/09/20 09:52			
COC Number		836599-02-01				836599-02-01			
	UNITS	SYSTEM#1 EFFLUENT	RDL	MDL	QC Batch	SYSTEM#2 MIDPOINT	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	110	N/A	N/A	7635696	110	N/A	N/A	7614764
13C5-Perfluorononanoic acid	%	100	N/A	N/A	7635696	106	N/A	N/A	7614764
13C5-Perfluoropentanoic acid	%	107	N/A	N/A	7635696	99	N/A	N/A	7614764
13C8-Perfluorooctane Sulfonamide	%	66	N/A	N/A	7635696	49	N/A	N/A	7614764
18O2-Perfluorohexanesulfonic acid	%	97	N/A	N/A	7635696	117	N/A	N/A	7614764
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		QSL514			
Sampling Date		2021/09/20 09:55			
COC Number		836599-02-01			
	UNITS	SYSTEM#2 EFFLUENT	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ng/L	<0.67	2.0	0.67	7614764
Perfluoropentanoic acid (PFPeA)	ng/L	<0.52	2.0	0.52	7614764
Perfluorohexanoic acid (PFHxA)	ng/L	<0.70	2.0	0.70	7614764
Perfluoroheptanoic acid (PFHpA)	ng/L	<0.51	2.0	0.51	7614764
Perfluorooctanoic acid (PFOA)	ng/L	<0.49	2.0	0.49	7614764
Perfluorononanoic acid (PFNA)	ng/L	<0.80	2.0	0.80	7614764
Perfluorodecanoic acid (PFDA)	ng/L	<0.64	2.0	0.64	7614764
Perfluoroundecanoic acid (PFUnA)	ng/L	<0.77	2.0	0.77	7614764
Perfluorododecanoic acid (PFDoA)	ng/L	<0.59	2.0	0.59	7614764
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.48	2.0	0.48	7614764
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.37	2.0	0.37	7614764
Perfluorobutanesulfonic acid (PFBS)	ng/L	<0.47	2.0	0.47	7614764
Perfluoropentanesulfonic acid (PFPeS)	ng/L	<0.73	2.0	0.73	7614764
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<0.53	2.0	0.53	7614764
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	<0.57	2.0	0.57	7614764
Perfluorooctanesulfonic acid (PFOS)	ng/L	1.6	2.0	0.43	7614764
Perfluorononanesulfonic acid (PFNS)	ng/L	<0.64	2.0	0.64	7614764
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.53	2.0	0.53	7614764
Perfluorooctane Sulfonamide (PFOSA)	ng/L	<0.81	4.0	0.81	7614764
6:2 Fluorotelomer sulfonic acid	ng/L	<0.59	4.0	0.59	7614764
8:2 Fluorotelomer sulfonic acid	ng/L	<0.75	4.0	0.75	7614764
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	74	N/A	N/A	7614764
13C2-8:2-Fluorotelomersulfonic Acid	%	100	N/A	N/A	7614764
13C2-Perfluorodecanoic acid	%	98	N/A	N/A	7614764
13C2-Perfluorododecanoic acid	%	88	N/A	N/A	7614764
13C2-Perfluorohexanoic acid	%	97	N/A	N/A	7614764
13C2-perfluorotetradecanoic acid	%	52	N/A	N/A	7614764
13C2-Perfluoroundecanoic acid	%	92	N/A	N/A	7614764
13C3-Perfluorobutanesulfonic acid	%	113	N/A	N/A	7614764
13C4-Perfluorobutanoic acid	%	84	N/A	N/A	7614764
13C4-Perfluoroheptanoic acid	%	104	N/A	N/A	7614764
13C4-Perfluorooctanesulfonic acid	%	103	N/A	N/A	7614764
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
N/A = Not Applicable					



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

RESULTS OF ANALYSES OF GROUND WATER

Bureau Veritas ID		QSL514			
Sampling Date		2021/09/20 09:55			
COC Number		836599-02-01			
	UNITS	SYSTEM#2 EFFLUENT	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	100	N/A	N/A	7614764
13C5-Perfluorononanoic acid	%	97	N/A	N/A	7614764
13C5-Perfluoropentanoic acid	%	92	N/A	N/A	7614764
13C8-Perfluorooctane Sulfonamide	%	49	N/A	N/A	7614764
18O2-Perfluorohexanesulfonic acid	%	118	N/A	N/A	7614764
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681
Report Date: 2021/10/18

Barnstable County
Client Project #: BFTA
Site Location: BARNSTABLE
Sampler Initials: MM

TEST SUMMARY

Bureau Veritas ID: QSL510
Sample ID: INFLUENT (PRW-4)
Matrix: Ground Water

Collected: 2021/09/20
Shipped:
Received: 2021/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	7614764	2021/10/02	2021/10/09	Patrick Yu Peng Li

Bureau Veritas ID: QSL511
Sample ID: SYSTEM#1 MIDPOINT
Matrix: Ground Water

Collected: 2021/09/20
Shipped:
Received: 2021/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	7614764	2021/10/02	2021/10/09	Patrick Yu Peng Li

Bureau Veritas ID: QSL512
Sample ID: SYSTEM#1 EFFLUENT
Matrix: Ground Water

Collected: 2021/09/20
Shipped:
Received: 2021/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	7635696	2021/10/14	2021/10/15	Xinhe Xing (Helena)

Bureau Veritas ID: QSL513
Sample ID: SYSTEM#2 MIDPOINT
Matrix: Ground Water

Collected: 2021/09/20
Shipped:
Received: 2021/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	7614764	2021/10/02	2021/10/09	Patrick Yu Peng Li

Bureau Veritas ID: QSL514
Sample ID: SYSTEM#2 EFFLUENT
Matrix: Ground Water

Collected: 2021/09/20
Shipped:
Received: 2021/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	7614764	2021/10/02	2021/10/09	Patrick Yu Peng Li



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

GENERAL COMMENTS

Sample QSL510 [INFLUENT (PRW-4)] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample QSL513 [SYSTEM#2 MIDPOINT] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.



**BUREAU
VERITAS**

Bureau Veritas Job #: C1R3681
Report Date: 2021/10/18

Barnstable County
Client Project #: BFTA
Site Location: BARNSTABLE
Sampler Initials: MM

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7614764	YPL	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2021/10/09		89	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2021/10/09		90	%	50 - 150
			13C2-Perfluorodecanoic acid	2021/10/09		89	%	50 - 150
			13C2-Perfluorododecanoic acid	2021/10/09		85	%	50 - 150
			13C2-Perfluorohexanoic acid	2021/10/09		92	%	50 - 150
			13C2-perfluorotetradecanoic acid	2021/10/09		82	%	50 - 150
			13C2-Perfluoroundecanoic acid	2021/10/09		87	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2021/10/09		90	%	50 - 150
			13C4-Perfluorobutanoic acid	2021/10/09		92	%	50 - 150
			13C4-Perfluoroheptanoic acid	2021/10/09		95	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2021/10/09		90	%	50 - 150
			13C4-Perfluorooctanoic acid	2021/10/09		90	%	50 - 150
			13C5-Perfluorononanoic acid	2021/10/09		90	%	50 - 150
			13C5-Perfluoropentanoic acid	2021/10/09		92	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2021/10/09		56	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2021/10/09		91	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2021/10/09		88	%	70 - 130
			Perfluoropentanoic acid (PFPeA)	2021/10/09		89	%	70 - 130
			Perfluorohexanoic acid (PFHxA)	2021/10/09		89	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)	2021/10/09		88	%	70 - 130
			Perfluorooctanoic acid (PFOA)	2021/10/09		91	%	70 - 130
			Perfluorononanoic acid (PFNA)	2021/10/09		92	%	70 - 130
			Perfluorodecanoic acid (PFDA)	2021/10/09		89	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)	2021/10/09		87	%	70 - 130
			Perfluorododecanoic acid (PFDoA)	2021/10/09		84	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)	2021/10/09		86	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)	2021/10/09		88	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)	2021/10/09		88	%	70 - 130
			Perfluoropentanesulfonic acid PFPes	2021/10/09		87	%	70 - 130
			Perfluorohexanesulfonic acid(PFHxS)	2021/10/09		93	%	70 - 130
			Perfluoroheptanesulfonic acid PFHpS	2021/10/09		87	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)	2021/10/09		84	%	70 - 130
			Perfluorononanesulfonic acid (PFNS)	2021/10/09		84	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)	2021/10/09		83	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/09		87	%	70 - 130
			6:2 Fluorotelomer sulfonic acid	2021/10/09		88	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2021/10/09		85	%	70 - 130
7614764	YPL	Spiked Blank DUP	13C2-6:2-Fluorotelomersulfonic Acid	2021/10/09		96	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2021/10/09		95	%	50 - 150
			13C2-Perfluorodecanoic acid	2021/10/09		97	%	50 - 150
			13C2-Perfluorododecanoic acid	2021/10/09		91	%	50 - 150
			13C2-Perfluorohexanoic acid	2021/10/09		101	%	50 - 150
			13C2-perfluorotetradecanoic acid	2021/10/09		90	%	50 - 150
			13C2-Perfluoroundecanoic acid	2021/10/09		94	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2021/10/09		99	%	50 - 150
			13C4-Perfluorobutanoic acid	2021/10/09		99	%	50 - 150
			13C4-Perfluoroheptanoic acid	2021/10/09		101	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2021/10/09		94	%	50 - 150
			13C4-Perfluorooctanoic acid	2021/10/09		100	%	50 - 150
			13C5-Perfluorononanoic acid	2021/10/09		96	%	50 - 150
			13C5-Perfluoropentanoic acid	2021/10/09		101	%	50 - 150



BUREAU
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Bureau Veritas Job #: C1R3681
Report Date: 2021/10/18

Barnstable County
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Site Location: BARNSTABLE
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7614764	YPL	RPD	13C8-Perfluorooctane Sulfonamide	2021/10/09		46	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2021/10/09		100	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2021/10/09		89	%	70 - 130
			Perfluoropentanoic acid (PFPeA)	2021/10/09		88	%	70 - 130
			Perfluorohexanoic acid (PFHxA)	2021/10/09		89	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)	2021/10/09		90	%	70 - 130
			Perfluorooctanoic acid (PFOA)	2021/10/09		88	%	70 - 130
			Perfluorononanoic acid (PFNA)	2021/10/09		92	%	70 - 130
			Perfluorodecanoic acid (PFDA)	2021/10/09		90	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)	2021/10/09		86	%	70 - 130
			Perfluorododecanoic acid (PFDoA)	2021/10/09		86	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)	2021/10/09		85	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)	2021/10/09		88	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)	2021/10/09		89	%	70 - 130
			Perfluoropentanesulfonic acid PFPes	2021/10/09		84	%	70 - 130
			Perfluorohexanesulfonic acid(PFHxS)	2021/10/09		91	%	70 - 130
			Perfluoroheptanesulfonic acid PFHpS	2021/10/09		88	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)	2021/10/09		88	%	70 - 130
			Perfluorononanesulfonic acid (PFNS)	2021/10/09		86	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)	2021/10/09		83	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/09		92	%	70 - 130
			6:2 Fluorotelomer sulfonic acid	2021/10/09		88	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2021/10/09		90	%	70 - 130
			Perfluorobutanoic acid (PFBA)	2021/10/09	1.3		%	30
			Perfluoropentanoic acid (PFPeA)	2021/10/09	1.4		%	30
			Perfluorohexanoic acid (PFHxA)	2021/10/09	0.50		%	30
			Perfluoroheptanoic acid (PFHpA)	2021/10/09	2.8		%	30
			Perfluorooctanoic acid (PFOA)	2021/10/09	2.7		%	30
			Perfluorononanoic acid (PFNA)	2021/10/09	0.82		%	30
			Perfluorodecanoic acid (PFDA)	2021/10/09	1.1		%	30
			Perfluoroundecanoic acid (PFUnA)	2021/10/09	0.86		%	30
			Perfluorododecanoic acid (PFDoA)	2021/10/09	2.3		%	30
			Perfluorotridecanoic acid (PFTRDA)	2021/10/09	0.47		%	30
			Perfluorotetradecanoic acid(PFTEDA)	2021/10/09	0.16		%	30
			Perfluorobutanesulfonic acid (PFBS)	2021/10/09	1.6		%	30
			Perfluoropentanesulfonic acid PFPes	2021/10/09	3.2		%	30
			Perfluorohexanesulfonic acid(PFHxS)	2021/10/09	1.4		%	30
			Perfluoroheptanesulfonic acid PFHpS	2021/10/09	1.5		%	30
			Perfluorooctanesulfonic acid (PFOS)	2021/10/09	4.2		%	30
			Perfluorononanesulfonic acid (PFNS)	2021/10/09	2.4		%	30
			Perfluorodecanesulfonic acid (PFDS)	2021/10/09	0.36		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/09	5.3		%	30
			6:2 Fluorotelomer sulfonic acid	2021/10/09	0.078		%	30
			8:2 Fluorotelomer sulfonic acid	2021/10/09	4.8		%	30
7614764	YPL	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2021/10/09		103	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2021/10/09		105	%	50 - 150
			13C2-Perfluorodecanoic acid	2021/10/09		99	%	50 - 150
			13C2-Perfluorododecanoic acid	2021/10/09		96	%	50 - 150
			13C2-Perfluorohexanoic acid	2021/10/09		108	%	50 - 150
			13C2-perfluorotetradecanoic acid	2021/10/09		93	%	50 - 150
			13C2-Perfluoroundecanoic acid	2021/10/09		96	%	50 - 150



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C3-Perfluorobutanesulfonic acid	2021/10/09		106	%	50 - 150
			13C4-Perfluorobutanoic acid	2021/10/09		106	%	50 - 150
			13C4-Perfluoroheptanoic acid	2021/10/09		110	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2021/10/09		100	%	50 - 150
			13C4-Perfluorooctanoic acid	2021/10/09		104	%	50 - 150
			13C5-Perfluorononanoic acid	2021/10/09		100	%	50 - 150
			13C5-Perfluoropentanoic acid	2021/10/09		107	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2021/10/09		39	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2021/10/09		107	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2021/10/09	<0.67		ng/L	
			Perfluoropentanoic acid (PFPeA)	2021/10/09	<0.52		ng/L	
			Perfluorohexanoic acid (PFHxA)	2021/10/09	<0.70		ng/L	
			Perfluoroheptanoic acid (PFHpA)	2021/10/09	<0.51		ng/L	
			Perfluorooctanoic acid (PFOA)	2021/10/09	<0.49		ng/L	
			Perfluorononanoic acid (PFNA)	2021/10/09	<0.80		ng/L	
			Perfluorodecanoic acid (PFDA)	2021/10/09	<0.64		ng/L	
			Perfluoroundecanoic acid (PFUnA)	2021/10/09	<0.77		ng/L	
			Perfluorododecanoic acid (PFDoA)	2021/10/09	<0.59		ng/L	
			Perfluorotridecanoic acid (PFTRDA)	2021/10/09	<0.48		ng/L	
			Perfluorotetradecanoic acid (PFTEDA)	2021/10/09	<0.37		ng/L	
			Perfluorobutanesulfonic acid (PFBS)	2021/10/09	<0.47		ng/L	
			Perfluoropentanesulfonic acid (PFPeS)	2021/10/09	<0.73		ng/L	
			Perfluorohexanesulfonic acid (PFHxS)	2021/10/09	<0.53		ng/L	
			Perfluoroheptanesulfonic acid (PFHpS)	2021/10/09	<0.57		ng/L	
			Perfluorooctanesulfonic acid (PFOS)	2021/10/09	<0.43		ng/L	
			Perfluorononanesulfonic acid (PFNS)	2021/10/09	<0.64		ng/L	
			Perfluorodecanesulfonic acid (PFDS)	2021/10/09	<0.53		ng/L	
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/09	<0.81		ng/L	
			6:2 Fluorotelomer sulfonic acid	2021/10/09	<0.59		ng/L	
			8:2 Fluorotelomer sulfonic acid	2021/10/09	<0.75		ng/L	
7635696	XIN	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2021/10/15		105	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2021/10/15		106	%	50 - 150
			13C2-Perfluorodecanoic acid	2021/10/15		111	%	50 - 150
			13C2-Perfluorododecanoic acid	2021/10/15		93	%	50 - 150
			13C2-Perfluorohexanoic acid	2021/10/15		115	%	50 - 150
			13C2-perfluorotetradecanoic acid	2021/10/15		92	%	50 - 150
			13C2-Perfluoroundecanoic acid	2021/10/15		101	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2021/10/15		110	%	50 - 150
			13C4-Perfluorobutanoic acid	2021/10/15		110	%	50 - 150
			13C4-Perfluoroheptanoic acid	2021/10/15		117	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2021/10/15		113	%	50 - 150
			13C4-Perfluorooctanoic acid	2021/10/15		118	%	50 - 150
			13C5-Perfluorononanoic acid	2021/10/15		112	%	50 - 150
			13C5-Perfluoropentanoic acid	2021/10/15		115	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2021/10/15		59	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2021/10/15		112	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2021/10/15		111	%	70 - 130
			Perfluoropentanoic acid (PFPeA)	2021/10/15		112	%	70 - 130
			Perfluorohexanoic acid (PFHxA)	2021/10/15		108	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)	2021/10/15		104	%	70 - 130
			Perfluorooctanoic acid (PFOA)	2021/10/15		107	%	70 - 130



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7635696	XIN	Spiked Blank DUP	Perfluorononanoic acid (PFNA)	2021/10/15		111	%	70 - 130
			Perfluorodecanoic acid (PFDA)	2021/10/15		110	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)	2021/10/15		104	%	70 - 130
			Perfluorododecanoic acid (PFDoA)	2021/10/15		102	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)	2021/10/15		101	%	70 - 130
			Perfluorotetradecanoic acid (PFTEDA)	2021/10/15		100	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)	2021/10/15		108	%	70 - 130
			Perfluoropentanesulfonic acid (PFPeS)	2021/10/15		106	%	70 - 130
			Perfluorohexanesulfonic acid (PFHxS)	2021/10/15		103	%	70 - 130
			Perfluoroheptanesulfonic acid (PFHpS)	2021/10/15		106	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)	2021/10/15		108	%	70 - 130
			Perfluorononanesulfonic acid (PFNS)	2021/10/15		99	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)	2021/10/15		93	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/15		103	%	70 - 130
			6:2 Fluorotelomer sulfonic acid	2021/10/15		109	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2021/10/15		105	%	70 - 130
			13C2-6:2-Fluorotelomersulfonic Acid	2021/10/15		103	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2021/10/15		99	%	50 - 150
			13C2-Perfluorodecanoic acid	2021/10/15		109	%	50 - 150
			13C2-Perfluorododecanoic acid	2021/10/15		90	%	50 - 150
			13C2-Perfluorohexanoic acid	2021/10/15		112	%	50 - 150
			13C2-perfluorotetradecanoic acid	2021/10/15		89	%	50 - 150
			13C2-Perfluoroundecanoic acid	2021/10/15		95	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2021/10/15		109	%	50 - 150
			13C4-Perfluorobutanoic acid	2021/10/15		111	%	50 - 150
			13C4-Perfluoroheptanoic acid	2021/10/15		114	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2021/10/15		105	%	50 - 150
			13C4-Perfluorooctanoic acid	2021/10/15		115	%	50 - 150
			13C5-Perfluorononanoic acid	2021/10/15		109	%	50 - 150
			13C5-Perfluoropentanoic acid	2021/10/15		114	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2021/10/15		48	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2021/10/15		110	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2021/10/15		108	%	70 - 130
			Perfluoropentanoic acid (PFPeA)	2021/10/15		109	%	70 - 130
			Perfluorohexanoic acid (PFHxA)	2021/10/15		106	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)	2021/10/15		103	%	70 - 130
			Perfluorooctanoic acid (PFOA)	2021/10/15		105	%	70 - 130
			Perfluorononanoic acid (PFNA)	2021/10/15		110	%	70 - 130
			Perfluorodecanoic acid (PFDA)	2021/10/15		104	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)	2021/10/15		102	%	70 - 130
			Perfluorododecanoic acid (PFDoA)	2021/10/15		99	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)	2021/10/15		99	%	70 - 130
			Perfluorotetradecanoic acid (PFTEDA)	2021/10/15		103	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)	2021/10/15		106	%	70 - 130
			Perfluoropentanesulfonic acid (PFPeS)	2021/10/15		103	%	70 - 130
			Perfluorohexanesulfonic acid (PFHxS)	2021/10/15		102	%	70 - 130
			Perfluoroheptanesulfonic acid (PFHpS)	2021/10/15		105	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)	2021/10/15		112	%	70 - 130
			Perfluorononanesulfonic acid (PFNS)	2021/10/15		95	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)	2021/10/15		88	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/15		105	%	70 - 130



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681
Report Date: 2021/10/18

Barnstable County
Client Project #: BFTA
Site Location: BARNSTABLE
Sampler Initials: MM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
7635696	XIN	RPD	6:2 Fluorotelomer sulfonic acid	2021/10/15		106	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2021/10/15		110	%	70 - 130
			Perfluorobutanoic acid (PFBA)	2021/10/15	2.3		%	30
			Perfluoropentanoic acid (PFPeA)	2021/10/15	2.8		%	30
			Perfluorohexanoic acid (PFHxA)	2021/10/15	1.8		%	30
			Perfluoroheptanoic acid (PFHpA)	2021/10/15	0.85		%	30
			Perfluorooctanoic acid (PFOA)	2021/10/15	2.3		%	30
			Perfluorononanoic acid (PFNA)	2021/10/15	0.68		%	30
			Perfluorodecanoic acid (PFDA)	2021/10/15	5.2		%	30
			Perfluoroundecanoic acid (PFUnA)	2021/10/15	2.4		%	30
			Perfluorododecanoic acid (PFDoA)	2021/10/15	2.9		%	30
			Perfluorotridecanoic acid (PFTRDA)	2021/10/15	1.9		%	30
			Perfluorotetradecanoic acid (PFTEDA)	2021/10/15	2.9		%	30
			Perfluorobutanesulfonic acid (PFBS)	2021/10/15	2.2		%	30
			Perfluoropentanesulfonic acid (PFPeS)	2021/10/15	2.6		%	30
			Perfluorohexanesulfonic acid (PFHxS)	2021/10/15	1.3		%	30
			Perfluoroheptanesulfonic acid (PFHpS)	2021/10/15	1.0		%	30
			Perfluorooctanesulfonic acid (PFOS)	2021/10/15	3.6		%	30
			Perfluorononanesulfonic acid (PFNS)	2021/10/15	4.4		%	30
			Perfluorodecanesulfonic acid (PFDS)	2021/10/15	5.0		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/15	2.1		%	30
			6:2 Fluorotelomer sulfonic acid	2021/10/15	2.7		%	30
			8:2 Fluorotelomer sulfonic acid	2021/10/15	4.3		%	30
7635696	XIN	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2021/10/15		105	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2021/10/15		104	%	50 - 150
			13C2-Perfluorodecanoic acid	2021/10/15		102	%	50 - 150
			13C2-Perfluorododecanoic acid	2021/10/15		86	%	50 - 150
			13C2-Perfluorohexanoic acid	2021/10/15		107	%	50 - 150
			13C2-perfluorotetradecanoic acid	2021/10/15		88	%	50 - 150
			13C2-Perfluoroundecanoic acid	2021/10/15		93	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2021/10/15		102	%	50 - 150
			13C4-Perfluorobutanoic acid	2021/10/15		106	%	50 - 150
			13C4-Perfluoroheptanoic acid	2021/10/15		110	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2021/10/15		105	%	50 - 150
			13C4-Perfluorooctanoic acid	2021/10/15		111	%	50 - 150
			13C5-Perfluorononanoic acid	2021/10/15		106	%	50 - 150
			13C5-Perfluoropentanoic acid	2021/10/15		109	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2021/10/15		57	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2021/10/15		100	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2021/10/15	<0.67		ng/L	
			Perfluoropentanoic acid (PFPeA)	2021/10/15	<0.52		ng/L	
			Perfluorohexanoic acid (PFHxA)	2021/10/15	<0.70		ng/L	
			Perfluoroheptanoic acid (PFHpA)	2021/10/15	<0.51		ng/L	
			Perfluorooctanoic acid (PFOA)	2021/10/15	<0.49		ng/L	
			Perfluorononanoic acid (PFNA)	2021/10/15	<0.80		ng/L	
			Perfluorodecanoic acid (PFDA)	2021/10/15	<0.64		ng/L	
			Perfluoroundecanoic acid (PFUnA)	2021/10/15	<0.77		ng/L	
			Perfluorododecanoic acid (PFDoA)	2021/10/15	<0.59		ng/L	
			Perfluorotridecanoic acid (PFTRDA)	2021/10/15	<0.48		ng/L	
			Perfluorotetradecanoic acid (PFTEDA)	2021/10/15	<0.37		ng/L	
			Perfluorobutanesulfonic acid (PFBS)	2021/10/15	<0.47		ng/L	



QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluoropentanesulfonic acid PFPes	2021/10/15	<0.73		ng/L	
			Perfluorohexanesulfonic acid(PFHxS)	2021/10/15	<0.53		ng/L	
			Perfluoroheptanesulfonic acid PFHpS	2021/10/15	<0.57		ng/L	
			Perfluorooctanesulfonic acid (PFOS)	2021/10/15	<0.43		ng/L	
			Perfluorononanesulfonic acid (PFNS)	2021/10/15	<0.64		ng/L	
			Perfluorodecanesulfonic acid (PFDS)	2021/10/15	<0.53		ng/L	
			Perfluorooctane Sulfonamide (PFOSA)	2021/10/15	<0.81		ng/L	
			6:2 Fluorotelomer sulfonic acid	2021/10/15	<0.59		ng/L	
			8:2 Fluorotelomer sulfonic acid	2021/10/15	<0.75		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



BUREAU
VERITAS

Bureau Veritas Job #: C1R3681

Report Date: 2021/10/18

Barnstable County

Client Project #: BFTA

Site Location: BARNSTABLE

Sampler Initials: MM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Colm McNamara, Senior Analyst, Liquid Chromatography

Sin Chii Chia, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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Page 1 of 1



October 5, 2021

Mark S. Ells, Town Manager
Town of Barnstable
200 Main Street
Hyannis, MA 02601

RE: Immediate Response Action Status and Remedial Monitoring Report #58
Barnstable County Fire and Rescue Training Academy
155 South Flint Rock Road
Barnstable, Massachusetts
DEP Release Tracking No. 4-26179
Project File #6206

Dear Mr. Ells,

As required by the Massachusetts Contingency Plan (MCP) 310 CMR 40.1403(3)(e) and 40.1403(6), BETA Group, Inc. (BETA) is notifying you on behalf of our client, Barnstable County, that an Immediate Response Action (IRA) Status and Remedial Monitoring Report (RMR) No. 58 is being submitted to the Massachusetts Department of Environmental Protection – Bureau of Waste Site Cleanup (MassDEP – BWSC) for the release site referenced as the former Barnstable County Fire and Rescue Training Academy (BCFRTA) located at 155 South Flint Rock Road in Barnstable, Massachusetts (the site). This Report summarizes the IRA activities that occurred during the September 2021 monthly reporting period.

Pursuant to the Massachusetts Contingency Plan (310 CMR 40.0480), an Initial Site Investigation has been performed at the site. A release of oils and/or hazardous materials has occurred at the site. In August 2016, MassDEP Southeast Regional Office issued a Notice of Responsibility (NOR) to Barnstable County, as current owner and operator of the Barnstable County Fire and Rescue Training Academy (BCFRTA), that the detection of elevated concentrations of poly- and perfluoralkyl substances (PFAS) in groundwater at the site constituted a release under the MCP. MassDEP issued Release Tracking Number (RTN) 4-26179 to this release. As summarized in the NOR, based on the detected PFAS concentrations in soil and groundwater at the BCFRTA and the inferred groundwater flow, MassDEP determined that the releases of PFAS from the use of aqueous film-forming foam (AFFF) at the BCFRTA is a source of PFAS detected in the Mary Dunn public water supply wells.

During the September reporting period, the treatment systems (GWTS #1 and GWTS#2) were both in operation for all or portions of approximately 30 days.

The overall (average) system flow rate and gallons of groundwater treated are based on the available Effluent flow totalizer readings reported by the O&M contractor. For the September 2021 reporting period GWTS#1 and GWTS#2 treated an approximate combined 0.74 million gallons of groundwater from the downgradient recovery well PRW-4 at an average, total combined effluent flow rate of 17.2 gpm.

The average combined influent flow rate was measured to be 20.3 gpm. Based on the total of 0.74 million gallons treated, approximately 0.0021 kilograms of PFAS were estimated to have been removed from the plume area.

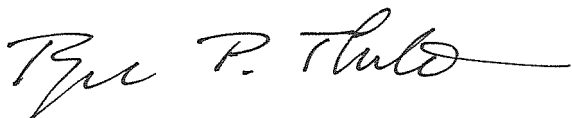
At this time, IRA activities are ongoing. Continuing IRA activities will include operation and monitoring of the on-Site Groundwater Pump and Treatment Systems (GWPTS), including performance sampling of GWPTS, review and evaluation of the on-Site GWPTS operation and maintenance activities as they affect groundwater treatment, periodic groundwater monitoring, and construction of the capping and select demolition project is underway. Additional details regarding the continuing IRA activities are included in the IRA Status and RMR No. 58 report document.

The IRA Status and RMR document is available electronically via the searchable sites database of the MassGOV / MassDEP website via the following link:

<https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0026179>

If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,
BETA Group, Inc.



Roger P. Thibault, P.E., LSP
Associate/Project Manager

Copies: Mass Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

Thomas Mckean, Director
Town of Barnstable Health Division
200 Main Street
Hyannis, MA 02601

Hans Keijser, Supervisor
Town of Barnstable Water Supply Division
47 Old Yarmouth Road
Hyannis, MA 02601