AREA 2 PRELIMINARY SITE CHARACTERIZATION SUMMARY
PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) REMEDIAL INVESTIGATION

FORMER FORT DEVENS ARMY INSTALLATION, DEVENS, MA



SEPTEMBER 2020

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Area 2 Preliminary Site Characterization Summary
Per- and Polyfluoroalkyl Substances (PFAS) Remedial Investigation
Former Fort Devens Army Installation
Devens, Massachusetts

September 2020

CERTIFICATION:

I hereby certify that the enclosed Report, shown and marked in this submittal, is that proposed to be incorporated with Contract Number W912WJ-18-C-0011. This document was prepared in accordance with the U.S. Army Corps of Engineers (USACE) Scope of Work and is hereby submitted for Government approval.

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09/11/2020

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AFFF	aqueous film forming foam
AOC	area of contamination
Army	U.S. Army
AST	above ground storage tank
BERS-Weston	BERS-Weston Services JVA, LLC
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DPT	direct push technology
DRFTA	Devens Reserve Forces Training Area
DQO	data quality objectives
DRMO	Defense Reuse and Marketing Office
E&E	Ecology and Environment, Inc.
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
FSP	field sampling plan
ft	feet
GW-1	Massachusetts Contingency Plan Method 1 Groundwater
HLA	Harding Lawson Associates
J	estimated result
KGS	KOMAN Government Solutions, LLC
k-spar	potassium-spar
LHA	lifetime health advisory
LTM	long-term monitoring
MassDEP	Massachusetts Department of Environmental Protection
MassDevelopment	Massachusetts Development and Finance Agency
MCP	Massachusetts Contingency Plan
MNA	monitored natural attenuation
NAVD88	North America Vertical Datum 1988
NIA	North Impact Area
ng/L	nanograms per liter
PA	preliminary assessment
PFDA	perfluorodecanoic acid
PFAS	per- and polyfluoroalkyl substances
PFHpA	perfluoroheptanoic acid
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
POL	petroleum, oil lubricants
PSCS	preliminary site characterization summary
RI	Remedial Investigation
ROD	Record of Decision
SA	study area
SHL	Shepley's Hill Landfill
SI	Site Inspection
SSSL	site-specific screening level
S&W	Stone and Webster Environmental Technology and Services
S-1	MCP Method 1 S-1 Soil Category
µg/kg	micrograms per kilogram
UST	underground storage tank

1.0 INTRODUCTION

KOMAN Government Solutions, LLC (KGS), on behalf of the U.S. Army Corps of Engineers (USACE) New England District, has prepared this Preliminary Site Characterization Summary (PSCS) for the Per- and Polyfluoroalkyl Substances (together, "PFAS") Remedial Investigation (RI) at the former Fort Devens Army Installation (Devens) located in Devens, Massachusetts.

The PSCS summarizes data that have been collected at numerous Areas of Contamination (AOC) identified in the *Draft Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018a) and as shown on Figure 1-1.

To expedite the field investigations, the identified AOCs, Grove Pond wellfield, and MacPherson, Patton, and Shabokin water supply well areas were grouped into three areas (Areas 1, 2, and 3). This PSCS addresses part of Area 2 as indicated below.

Area 2 (partial):

- AOC 32/43A Former Defense Reuse and Marketing Office(DRMO)/Petroleum, Oil, Lubricants (POL) Storage Area;
- AOC 76 Devens Fire Station;
- MacPherson Well Area; and,
- AOC 5 Shepley's Hill Landfill (SHL).

The Area 1 PSCS (KGS, 2020) addressed Area 1 and part of Area 2 as indicated below.

Area 1:

- AOC 57 Building 3713 Fuel Oil Spill Site;
- AOC 74 Barnum Road Firefighting Exercise Site;
- AOC 75 Former Building T-1445 Warehouse Fire; and,
- Grove Pond wellfield.

Area 2 (partial):

- AOC 40 Cold Spring Brook Landfill;
- AOC 43G Historical Gas Station G;
- AOC 43J Historical Gas Station J;
- Patton water supply well; and,
- Shabokin water supply well.

A future PSCS submittal will include Area 3.

The PSCS is a summary of site data following completion of the initial field sampling and analysis (EPA, 1988). The intent is to better understand and assess any potential data gaps remaining at the AOCs, and determine additional data gathering activities. The U.S. Army (Army) will prepare a bulleted list of data gaps following discussions at the Base Cleanup Team meetings, which will be used to develop specific Data Quality Objectives (DQO) for the development of an RI Addendum work plan.

1.1 Investigation Approach

The initial field activities for the AOCs covered in this PSCS were detailed in the *Draft Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018a) and the *Area 2 Field Sampling Plan (FSP) Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). The initial activities were planned based on results from the *Final Base-Wide Preliminary Assessment for Evaluation of Perfluoroalkyl Substances* (KGS, 2017), the *Site Inspection (SI) Addendum for Additional Per- and Polyfluoroalkyl Substances (PFAS) Sampling at Area of Contamination (AOC) 76-Devens Fire Department and Long Term Monitoring (LTM) Wells at AOCs 57, 43G, 43J, 32, 43A, 50 and Shepley's Hill Landfill (SHL) Former Fort Devens Army Installation Devens, Massachusetts* (BERS-Weston, 2018a), and the *Final Site Inspection Report for Per- and Polyfluoroalkyl*

Substances (PFAS) at Former Fort Devens Army Installation, Devens, MA (BERS-Weston, 2018b). Knowledge of the sites through previous investigations, operation and maintenance activities, and long-term monitoring activities, which included various groundwater models were also used to plan field activities.

The field work was conducted in an iterative manner. The field work commenced with the work detailed in the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). While executing the field work, analytical data from sampling of existing monitoring wells, groundwater vertical profiling, soil sampling, and surface water and sediment sampling was shared with U.S. Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (MassDEP) as it was received from the laboratory. The results were discussed with EPA and MassDEP and additional activities, not detailed in the field sampling plan (FSP), needed to achieve the study goals and DQOs were recommended. The recommendations were developed based on review of the analytical data and understanding of groundwater flow direction based on analysis of field data or review of information from previous field investigations or groundwater flow models. Further activities included additional vertical profiles, soil borings, surface water and sediment sampling, existing monitoring well sampling, installation of piezometers, and synoptic water level surveys. As additional results were received and reviewed, further work was conducted, which sometimes resulted in numerous phases of field activities at different AOCs. The field work at each AOC is discussed in subsequent sections.

After existing monitoring wells were sampled in Area 1 and Area 2, further sampling of existing monitoring wells was detailed in the *Work Plan for Additional Sampling of Existing Wells to Support the PFAS Remedial Investigation Former Fort Devens Army Installation, Devens, MA* (KGS, 2019). This supplemental sampling of existing monitoring wells was intended to provide additional data regarding the nature and extent of PFAS at these sites for the RI and will be used to support evaluation of trends in PFAS concentrations in groundwater over time.

There were minor deviations to the FSPs and FSP addendums related to locations of drilling activities, additions and deletions of locations, or activities at specific locations. As is typical with field investigations, some locations were adjusted based on field conditions (e.g., steep terrain, proximity to wetlands, safety considerations). None of the adjustments to the locations negatively impacted meeting the DQOs. There were no major deviations to the methods detailed in the work plan, FSPs, and FSP addendums.

1.2 Report Organization

The site characteristics, general geology, and regional hydrogeology at former Fort Devens are described in Section 2. The results of synoptic water level events conducted in the areas addressed in this report are reported in Section 2 and site-specific groundwater flow conditions are described in the subsequent site-specific sections. Sections 3 through 5 each address a specific area of investigation listed above. The PFAS results related to each area of investigation are discussed in the applicable section. The PFAS results in various media are described in each applicable section with respect to the media-specific criteria (Table 1-1). Section 6 addresses a sample collected from a well that is currently not associated with any AOC in the PFAS RI. The field sheets, soil boring logs, piezometer construction logs, and results are presented in appendices.

2.0 FORMER FORT DEVENS SITE LOCATION AND DESCRIPTION

Devens is located in the towns of Ayer and Shirley in Middlesex County, and the towns of Harvard and Lancaster in Worcester County, Massachusetts, approximately 35 miles northwest of Boston, Massachusetts. The installation occupied approximately 9,260 acres. Fort Devens was divided into the North Post, Main Post, and South Post. Route 2 divides the South Post from the Main Post. The Nashua River runs through the North, Main, and South Posts. The area surrounding Devens is primarily comprised of rural residential properties. Portions of Devens have been redeveloped for commercial/industrial use.

Camp Devens was established in 1917 as a temporary training area for soldiers during World War I. In 1932, the site was named Fort Devens and made a permanent installation with the primary mission of commanding, training, and providing logistical support for non-divisional troop units. Fort Devens was used for a variety of training missions between 1917 and 1990. Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Fort Devens was placed on the National Priorities List on November 21, 1989, due to environmental contamination at several sites.

Fort Devens was identified for cessation of operations and closure under Public Law 101-510, the Defense Base Realignment and Closure (BRAC) Act of 1990, and officially closed in March 1996. As part of the Devens BRAC program, portions of the property formerly occupied by Devens were retained by the U.S. Army for reserve forces training and renamed the Devens Reserve Forces Training Area (DRFTA). Areas not retained as part of the DRFTA were transferred to new owners, the Massachusetts Development and Finance Agency (MassDevelopment), U.S. Department of Labor, U.S. Department of Justice, and the U.S. Fish and Wildlife Service, for reuse and redevelopment. In 2009, the DRFTA was renamed the U.S. Army Garrison Fort Devens.

2.1 Physical Characteristics

Devens lies within the Nashua River basin. The Nashua River flows north through the former North, Main, and South Posts (Figures 2-1 and 2-2). The Nashua River forms the western installation boundary on the former Main Post. Other notable surface water features include: Grove Pond located north of the Grove Pond wellfield, Plow Shop Pond located west of Grove Pond, Nonacoicus Brook flowing from Plow Shop Pond to the Nashua River, Cold Spring Brook located east of AOCs 57, 74, and 75, an unnamed stream located east of AOC 43G, Robbins Pond located east of AOC 43G, Willow Brook flowing north from Robbins Pond to Nonacoicus Brook, Cold Spring Brook Pond (AOC 40), and Mirror Lake and Little Mirror Lake located between Patton and Shabokin wells. The specific surface water bodies and their relations to specific areas of investigation are discussed in applicable sections.

The geography of Devens is characterized by undulating glacial terrain. The landforms are products of glacial erosion and deposition on a crystalline bedrock terrain. Terrain at Devens falls generally into three types. The least common is bedrock terrain, where rocks that have been resistant to both glacial and fluvial erosion remain as topographic highs, sometimes thinly veneered by glacial deposits. A more common terrain at Devens consists of tills deposited by glaciers. These landforms often conform to the shape of the underlying bedrock surface. They range from areas of comparatively low topographic relief to elongated hills (drumlins) [Harding Lawson Associates (HLA), 2000].

The most common terrain at Devens was formed by sediment accumulations in glacial-meltwater streams and lakes (glaciofluvial and glaciolacustrine deposits). Other prominent glacial meltwater features are kame and kettle topography present on the former Main Post near Mirror Lake and Little Mirror Lake located between the Patton and Shabokin wells.

2.2 Geology

The major glacial units consist of till, deltaic deposits from former glacial Lake Nashua, and deposits from glacial meltwater streams (Figure 2-3). Glacial till at Devens consists of unstratified gravel to silt and typically contains boulders. The till at the site is typically approximately 10 feet thick but is up to 60 feet

thick in the cores of drumlins. The glacial lake deposits consist chiefly of sand and gravelly sand. Lake bottom deposits consist of sand, silt, and clay. Post-glacial deposits consist of river terrace sands and gravels, fine alluvial sands and silts, as well as peat and silt and sands in swampy areas. Generalized surficial geology by AOC is described below and is based on the *2018 Surficial Materials Map of the Ayer Quadrangle, Massachusetts* (Stone and Stone) that in turn, was based on geologic units mapped by Richard Jahns in 1953 (Jahns, 1953).

- AOC 32/43A - coarse terrace deposits, chiefly kame terraces, coarse sand and pebble to boulder gravel, with bedrock outcrops and till over shallow bedrock to the east and west, and kame deposits farther to the east, and muck and peat in the wetland to the east.
- MacPherson – river terraces and floodplain silt and sand, terraces due in part to erosion.
- Shepley's Hill Landfill – primarily coarse sand and pebble to boulder gravel kame-plain or ice-contact deposits, with some swamp deposits chiefly muck and peat, some thin deposits of sand and gravel, some sand and pebble to cobble gravel in terrace and delta-outwash plain deposits, some small chiefly pebble to boulder gravel with some fine to coarse sand kame deposits and near Nonacoicus Brook some kame deposits of shore and near-shore deposits of glacial Lake Nashua.
- AOC 76 – artificial fill and a mix of thins deposits of sand and gravel, sand and pebble to cobble gravel kame deposits, sand and pebble to cobble gravel terrace and delta-outwash plain deposits, and river terraces and floodplain silt and sand to the north.

Bedrock beneath the portion of Devens covered under this PSCS has been mapped as part of the *Preliminary Bedrock Geologic Map of the Ayer Quadrangle, Massachusetts* (Kopera, 2006). Bedrock chiefly consists of low-grade metasedimentary rocks, gneisses, and granites. The principal bedrock units are described below and illustrated on Figure 2-4.

- The Oakdale Formation underlies AOC 76 and the MacPherson well. The formation is described by Kopera as thinly laminated, light tan micaceous quartz-muscovite-ankerite siltstone and quartzite interbedded with thin, dark greenish-grey, chlorite-muscovite-quartz- ankerite phyllite. At biotite and actinolite grade, consists of fine grained reddish and greenish siltstone granofels.
- The Devens Gneiss Complex underlies AOC 32/43A and SHL and is believed to be of Silurian age. The unit is described by Kopera as light to medium grey, buff to pink weathering, coarse-grained quartz-potassium-spar (k-spar) biotite granite-gneiss, with subordinate tonalitic and dioritic gneiss near Harvard Center. Biotite content varies locally as much as approximately 15 percent. Sheared to a medium to dark grey fine- to medium-grained S/C mylonite with k-spar porphyroclasts near the Clinton-Newbury fault zone. Intruded by the Ayer Granite.

Other bedrock units beneath or in the general vicinity of Devens and depicted on Figure 2-4 include:

- The Ayer Granite of Silurian age and described by Kopera as light to dark grey, buff weathering, coarse-grained, porphyritic quartz-k-spar biotite granite with distinctive k-spar megacrysts up to 8 centimeters in diameter. Locally foliated, sheared and altered to an augen gneiss and talc-bearing schist near the Clinton-Newbury fault zone. A non-porphyritic phase has been mapped separately northwest of Harvard center.
- The Chelmsford Granite of Devonian age and described by Kopera as white to buff weathering, light grey medium- to coarse-grained feldspar-quartzbiotite granite. Biotite occurs in isolated rusty weathering clots. Commonly contains screens and xenoliths of presumed Berwick formation. Distinctive quartz veins, up to 2 centimeters in width and several meters in length, are common. Locally foliated and/or sheared near the Clinton-Newbury fault zone. Also includes a medium grey, buff weathering, fine- to medium-grained quartz-feldspar-muscovite-biotite granite-gneiss, and a

well-foliated light grey k-spar-quartz-muscovite granite-gneiss near the Clinton-Newbury fault. Intrudes the Ayer granite and Devens gneiss complex.

- The Berwick Formation of Silurian age and described by Kopera as thinly to massively bedded, light green-grey, fine-grained metamorphosed calcareous siltstone, quartzite, and quartzo-feldspathic granofels. Also contains a fine-grained, massively bedded muscovite-quartz-biotite quartzite and schist containing distinctive 1-millimeter knots of biotite.
- The Tadmuck Brook Schist is possibly of late Proterozoic or early Paleozoic age. The formation is described by Kopera as rusty weathering, sulfidic, quartz-muscovite-biotite with or without sillimanite, andalusite, or staurolite, schist. Metamorphic grade increases from west to east across strike.

The bedrock elevation contours were mapped using data gathered as part of the PFAS RI, previous investigations at Devens, well drilling records available through the Massachusetts Energy & Environmental Affairs Data Portal (eeaonline.eea.state.ma.us), and Massachusetts Geological Survey (Figure 2-5, Table 2-1). There is significant relief in bedrock elevations across Devens and the surrounding area. The area shown has bedrock elevations ranging from -49 feet (ft) North America Vertical Datum 1988 (NAVD88) to 408 ft NAVD88.

2.3 Regional Hydrogeology

The Nashua River is the eventual discharge locus for surface water and groundwater flow at Devens. The tributaries of the Nashua River at Devens are Nonacoicus Brook and Walker Brook on the former North Post; Cold Spring Brook (which is a tributary of the Nonacoicus Brook through Grove Pond and Plow Shop Pond) on the former Main Post (Figure 2-2). There is also a lesser stream, Willow Brook that discharges to Nonacoicus Brook to the north. Willow Brook originates from Robbins Pond and is fed by Robbins Pond, surface water runoff, storm water discharge, and groundwater. On the west side of the Nashua River there are also a number of tributaries west of Devens, specifically Catacoonamug Brook, Trout Brook, Morse Brook, Walker Brook, and Mulpus Brook. The groundwater flow direction at each AOC is addressed in applicable sections.

Glacial meltwater deposits constitute the primary overburden aquifer at Devens. Groundwater also occurs in the underlying bedrock; however, flow is limited because regional bedrock lacks primary porosity and/or has been affected by metamorphism that limits transmissivity (an example would be the degree of development of transmissive partings parallel to layering). The result is bedrock groundwater flow that is primarily via fractures and dissolution voids.

The zones of highest transmissivity within the overburden are found in areas of thick glacial meltwater (outwash) deposits on the former Main Post at Devens, and these encompass deposits in which the Shabokin, Patton, MacPherson, and Grove Pond water supply wells are screened (Figure 2-6). Due to the high transmissivity of these overburden deposits, these areas are preferential groundwater flow areas. The zones of lowest transmissivity are typically associated with exposed till and bedrock.

Groundwater recharge occurs in upland areas and groundwater flows generally from the topographic highs to topographic lows. Groundwater discharges in wetlands, ponds, streams, and directly into the Nashua River.

The Devens Groundwater Use and Value is categorized as “High” as determined by MassDEP (MassDEP, 2003) and the MassDEP groundwater classification of GW-1 is applied throughout Devens. The MassDEP approved water supply Zone II’s, as well as the potentially productive aquifer areas, and the Devens Aquifer Protection and Watershed Protection Districts are shown on Figure 2-6.

The synoptic water level measurements taken for the PFAS RI in the areas addressed in this report are presented in Tables 2-2, 2-3, 2-4, and 2-6. The groundwater elevation contour maps based on those measurements are on Figures 2-7, 2-8, 2-9, 2-10, 2-12, and 2-13. A synoptic event was performed at SHL

in October 2019 (Table 2-5, Figure 2-11) in support of the long-term monitoring (LTM) program and is provided in this report for reference. The contour intervals vary between figures based on the level of scale and area of interest. The groundwater flow directions and gradients are discussed in the applicable sections.

3.0 AOC 32/43A PRELIMINARY SITE CHARACTERIZATION SUMMARY

3.1 Site Description

The AOC 32/43A and surrounding areas have been redeveloped and currently consist of large warehouse type buildings (constructed in 2001 and 2007) and paved areas. The area is generally flat with the land sloping down to a wetland north of the Devens Recycling Center.

The area is zoned Rail, Industrial & Trade Related. There are no wells in the area that are used for drinking water supply, irrigation water supply, or any other water supply purposes. A permit is required from Devens Enterprise Commission for installation of any water supply well.

3.2 Facility History and Utilities

AOC 32 (former DRMO Yard) historically consisted of three fenced areas (West Yard, East Yard, and Tire Recycling Area) along Cook Street (Figure 3-1). The West Yard, a paved area formerly used for the storage of used equipment containing lead-acid batteries, as well as for storage of telecommunications and administrative equipment; the former East Yard, a paved area that was used for disassembling vehicles for reusable parts; and the Tire Recycling Area, an unpaved area used for the storage and recycling of tires. Records indicated that the facility was actively used by the Army from approximately 1964 to 1995 (KGS, 2017). In addition, a former waste oil underground storage tank site, located just northeast of the former DRMO Office, was also incorporated into AOC 32.

South of AOC 32 is a series of underground storage tanks (UST), aboveground storage tanks (AST), and gasoline pump stations, that was name AOC 43A (former POL Storage Area). During the 1940s and 1950s, AOC 43A, was a fenced lot that served as a distribution facility for all the gasoline stations at Fort Devens. The distribution facility formerly consisted of a main gasoline station, a pump house (former building T-401) with five fuel USTs and four fuel ASTs, railroad tracks, an asphalt driveway led into the POL Storage Area from Antietam Street (Figure 3-1) [Stone & Webster Environmental Technology and Services (S&W), 1998].

The land where historic AOC 32/43A source areas are located was redeveloped to include paved areas and a large warehouse constructed in 2001 (Nobis, 2005). The current owner, O'Reilly Auto, purchased the property in 2013. The land where DRMO West Yard was located is owned by JPR Trust (purchased in 2000). The land east of AOC 32/43A was divided and the northern parcel sold to Devens Recycling Center, LLC (purchased in 2006) and the southern parcel is currently owned by National Ind Portfolio Borrower, LLC (purchased in 2007). The National Ind Portfolio Borrower, LLC property is undeveloped. The Devens Recycling Center was constructed by 2007. The Devens Recycling Center had a large fire at the facility in May 2015. Sixty 5-gallon pails of aqueous film forming foam (AFFF) were used to extinguish the fire (KGS, 2017). The facility is a construction and demolition debris processing center.

The current and previous subsurface features are shown on Figures 3-2 and 3-3. The current stormwater system around the Devens Recycling Center discharges storm water to detention areas south and southwest of the center and an infiltration gallery southeast of the center.

3.3 Remedial Status

Prior to the PFAS investigation, investigations, remediation, and post-remediation monitoring has occurred at AOCs 32 and 43A, under the CERCLA program, to address issues related to the USTs and ASTs identified at the sites described above. A brief summary of those activities is presented below.

At AOC 32, in 1991, a SI was performed at the DRMO Yard. Two operable units were included, a soils operable unit, that included the excavation and off-site disposal of soil and a groundwater operable unit associated with a waste-oil UST. Excavated soils were removed from the East Yard and the former Tire Recycling Yard (KGS, 2017). Analytical findings of the SI reported xylene and petroleum contamination in soil and groundwater.

In 1994, a RI was conducted and concluded that soil and groundwater contamination at the site required further remedial action [Ecology and Environment, Inc. (E&E), 1994]. Potential remedial alternatives were presented in a feasibility study (FS) and the preferred alternative was presented in a proposed plan. The record of decision (ROD) documented the final choice of remedy for cleanup of soils by excavation with off-site disposal and cleanup of groundwater by monitored natural attenuation (MNA) (Horne, 1998). Remedial actions for the soil included the removal and disposal of metal debris; the removal and disposal of soil contaminated with petroleum, pesticides, and lead; and the removal and disposal of non-hazardous soil containing shredded tire scrap (S&W, 2000a).

In 1999, MNA field activities commenced at AOC 32 and a final assessment and recommendations report concerning the effectiveness of the MNA based on ROD criteria was presented in February 2000. The report determined that natural attenuation, supplemented with long-term groundwater monitoring and the establishment of institutional controls, would be an effective remedial action for AOC 32 (S&W, 2000c). Monitoring of the groundwater at the site has continued and the results reported on an annual basis.

At AOC 43A, between 1965 and 1972, four fuel oil ASTs were removed. In 1989 and 1990, five fuel oil USTs were located, and the adjacent soils were excavated and removed from the site, respectively. Five USTs and 800 cubic feet of contaminated soil was removed from the site. Total petroleum hydrocarbons were detected in soil collected during the excavation (E&E, 1994). This remedial action removed the source from AOC 43A.

In 1991, five new USTs were installed in the POL Storage Area and were used to store fuel for military vehicles. In 1992, the Army conducted a SI and reported low levels of xylene and elevated petroleum in subsurface soils. In 1994 a RI was conducted to determine the nature and distribution of the detected contamination. Findings of the RI concluded that groundwater contamination required a remedial action evaluation (S&W, 2000b). Potential remedial alternatives were presented in a FS and the preferred alternative was presented in a proposed plan. The 1998 ROD documented the final remedy choice of institutional controls and MNA long-term monitoring (Horne, 1998).

Per the ROD, long-term monitoring has continued at AOC 32/43A.

3.4 PFAS Field Investigation

The RI field investigation at AOC 32/43A included sampling existing monitoring wells, collecting a surface water and sediment sample from the detention pond north of the Devens Recycling Center, groundwater vertical profiling using direct push technology (DPT), soil borings using DPT, piezometer installation, and synoptic water level events. The work was completed in general accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). Field activities were added as the data was received and reviewed. Sampling locations are presented on Figure 3-4 and summarized in Table 3-1. The results are discussed in Section 3.5.

3.4.1 Existing Wells

Groundwater samples were collected from existing monitoring wells at AOC 32/43A from November 2018 to January 2019 in accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b) (Table 3-1, Figure 3-4). A sample could not be collected from 32Z-01-11-XBR. The well was dry in the 2018/2019 Winter and in the 2019 Spring.

Groundwater samples were collected from one existing monitoring well (32M-01-14XBR) at AOC 32 in November 2019 and May 2020 in accordance with the *Work Plan for Additional Sampling of Existing Wells to Support the PFAS Remedial Investigation Former Fort Devens Army Installation, Devens, MA* (KGS, 2019). The groundwater results are discussed in Section 3.5.

3.4.2 Surface Water and Sediment

A surface water and sediment sample was collected from the detention pond north of the Devens Recycling Center in December 2018, in accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). The results are discussed in Section 3.5.

3.4.3 DPT Vertical Profiles

Two phases of DPT vertical profiles were conducted at AOC 32/43A. As results were received and reviewed, additional profiles were conducted to better delineate the PFAS contamination. The DPT vertical profiles are described below, are shown on Figure 3-4 and are summarized in Table 3-1.

AOC 32

The first round of vertical profiles at AOC 32 (32VP-19-01 through -08) was conducted from February into June 2019 downgradient of the area of historic AOC 32 contamination (Table 3-1, Figure 3-4).

Review of the initial vertical profile results and the existing monitoring well results at AOC 32 indicated that the highest concentrations in the area were north of the Devens Recycling Center at 32VP-19-01. Based on these results, a second set of vertical profiles (32VP-19-09 through -12) was completed. Two vertical profiles were conducted downgradient of 32VP-19-01 (32VP-19-09 and -10), one vertical profile was conducted northeast of the paved area where water and AFFF foam from extinguishing the fire may have runoff the pavement (32VP-19-11), and one vertical profile was conducted downgradient of the infiltration gallery that is a component of the storm water management system that collects storm water on the east side of the Devens Recycling Center (32VP-19-12). These four vertical profiles were conducted in September 2019. The results are discussed in Section 3.5.1.

AOC 43A

Four vertical profiles at AOC 43A (43AVP-19-01 through -04) were conducted in March to May 2019 downgradient of existing AOC 43A monitoring wells (Table 3-1, Figure 3-4). Based on review of the vertical profile results [maximum perfluorooctanoic acid (PFOA) + perfluorooctanesulfonic acid (PFOS) of 30.0 nanograms per liter (ng/L)] and existing monitoring well results (maximum PFOA + PFOS of 34.0 ng/L at 43M-01-17XBR) from AOC 43A and existing AOC 32 monitoring wells near AOC 43A, additional vertical profiles were not conducted at AOC 43A. The results are discussed in Section 3.5.1.

3.4.4 DPT Soil Borings

A total of 11 soil borings (32SB-19-01 through -11) were conducted at AOC 32 in October 2019. The locations of the soil borings were determined after review of the groundwater results from the existing wells and the vertical profiles (Figure 3-1). At 32SB-19-04, refusal occurred at a maximum depth of three feet below ground surface (bgs) during three attempts within the area cleared of subsurface utilities. Soil samples were not collected from this location. The soil borings activities were conducted accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). The results are summarized in Section 3.5.

3.4.5 Piezometer Installation

Two piezometers (32PZ-19-01 and -02) were installed in September and October 2019.

3.4.6 Synoptic Water Level Surveys

Two synoptic water level monitoring events that encompassed AOC 32/43A were conducted. One event was conducted in December 2018 and one was conducted in April 2020. All of the results are discussed in Section 3.5.

3.5 PFAS Nature and Extent

Groundwater PFAS results are summarized on Figure 3-5 and in cross section (Figures 3-6 through 3-8). Soil sampling results are summarized on Figure 3-9. Surface water and sediment sampling results are summarized on Figure 3-10. Site-specific groundwater contour figures are presented on Figures 2-7, 2-8, 2-12, 2-13, and 3-5. All of the PFAS results from the RI are presented in tables in Appendix H. The media specific criteria are presented in Table 1-1.

3.5.1 Groundwater

Groundwater at AOC 32 was characterized through existing monitoring wells and vertical profiles. At AOC 32, vertical profile samples were collected from 12 locations. A total of 87 vertical profile samples were collected from AOC 32. Table 3-2 provides summary statistics of the results of the vertical profile samples. Of those samples, 12 samples (14%) of the samples had concentrations greater than the EPA LHA and 57 samples (66%) had concentrations greater than the Massachusetts Contingency Plan (MCP) Method 1 Groundwater (GW-1) standard. Table 3-3 provides summary statistics of the results of the monitoring well samples in the AOC 32 area, which includes a few wells installed for SHL, specifically SHL-12, SHL-17, SHL-25, and SHM-93-24A. Of the 25 monitoring well samples collected, 7 samples (28%) had concentrations greater than the EPA LHA and 23 samples (92%) had concentrations greater than the GW-1. None of the concentrations were greater than the GW-3 standard (protective of surface water). The wells at AOC 32 are located in overburden and shallow bedrock.

The summary statistics table provides data with respect to individual compounds (e.g., number of samples with PFOA that exceed the EPA LHA and the GW-1 standard) and with respect to the sum of applicable compounds in the EPA LHA and the GW-1 standard (e.g., numbers of samples with the sum of PFOA+PFOS that exceed the EPA LHA, and number of samples with the sum PFOA+PFOS+ perfluorohexanesulfonic acid (PFHxS) + perfluorononanoic acid (PFNA) + perfluoroheptanoic acid (PFHpA)+perfluorodecanoic acid (PFDA) that exceed the GW-1 standard]. Due to the summing of concentrations needed for comparison to the EPA LHA and the GW-1 standard, the numbers of samples that exceed the EPA LHA or GW-1 standard for individual compounds may not equal the numbers of samples that exceed the sum of the appropriate compounds for the EPA LHA or GW-1 standard. One example is, if individual results of PFOA and PFOS were both below the EPA LHA, but the sum of the results exceeded the EPA LHA, then the sample would be counted as an exceedance of the EPA LHA even though the individual compounds would not be counted as exceedances.

At AOC 32, as indicated on Figure 3-5, PFAS was detected at concentrations greater than the EPA LHA at the tire recycling yard (32Z-01-07XOB), within and downgradient of the approximate historic extent of petroleum contamination (32M-01-14XBR and SHL-12), north of the Devens Recycling Center (32VP-19-01, -09, and -10), and downgradient of the infiltration gallery associated with the storm water collection system around the Devens Recycling Center (32VP-19-12 and -05). All of the locations had at least one groundwater sample that had PFAS concentrations greater than the GW-1 standard, except 32M-01-16XBR and SHL-17.

The maximum PFAS concentrations were detected off the north edge of the pavement from the Devens Recycling Center at 32VP-19-01, in the shallowest sample interval (17-21 ft bgs). The detected concentrations of PFOA + PFOS was 2,880 ng/L and the sum of the six GW-1 compounds was 4,300 ng/L. At 32VP-19-01, PFAS concentrations greater than the EPA LHA were detected from 17 to 41 ft bgs (24 ft thick) and concentrations above the GW-1 standard were detected from 17 to 51 ft bgs (34 ft thick). Downgradient (i.e., north/northeast) of 32VP-19-01 at 32VP-19-02, the maximum concentrations were detected at 32-36 ft bgs with lesser concentrations detected throughout the saturated overburden. PFAS concentrations greater than the GW-1 standard were detected at 32VP-19-02 from 12 to 70.5 ft bgs (except at 22-26 ft bgs). Downgradient of 32VP-19-01 at 32VP-19-09, and -10, PFAS concentrations greater than the EPA LHA and GW-1 standard were detected in the shallowest sample interval as well as deeper in the aquifer, but not continuously throughout the thickness of the saturated overburden. At 32VP-19-09 PFAS

concentrations greater than the EPA LHA were detected from 12 to 16 ft bgs and 49 to 73 ft bgs and PFAS concentrations greater than the GW-1 standard were detected from 12 to 16 ft bgs, 29 to 33, and 49 to 73 ft bgs. At 32VP-19-10, PFAS concentrations greater than the EPA LHA were detected from 9 to 13 ft bgs and from 79 to 83 ft bgs and PFAS concentrations greater than the GW-1 standard were detected from 9 to 23 ft bgs, 79 to 83 ft bgs, and 99 to 103 ft bgs.

The second highest PFAS concentrations were detected downgradient of the infiltration gallery at 32VP-19-12 with PFOA + PFOS = 449 ng/L and the sum of the six GW-1 compounds was 534 ng/L, in the shallowest sample interval (22 to 26 ft bgs). At 32VP-19-12, the PFAS concentrations greater than the EPA LHA were only detected from 22 to 26 ft bgs and PFAS concentrations greater than GW-1 standard were limited to the shallower portion of the aquifer (22 to 83 ft bgs at 32VP-19-12). Downgradient of 32VP-19-12 and 32VP-19-10, a transect of vertical profiles was conducted (32VP-19-04 through 07). PFAS concentrations were detected greater than the EPA LHA only at 32VP-19-05. At 32VP-19-05, the maximum concentration and the only sample interval with concentrations greater than the EPA LHA was detected in the shallowest sample interval (PFOA + PFOS = 108 ng/L, sum of the six GW-1 compounds = 154 ng/L, 22 to 26 ft bgs) with concentrations greater than the GW-1 standard detected down to 96 ft bgs. Additionally, PFAS concentrations were detected above the GW-1 standard at 32VP-19-04, -06 and -07, with the maximum concentrations at these three profiles detected at 32VP-19-04 (sum of the six GW-1 compounds = 75.4 ng/L, 27-31 ft bgs).

Groundwater at AOC 43A was characterized through existing monitoring wells and vertical profiles. During the RI, vertical profile samples were collected from four locations at AOC 43 A. Table 3-4 provides summary statistics of the results of the vertical profile samples. A total of 20 vertical profile samples were collected from AOC 43A. Of those samples, none of the samples had concentrations greater than the EPA lifetime health advisory (LHA) and 18 of 20 samples (90%) had concentrations greater than the Massachusetts Contingency Plan (MCP) Method 1 Groundwater (GW-1) standard. Table 3-5 provides summary statistics of the results of the monitoring well samples. Of the six monitoring well samples collected, none of the samples had concentrations greater than the EPA LHA and 5 samples (83%) had concentrations greater than the GW-1. None of the concentrations were greater than the GW-3 standard (protective of surface water). The wells at AOC 43A are located in overburden and shallow bedrock.

At AOC 43A, all of the groundwater samples collected from the vertical profiles and the existing monitoring wells were below the EPA LHA. The maximum concentration of PFOA + PFOS was 34.0 ng/L (43M-01-17XBR). All of the locations had at least one groundwater sample that had PFAS concentrations greater than the GW-1 standard, except 43M-01-20XBR. The maximum concentration of the sum of the six GW-1 PFAS compounds was 60.4 ng/L (43AVP-19-03, 27-31 ft bgs). Five to six samples intervals were collected at each of the vertical profile with all but two of the samples having PFAS concentrations greater than the GW-1 standard, indicating most of the thickness of the saturated overburden has concentrations greater than the GW-1 standard. Groundwater flows west from the former AOC 43A USTs and ASTs.

3.5.2 Soil

At AOC 32, 11 soil borings were advanced to a maximum depth of 25 feet bgs. At one boring (32SB-19-04) refusal occurred at 3 ft bgs and samples were not collected. Five locations had one or more sample intervals with detections of PFAS compounds greater than the MCP Method 1 S-1 Soil Category (S-1)/GW-1 standard. At 32SB-19-02, -03, -08, -09, and -10 PFAS compounds were not detected at concentrations greater than the S-1/GW-1 standards. Only PFOS and PFHxS were detected at concentrations above the S-1/GW-1 standards (Figure 3-9, Appendix H). Location 32SB-19-01 had the largest number of samples (three samples) with concentrations above the S-1/GW-1 standards and also had the highest concentrations of PFOS [6.30 micrograms per kilogram (µg/kg)]. The maximum concentration of PFHxS was detected at 32SB-19-06 (0.450 µg/kg).

3.5.3 Surface Water and Sediment

One surface water sample and one sediment sample were collected at AOC 32 (DP-18-01). The detections in surface water and sediment were below the EPA site-specific screening levels (SSSL) for PFAS at former Fort Devens (Table 1-1). The sampling location and data are summarized on Figure 3-10 and the data are presented in Appendix H.

The PFOA concentration in the surface water was 1.10 estimated result (J) ng/L and the PFOS and PFBS were non-detect. In the sediment sample, the PFOA, PFOS, and PFBS were non-detect.

4.0 AOC 76/MACPHERSON WELL PRELIMINARY SITE CHARACTERIZATION SUMMARY

During the RI field investigation, it became evident that the PFAS groundwater contamination at AOC 76 was related to the groundwater contamination detected at the MacPherson water supply well. For this PSCS, the AOC 76 and the MacPherson field activities and results will be discussed as part of a single site, specifically as part of AOC 76.

4.1 Site Description

AOC 76 (Devens Fire Station) is located at 182 Jackson Road at the intersection of Jackson Road and Barnum Road (Figure 4-1). The area is generally flat with the land sloping down toward the storm water retention pond located to the northeast of the Devens Fire Station building and east of the parking lot the land slopes down to Willow Brook, which is located east of the fire station.

Most of the area is zoned open space/recreation with some areas to the west zoned as Innovation & Technology Center, and some adjacent areas to the east zoned Gateway I Jackson and Residential II. It is not anticipated that the land use will change in the future. MassDevelopment operates the MacPherson water supply well (Figure 2-6) as part of the Devens municipal water supply. The MacPherson well is screened from 75 to 93 ft bgs. The well is operated at 350 gallons per minute. There are no other wells in the area that are used for drinking water supply, irrigation water supply, or any other water supply purposes. A permit is required from Devens Enterprise Commission for installation of any water supply well.

4.2 Facility History and Utilities

AOC 76 and the MacPherson water supply well were not identified as sites to be addressed under the CERCLA program prior to the PFAS investigations; therefore, there are no previous investigations or remedial activities associated with these sites.

AOC 76

The initial environmental investigation at the Devens Fire Station, designated as study area (SA) 76 at the time, was the PFAS Preliminary Assessment (KGS, 2017). The fire station at Jackson Road began operation in the 1940s by the Army for Fort Devens. No records have been found to document the potential storage/uses by the Army in this area before 1996 (KGS, 2017). The fire station was transitioned to MassDevelopment following base closure in 1996. The identified firefighting foam storage/use at the fire station post-dates the 1996 base closure (i.e., non-Army operations), although the Devens Deputy Fire Chief recalled that a dumpster fire at the fire station in the early 1990s was extinguished using foam. The Deputy Fire Chief indicated that since 1996, the Devens Fire Department has conducted some training in the paved area behind the fire station where fire-fighting foams were discharged to the ground. During training events, firefighting foams were sprayed over the paved area behind (southeast of) the fire station (KGS, 2017).

The Fire Chief has indicated that the Devens Fire Department currently stores small quantities of AFFF at the Jackson Road fire station. Engine #3 has a 30-gallon holding tank of AFFF; Engine #5 carries four 5-gallon pails; and 22 5-gallon pails are stored at the warehouse on Cook Street. When needed, the AFFF is connected to a truck sprayer and mixed with water at the point of use. There is no mixed foam stored on the truck or at the Devens Fire Station. The AFFF used since 1996 is "Universal Gold" manufactured by National Foam. The "Universal Gold" material safety data sheet indicates that the product contains a proprietary "fluoroalkyl surfactant" (KGS, 2017).

MacPherson Water Supply Well

MassDevelopment first sampled the MacPherson water supply well for PFAS in July 2016. MassDevelopment continued to sample the well on a quarterly basis until February 2018, when the well was taken out of service after MassDEP had informed MassDevelopment that MassDEP is considering

adopting recommendations addressing five PFAS chemicals (PFOS, PFOA, PFNA, PFHxS, and PFHpA) at a sum of 70 ng/L.

In August 2019, MassDevelopment installed a granular activated carbon treatment system at the MacPherson well to remove PFAS from the water and the well was brought back into service in August 2019. MassDevelopment is currently planning on installing a permanent PFAS removal system at the MacPherson well.

The current and previous subsurface features are shown on Figures 4-2 through 4-5.

4.3 PFAS Field Investigation

The RI field investigation at AOC 76 and MacPherson well area included collecting surface water and sediment samples in Willow Brook, groundwater vertical profiling using DPT, soil borings using DPT, installation of piezometers, and synoptic water level measurements. The work was completed in general accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). Field activities were revised and added as the data was received and reviewed. Sampling locations are presented on Figures 4-6 and 4-7 and summarized in Table 4-1. The results are discussed in Section 4.5.

4.3.1 Existing Wells

Groundwater samples were collected from existing monitoring wells at the MacPherson well area, including wells at AOC 69W and wells at the Town of Ayer sludge landfill from December 2018 to January 2019 in accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b) (Table 4-1 and Figures 4-6 and 4-7) with the following exceptions. Well 69WP-08-01 was not sampled initially because the well was frozen. Based on review of the vertical profiling conducted east and west of the well, a sample from 69WP-08-01 was not necessary for the PFAS RI at the time. A sample could not be collected from MPP-93-01 because the well could not be located. A monitoring well was found southeast of MacPherson water supply well (McPh-Sentinel) that was also sampled in April 2019. The well was installed to act as a sentry well for the MacPherson water supply well from potential groundwater contamination from 211 West Main Street.

Groundwater samples were collected from two existing monitoring wells (ZWM-95-17X and ZWM-95-15X) at AOC 69W in October 2019 and May 2020 in accordance with the *Work Plan for Additional Sampling of Existing Wells to Support the PFAS Remedial Investigation Former Fort Devens Army Installation, Devens, MA* (KGS, 2019c). The groundwater results are discussed in Section 4.4.

4.3.2 Surface Water and Sediment

Surface water and sediment samples were collected in Willow Brook in December 2018. The work was completed in general accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). Surface water and sediment samples were also collected in Nonacoicus Brook, which is adjacent to the MacPherson well area. These samples are addressed in Section 5.0. Surface water and sediment samples were also collected in the Nashua River, which is adjacent to the MacPherson well area. These samples will be addressed in the Area 3 PSCS.

4.3.3 DPT Vertical Profiles

Numerous phases of DPT vertical profiles were conducted at AOC 76 and the MacPherson well area. As results were received and reviewed, planned vertical profiles locations were moved, and additional profiles were conducted to better delineate the PFAS contamination. The DPT vertical profiles are described below, are shown on Figures 4-6 and 4-7 and are summarized in Table 4-1.

The AOC 76 vertical profiles in the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b) were positioned in locations that were thought to be within the source area as well as cross-gradient, upgradient, and downgradient of the suspected

source area to assess the nature and extent of PFAS in groundwater in this area. The first vertical profiles conducted included 76VP-19-03, -05, -10, -12, -14, and -18, which were conducted in January and February 2019 as planned in the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). Based on the results from those locations and the results from sampling existing monitoring wells at AOC 69W (ZWP-95-01X and ZWM-95-17X), the extent of PFAS contamination in groundwater at AOC 76 was more extensive than previously conceptualized. Particularly, PFAS contamination was detected farther east (76VP-19-12) and farther north (76VP-19-18, ZWP-95-01X, and ZWM-95-17X) than previously conceptualized. Based on the initial results, four vertical profiles were moved (76VP-19-07, -13, -16, and -19), eight additional vertical profiles were conducted (76VP-19-20 through -27), and the piezometer network from the Area 2 FSP was revised. The moved vertical profiles and the additional vertical profiles were conducted in areas that were cross-gradient and downgradient of the initial PFAS detections observed. The piezometer network was also broadened cross-gradient and downgradient of the initial PFAS detections observed. The vertical profiles were conducted in March through May 2019.

Based on review of results, a third set of vertical profiles were conducted at AOC 76. Specifically, based on review of vertical profile results at 76VP-19-07, -21, -22, and -27, which all had PFAS concentrations greater than the EPA LHA, three additional vertical profiles were conducted (76VP-19-28, -32, and -33) crossgradient to the west. Also based on review of vertical profile results from 76VP-19-13 and -20, which had concentrations greater than the EPA LHA, three additional vertical profiles were conducted (76VP-19-29, 30, and -31) crossgradient to the east and upgradient to the south. Additional piezometers were also installed at some of the new locations.

At the MacPherson well area, the groundwater vertical profiling was conducted along a perimeter transect that encircles the MacPherson water supply well to delineate the vertical and lateral extent of PFAS in groundwater in the immediate vicinity of the well. Due to difficulties caused by terrain and wetlands, location MPVP-19-06 was moved toward the MacPherson well and location MPVP-19-05 was deleted.

4.3.4 Soil Borings

The AOC 76 soil borings identified in the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b) (76SB-19-01 through -15) were drilled in June 2019. The data are discussed in Section 4.4.2.

4.3.5 Monitoring Wells and Piezometers

A series of piezometers (76PZ-19-01 through -19) were installed between February and June 2019. A series of three piezometers (MPPZ-19-01 through -03) were installed between April and June 2019.

4.3.6 Synoptic Water Level Event

An AOC 76 synoptic water level event was conducted on May 16, 2019.

An AOC 76/43G/MacPherson area synoptic water level event was conducted on June 28, 2019.

4.3.7 Town of Ayer Waste Water Treatment Plant Outflow

A grab sample was collected from the outflow from the Town of Ayer Waste-Water Treatment Plant and analyzed for PFAS.

4.4 Nature and Extent

Groundwater results are summarized on Figures 4-8 through 4-9 and in cross-section (Figures 4-10 through 4-14). Soil sampling results are summarized on Figure 4-15. Surface water and sediment sampling results are summarized on Figure 3-10. Site-specific groundwater contours are presented on Figures 2-9, 2-10, and Figure 4-8. All of the results are presented in tables in Appendix H. The media specific criteria are presented in (Table 1-1).

The results of the grab sample collected from the outflow from the Town of Ayer Waste-Water Treatment Plant are presented in Appendix H. The sum of PFOA + PFOS = 19.2 ng/L and 32.8 ng/L for the sum of the six GW-1 compounds.

4.4.1 Groundwater

Groundwater at AOC 76 was characterized through nine groundwater samples collected during the SI (BERS-Weston, 2018a), and during the RI via DPT vertical profiles and samples from existing monitoring wells. During the RI, vertical profile samples were collected from 40 locations. During the RI, a total of 260 vertical profile samples were collected. Table 4-2 provides summary statistics of the results of the vertical profile samples. Of those samples, 133 samples (51%) had concentrations greater than the EPA LHA and 244 samples (94%) had concentrations greater than the GW-1 standard. Table 4-3 provides summary statistics of the results of the monitoring well samples. Of the 15 monitoring well samples collected from December 2018 to May 2020, two samples (13%) had concentrations greater than the EPA LHA and 12 samples (8%) had concentrations greater than the GW-1 standard (Table 4-3). None of the concentrations were greater than the GW-3 standard (protective of surface water).

The maximum concentrations were detected at FH-17-09 (collected during the SI and therefore the sample was not analyzed for PFDA) at the water table (PFOA + PFOS = 4,160 ng/L and the sum of PFOA, PFOS, PFHpA, PFHxS, and PFNA = 5,090 ng/L). Location FH-17-09 is located in the storm water detention basin northeast of the fire station. The second highest concentrations were detected at adjacent location 76VP-19-08, also collected at the water table (7-11 ft bgs) (PFOA + PFOS = 2,750 ng/L and 2,960 ng/L for the sum of the six GW-1 compounds). The highest concentrations were detected in the shallowest and second shallowest sample interval at 76VP-19-08, at nearby 7VP-19-04, and at 76VP-19-07 (farther west) with a significant decrease in PFAS concentrations in deeper intervals, but PFAS concentrations remain greater the GW-1 standard. This pattern is not observed in vertical profiles downgradient (northeast) and in general, crossgradient to the east (southeast) of 76VP-19-08 where the PFAS concentrations are more consistent throughout the saturated overburden and are present at concentrations greater than the GW-1 standard. The pattern of PFAS concentrations observed at vertical profile 76VP-19-13, is different with the highest PFAS concentrations in the deepest sample intervals, with significantly lower PFAS concentrations shallower in the aquifer and with two intervals with PFAS concentrations less than the GW-1 standard.

Groundwater flows from the area of the fire station to the north, parallel to Willow Brook and Jackson Road (Figure 2-10). Downgradient of the fire station, PFAS concentrations generally decrease but the full saturated thickness of the overburden continues to have PFAS concentrations greater than the GW-1 standard. As groundwater approaches the MacPherson water supply well, the higher concentrations were generally observed in the middle of the saturated overburden with lower concentrations observed shallower and deeper in the aquifer. This pattern was observed in vertical profiles close to the MacPherson water supply well, specifically MPVP-19-02, -06, and -07.

Lower PFAS concentrations (below the EPA LHA) were detected upgradient of the fire station at 76VP-19-01 and -02, crossgradient of the high concentrations to the west at 76VP-19-32, -33, and -28, and crossgradient of the high concentrations to the east at 76VP-19-29, 76VP-19-31, 76VP-19-24, -26, and MPVP-19-04.

All of the locations had at least one groundwater sample that had PFAS concentrations greater than the GW-1 standard, except three monitoring wells at the Town of Ayer sludge landfill, specifically AYRMW001, -MW003, and -MW-004. The vertical profile conducted at the Town of Ayer sludge landfill had PFAS concentrations greater than the GW-1 standard in three intervals (the deepest sample interval and the shallowest two sample intervals) with a maximum concentration of 385 ng/L.

At most locations, the PFOS concentrations were higher than the PFOA concentrations. A few locations southeast of the fire station parking lot (i.e., 76VP-19-06, -14, -15, FH-17-01, -02, 03, -04) had some samples with PFOA concentrations higher than PFOS concentrations. The samples from near the Town of

Ayer sludge landfill were almost evenly split between higher concentrations of PFOA or PFOS. The location with the highest concentrations at the Town of Ayer sludge landfill had higher PFOA than PFOS concentrations (MPVP-19-08, Figure 4-14).

4.4.2 Soil

At AOC 76, nine soil borings were conducted during the SI (BERS-Weston, 2018a) and 15 borings were conducted during the RI. The SI soil samples were composite samples collected at 0 to 5 ft bgs. The RI soil samples were collected from 0-1 ft bgs, 3-7 ft bgs, and from the 2-foot interval above the water table. Nine soil samples were collected during the SI (BERS-Weston, 2018a) and 41 soil samples were collected during the RI. Table 4-4 provides summary statistics of the results of the SI and RI samples. The SI samples were not analyzed for PFDA. Of the SI samples,

- 2 samples (22%) had PFHpA concentrations greater than the S-1/GW-1,
- 3 samples (33%) had PFHxS concentrations greater than the S-1/GW-1,
- 4 samples (44%) had PFNA concentrations greater than the S-1/GW-1,
- 3 samples (33%) had PFOS concentrations greater than the S-1/GW-1, and
- 3 samples (33%) had PFOA concentrations greater than the S-1/GW-1.

Of the 41 RI samples collected,

- 14 samples (34%) had PFDA concentrations greater than the S-1/GW-1,
- 2 samples (5%) had PFHpA concentrations greater than the S-1/GW-1,
- 11 samples (27%) had PFHxS concentrations greater than the S-1/GW-1,
- 11 samples (27%) had PFNA concentrations greater than the S-1/GW-1,
- 16 samples (39%) had PFOS concentrations greater than the S-1/GW-1, and
- 6 samples (15%) had PFOA concentrations greater than the S-1/GW-1.

The maximum concentrations of the six PFAS compounds in the S-1/GW-1 standards detected in AOC 76 area are:

- PFDA = 3.40 µg/kg at 76SB-19-06
- PFHpA = 1.50 µg/kg at 76SB-19-13
- PFHxS = 26.0 µg/kg at 76SB-19-13
- PFNA = 10.0 µg/kg at FH-17-01
- PFOS = 130 µg/kg at 76SB-19-05
- PFOA = 5.30 µg/kg at FH-17-01

Soil boring 76SB-19-05 was collected in the general area where a dumpster fire was reported to have been extinguished using AFFF. The other locations with high concentrations and with a greater prevalence of exceedances of the S-1/GW-1, are located in the eastern part of the site. These data suggest that the largest amount of PFAS in the soil are related to these two areas.

4.4.3 Surface Water and Sediment

Six surface water and sediment samples were collected along Willow Brook. All of the detections in surface water and sediment in Willow Brook were below the EPA SSSLs for PFAS at former Fort Devens (Table 1-1). The sampling locations and data are summarized on Figure 3-10 and the data are presented in Appendix H.

The PFOA concentrations in the surface water ranged from 13.0 ng/L to 25.0 ng/L (the maximum concentration was detected at WB-18-05), the PFOS concentrations ranged from 23.0 ng/L to 72.0 ng/L (the maximum concentration was detected at WB-18-05), and the PFBS concentrations ranged from 2.30 ng/L to 4.60 ng/L (field duplicate) (the maximum concentration was detected at WB-18-05). The highest

concentrations were detected at WB-18-05 suggesting that area is receiving groundwater with the higher concentrations as compared to adjacent areas.

In the sediment samples, PFOA concentration ranged from non-detect to 0.430J µg/kg (the maximum concentration was detected at WB-18-06), PFOS concentrations ranged from 0.420J µg/kg to 7.90 µg/kg (the maximum was detected at WB-18-06), and PFBS was non-detect.

5.0 AOC 5 SHELPLEY'S HILL LANDFILL PRELIMINARY SITE CHARACTERIZATION SUMMARY

5.1 Site Description

Shepley's Hill Landfill is bordered to the east by Plow Shop Pond and land formerly containing a railroad roundhouse, to the west by Shepley's Hill, to the south by recent commercial development and AOC 32, and to the north by wooded and residential areas (Figure 5-1). Nonacoicus Brook, which drains Plow Shop Pond to the Nashua River, is located north of the landfill, and is identified as the northern boundary of what is called the North Impact Area (NIA) (i.e., the area downgradient of the landfill with groundwater that is believed to have been impacted by the presence of SHL).

Most of the area is zoned open space/recreation with the southern extent zoned Rail, Industrial & Trade Related. North of the landfill there are some residential and commercial properties. It is not anticipated that the land use will change in the future. There are currently no wells in the SHL area that are used for drinking water supply, irrigation water supply, or any other water supply purposes. A permit is required from Devens Enterprise Commission for installation of any water supply well within Devens.

Besides Shepley's Hill , the area is generally flat. There is a gentle slope from SHL to north toward Nonacoicus Brook and the land east of the landfill slopes down to Plow Shop Pond.

5.2 Site History and Utilities

The Army began landfill operations in the 1940s, although test pit evidence indicates that earlier use as a landfill was highly probable (ANL, 1992). The landfill was in a former wetlands area and formerly operated as an open burning site (ANL, 1992). Landfill operations ceased as of July 1, 1992. The principal waste types in SHL include incinerator ash, household refuse, glass, construction debris, asbestos-containing materials, and spent shell casings. Army documentation indicates that no hazardous wastes were disposed of in SHL after November 19, 1980.

The current and previous subsurface features are shown on Figures 5-2 and 5-3.

5.3 Remedial Status

There is an extensive investigative, remediation, and monitoring history at SHL. A brief orientation to SHL is provided below with greater detail available in referenced documents. The SHL is comprised of three AOCs. The 1995 ROD for SHL addresses AOC 4 which is the former sanitary landfill incinerator, located near the end of Cook Street; AOC 5 which is the sanitary landfill No. 1; and AOC 18 which contains the asbestos disposal cell. AOCs 4 and 18 are located within the capped area of SHL and all three AOCs are collectively referred to as SHL (USAEC, 1995) and in this document reference to AOC 5 includes AOCs 4 and 18.

The MassDEP approved the closure plan in 1985 and the Army capped the landfill in accordance with Massachusetts Regulations 310 CMR 19.000. The landfill was closed in five phases between 1986 and 1993 and was capped with a 30 to 40-mil polyvinyl chloride membrane and overlying soil cover. In 2006, the Army commenced operation of a groundwater extraction and treatment system to address arsenic contamination in groundwater emanating from the landfill toward the NIA. Two extraction wells and the treatment plant were constructed at the north (downgradient) end of the landfill. It was later determined that the landfill cap and groundwater extraction system did not eliminate groundwater flow and arsenic migration from SHL into Red Cove at Plow Shop Pond. In 2012, the Army installed a low permeable groundwater barrier wall through the overburden to the bedrock surface to mitigate landfill contaminant migration to Red Cove (Sovereign, 2013).

Per the ROD, operation and maintenance of the treatment plan, the landfill cap, and LTM activities have continued at SHL.

5.4 PFAS Field Investigation

The SHL field investigation included sampling of a subset of existing monitoring wells and collection of surface water and sediment samples. Synoptic water level measurements were conducted as part of LTM activities. The work was completed in general accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). Field activities were added as the data was received and reviewed. Vertical profiling was not conducted at SHL due to the large number of existing wells at the site. Sampling locations are presented on Figure 5-4 and summarized in Table 5-1. The results are discussed in Section 5.5.

5.4.1 Existing Wells

Groundwater samples were collected from a subset of the existing monitoring wells at SHL from December 2018 to November 2019 in accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b) (Table 5-1 and Figure 5-4).

Groundwater samples were collected from an additional set of monitoring well locations (i.e., SHM-13-05, SHM-99-32X, SHL-8D, N1-P1, N1-P2, N2-P2, SHL-20, N3-P1, N3-P2, SHL-3, SHM-93-01A, SHM-93-10D, SHM-93-18B) in October 2019.

Groundwater samples were collected from five existing monitoring wells (SHM-96-5B, N7-P2, N2-P1, SHL-12, SHP-99-33B) in October and November 2019 and May 2020 in accordance with the *Work Plan for Additional Sampling of Existing Wells to Support the PFAS Remedial Investigation Former Fort Devens Army Installation, Devens, MA* (KGS, 2019c). The groundwater results are discussed in Section 3.5.

5.4.2 Surface Water and Sediment

Surface water and sediment samples were collected in Plow Shop Pond and Nonacoicus Brook in December 2018. The work was completed in general accordance with the *Area 2 Field Sampling Plan Addendum to Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances (PFAS)* (KGS, 2018b). These samples are addressed in Section 5.0.

5.4.3 Shepley's Hill Landfill Treatment Plant

A grab sample was collected from the outflow of the Shepley's Hill Landfill Treatment Plant in January 2019 and analyzed for PFAS.

5.5 NATURE AND EXTENT

Groundwater results are presented on Figure 5-5 and in cross section (Figures 5-6 through 5-9). For this discussion, results of samples collected from monitoring wells that are located in areas presumed to be related to AOC 32, specifically SHL-12, -17, -24, -25, and SHM-93-24A are discussed in Section 3.5. Surface water and sediment sampling results are summarized on Figure 3-9. Site-specific groundwater contours are presented on Figure 2-11 and Figure 5-5. All of the results are presented in Appendix H. The discussions below are focused on results with respect to the media specific criteria (Table 1-1).

The results of the grab sample collected from the Shepley's Hill Landfill Treatment Plant are presented in Appendix H. The sum of PFOA + PFOS = 23.0 ng/L and 46.7 ng/L for the sum of the six GW-1 compounds.

Groundwater in the overburden and bedrock at SHL was characterized through groundwater samples collected from existing monitoring wells and the extraction wells during the SI (BERS-Weston, 2018b) and from existing monitoring wells during the RI. During the RI, samples were collected from 65 monitoring wells. Table 5-2 provides summary statistics of the results of the monitoring well samples. Of those samples, 22 samples (34%) had concentrations greater than the EPA LHA and 49 samples (75%) had concentrations greater than the GW-1 standard. Table 5-2 provides summary statistics of the results of the monitoring well samples in SHL, except a few wells installed for SHL that are located within the AOC 32

area, specifically SHL-12, SHL-17, SHL-25, and SHM-93-24A. None of the concentrations were greater than the GW-3 standard (protective of surface water).

5.5.1 Groundwater in Overburden

In the overburden, most locations with PFAS concentrations greater than the EPA LHA are located east, northeast, and north of the landfill, except for one well in the upgradient portion of SHL (N7-P2). The highest PFAS concentrations were detected at N7-P2 (PFOA + PFOS = 170 ng/L and the sum of the six GW-1 compounds = 275 ng/L). The well screen at N7-P2 is located shallow in the aquifer (224.18 to 219.18 ft NAVD88). Northeast of N7-P2, PFAS was detected greater than the EPA LHA at SHM-93-18B (120 ng/L) at an elevation at the bottom of the saturated overburden (156.71 to 146.71 ft NAVD88).

Most of the other locations with PFAS concentrations greater than the EPA LHA are located northeast and north of the landfill. The maximum PFOA + PFOS concentrations in this area was 127 ng/L (N2-P1).

The locations northeast of the SHL with concentrations greater than the EPA LHA are at locations lower in elevation than N7-P2, specifically SHM-11-06 (208.33 to 198.33 ft NAVD88), SHL-20 (195.72 to 185.72 ft NAVD88), N1-P2 (187.88 to 182.78 ft NAVD88), SHP-05-43 (207.88 to 197.88 ft NAVD88), and N2-P2 (185.55 to 180.55 ft NAVD88).

Farther downgradient at the locations near the SHL extraction wellfield, locations with concentrations greater than the EPA LHA are at well screens that are lower in elevation, specifically at SHM-10-06 (160.53 to 150.53 ft NAVD88), SHP-05-46B (161.03 to 151.03 ft NAVD88), EPA-PZ-2012-3B (150.55 to 145.55 ft NAVD88), SHM-96-5B (137.38 to 127.38 ft NAVD88), and EPA-PZ-2012-2B (146.60 to 141.60 ft NAVD88).

The farthest downgradient locations with concentrations greater than the EPA LHA are at locations deep in the overburden, specifically at SHP-99-3B (146.66 to 141.66 NAVD88) and SHM-10-16 (141.72 to 131.72 ft NAVD88). The ten most downgradient wells that were sampled all had concentrations less than the EPA LHA.

Most of the samples had concentrations greater than the GW-1 standard (75%). The locations with PFAS concentrations less than the GW-1 standard are located along the east, northeast and north of SHL. The higher concentrations with respect to the GW-1 standard (greater than 150 ng/L for the sum of the six GW-1 compounds) are collocated with the PFAS concentrations that are greater than the EPA LHA.

5.5.2 Groundwater in Bedrock

Seven wells installed in bedrock at SHL were sampled for PFAS. All of the wells had concentrations less than the EPA LHA. Results from two of the wells (SHP-2016-06B and C) were non-detect for the sum of the six GW-1 compounds and collocated well (SHP-2016-06A) had PFAS concentrations less the GW-1 standard. The other five wells (N7-P1, N6-P1, N2-P1, N3-P1, SHM-93-10D) had concentrations greater the GW-1 standard.

5.5.3 Surface Water and Sediment

Six locations were sampled in Plow Shop Pond and seven locations were sampled in Nonacoicus Brook. All of the detections in surface water and sediment in Nonacoicus Brook and Plow Shop Pond were below the EPA SSSLs for PFAS at former Fort Devens (Table 1-1). The sampling locations and data are summarized on Figure 3-10 and the data are presented in Appendix H.

In Plow Shop Pond, the PFOA concentrations in the surface water ranged from 3.90 ng/L to 9.80 ng/L (the maximum concentration was detected at PS-18-03), the PFOS concentrations ranged from 3.70 ng/L to 9.80 ng/L (the maximum concentration was detected at PS-18-06), and the PFBS concentrations ranged from 0.610J ng/L to 1.30J ng/L (the maximum concentration was detected at PS-18-03).

In Plow Shop Pond, PFOA concentrations in sediment were non-detect, PFOS concentrations ranged from non-detect to 1.70 µg/kg (the maximum was detected at PS-18-02), and PFBS was non-detect.

In Nonacoicus Brook, the PFOA concentrations in the surface water ranged from 6.40 ng/L to 12.0 ng/L (the maximum concentration was detected at NB-18-05), the PFOS concentrations ranged from 3.00J ng/L to 17.0 ng/L (the maximum concentration was detected at NB-18-05), and the PFBS concentrations ranged from 1.20J ng/L to 3.20 ng/L (the maximum concentration was detected at (NB-18-07).

In Nonacoicus Brook, PFOA concentrations in sediment ranged from non-detect to 0.930 µg/kg (the maximum concentration was detected at (NB-18-05), PFOS concentrations ranged from non-detect to 6.40 µg/kg (the maximum was detected at NB-18-05), and PFBS was not detected.

6.0 DEVENS CAR WASH WELL

A grab sample was collected from the Devens Car Wash Well (A2-IG1) in September 2019 and analyzed for PFAS. The sample was collected from the outflow of the pump in the well. The well is shown on Figure 4-6 and summarized in Table 6-1. The only information on the well construction that is available via https://eeaonline.eea.state.ma.us (the well owner was not able to provide more detailed well construction information) is that the well is 420 feet deep, the depth to bedrock recorded in the drilling record is 20 ft, and there are 40 ft of casing. The results are presented in Appendix H. The sum of PFOA + PFOS = 12.6 ng/L and 28.7 ng/L for the sum of the six GW-1 compounds.

7.0 REFERENCES

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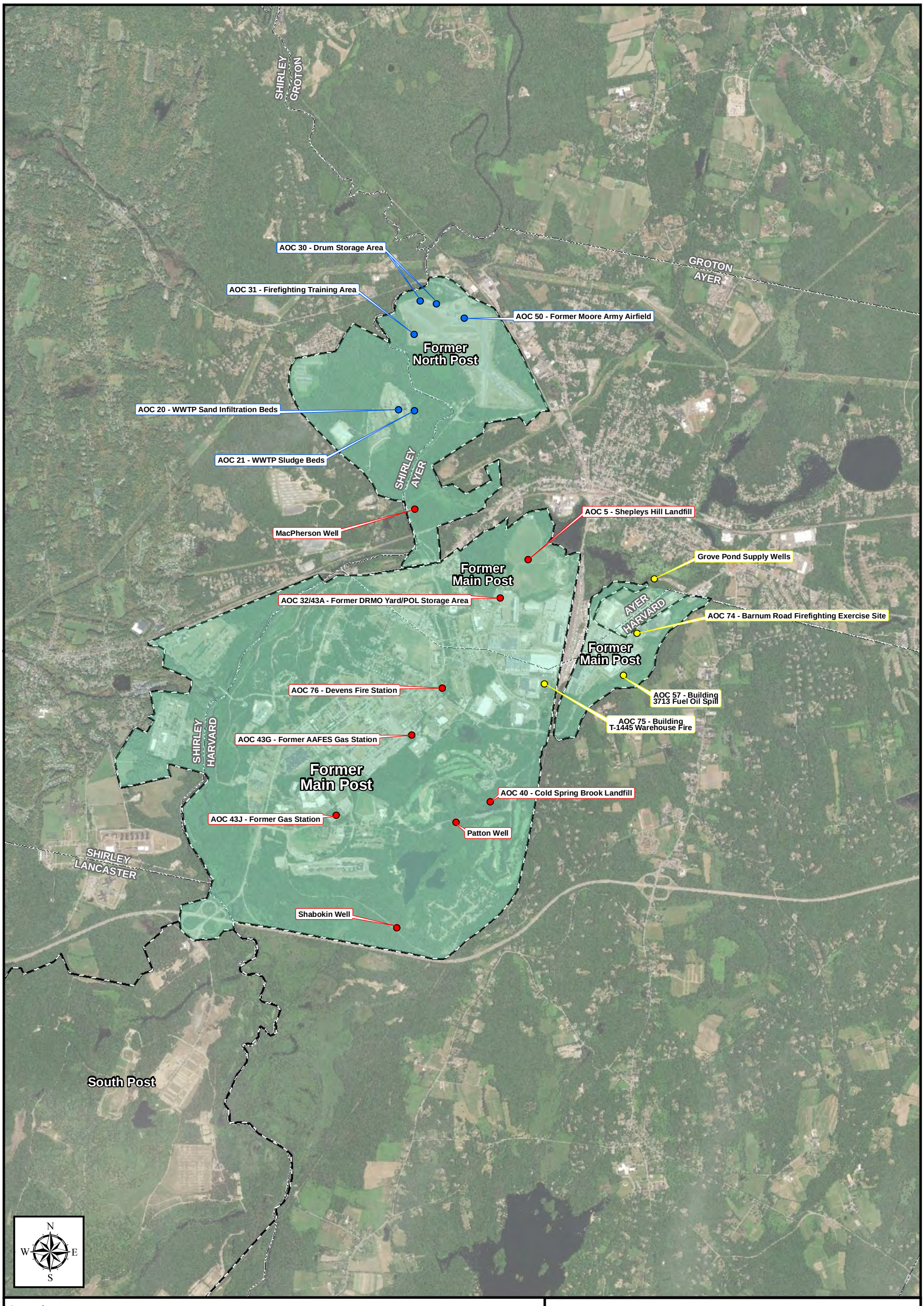
FIGURES



Legend

- Area 1 - Grove Pond Supply Wells, AOCs 57, 74, and 75
- Area 2 - MacPherson, Patton and Shabokin Water Supply Wells, SHL, AOCs 32/43A, 40, 43G, 43J and 76
- Area 3 - AOCs 20, 21, 30, 31, and 50
- Devens Regional Enterprise Zone
- City/Town Boundary
- Former Fort Devens Boundary

Devens PFAS Remedial Investigation Areas
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

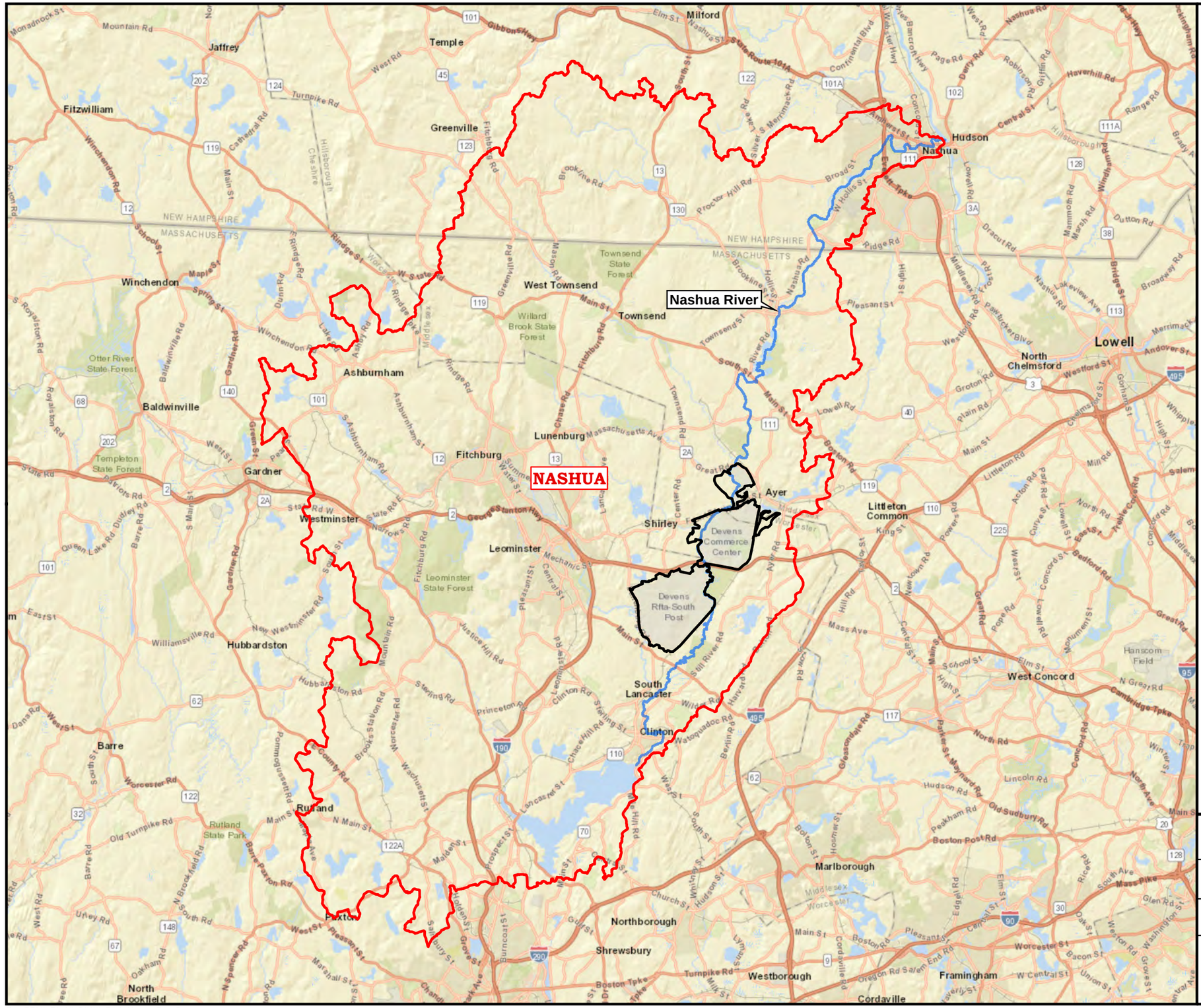
0 1,500 3,000
Feet

Date: 06/26/2020

Figure 1-1

File: PFAS_RI_A2_PSCS_F1-1_Areas.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- River
- Watershed Boundary
- Former Fort Devens Boundary

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Nashua River Basin
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

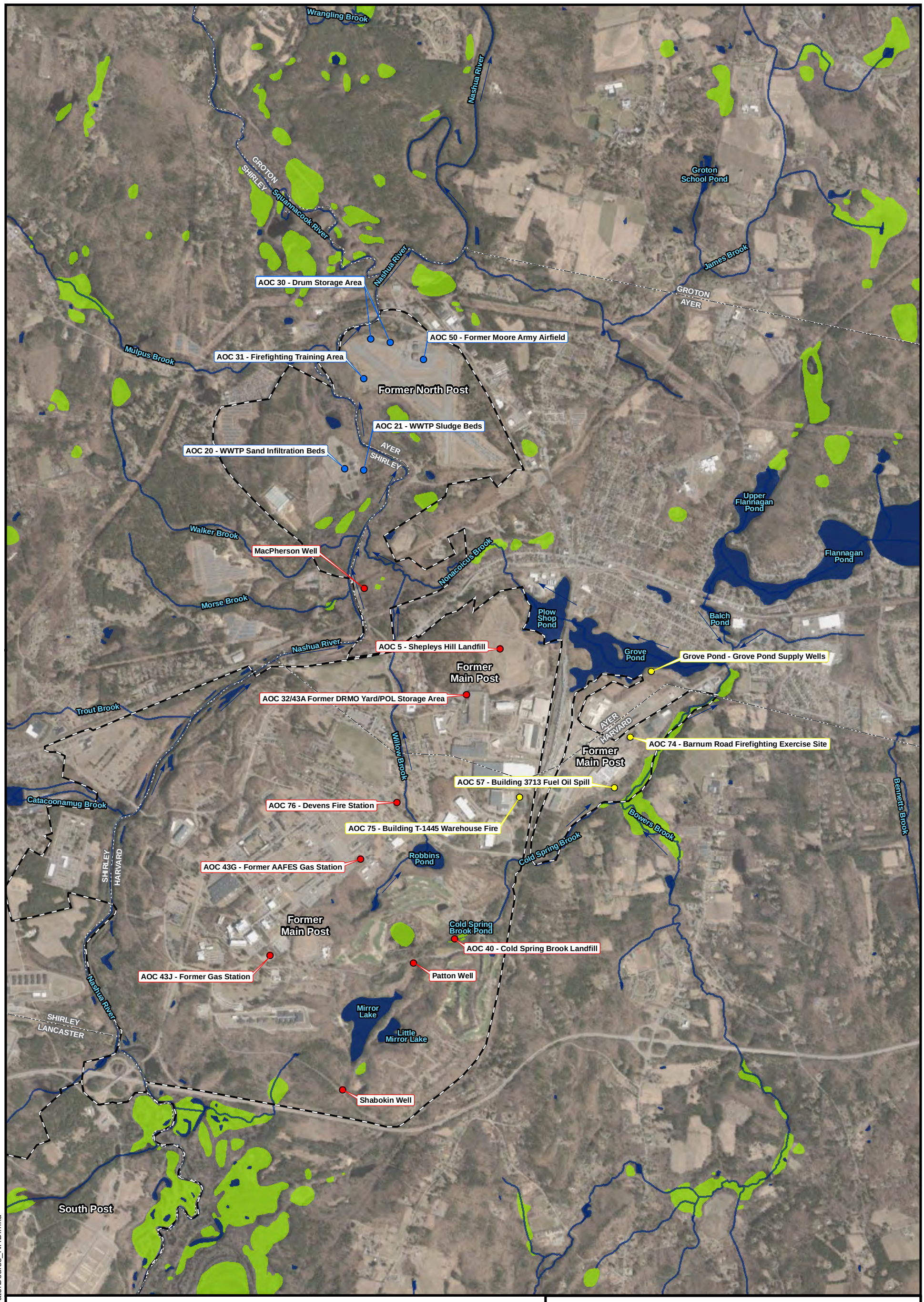
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 2 4
Miles

Date: 06/26/2020

Figure 2-1

File: PFAS_RI_A2_PSCS_F2-1_NashuaRiverBasin.mxd



Legend

- Area 1 - Grove Pond Supply Wells, AOCs 57, 74, and 75
- Area 2 - MacPherson, Patton, Shabokin Water Supply Wells, SHL, AOCs 32/43A, 40, 43G, 43J and 76
- Area 3 - AOCs 20, 21, 30, 31, and 50
- Surface Water Flow Direction
- City/Town Boundary
- Former Fort Devens Boundary

National Hydrography Dataset

- Stream/River
- Lake/Pond
- Swamp/Marsh

N W E S

0 1,250 2,500 Feet

Surface Water Bodies
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

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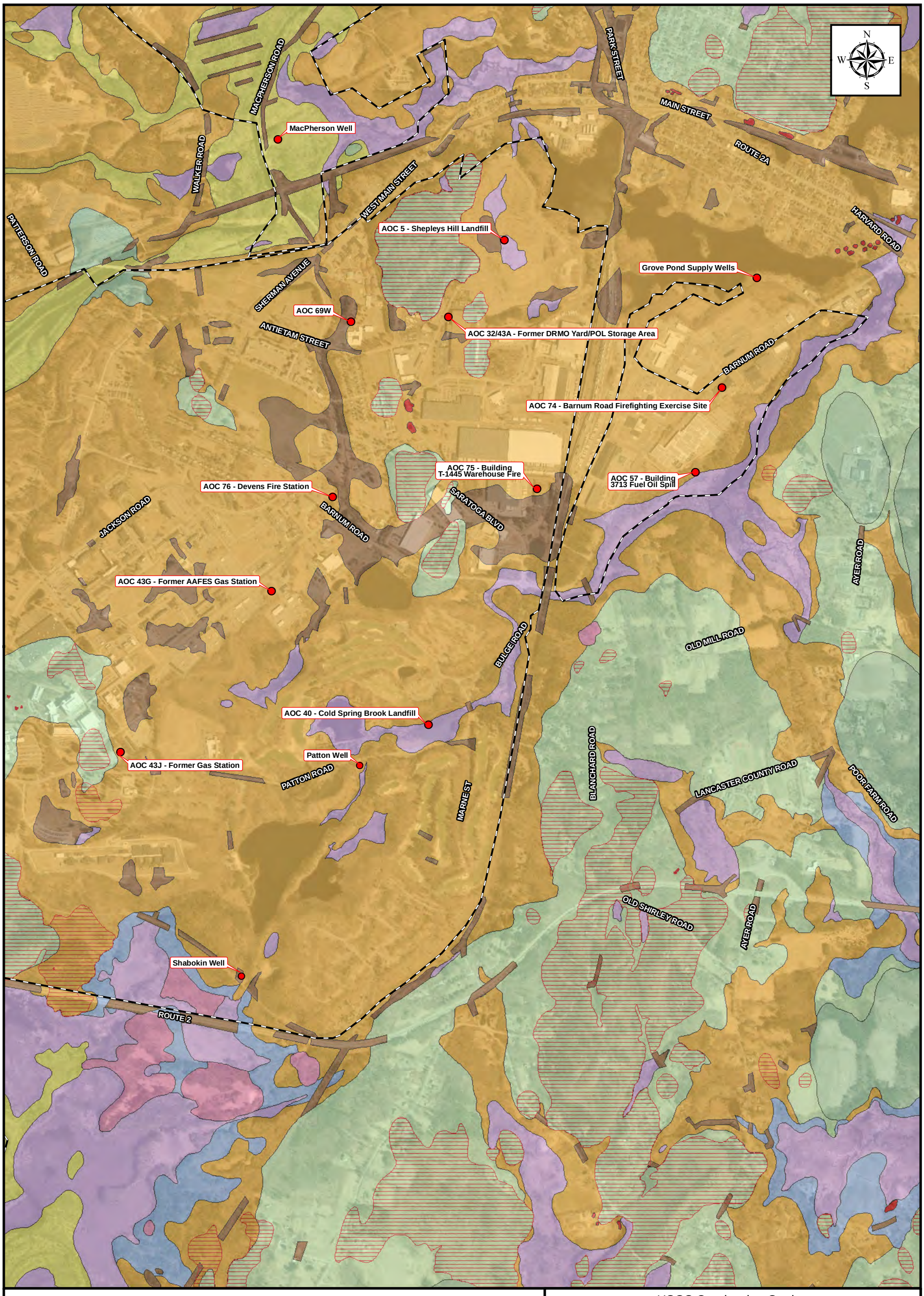
Date: 06/26/2020

Figure 2-2

File: PFAS_RI_A2_PSCS_F2-2_SurfaceWaterBodies_NHD.mxd

Aerial Source: USGS, MassGIS Orthoimagery 2019



Legend

AOC Location

Former Fort Devens Boundary

Surficial Geology (1:24,000)

- Abundant Outcrop and Shallow Bedrock
- Artificial Fill
- Swamp and Marsh Deposits
- Alluvium
- Inland Dune
- Coarse
- Glaciolacustrine Fine
- Thick Till
- Bedrock Outcrop
- Thin Till

USGS Overburden Geology
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
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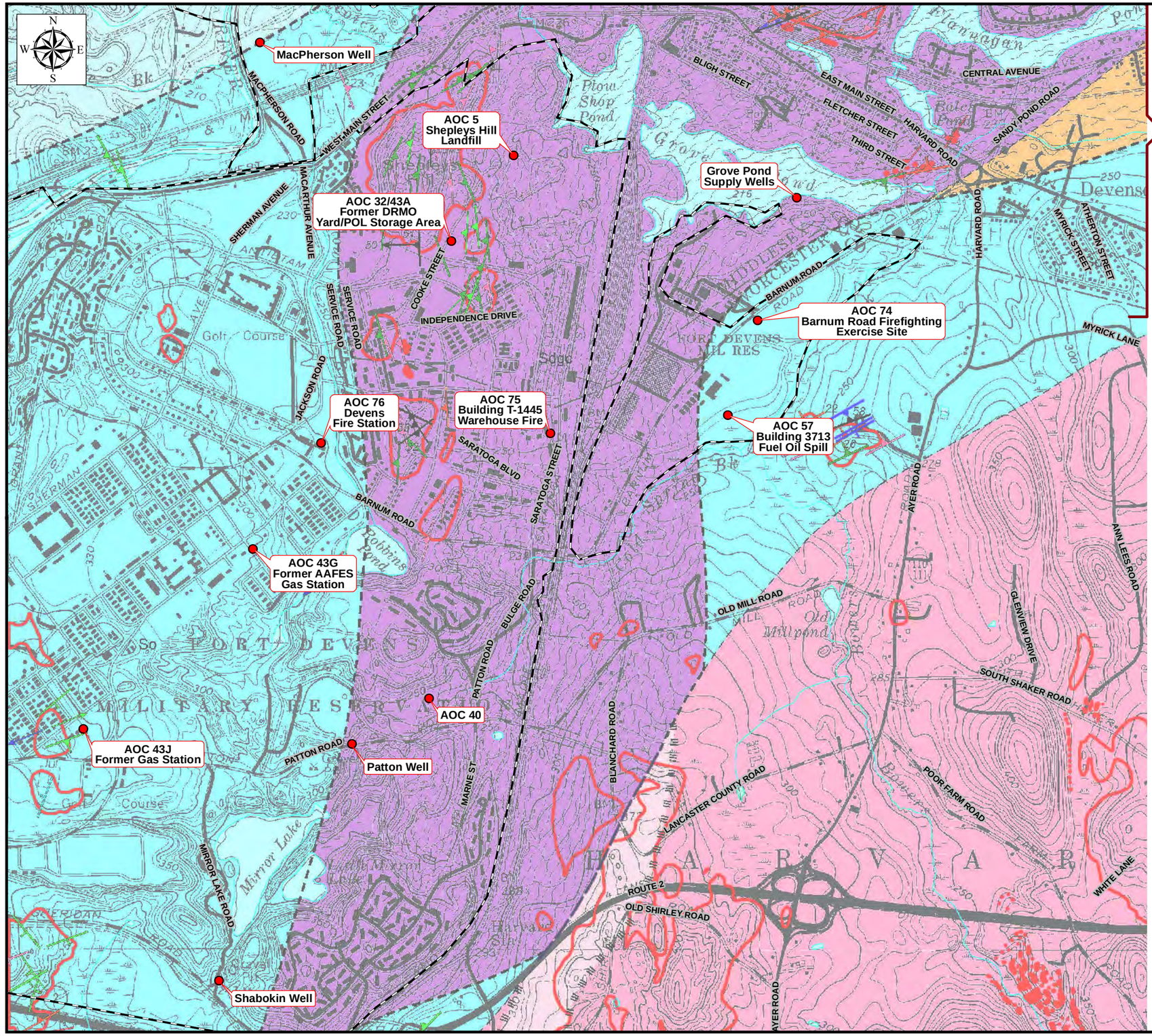
0 750 1,500
Feet

Date: 06/26/2020

Figure 2-3

File: PFAS_RI_A2_PSCS_F2-3_USGS_OverburdenGeol.mxd

Aerial Source: 2019, USGS, MassGIS



Legend

- AOC Location
- Former Fort Devens Boundary

Lithologic Units

- Sb / Sbbks — Berwick Formation (Silurian)
- So — Oakdale Formation (Silurian)
- Dgrm / Dogr — Chelmsford Granite (Devonian)
- Sayg / Saygr — Ayer Granite (Silurian)
- Sdge — Devens gneiss complex (Silurian(?))
- OZtb — Tadmuck Brook schist
- Bedrock outcrop
- Area where bedrock is shallow (<3 meters below surface) and/or outcrop is extensive
- Fault, approximately located (within approximately 50 meters)
- Fault, inferred
- Contact, approximately located (within approximately 50 meters)
- Contact, location inferred
- Gradational contact in Ayer granite

Map Reference: Preliminary Fracture Characterization Map of the Ayer Quadrangle Massachusetts Hydrostructural Domain Map Sheet 1

Bedrock Geology
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

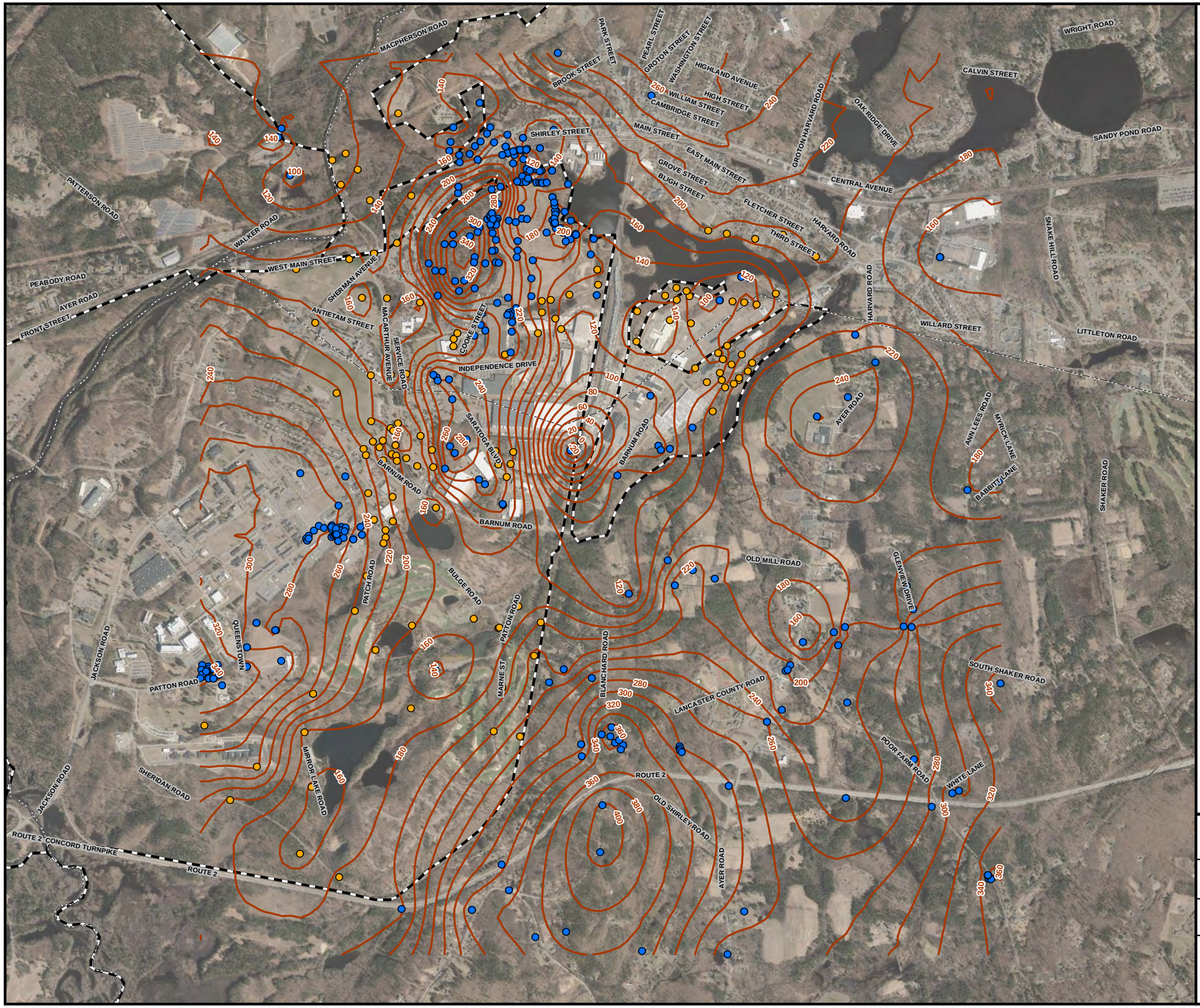
0 750 1,500
Feet

Date: 08/13/2020

Figure 2-4

KGS

File: PFAS_RI_A2_PSCS_F2-4_BedGeology_JPG.mxd



Legend

- Bedrock confirmed
- Refusal
- Bedrock Elevation Contour (ft NAVD88)
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

Bedrock Contours
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

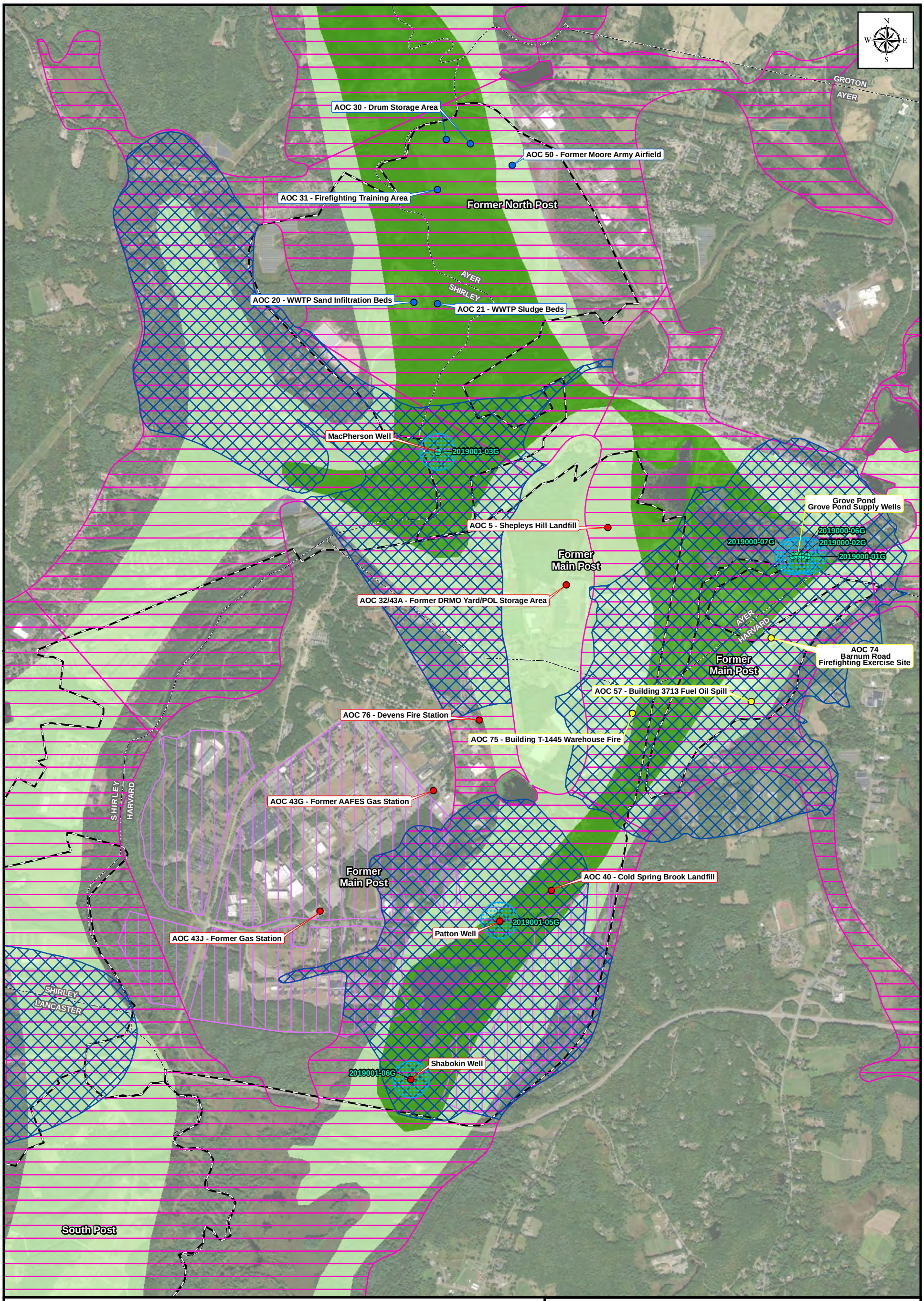
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 1,000 2,000
Feet

Date: 06/29/2020

Figure 2-5

File: PFAS_RI_A2_PSCS_Bedrock_Contours.mxd



Legend

- Public Water Supply Well
- Area 1 - Grove Pond Supply Wells, AOCs 57, 74, and 75
- Area 2 - MacPherson, Patton, Shabokin Water Supply Wells, SHL, AOCs 32/43A, 40, 43G, 43J and 76
- Area 3 - AOCs 20, 21, 30, 31, and 50
- City/Town Boundary
- Former Fort Devens Boundary
- MassDEP Approved Zone I
- MassDEP Approved Zone II
- Devens Watershed Protection District
- Devens Aquifer Protection District

Potentially Productive Aquifers

- High Yield
- Medium Yield

Devens Groundwater
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

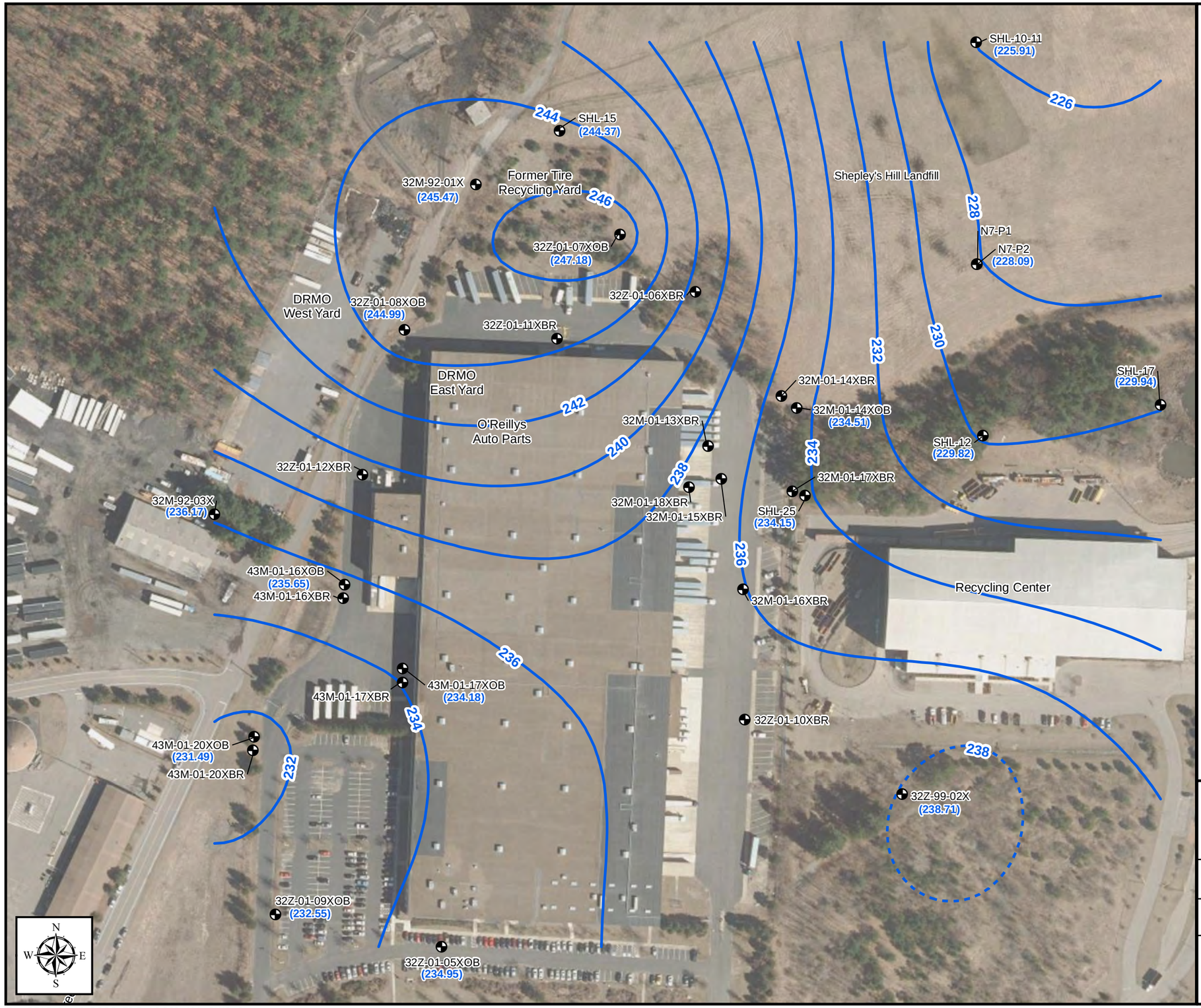
0 1,000 2,000
Feet

Date: 08/12/2020

Figure 2-6

File: PFAS_RI_A2_PSCS_F2-6_Aquifer.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- Monitoring Well
- Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 2.0 ft)
- Inferred Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 2.0 ft)
- (234.51) Groundwater Elevation (ft NAVD88)
- 32M-92-01X Well Identification

Notes:

NAVD88 = North American Vertical Datum

Aerial Sources: USGS, MassGIS Orthoimagery 2019

Groundwater Elevation Contours Overburden Wells
AOC 32/43A
December 2018
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

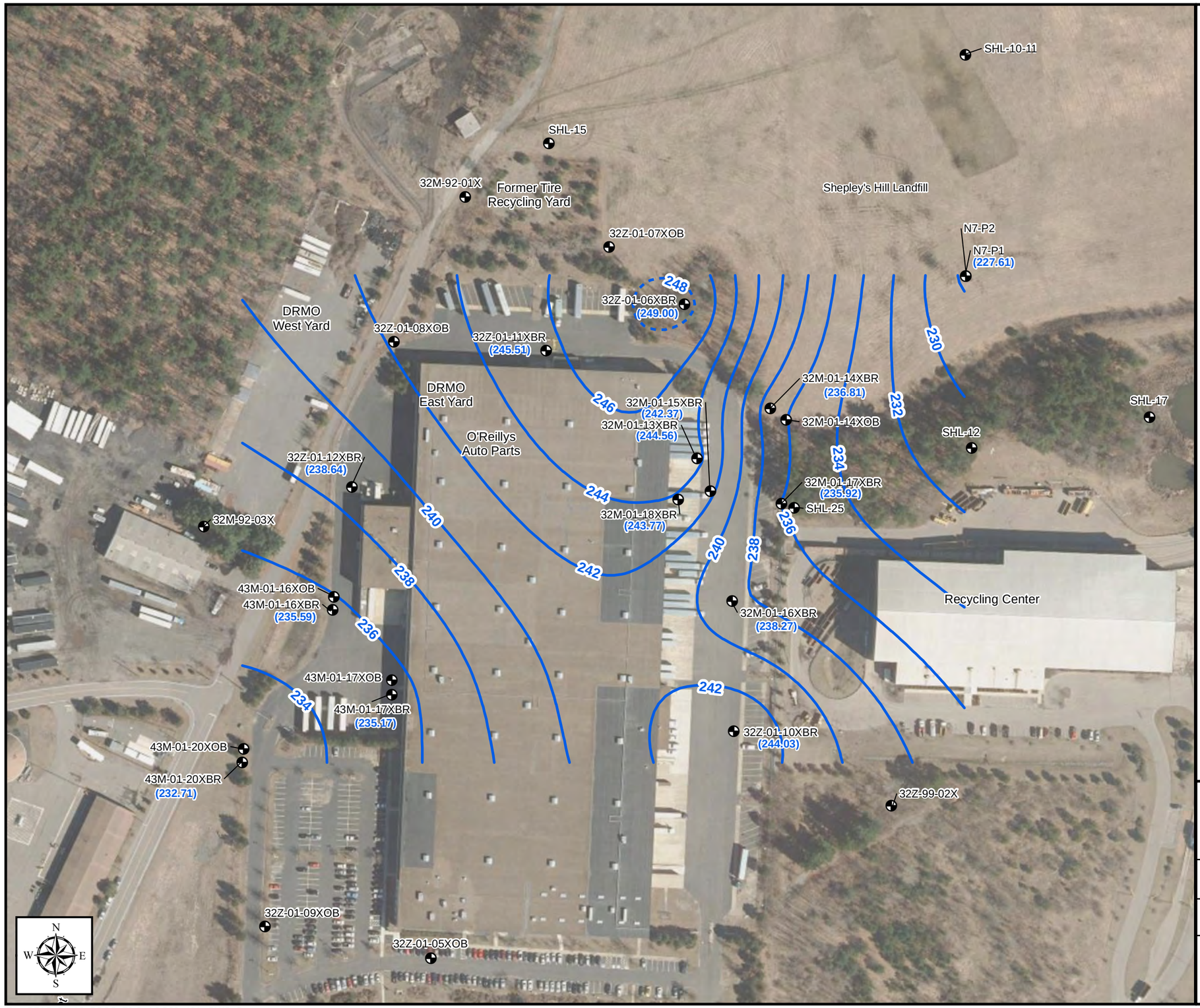
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 80 160
Feet

Date: 08/12/2020

Figure 2-7

File: PFAS_RI_A2_PSCS_F2-7_AOC32_43A_GWC_Overburden.mxd



Legend

- Monitoring Well
- Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 2.0 ft)
- Inferred Groundwater Elevation Contour (ft NAVD88) (Contour Interval = 2.0 ft)
- (235.91) Groundwater Elevation (ft NAVD88)
- 32M-92-01X Well Identification

Notes:

NAVD88 = North American Vertical Datum

Aerial Sources: USGS, MassGIS Orthoimagery 2019

Groundwater Elevation Contours Bedrock Wells
AOC 32/43A
December 2018
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

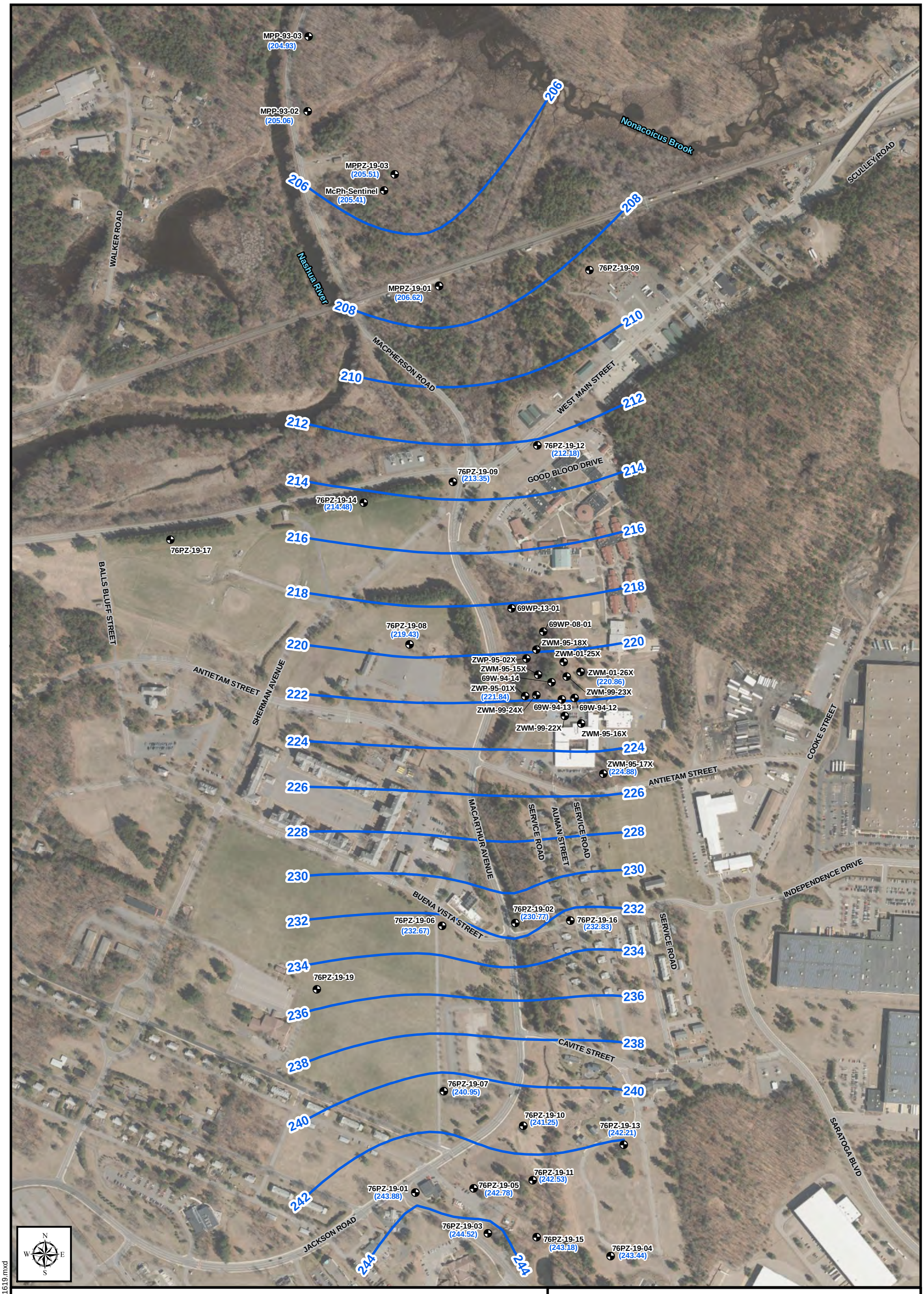
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 80 160
Feet

Date: 08/12/2020

Figure 2-8

File: PFAS_RI_A2_PSCS_F2-8_AOC32_43A_GWC_Bedrock.mxd



Legend

- Monitoring Well or Piezometer
- Groundwater Contours (May 16, 2019)
  Contour Elevation is in Ft NAVD88
- (241.25) Groundwater Elevation

Aerial Sources: USGS, MassGIS Orthoimagery 2019

Groundwater Elevation Contours
AOC 76 and MacPherson - May 16, 2019
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

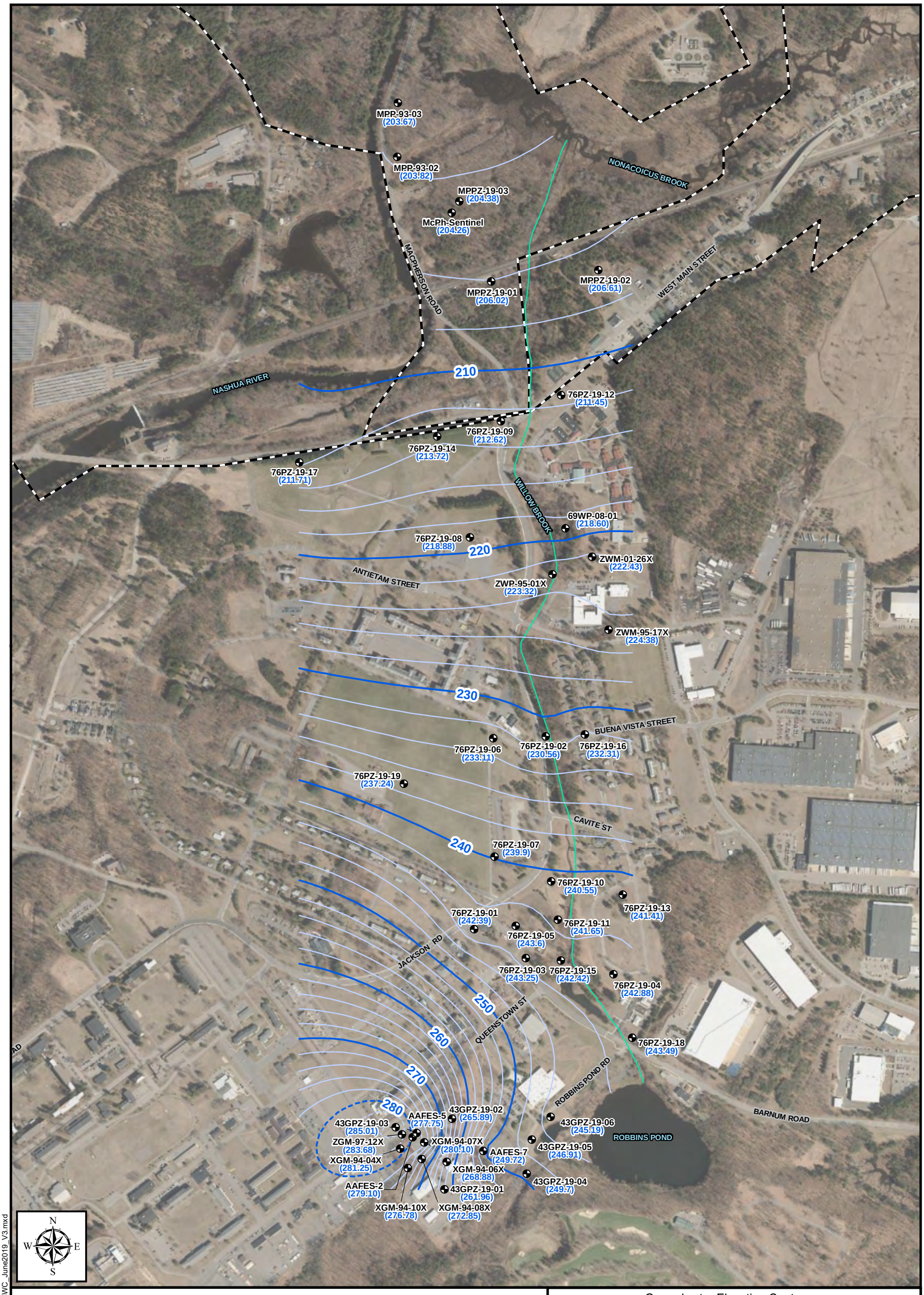
0 250 500
Feet

Date: 08/12/2020

Figure 2-9

KGS

File: PFAS_RI_A2_PSCS_F2-9_AOC76_GWC051619.mxd



Legend

- Monitoring Well or Piezometer
- Stream
- Former Fort Devens Boundary
- (268.88) Groundwater Elevation (ft NAVD88)
- Contour (10 Foot Interval)
- Inferred Contour (10 Foot Interval)
- Contour (2 Foot Interval)
- Inferred Contour (2 Foot Interval)

Aerial Sources: USGS, MassGIS Orthoimagery 2019

Groundwater Elevation Contours
AOC 43G and AOC 76 - June 28, 2019
Devens PFAS RI – Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

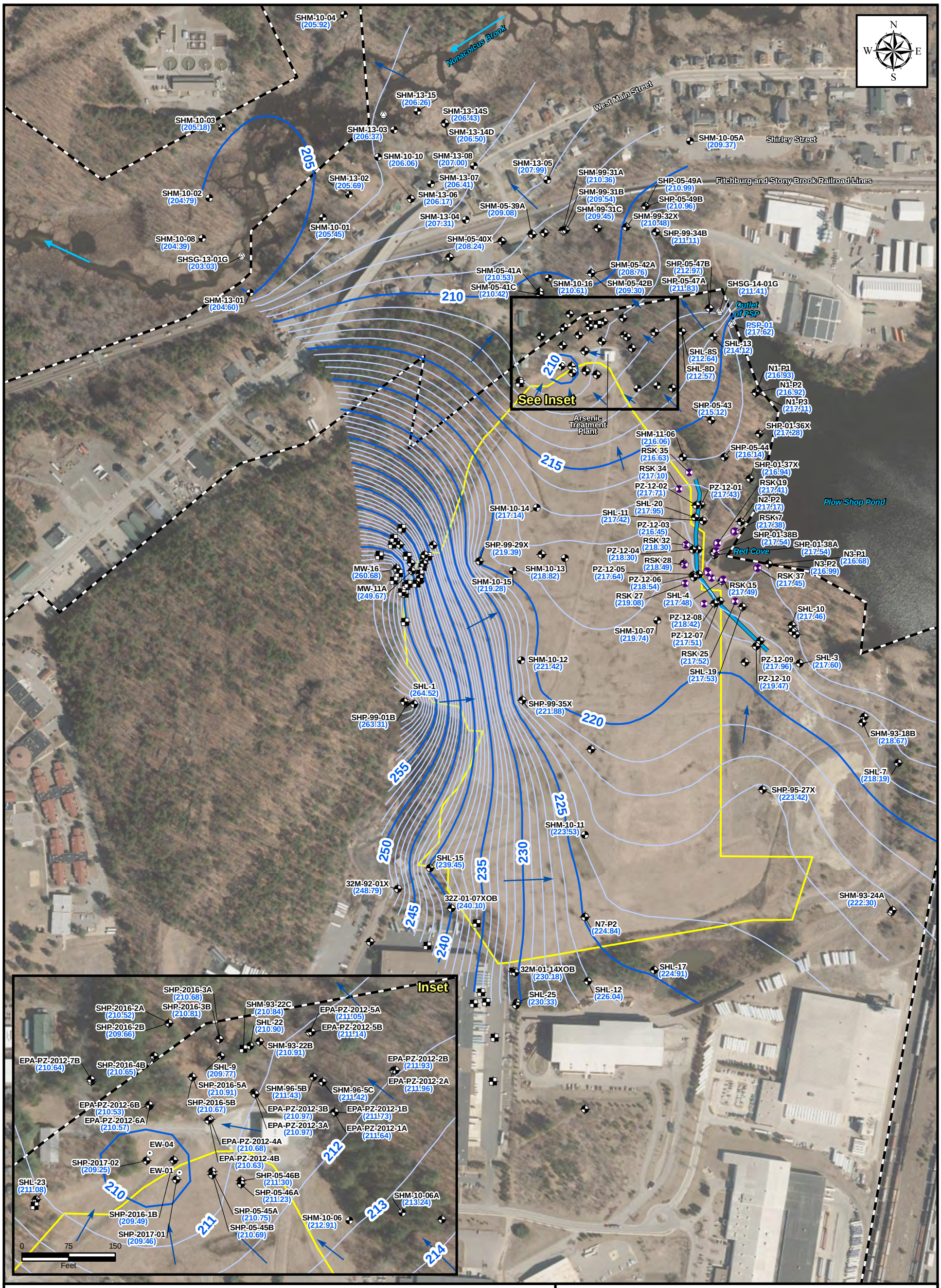
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 350 700
Feet

Date: 08/12/2020

Figure 2-10

File: PFAS_RI_A2_PSCS_F2-10-AOC43G_76_GWC_June2019_V3.mxd



Legend

- Overburden Monitoring Well/Piezometer
- Groundwater Profiling Location/Monitoring Well
- Monitoring Well
- Bedrock Monitoring Well
- Bedrock Study Core
- Extraction Well
- Stream Gauge
- Barrier Wall
- Shepley's Hill Landfill Boundary
- Former Fort Devens Boundary
- (213.24) Groundwater Elevation - October 22, 2019
- Contour (5 Foot Interval)
- Contour (1 Foot Interval)
- Inferred Contour (5 Foot Interval)
- Inferred Contour (1 Foot Interval)
- Groundwater Flow Direction
- Surface Water Flow Direction

Notes:
1) Combined pumping rate at EW-01 and EW-04 on October 22, 2019 was 53.4 gpm.
2) Water levels plotted used average value of the cluster wells in creating the contour figure.

Aerial Sources: USGS, MassGIS 2019 Orthoimagery

Groundwater Elevations October 22, 2019
North Impact Area andShepley's Hill Landfill
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

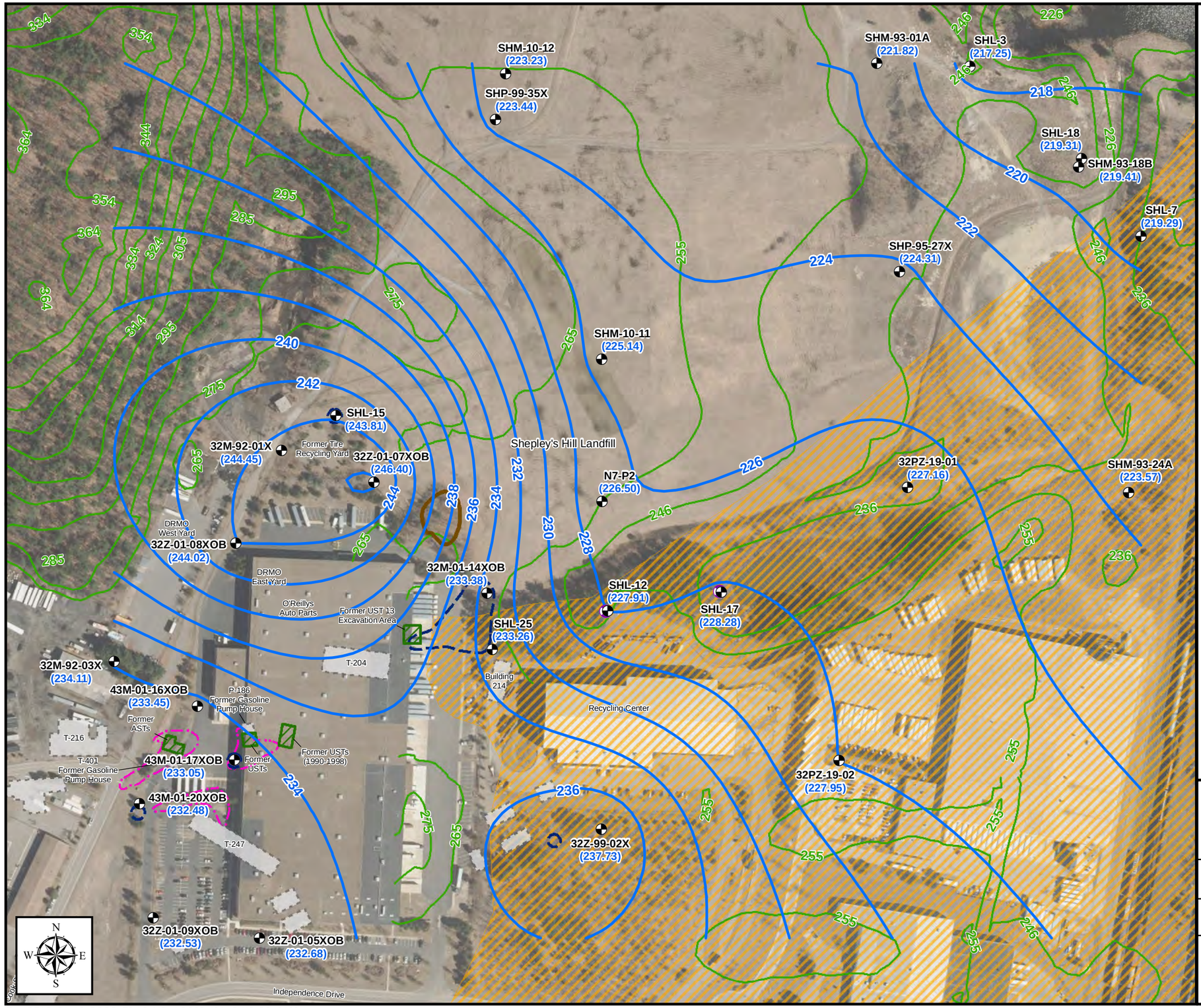
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 09/13/2020

Figure 2-11

File: PFAS_RI_A2_PSCS_F2-11_SHL_GWC_Oct2019_V2.mxd



Legend

- Monitoring Well/Piezometer
- Groundwater Contour (ft NAVD88)
- (234.51) Groundwater Elevation (ft NAVD88)
- Topographic Contour (Ft AMSL)
- MassDEP Approved Wellhead Protection Areas (Zone II)
- Former Storage Tank(s)
- T-247 Former Building Number
- Former Building
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)

Notes:
AST = Aboveground Storage Tank
UST = Underground Storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-Term Monitoring
TPHC = Total Petroleum Hydrocarbons
ft AMSL = Feet Above Mean Sea Level

Aerial Sources: USGS, MassGIS Orthoimagery 2019

Overburden Groundwater Elevation Contours
AOC32/43A
April 29, 2020
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

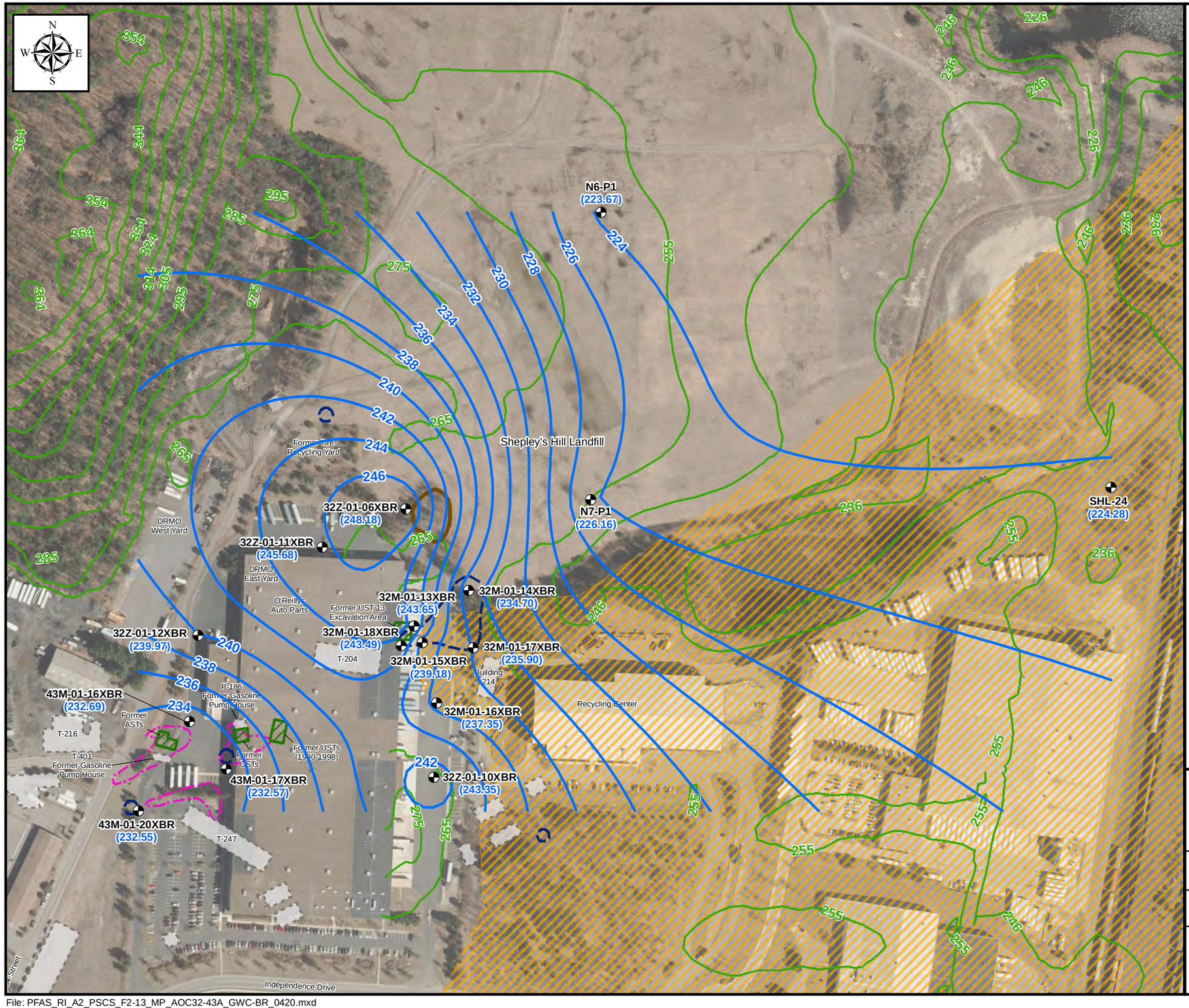
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 125 250
Feet

Date: 08/12/2020

Figure 2-12

File: PFAS_RI_A2_PSCS_F2-12_MP_AOC32-43A_GWC-OB_0420.mxd



Legend

- Monitoring Well/Piezometer
- Groundwater Contour (ft NAVD88)
- (235.91) Groundwater Elevation (ft NAVD88)
- Topographic Contour (Ft AMSL)
- MassDEP Approved Wellhead Protection Areas (Zone II)
- Former Storage Tank(s)
- T-247 Former Building Number
- Former Building
- TPHC Soil Contamination
- Remaining Bedrock Outcrop
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)

Notes:
AST = Aboveground Storage Tank
UST = Underground Storage Tank
DRMO = Defense Reutilization and Marketing Office
LTM = Long-Term Monitoring
TPHC = Total Petroleum Hydrocarbons
ft AMSL = Feet Above Mean Sea Level

Aerial Sources: USGS, MassGIS 2019 Orthoimagery

Bedrock Groundwater Elevation Contours
AOC32/43A
April 29, 2020
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 125 250
Feet

Date: 08/12/2020

Figure 2-13

KGS

File: PFAS_RI_A2_PSCS_F2-13_MP_AOC32-43A_GWC-BR_0420.mxd



Legend

- Current Road
- Historic Features
- Former Storage Tank(s)
- TPHC Soil Contamination
- Former Fort Devens Boundary
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)

Aerial Source: MassGIS - 1:5,000 Black and White Digital Orthophoto Images - 1992

AOC 32/AOC 43A 1992 Aerial Imagery
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC

0 125 250
Feet

Date: 06/15/2020

Figure 3-1

KGS

File: PFAS_RI_A2_PSCS_AOC32_43A_1992Imagery.mxd



Legend

Historic Subsurface Features

- Communication
- Communication Line
- Electric
- Electric Line
- UST — Underground Tank
- Steam Manhole
- Steam
- Storm
- Storm Line
- Storm Feature
- Sanitary
- Sanitary Line
- Sanitary Feature
- Water
- Water Line
- Water Feature
- Abandoned Feature
- Abandoned Line
- Gas
- Gas Line
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 32 and AOC 43A Historic Subsurface Features
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 06/16/2020

Figure 3-2

KGS

File: PFAS_RI_A2_PSCS_AOC32_43A_HistoricUtilities.mxd



Legend

Water 01/06/2020
- Hydrant
- Main Fitting
- Service Fitting
- Main Valve
- Service Valve
- Main Line
- Service Line
- Tie

Sewer 01/06/2020
- Force Fitting, Main Fitting, Service Fitting, Manhole
- Force Main, Gravity Main, Service Line, Tie
- DBox, Grease Trap, Lift Station, Oil/Water

Electric 01/07/2020
- Connection Box, Handhole, Junction Box, Manhole, Meter, Switch, or Transformer
- Inservice/Abandoned
- Vault

Gas 01/06/2020
- Main Fitting, Main Valve, Meter, Rectifier, Service Fitting, Service Regulator, Service Valve, Test Station, Anode
- Main, Service, Tie, Cathodic Loop

Stormwater 12/11/2019
- Catch Basin
- Outfall
- Manhole
- Pipe, Culvert
- Detention Pond
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 32/AOC43A Current Subsurface Features
Devens PFAS RI – Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

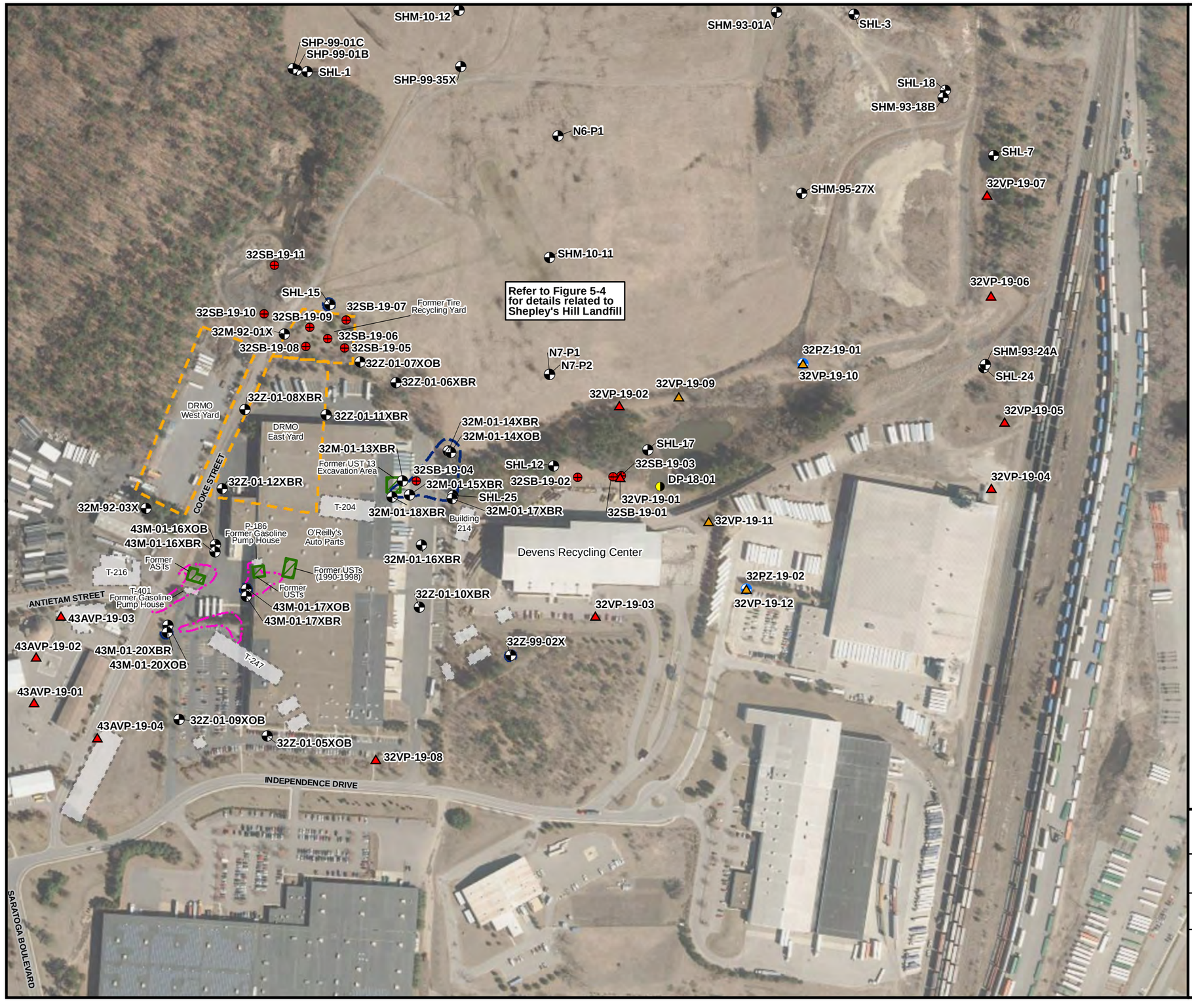
0 150 300
Feet

Date: 08/12/2020

Figure 3-3

KGS

File: PFAS_RI_A2_PSCS_F3-3_AOC32_43A_SubsurfaceUtilities.mxd



Legend

- Existing Well
- New Monitoring Well/Piezometer
- Soil Boring Location
- Surface Water/Sediment Sample Location
- Vertical Profiling Location Installation Phase 1
- Vertical Profiling Location Installation Phase 2
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- TPHC Soil Contamination
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)

Notes:

AST = Above ground storage tank
UST = Underground storage Tank
DRMO = Defense Reutilization and Marketing Office
TPHC = Total petroleum hydrocarbons

Aerial Source: USGS, MassGIS 2019 Orthoimagery

AOC 32/43A Field Activities
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

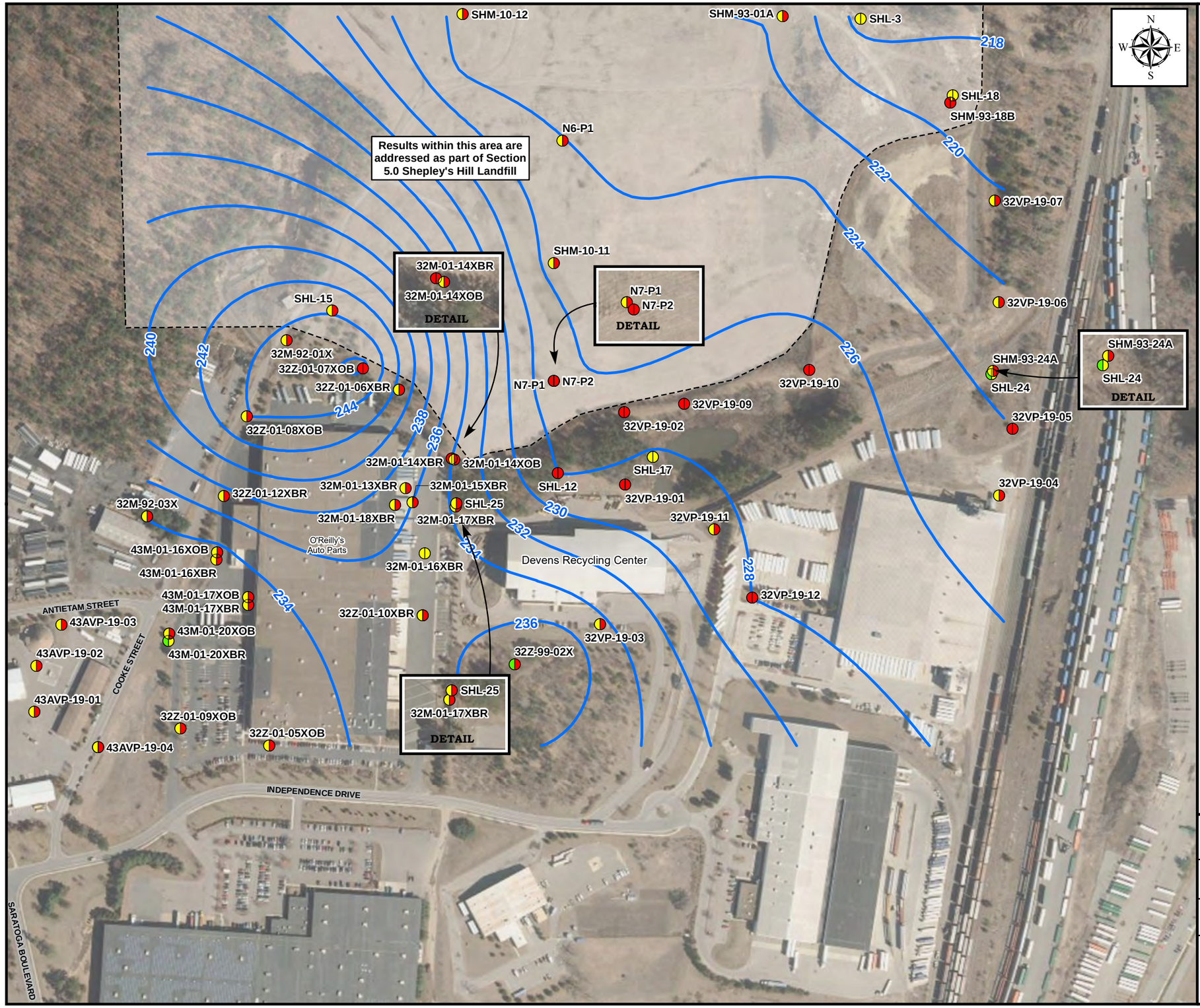
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 08/12/2020

Figure 3-4

KGS



Legend

- Monitoring Well/Vertical Profiling Location

EPA LHA
(sum of PFOA and PFOS) (ng/L)

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70 ng/L
- EPA LHA No detection

MassDEP
(sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)

- MassDEP ≥ 20 ng/L
- MassDEP < 20 ng/L
- MassDEP no detection
- Overburden Groundwater Contour (ft NAVD88) (April 29, 2020)

Notes:

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

SI GW results were not analyzed for PFDA.

Aerial Source: USGS, MassGIS 2019 Orthoimagery

AOC 32/43A Groundwater Results
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

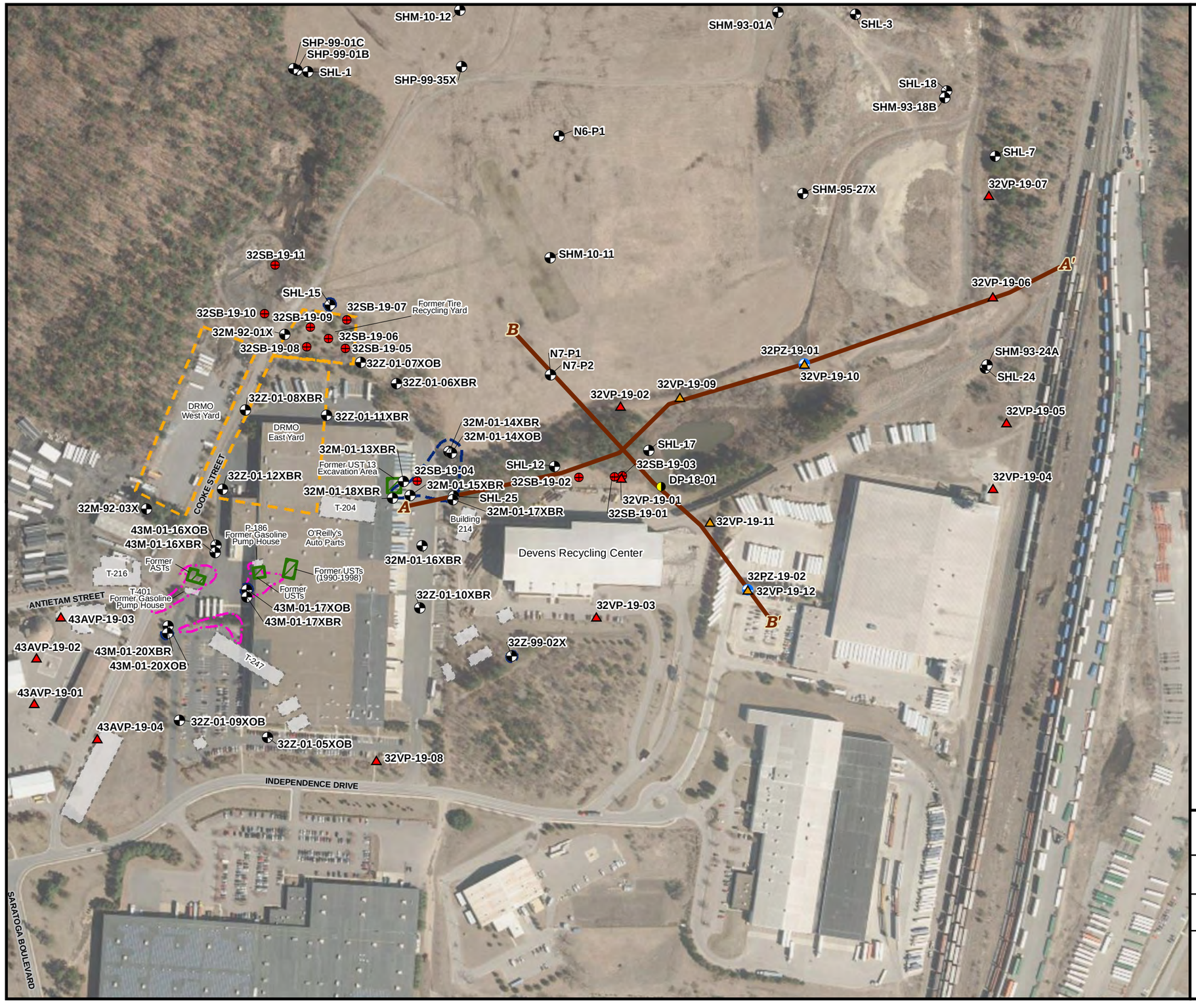
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 08/13/2020

Figure 3-5

File: PFAS_RI_A2_PSCS_F3-5_AOC32_43A_GWResults.mxd



Legend

- Existing Well
- New Monitoring Well/Piezometer
- Soil Boring Location
- Surface Water/Sediment Sample Location
- Vertical Profiling Location Installation Phase 1
- Vertical Profiling Location Installation Phase 2
- Cross Section Location
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- TPHC Soil Contamination
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)

Notes:

AST = Above ground storage tank
UST = Underground storage Tank
DRMO = Defense Reutilization and Marketing Office
TPHC = Total petroleum hydrocarbons

Aerial Source: USGS, MassGIS 2019 Orthoimagery

AOC 32/43A Field Cross Section Location Map
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

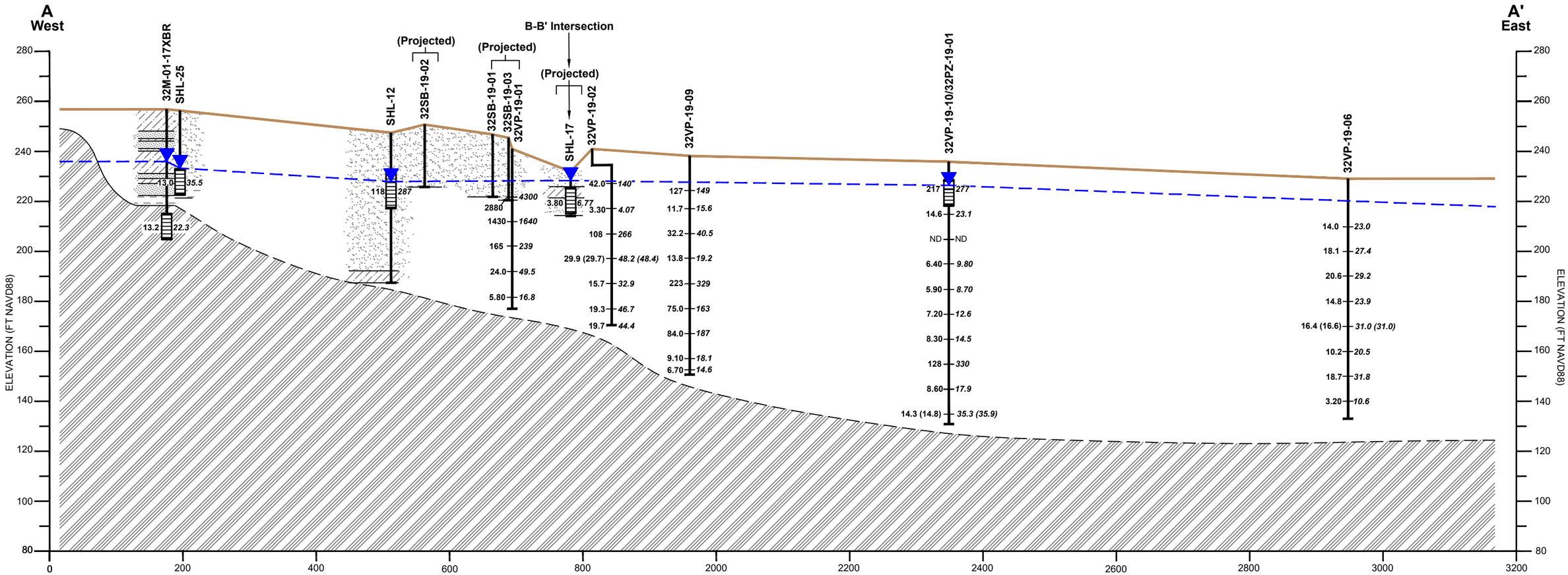
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 06/30/2020

Figure 3-6

KGS



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened
Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

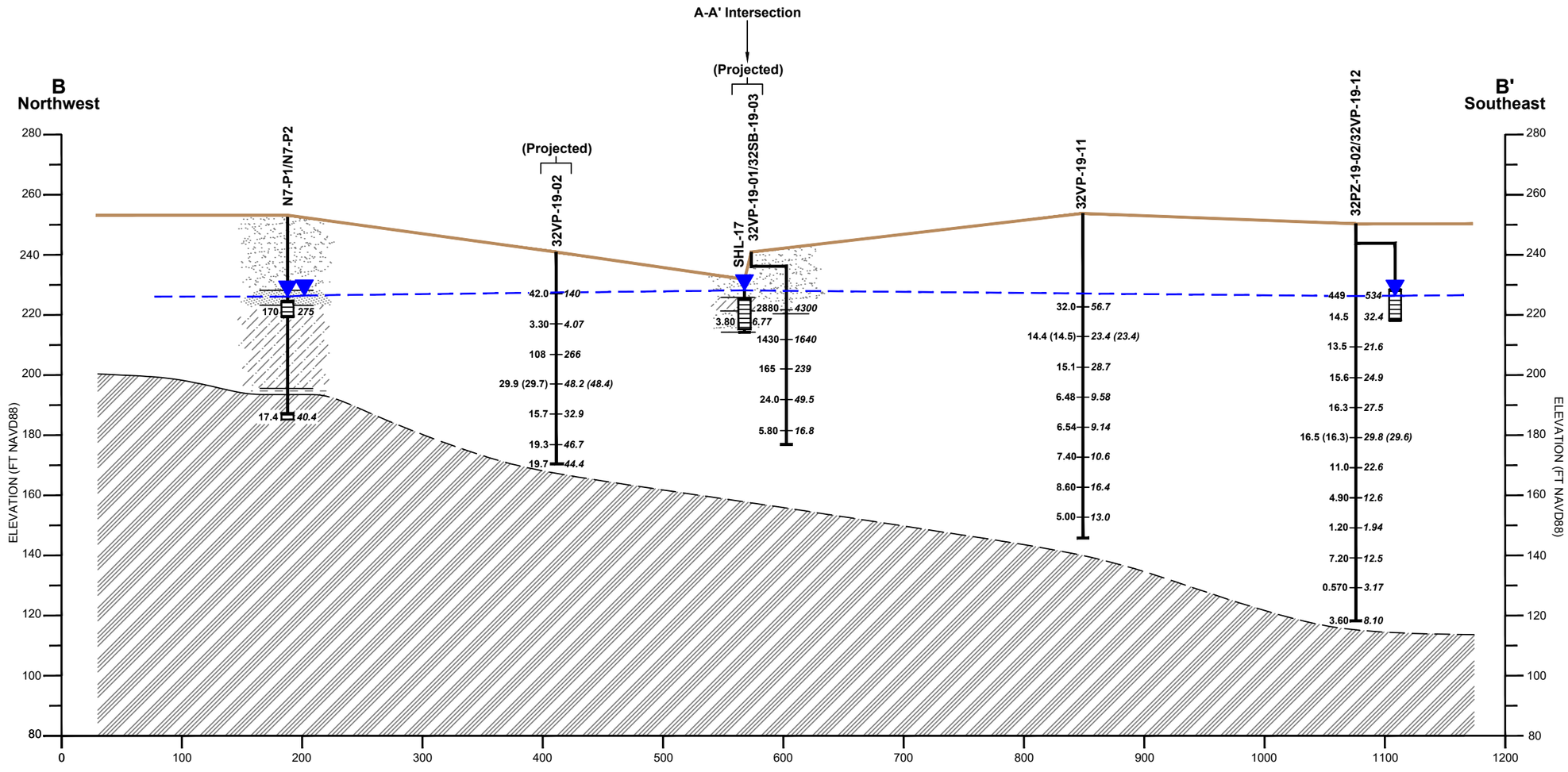
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 150

AOC 32 Cross Section A-A'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 07/13/2020	Figure 3-7	KGS



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened
Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

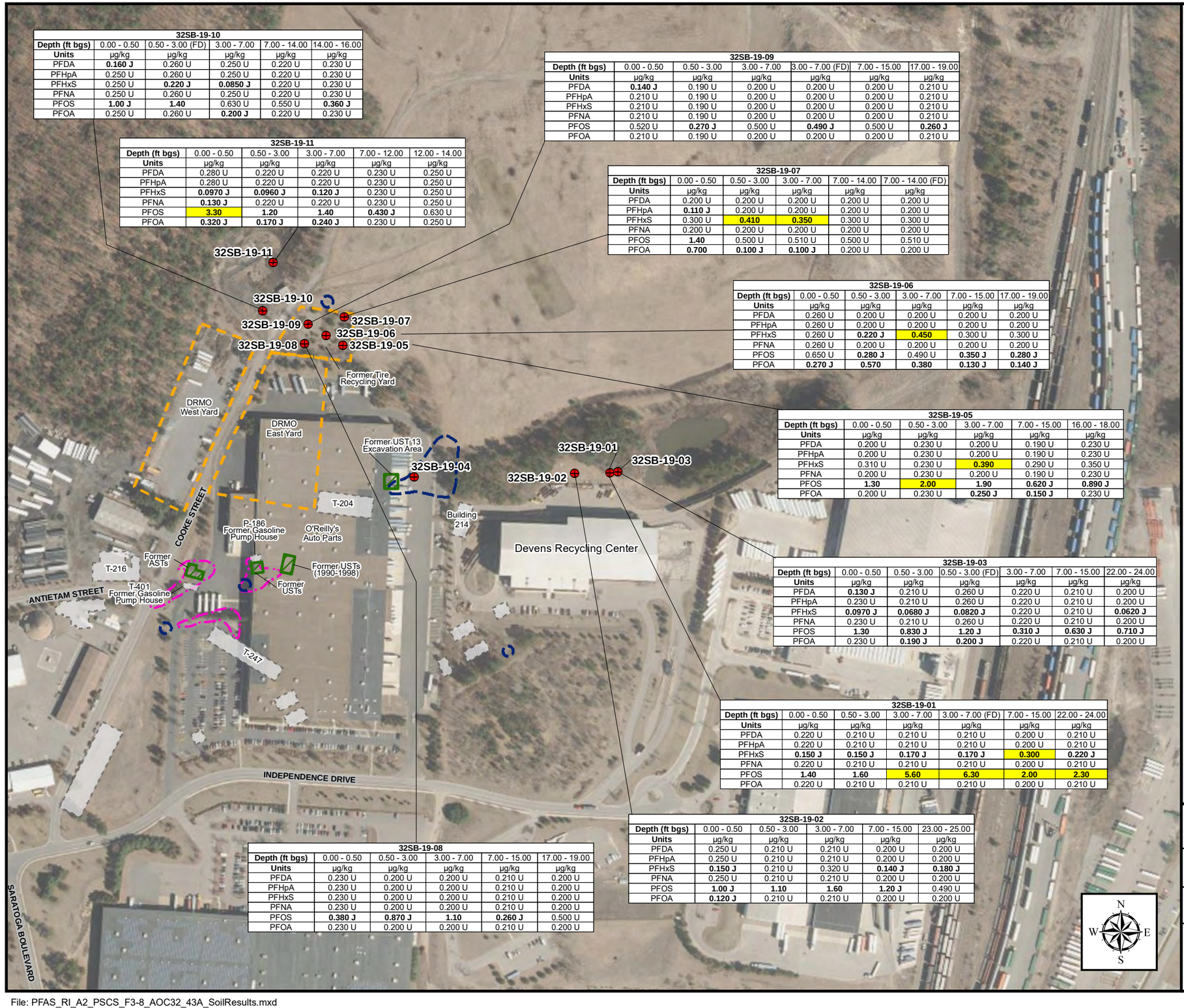
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 100

AOC 32 Cross Section B-B'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 07/13/2020	Figure 3-8	KGS



32SB-19-10

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00 (FD)	3.00 - 7.00	7.00 - 14.00	14.00 - 16.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.160 J**	0.260 U	0.250 U	0.220 U	0.230 U
PFHpA	0.250 U	0.260 U	0.250 U	0.220 U	0.230 U
PFHxS	0.250 U	**0.220 J**	**0.0850 J**	0.220 U	0.230 U
PFNA	0.250 U	0.260 U	0.250 U	0.220 U	0.230 U
PFOS	**1.00 J**	**1.40**	0.630 U	0.550 U	**0.360 J**
PFOA	0.250 U	0.260 U	**0.200 J**	0.220 U	0.230 U

32SB-19-11

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 12.00	12.00 - 14.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.280 U	0.220 U	0.220 U	0.230 U	0.250 U
PFHpA	0.280 U	0.220 U	0.220 U	0.230 U	0.250 U
PFHxS	**0.0970 J**	**0.0960 J**	**0.120 J**	0.230 U	0.250 U
PFNA	**0.130 J**	0.220 U	0.220 U	0.230 U	0.250 U
PFOS	**3.30**	**1.20**	**1.40**	**0.430 J**	0.630 U
PFOA	**0.320 J**	**0.170 J**	**0.240 J**	0.230 U	0.250 U

32SB-19-09

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00 (FD)	7.00 - 15.00	17.00 - 19.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.140 J**	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
PFHpA	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
PFHxS	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
PFNA	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
PFOS	0.520 U	**0.270 J**	0.500 U	**0.490 J**	0.500 U	**0.260 J**
PFOA	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U

32SB-19-07

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 14.00	7.00 - 14.00 (FD)
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
PFHpA	**0.110 J**	0.200 U	0.200 U	0.200 U	0.200 U
PFHxS	0.300 U	**0.410**	**0.350**	0.300 U	0.300 U
PFNA	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
PFOS	**1.40**	0.500 U	0.510 U	0.500 U	0.510 U
PFOA	**0.700**	**0.100 J**	**0.100 J**	0.200 U	0.200 U

32SB-19-06

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	17.00 - 19.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
PFHpA	0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
PFHxS	0.260 U	**0.220 J**	**0.450**	0.300 U	0.300 U
PFNA	0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
PFOS	0.650 U	**0.280 J**	0.490 U	**0.350 J**	**0.280 J**
PFOA	**0.270 J**	**0.570**	**0.380**	**0.130 J**	**0.140 J**

32SB-19-05

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	16.00 - 18.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
PFHpA	0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
PFHxS	0.310 U	0.230 U	**0.390**	0.290 U	0.350 U
PFNA	0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
PFOS	**1.30**	**2.00**	**1.90**	**0.620 J**	**0.890 J**
PFOA	0.200 U	0.230 U	**0.250 J**	**0.150 J**	0.230 U

32SB-19-03

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	0.50 - 3.00 (FD)	3.00 - 7.00	7.00 - 15.00	22.00 - 24.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.130 J**	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
PFHpA	0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
PFHxS	**0.0970 J**	**0.0680 J**	**0.0820 J**	0.220 U	0.210 U	**0.0620 J**
PFNA	0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
PFOS	**1.30**	**0.830 J**	**1.20 J**	**0.310 J**	**0.630 J**	**0.710 J**
PFOA	0.230 U	**0.190 J**	**0.200 J**	0.220 U	0.210 U	0.200 U

32SB-19-01

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00 (FD)	7.00 - 15.00	22.00 - 24.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
PFHpA	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
PFHxS	**0.150 J**	**0.150 J**	**0.170 J**	**0.170 J**	**0.300**	**0.220 J**
PFNA	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
PFOS	**1.40**	**1.60**	**5.60**	**6.30**	**2.00**	**2.30**
PFOA	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U

32SB-19-02

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	23.00 - 25.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
PFHpA	0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
PFHxS	**0.150 J**	0.210 U	0.320 U	**0.140 J**	**0.180 J**
PFNA	0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
PFOS	**1.00 J**	**1.10**	**1.60**	**1.20 J**	0.490 U
PFOA	**0.120 J**	0.210 U	0.210 U	0.200 U	0.200 U

32SB-19-08

Depth (ft bgs)	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	17.00 - 19.00
Units	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
PFHpA	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
PFHxS	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
PFNA	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
PFOS	**0.380 J**	**0.870 J**	**1.10**	**0.260 J**	0.500 U
PFOA	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U

Legend

- Soil Boring Location
- Former Storage Tank(s)
- Former Building
- T-247 — Former Building Number
- TPHC Soil Contamination
- Approximate Historical Extent of Groundwater Contamination in Exceedance of Cleanup Goals (based on April 2002 to October 2008 analytical data) (2008 Annual Report, HGL, 2009)

Notes:

Criteria = S-1/GW-1,Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

PFAS	Limits (µg/kg)
Perfluorodecanoic acid (PFDA)	0.300
Perfluoroheptanoic acid (PFHpA)	0.500
Perfluorohexanesulfonic acid (PFHxS)	0.300
Perfluorononanoic acid (PFNA)	0.320
Perfluorooctanesulfonic acid (PFOS)	2.00
Perfluorooctanoic acid (PFOA)	0.720

2.00 = detection of PFAS

2.00 = detection of PFAS above criteria

Data reported to three significant figures

µg/kg = micrograms per kilogram
U = non-detect
J = estimated result

AST = Above ground storage tank
UST = Underground storage Tank
DRMO = Defense Reutilization and Marketing Office
TPHC = Total petroleum hydrocarbons

Aerial Source: USGS, MassGIS 2019 Orthoimagery

AOC 32 Soil Sampling Results
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 07/06/2020

Figure 3-9

File: PFAS_RI_A2_PSCS_F3-8_AOC32_43A_SoilResults.mxd

NB-18-02		
Sample	12/11/2018	12/11/2018
Units:	ng/L	µg/kg
PFBS	**1.30 J**	0.310 U
PFOS	**4.80**	**0.550 J**
PFOA	**8.10**	0.350 U

NB-18-06		
Sample	12/11/2018	12/11/2018
Units:	ng/L	µg/kg
PFBS	**1.30 J**	0.250 U
PFOS	**3.00 J**	0.690 U
PFOA	**9.30**	0.280 U

NB-18-07		
Sample	12/11/2018	12/11/2018
Units:	ng/L	µg/kg
PFBS	**3.20**	0.560 U
PFOS	**3.60**	1.50 U
PFOA	**6.40**	0.620 U

PS-18-03		
Sample	12/14/2018	12/14/2018
Units:	ng/L	µg/kg
PFBS	**1.30 J**	0.330 U
PFOS	**4.30**	0.910 U
PFOA	**9.80**	0.360 U

PS-18-04		
Sample	12/14/2018	12/14/2018
Units:	ng/L	µg/kg
PFBS	**1.20 J**	0.230 U
PFOS	**4.40**	0.650 U
PFOA	**9.40**	0.260 U

NB-18-05		
Sample	12/06/2018	12/06/2018
Units:	ng/L	µg/kg
PFBS	**2.10**	0.360 U
PFOS	**17.0**	**6.40**
PFOA	**12.0**	**0.930**

NB-18-03		
Sample	12/06/2018	12/06/2018
Units:	ng/L	µg/kg
PFBS	**1.30 J**	0.450 U
PFOS	**4.90 J**	**4.00 J**
PFOA	**8.80**	0.500 U

NB-18-04		
Sample	12/06/2018	12/06/2018
Units:	ng/L	µg/kg
PFBS	**1.20 J**	0.390 U
PFOS	**3.70**	**0.710 J**
PFOA	**7.40**	0.440 U

NB-18-01		
Sample	12/11/2018	12/11/2018
Units:	ng/L	µg/kg
PFBS	**1.20 J**	0.220 U
PFOS	**4.10**	0.620 U
PFOA	**8.30**	0.250 U

WB-18-06		
Sample	12/13/2018	12/13/2018
Units:	ng/L	µg/kg
PFBS	**4.40**	0.370 U
PFOS	**48.0**	**7.90**
PFOA	**21.0**	**0.430 J**

PS-18-05		
Sample	12/17/2018	12/17/2018
Units:	ng/L	µg/kg
PFBS	**1.00 J**	0.310 U
PFOS	**3.70**	0.850 U
PFOA	**7.50**	0.340 U

PS-18-02		
Sample	12/17/2018	12/17/2018
Units:	ng/L	µg/kg
PFBS	**0.910 J**	0.270 U
PFOS	**3.90**	**1.70**
PFOA	**6.10**	0.300 U

WB-18-05				
Sample	12/13/2018	12/13/2018 (FD)	12/13/2018	12/13/2018 (FD)
Units:	ng/L	ng/L	µg/kg	µg/kg
PFBS	**4.10**	**4.60**	0.260 U	0.280 U
PFOS	**66.0**	**72.0**	**0.930 J**	**2.70**
PFOA	**25.0**	**25.0**	0.290 U	**0.170 J**

PS-18-06		
Sample	12/17/2018	12/17/2018
Units:	ng/L	µg/kg
PFBS	**0.920 J**	0.260 U
PFOS	**9.80**	**1.40**
PFOA	**4.10**	0.290 U

PS-18-01		
Sample	12/14/2018	12/14/2018
Units:	ng/L	µg/kg
PFBS	**0.610 J**	0.240 U
PFOS	**5.00**	0.670 U
PFOA	**3.90**	0.270 U

DP-18-01		
Sample	12/5/2018	12/5/2018
Units:	ng/L	µg/kg
PFBS	0.880 U	0.420 U
PFOS	2.60 U	1.20 U
PFOA	**1.10 J**	0.470 U

WB-18-04		
Sample	12/13/2018	12/13/2018
Units:	ng/L	µg/kg
PFBS	**3.20**	0.260 U
PFOS	**58.0**	**1.90**
PFOA	**19.0**	**0.250 J**

WB-18-03		
Sample	12/13/2018	12/13/2018
Units:	ng/L	µg/kg
PFBS	**3.10**	0.200 U
PFOS	**55.0**	**0.420 J**
PFOA	**19.0**	0.230 U

WB-18-02		
Sample	12/17/2018	12/17/2018
Units:	ng/L	µg/kg
PFBS	**2.70**	0.330 U
PFOS	**23.0**	**3.00**
PFOA	**13.0**	**0.300 J**

WB-18-01		
Sample	12/17/2018	12/17/2018
Units:	ng/L	µg/kg
PFBS	**2.30**	0.270 U
PFOS	**34.0**	**0.580 J**
PFOA	**14.0**	0.300 U

Town of Ayer Waste Water Treatment Plant

Approximate Location of Storm Water discharge from Town of Ayer Waste Water Treatment Plant

MacPherson Water Supply Well

AOC 5 - Shepley's Hill Landfill

AOC 32/43A - Former DRMO Yard

AOC 76 - Devens Fire Station

NB-18-01, NB-18-02, NB-18-03, NB-18-04, NB-18-05, NB-18-06, NB-18-07, PS-18-01, PS-18-02, PS-18-03, PS-18-04, PS-18-05, PS-18-06, WB-18-01, WB-18-02, WB-18-03, WB-18-04, WB-18-05, WB-18-06, DP-18-01

Walker Brook, Morse Brook, Nashua River, Nonacoicus Brook, Willow Brook, Cold Spring Brook

Park St, Main St, Antietam St, Sherman Ave, Caney St, Independence Dr, Saratoga Blvd, Barnum Rd, Queenstown St, Old Mill Rd

Plow Shop Pond, Grove Pond, Robbins Pond

SHIRLEY, AYER, AYER HARVARD

Legend

- Surface Water and Sediment Sample Location
- City/Town Boundary
- Stream/River
- Lake/Pond
- Swamp/Marsh
- Former Fort Devens Boundary

EPA PFAS Site Specific Screening Levels for Former Fort Devens			
Surface Water		Sediment	
Units:	ng/L	Units:	µg/kg
PFOA	2,030	PFOA	609
PFOS	2,030	PFOS	609
PFBS	2,030,000	PFBS	609,000

Notes:
Perfluorooctane Sulfonic Acid (PFOS)
Perfluorooctanoic Acid (PFOA)
ng/L = nanograms per liter (Surface Water Result Value)
µg/kg = microgram per kilogram (Sediment Result Value)

J = estimated result
U= not detected above the reported sample quantitation limit
Bold = detection

Area 2 PFAS Results in Surface Water and Sediment Samples
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 400 800
Feet

Date: 07/09/2020

Figure 3-10

File: PFAS_RI_A2FSP_F3-10_SED_SW_Results_V2.mxd

Source: USGS, MassGIS Orthoimagery 2019



Legend

Current Road

Aerial Sources: USGS, MassGIS 2019 Orthoimagery

AOC 76 Fire Station Area 1992 Aerial Imagery
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 75 150
Feet

Date:
07/08/2020

Figure
4-1

KGS

File: PFAS_RI_A2_PSCS_F4-1_AOC76_1992Imagery.mxd



Legend

Historic Subsurface Features

- Communication
- Communication Line
- Electric
- Electric Line
- Storm
- Storm Line
- Storm Feature
- Sanitary
- Sanitary Line
- Sanitary Feature
- Water
- Water Line
- Water Feature
- Abandoned Feature
- Abandoned Line
- Gas
- Gas Line
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 76 Fire Station Area Historic Subsurface Features
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

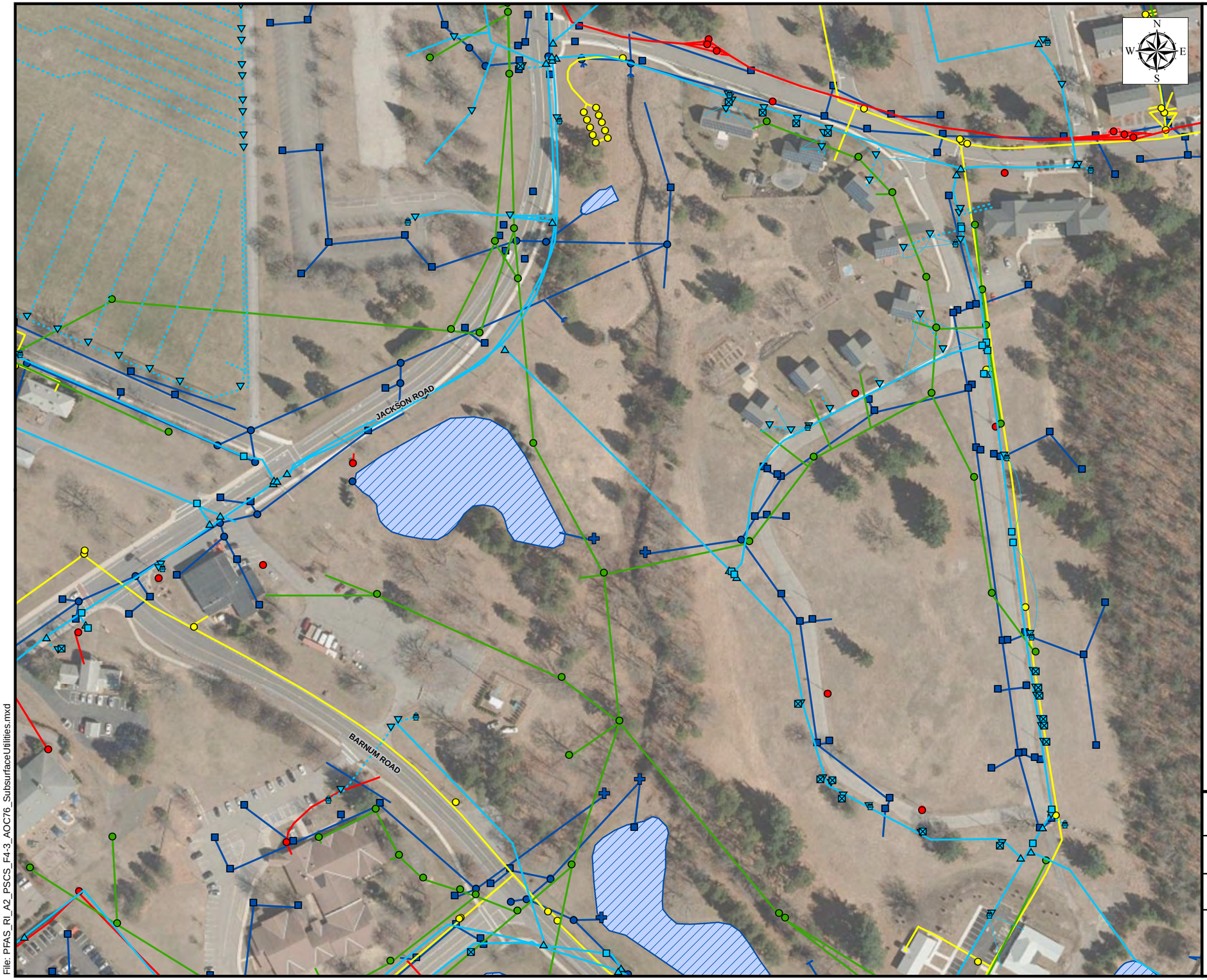
0 75 150
Feet

Date: 07/06/2020

Figure 4-2

KGS

File: PFAS_RI_A2_PSCS_F4-2_AOC76_HistoricUtilities.mxd



Legend

Water 01/06/2020
- Hydrant
- Main Fitting
- Service Fitting
- Main Valve
- Service Valve
- Main Line
- Service Line
- Tie

Sewer 01/06/2020
- Force Fitting, Main Fitting, Service Fitting, Manhole
- Force Main, Gravity Main, Service Line, Tie
- DBox, Grease Trap, Lift Station, Oil/Water

Electric 01/07/2020
- Connection Box, Handhole, Junction Box, Manhole, Meter, Switch, or Transformer
- Inservice/Abandoned
- Vault

Gas 01/06/2020
- Main Fitting, Main Valve, Meter, Rectifier, Service Fitting, Service Regulator, Service Valve, Test Station, Anode
- Main, Service, Tie, Cathodic Loop

Stormwater 12/11/2019
- Catch Basin
- Outfall
- Manhole
- Pipe, Culvert
- Detention Pond
- Former Fort Devens Boundary

Aerial Source: USGS, MassGIS Orthoimagery 2019

AOC 76 Area Current Subsurface Features
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

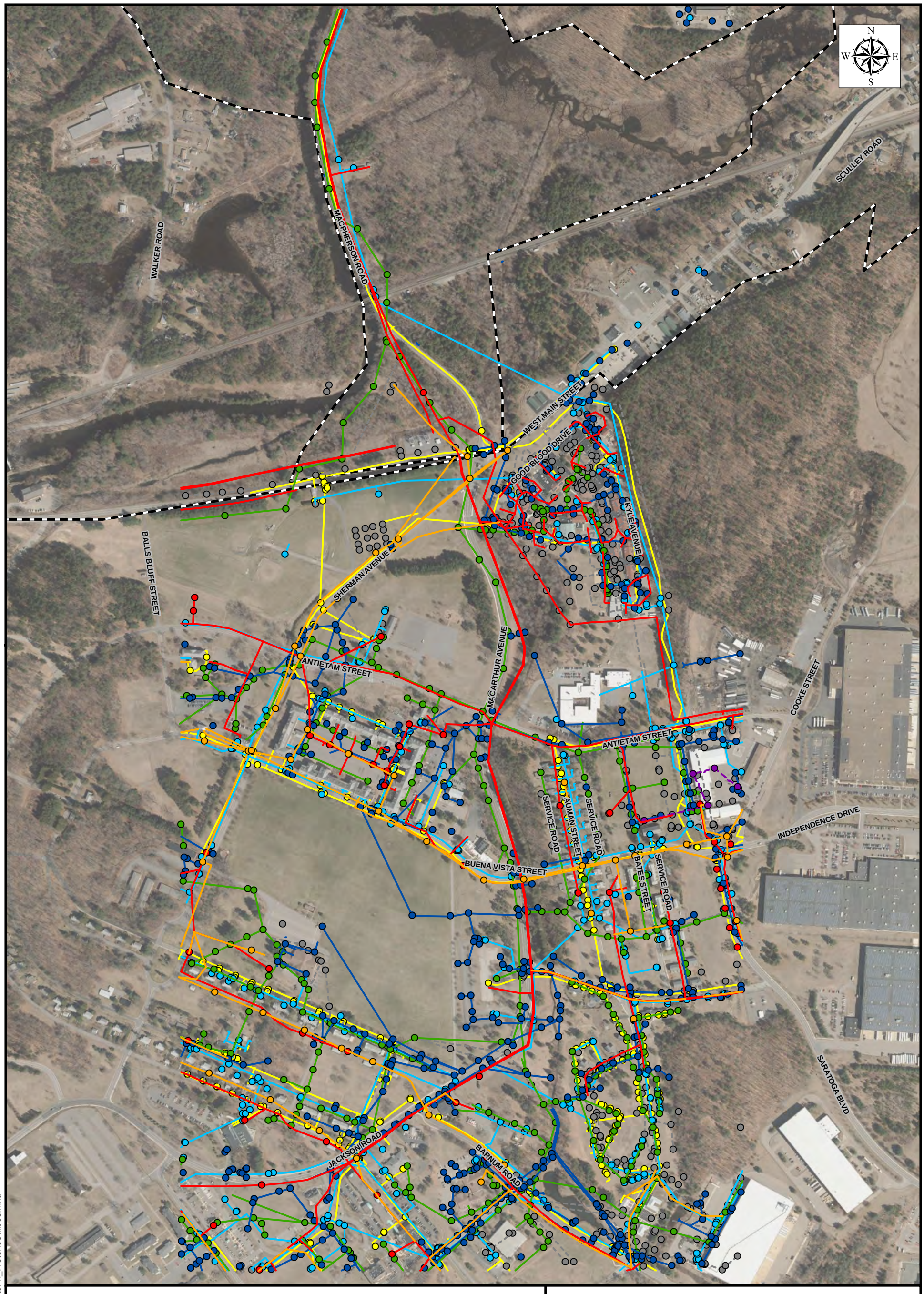
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 75 150
Feet

Date: 07/06/2020

Figure 4-3

File: PFAS_RI_A2_PSCS_F4-3_AOC76_SubsurfaceUtilities.mxd



Legend

- Communication
- Communication Line
- Electric
- Electric Line
- Storm
- Storm Line
- Storm Feature
- Steam Manhole
- Steam Line
- Sanitary
- Sanitary Line
- Sanitary Feature
- Water
- Water Line
- Water Feature
- Gas
- Gas Line
- Abandoned Feature
- Abandoned Line
- Former Fort Devens Boundary

AOC 76/MacPherson Area Historic Subsurface Features
Devens PFAS - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

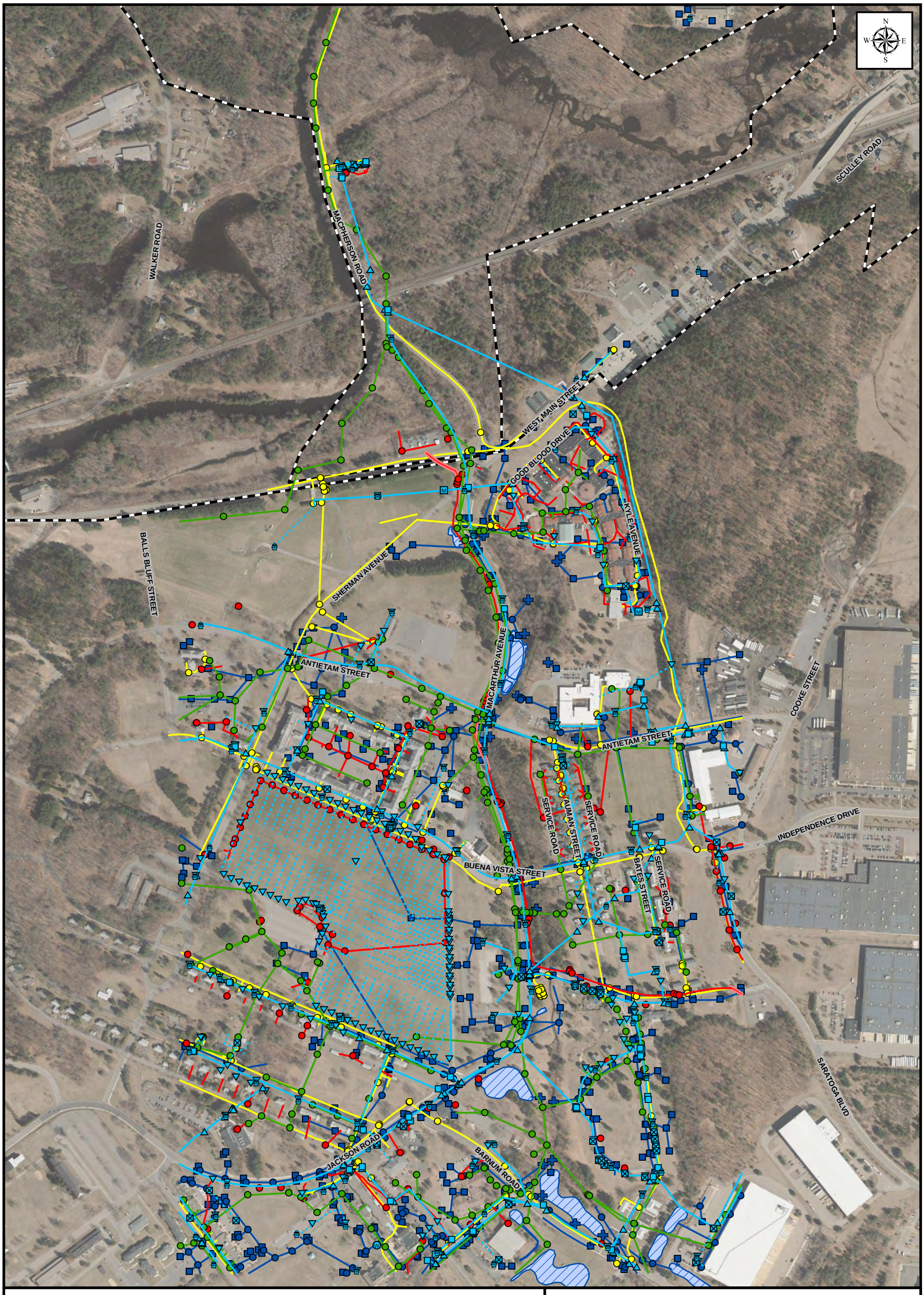
0 275 550
Feet

Date: 07/06/2020

Figure 4-4

File: PFAS_RI_A2_PSCS_F4-4_AOC76_MacPh_HistoricUtilities.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

Water 01/06/2020
- Hydrant
- Main Fitting
- Service Fitting
- Main Valve
- Service Valve
- Meter
- Wellhead
- Main Line
- Service Line
- Tie

Sewer 01/06/2020
- Force Fitting, Main Fitting, Service Fitting, Manhole
- Force Main, Gravity Main, Service Line, Tie
- DBox, Grease Trap, Lift Station, Oil/Water

Electric 01/07/2020
- Connection Box, Handhole, Junction Box, Manhole, Meter, Switch, or Transformer
- Inservice/Abandoned
- Vault

Gas 01/06/2020
- Main Fitting, Main Valve, Meter, Rectifier, Service Fitting, Service Regulator, Service Valve, Test Station, Anode
- Main, Service, Tie, Cathodic Loop

Stormwater 12/11/2019
- Catch Basin
- Outfall
- Manhole
- Pipe, Culvert
- Detention Pond
- Former Fort Devens Boundary

AOC 76/MacPherson Area Current Subsurface Features
Devens PFAS - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 275 550
Feet

Date: 07/06/2020

Figure 4-5

File: PFAS_RI_A2_PSCS_F4-5_AOC76_MacPh_SubsurfaceUtilities.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

- Vertical Profiling Location Installation Phase 1
- Vertical Profiling Location Installation Phase 2
- Vertical Profiling Location Installation Phase 3
- Vertical Profiles from adjacent sites
- Existing Monitoring Well/Piezometer
- New Monitoring Well/Piezometer
- Soil Boring Location
- Temporary Well Location from SI
- MacPherson Water Supply Well
- Car Wash Water Supply Well
- MPP-93-03 Well Sampled for PFAS RI
- Stream/River
- Former Fort Devens Boundary

AOC 76/MacPherson Area Field Activities
Devens PFAS - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

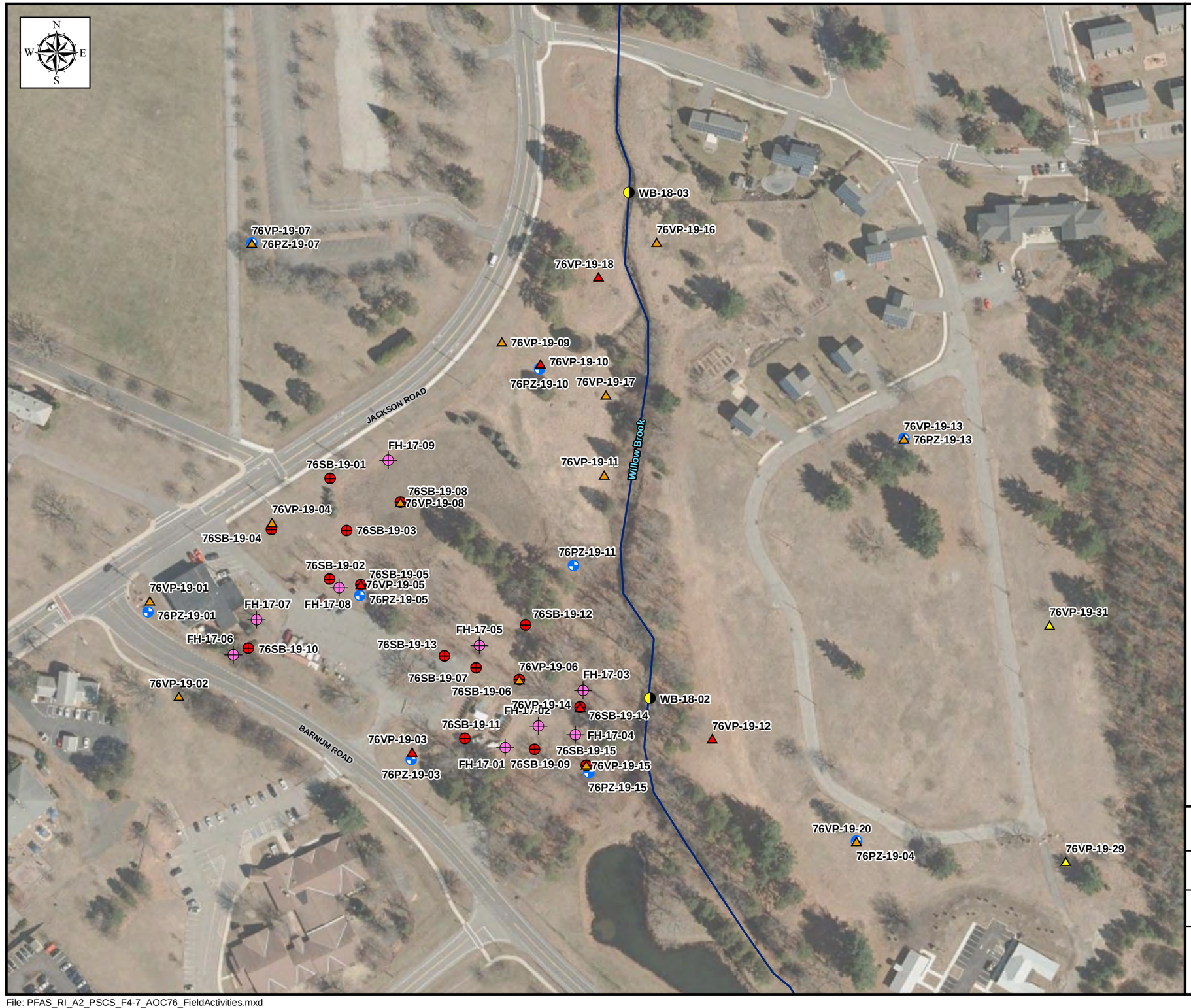
0 300 600
Feet

Date: 08/12/2020

Figure 4-6

File: PFAS_RI_A2_PSCS_F4-6_AOC76_AOC69W_MacPh_FieldActivities.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

- Vertical Profiling Location Installation Phase 1
- Vertical Profiling Location Installation Phase 2
- Vertical Profiling Location Installation Phase 3
- Surface Water and Sediment Sampling Location
- Soil Boring Location
- New Monitoring Well/Piezometer
- Temporary Well Location from SI
- Stream/River

Aerial Sources: USGS, MassGIS 2019 Orthoimagery

AOC 76 Fire Station Area Field Activities
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

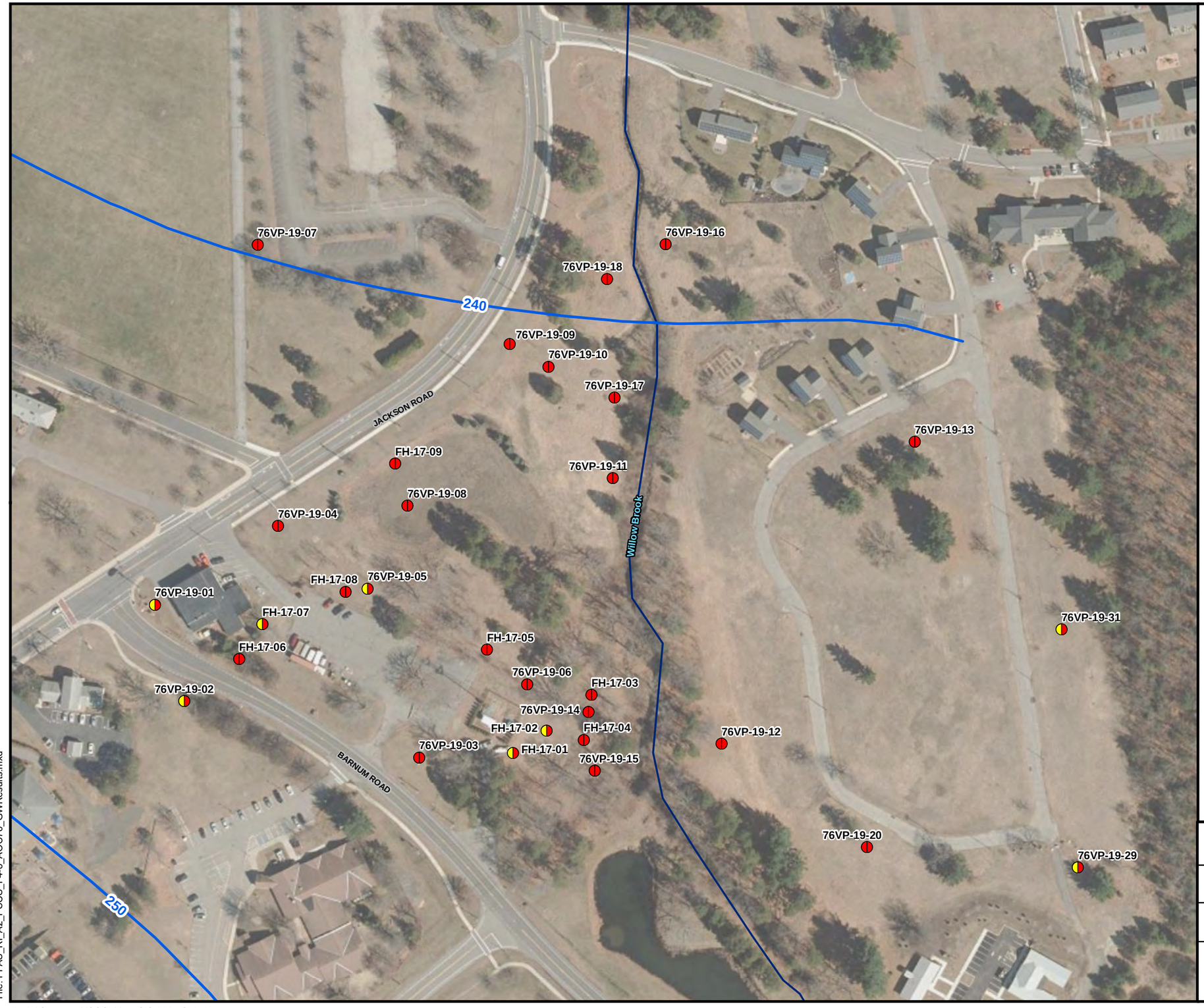
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 75 150
Feet

Date: 07/08/2020

Figure 4-7

File: PFAS_RI_A2_PSCS_F4-7_AOC76_FieldActivities.mxd



Legend

- Monitoring Well/ Vertical Profiling Location

EPA LHA (sum of PFOA and PFOS) (ng/L)

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70 ng/L
- EPA LHA no detection

MassDEP (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)

- MassDEP ≥ 20 ng/L
- MassDEP < 20ng/L
- MassDEP no detection
- Groundwater Contour (ft NAVD88) (June 28, 2019)

Notes:

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

SI GW results were not analyzed for PFDA.

Aerial Sources: USGS, MassGIS 2019 Orthoimagery

AOC 76 Fire Station Area Groundwater Results
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

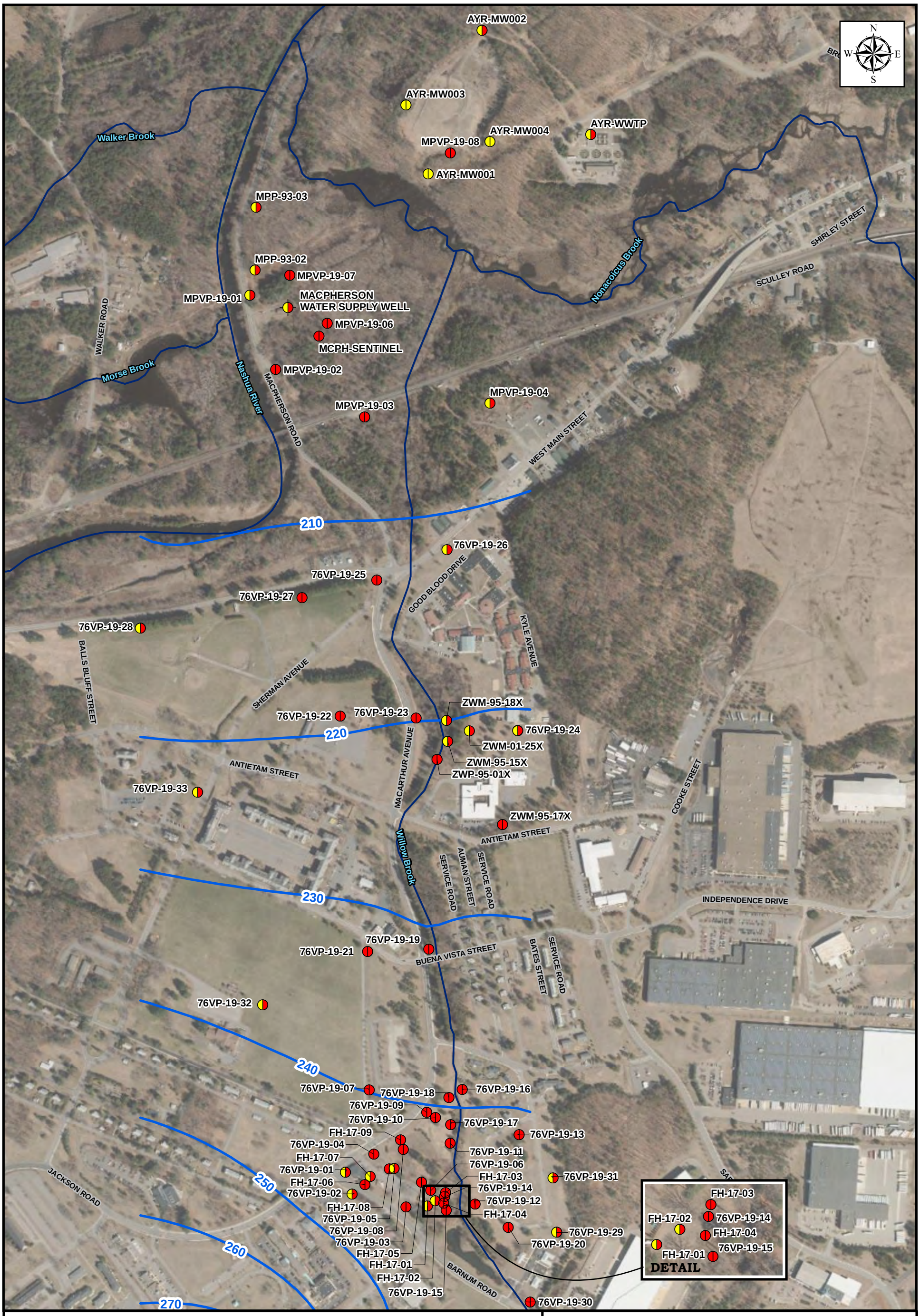
0 75 150
Feet

Date: 07/09/2020

Figure 4-8

File: PFAS_RI_A2_PSCS_F4-8_AOC76_GWResults.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

- Monitoring Well/ Vertical Profiling Location
- Groundwater Contour (ft NAVD88) (June 28, 2019)

EPA LHA (sum of PFOA and PFOS) (ng/L)

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70 ng/L
- EPA LHA no detection

MassDEP (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)

- MassDEP ≥ 20 ng/L
- MassDEP < 20ng/L
- MassDEP no detection

Notes:
EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

SI GW results were not analyzed for PFDA.

AOC 76/MacPherson Well Area Groundwater Results
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 300 600
Feet

Date: 07/10/2020

Figure 4-9

File: PFAS_RI_A2_PSCS_F4-9_AOC76_MacPh_GWResults.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

- Vertical Profiling Location Installation Phase 1
- Vertical Profiling Location Installation Phase 2
- Vertical Profiling Location Installation Phase 3
- Vertical Profiles from adjacent sites
- Existing Monitoring Well/Piezometer
- New Monitoring Well/Piezometer
- Soil Boring Location
- Temporary Well Location from SI
- MacPherson Water Supply Well
- Car Wash Water Supply Well
- MPP-93-03 Well Sampled for PFAS RI
- Stream/River
- Cross Section Location
- Former Fort Devens Boundary

AOC 76/MacPherson Area Cross Section Locations
Devens PFAS - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

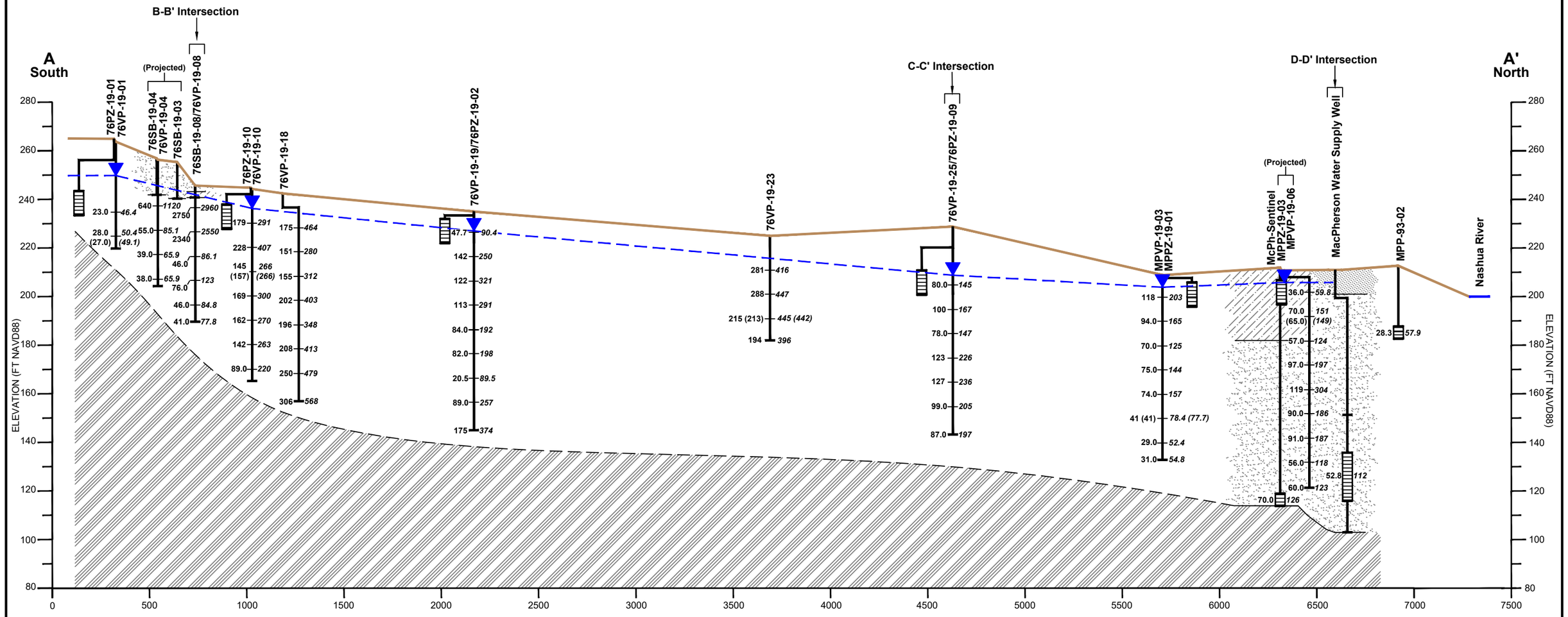
0 300 600 Feet

Date: 07/13/2020

Figure 4-10

File: PFAS_RI_A2_PSCS_F4-10_AOC76_XSLoc.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened
Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

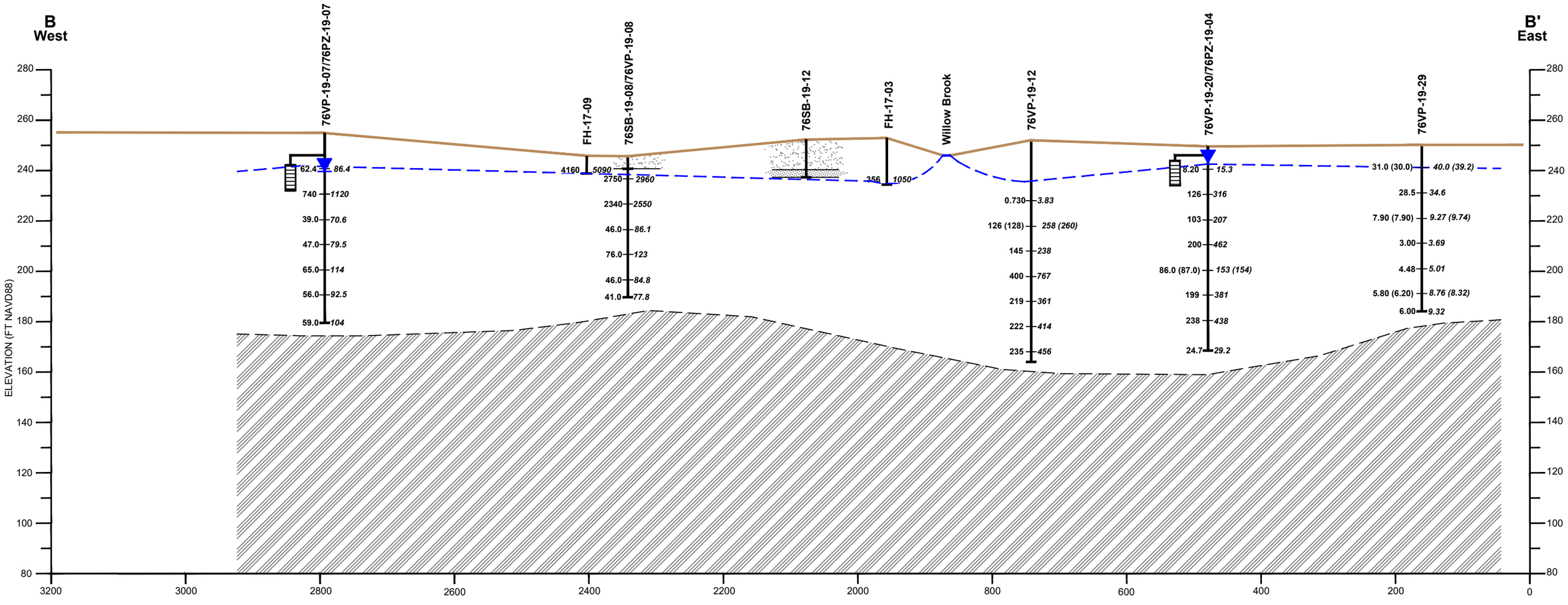
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 500

AOC 76 Cross Section A-A'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 07/14/2020	Figure 4-11	KGS



Legend

Vertical Profile

1.39 U EPA LHA Concentration (sum of PFOA and PFOS)

2.59 U MassDEP Concentration (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA)

Monitoring Well

Screened Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

VERTICAL SCALE IN FEET: 40

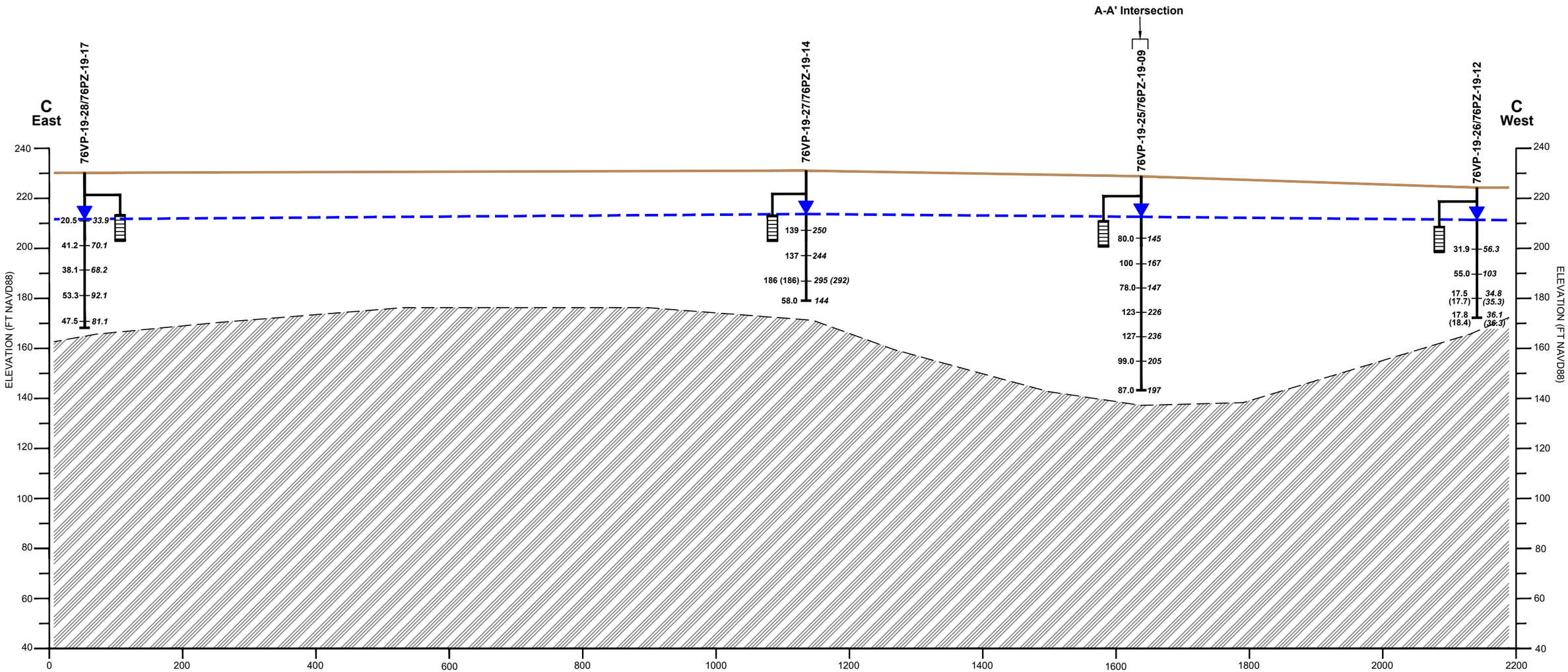
HORIZONTAL SCALE IN FEET: 150

AOC 76 Cross Section B-B'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 07/13/2020	Figure 4-12	KGS



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened
Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

VERTICAL SCALE IN FEET: 40

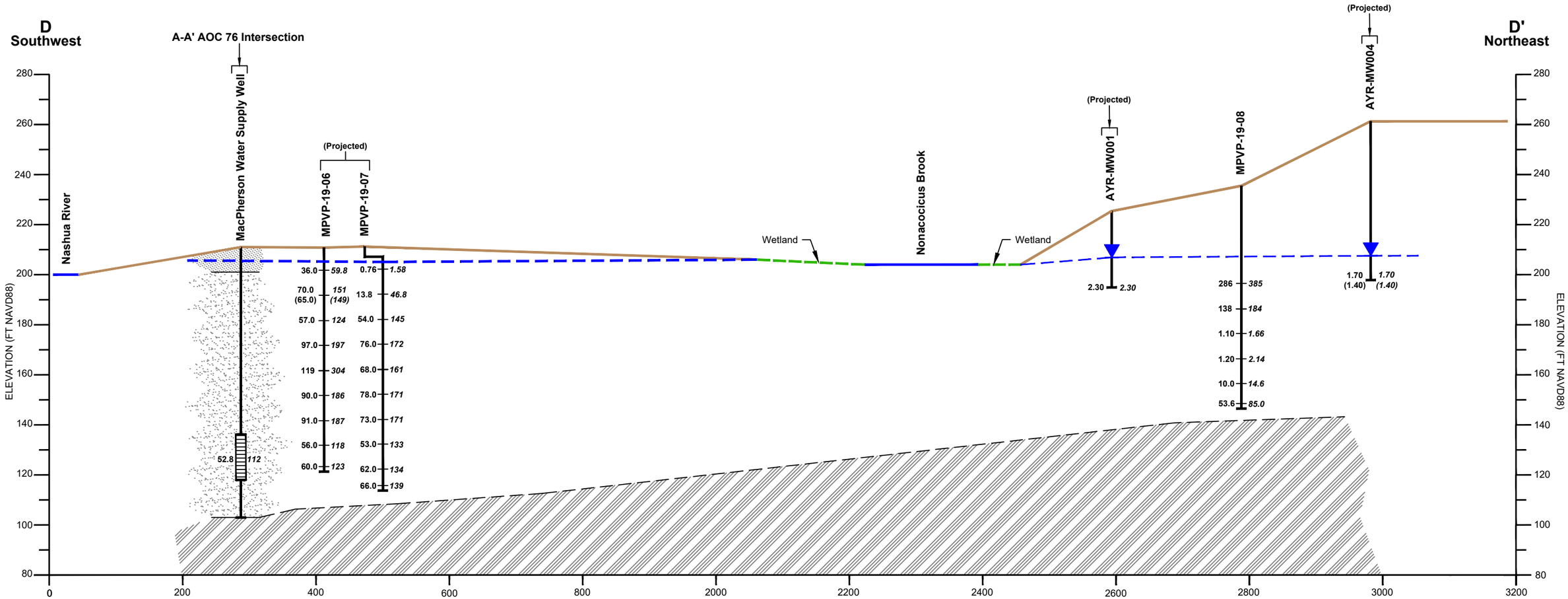
HORIZONTAL SCALE IN FEET: 150

AOC 76 Cross Section C-C'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 07/13/2020	Figure 4-13	KGS



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened
Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
( ) = field duplicate

Screen information not available for AYR-MW001 or AYR-MW004. Total depths based on field measurements.

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

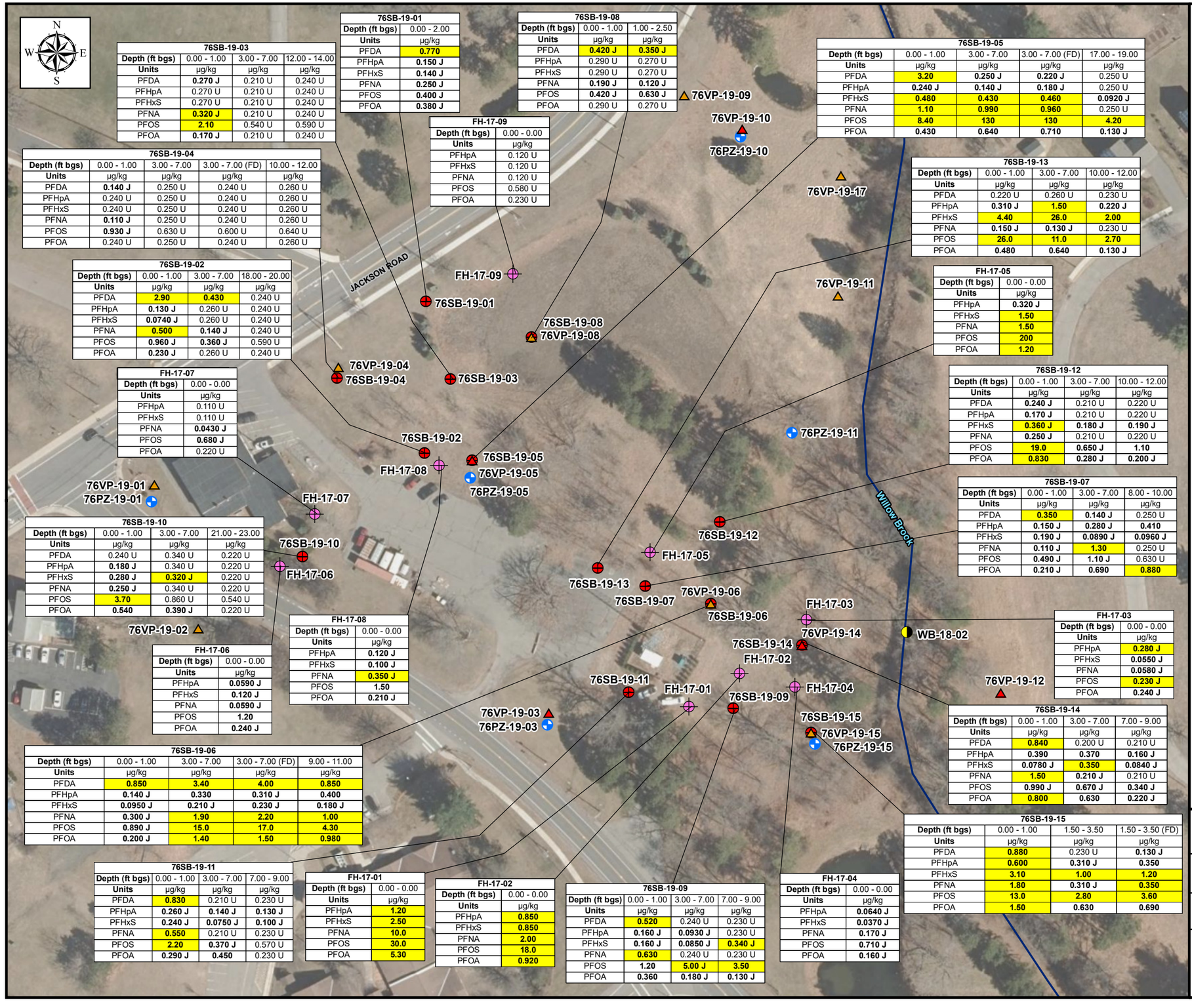
VERTICAL SCALE IN FEET: 40
HORIZONTAL SCALE IN FEET: 150

AOC 76 Area Cross Section D-D'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Scale as Shown	Date: 07/13/2020	Figure 4-14	KGS



76SB-19-03

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	12.00 - 14.00
Units	µg/kg	µg/kg	µg/kg
PFDA	**0.270 J**	0.210 U	0.240 U
PFHpA	0.270 U	0.210 U	0.240 U
PFHxS	0.270 U	0.210 U	0.240 U
PFNA	**0.320 J**	0.210 U	0.240 U
PFOS	**2.10**	0.540 U	0.590 U
PFOA	**0.170 J**	0.210 U	0.240 U

76SB-19-01

Depth (ft bgs)	0.00 - 2.00
Units	µg/kg
PFDA	**0.770**
PFHpA	**0.150 J**
PFHxS	**0.140 J**
PFNA	**0.250 J**
PFOS	**0.400 J**
PFOA	**0.380 J**

76SB-19-08

Depth (ft bgs)	0.00 - 1.00	1.00 - 2.50
Units	µg/kg	µg/kg
PFDA	**0.420 J**	**0.350 J**
PFHpA	0.290 U	0.270 U
PFHxS	0.290 U	0.270 U
PFNA	**0.190 J**	**0.120 J**
PFOS	**0.420 J**	**0.630 J**
PFOA	0.290 U	0.270 U

76SB-19-05

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00 (FD)	17.00 - 19.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**3.20**	**0.250 J**	**0.220 J**	0.250 U
PFHpA	**0.240 J**	**0.140 J**	**0.180 J**	0.250 U
PFHxS	**0.480**	**0.430**	**0.460**	**0.0920 J**
PFNA	**1.10**	**0.990**	**0.960**	0.250 U
PFOS	**8.40**	**130**	**130**	**4.20**
PFOA	**0.430**	**0.640**	**0.710**	**0.130 J**

FH-17-09

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	0.120 U
PFHxS	0.120 U
PFNA	0.120 U
PFOS	0.580 U
PFOA	0.230 U

76SB-19-04

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00 (FD)	10.00 - 12.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.140 J**	0.250 U	0.240 U	0.260 U
PFHpA	0.240 U	0.250 U	0.240 U	0.260 U
PFHxS	0.240 U	0.250 U	0.240 U	0.260 U
PFNA	**0.110 J**	0.250 U	0.240 U	0.260 U
PFOS	**0.930 J**	0.630 U	0.600 U	0.640 U
PFOA	0.240 U	0.250 U	0.240 U	0.260 U

76SB-19-13

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	10.00 - 12.00
Units	µg/kg	µg/kg	µg/kg
PFDA	0.220 U	0.260 U	0.230 U
PFHpA	**0.310 J**	**1.50**	**0.220 J**
PFHxS	**4.40**	**26.0**	**2.00**
PFNA	**0.150 J**	**0.130 J**	0.230 U
PFOS	**26.0**	**11.0**	**2.70**
PFOA	**0.480**	**0.640**	**0.130 J**

76SB-19-02

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	18.00 - 20.00
Units	µg/kg	µg/kg	µg/kg
PFDA	**2.90**	**0.430**	0.240 U
PFHpA	**0.130 J**	0.260 U	0.240 U
PFHxS	**0.0740 J**	0.260 U	0.240 U
PFNA	**0.500**	**0.140 J**	0.240 U
PFOS	**0.960 J**	**0.360 J**	0.590 U
PFOA	**0.230 J**	0.260 U	0.240 U

FH-17-05

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	**0.320 J**
PFHxS	**1.50**
PFNA	**1.50**
PFOS	**200**
PFOA	**1.20**

FH-17-07

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	0.110 U
PFHxS	0.110 U
PFNA	**0.0430 J**
PFOS	**0.680 J**
PFOA	0.220 U

76SB-19-12

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	10.00 - 12.00
Units	µg/kg	µg/kg	µg/kg
PFDA	**0.240 J**	0.210 U	0.220 U
PFHpA	**0.170 J**	0.210 U	0.220 U
PFHxS	**0.360 J**	**0.180 J**	**0.190 J**
PFNA	**0.250 J**	0.210 U	0.220 U
PFOS	**19.0**	**0.650 J**	**1.10**
PFOA	**0.830**	**0.280 J**	**0.200 J**

76SB-19-10

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	21.00 - 23.00
Units	µg/kg	µg/kg	µg/kg
PFDA	0.240 U	0.340 U	0.220 U
PFHpA	**0.180 J**	0.340 U	0.220 U
PFHxS	**0.280 J**	**0.320 J**	0.220 U
PFNA	**0.250 J**	0.340 U	0.220 U
PFOS	**3.70**	0.860 U	0.540 U
PFOA	**0.540**	**0.390 J**	0.220 U

76SB-19-07

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	8.00 - 10.00
Units	µg/kg	µg/kg	µg/kg
PFDA	**0.350**	**0.140 J**	0.250 U
PFHpA	**0.150 J**	**0.280 J**	**0.410**
PFHxS	**0.190 J**	**0.0890 J**	**0.0960 J**
PFNA	**0.110 J**	**1.30**	0.250 U
PFOS	**0.490 J**	**1.10 J**	0.630 U
PFOA	**0.210 J**	**0.690**	**0.880**

FH-17-08

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	**0.120 J**
PFHxS	**0.100 J**
PFNA	**0.350 J**
PFOS	**1.50**
PFOA	**0.210 J**

FH-17-03

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	**0.280 J**
PFHxS	**0.0550 J**
PFNA	**0.0580 J**
PFOS	**0.230 J**
PFOA	**0.240 J**

FH-17-06

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	**0.0590 J**
PFHxS	**0.120 J**
PFNA	**0.0590 J**
PFOS	**1.20**
PFOA	**0.240 J**

76SB-19-14

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	7.00 - 9.00
Units	µg/kg	µg/kg	µg/kg
PFDA	**0.840**	0.200 U	0.210 U
PFHpA	**0.390**	**0.370**	**0.160 J**
PFHxS	**0.0780 J**	**0.350**	**0.0840 J**
PFNA	**1.50**	**0.210 J**	0.210 U
PFOS	**0.990 J**	**0.670 J**	**0.340 J**
PFOA	**0.800**	**0.630**	**0.220 J**

76SB-19-06

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00 (FD)	9.00 - 11.00
Units	µg/kg	µg/kg	µg/kg	µg/kg
PFDA	**0.850**	**3.40**	**4.00**	**0.850**
PFHpA	**0.140 J**	**0.330**	**0.310 J**	**0.400**
PFHxS	**0.0950 J**	**0.210 J**	**0.230 J**	**0.180 J**
PFNA	**0.300 J**	**1.90**	**2.20**	**1.00**
PFOS	**0.890 J**	**15.0**	**17.0**	**4.30**
PFOA	**0.200 J**	**1.40**	**1.50**	**0.980**

76SB-19-15

Depth (ft bgs)	0.00 - 1.00	1.50 - 3.50	1.50 - 3.50 (FD)
Units	µg/kg	µg/kg	µg/kg
PFDA	**0.880**	0.230 U	**0.130 J**
PFHpA	**0.600**	**0.310 J**	**0.350**
PFHxS	**3.10**	**1.00**	**1.20**
PFNA	**1.80**	**0.310 J**	**0.350**
PFOS	**13.0**	**2.80**	**3.60**
PFOA	**1.50**	**0.630**	**0.690**

76SB-19-11

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	7.00 - 9.00
Units	µg/kg	µg/kg	µg/kg
PFDA	**0.830**	0.210 U	0.230 U
PFHpA	**0.260 J**	**0.140 J**	**0.130 J**
PFHxS	**0.240 J**	**0.0750 J**	**0.100 J**
PFNA	**0.550**	0.210 U	0.230 U
PFOS	**2.20**	**0.370 J**	0.570 U
PFOA	**0.290 J**	**0.450**	0.230 U

FH-17-01

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	**1.20**
PFHxS	**2.50**
PFNA	**10.0**
PFOS	**30.0**
PFOA	**5.30**

FH-17-02

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	**0.850**
PFHxS	**0.850**
PFNA	**2.00**
PFOS	**18.0**
PFOA	**0.920**

76SB-19-09

Depth (ft bgs)	0.00 - 1.00	3.00 - 7.00	7.00 - 9.00
Units	µg/kg	µg/kg	µg/kg
PFDA	**0.520**	0.240 U	0.230 U
PFHpA	**0.160 J**	**0.0930 J**	0.230 U
PFHxS	**0.160 J**	**0.0850 J**	**0.340 J**
PFNA	**0.630**	0.240 U	0.230 U
PFOS	**1.20**	**5.00 J**	**3.50**
PFOA	**0.360**	**0.180 J**	**0.130 J**

FH-17-04

Depth (ft bgs)	0.00 - 0.00
Units	µg/kg
PFHpA	**0.0640 J**
PFHxS	**0.0370 J**
PFNA	**0.170 J**
PFOS	**0.710 J**
PFOA	**0.160 J**

Legend

- Vertical Profiling Location Installation Phase 1
- Vertical Profiling Location Installation Phase 2
- Vertical Profiling Location Installation Phase 3
- Surface Water and Sediment Sampling Location
- Soil Boring Location
- Existing Monitoring Well/Piezometer
- New Monitoring Well/Piezometer
- Temporary Well Location from SI
- Stream/River

Notes:

Soil Samples collected during the SI were not analyzed for PFDA.

Criteria = S-1/GW-1,Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

PFAS	Limits (µg/kg)
Perfluorodecanoic acid (PFDA)	0.300
Perfluoroheptanoic acid (PFHpA)	0.500
Perfluorohexanesulfonic acid (PFHxS)	0.300
Perfluorononanoic acid (PFNA)	0.320
Perfluorooctanesulfonic acid (PFOS)	2.00
Perfluorooctanoic acid (PFOA)	0.720

2.00 = detection of PFAS

2.00 = detection of PFAS above criteria

Data reported to three significant figures

µg/kg = micrograms per kilogram
U = non-detect
J = estimated result

Aerial Sources: USGS, MassGIS 2019 Orthoimagery

AOC 76 Fire Station Area Soil Sampling Results
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 50 100
Feet

Date: 07/13/2020

Figure 4-15

KGS



Legend

- Current Road
- Former Fort Devens Boundary

Note:

Aerial Source: MassGIS - 1:5,000 Black and White Digital Orthophoto Images - 1992

Shepley's Hill Landfill 1992 Aerial Imagery
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, MA

KOMAN Government Solutions, LLC

0 150 300
Feet

Date: 06/30/2020

Figure 5-1

File: PFAS_RI_A2_PSCS_F5-1_SHL_1992Imagery.mxd



Legend

Historic Subsurface Features

- Storm
- Storm Line
- Storm Feature
- Sanitary
- Sanitary Line
- Sanitary Feature
- Water
- Water Line
- Water Feature
- Abandoned Feature
- Abandoned Line
- Former Fort Devens Boundary

Shepley's Hill Landfill Historic Subsurface Features
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 06/30/2020

Figure 5-2

KGS

File: PFAS_RI_A2_PSCS_F5-2_SHL_HistoricUtilities.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

Water 01/06/2020
- Hydrant
- Service Valve
- Service Line

Sewer 01/06/2020
- Force Fitting, Main Fitting, Service Fitting, Manhole
- Force Main, Gravity Main, Service Line, Tie

Electric 01/07/2020
- Inservice/Abandoned

Stormwater 12/11/2019
- Catch Basin
- Outfall
- Manhole
- Pipe, Culvert
- Former Fort Devens Boundary

Shepley's Hill Landfill Current Subsurface Features
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

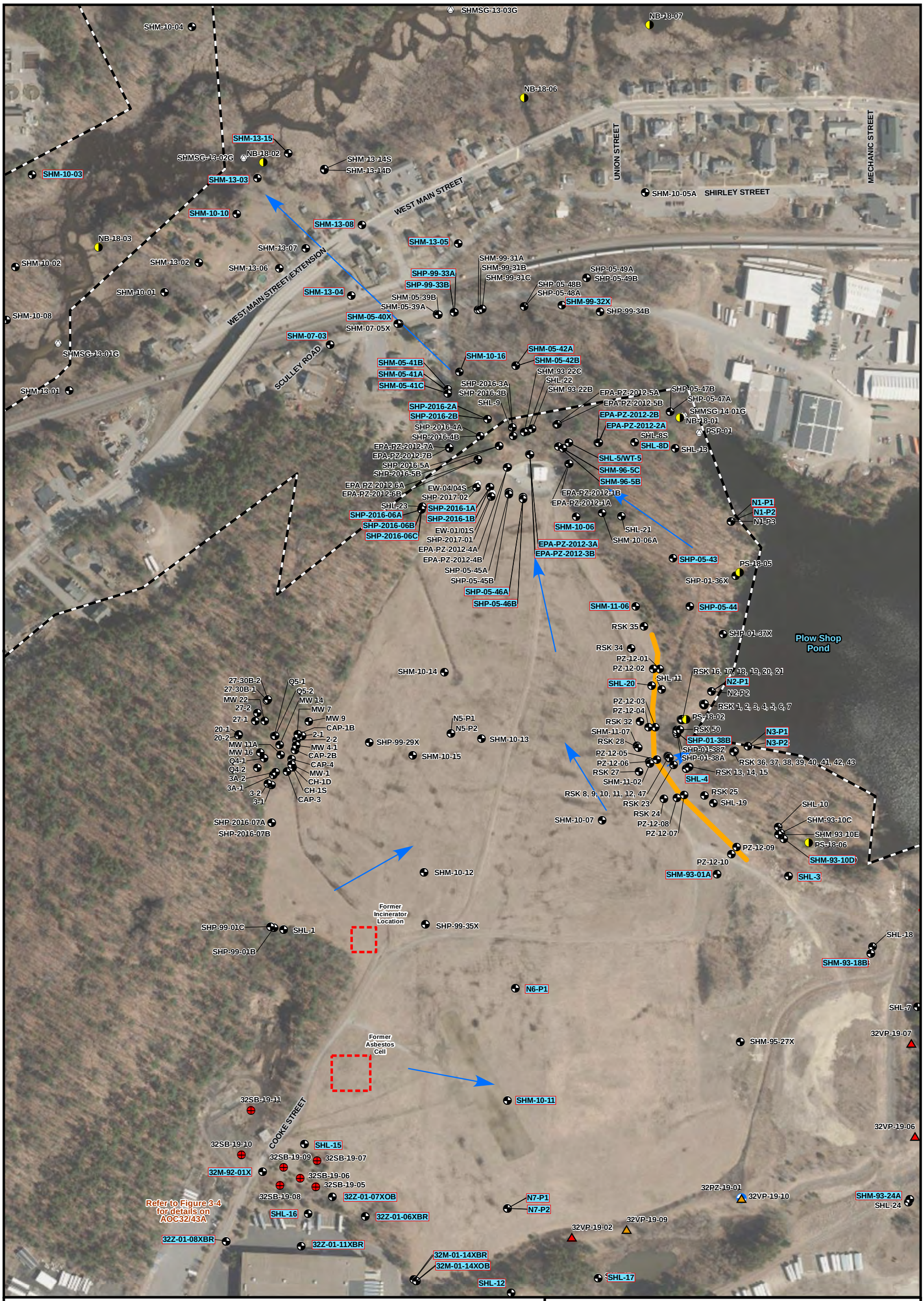
0 150 300
Feet

Date: 08/10/2020

Figure 5-3

File: PFAS_RI_A2_PSCS_F5-3_SHL_SubsurfaceUtilities.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

- Vertical Profiling Location Installation Phase 1
- Vertical Profiling Location Installation Phase 2
- Surface Water/Sediment Sample Location
- Monitoring Well
- Extraction Well
- Stream Gauge
- Barrier Wall
- Approximate Groundwater Flow Direction
- SHL-25 — Wells Sampled for PFAS RI
- AOC 5 Feature
- Former Fort Devens Boundary

Shepley's Hill Landfill Field Activities
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

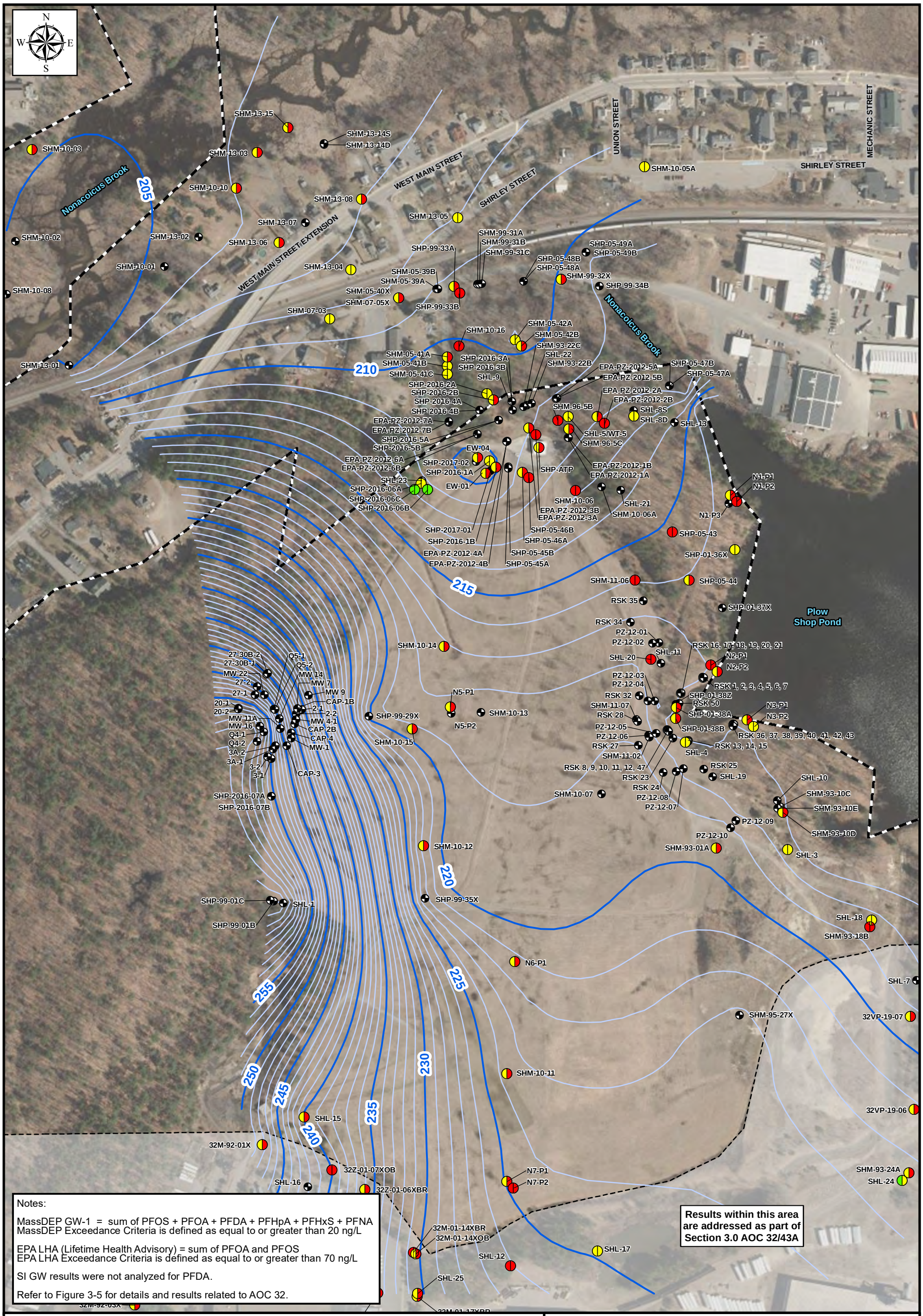
0 150 300
Feet

Date: 07/01/2020

Figure 5-4

File: PFAS_RI_A2_PSCS_F5-4_SHL_FieldActivities.mxd

Aerial Source: USGS, MassGIS 2019 Orthoimagery



Shepley's Hill Landfill Groundwater Results
Devens PFAS RI - Area 2 PSCS

Former Army Installation Devens
Devens, Massachusetts

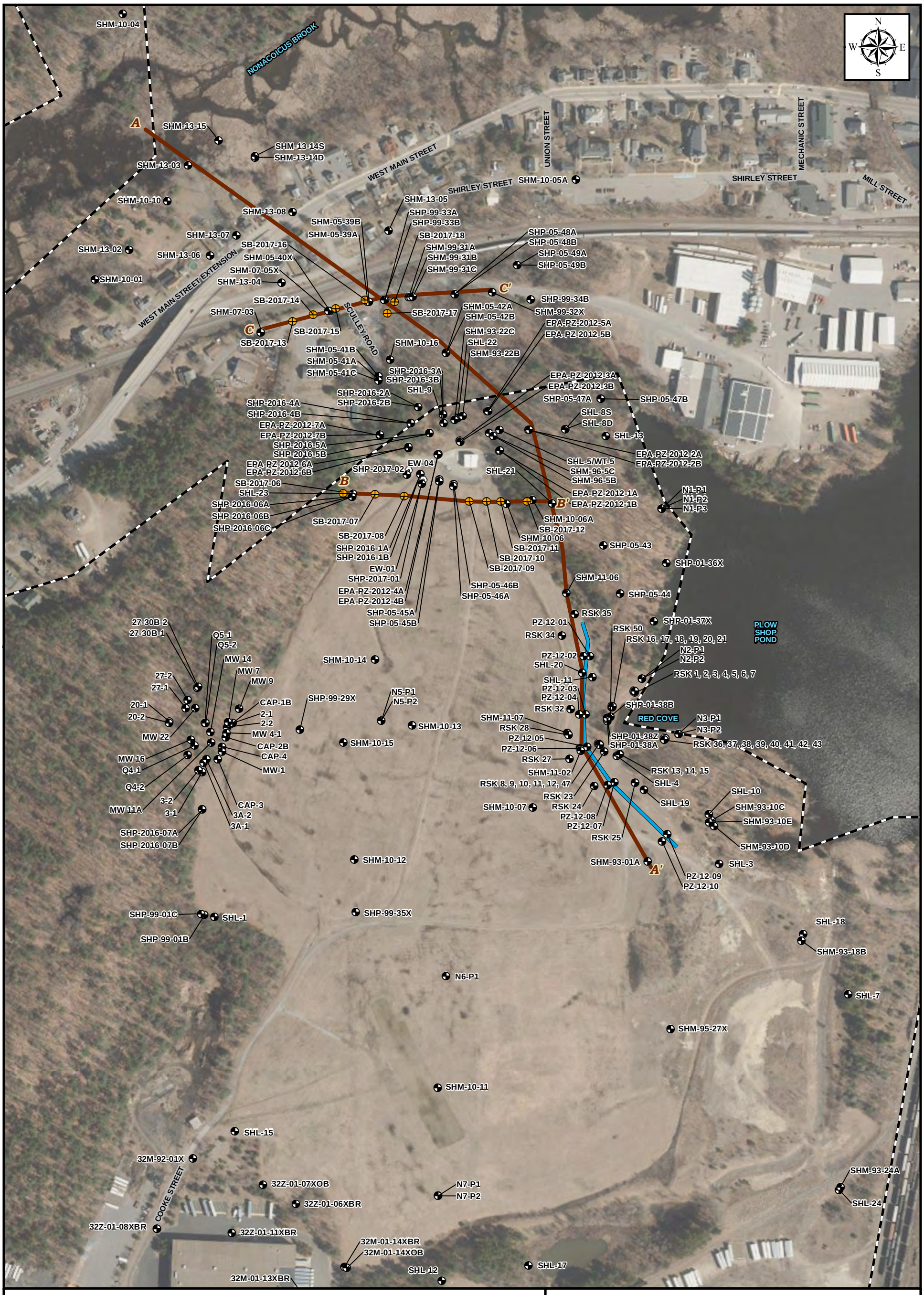
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

Date: 08/13/2020

Figure 5-5

File: PFAS_RI_A2_PSCS_F5-5_SHL_GWResults.mxd

Aerial Sources: USGS, MassGIS 2019 Orthoimagery



Legend

- 2017 LTM Program Soil Boring
- Monitoring Well
- Extraction Well
- Cross Section Location
- Barrier Wall
- Former Fort Devens Boundary

Aerial Sources: USGS, MassGIS Orthoimagery 2019

Shepley Hill Area Cross Section Locations
Devens PFAS - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

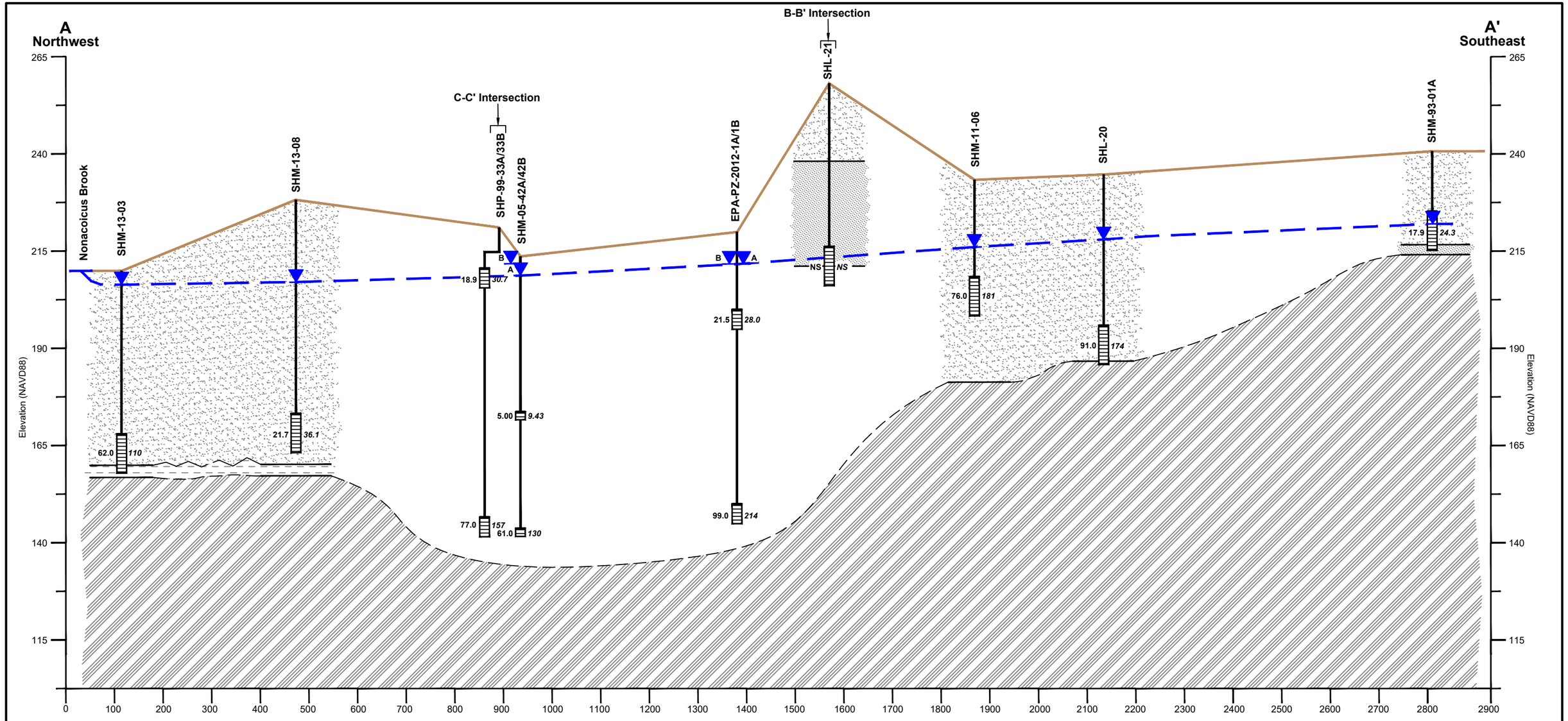
KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 150 300
Feet

Date: 07/09/2020

Figure 5-6

File: PFAS_RI_A2_PSCS_F5-6_SHL_XSLoc.mxd



Legend

Vertical Profile

1.39 U
EPA LHA Concentration (sum of PFOA and PFOS)

2.59 U
MassDEP Concentration (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA)

Monitoring Well

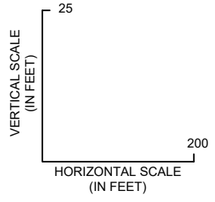
Screened Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



Shepley's Landfill Cross Section, A-A'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

KOMAN Government Solutions, LLC
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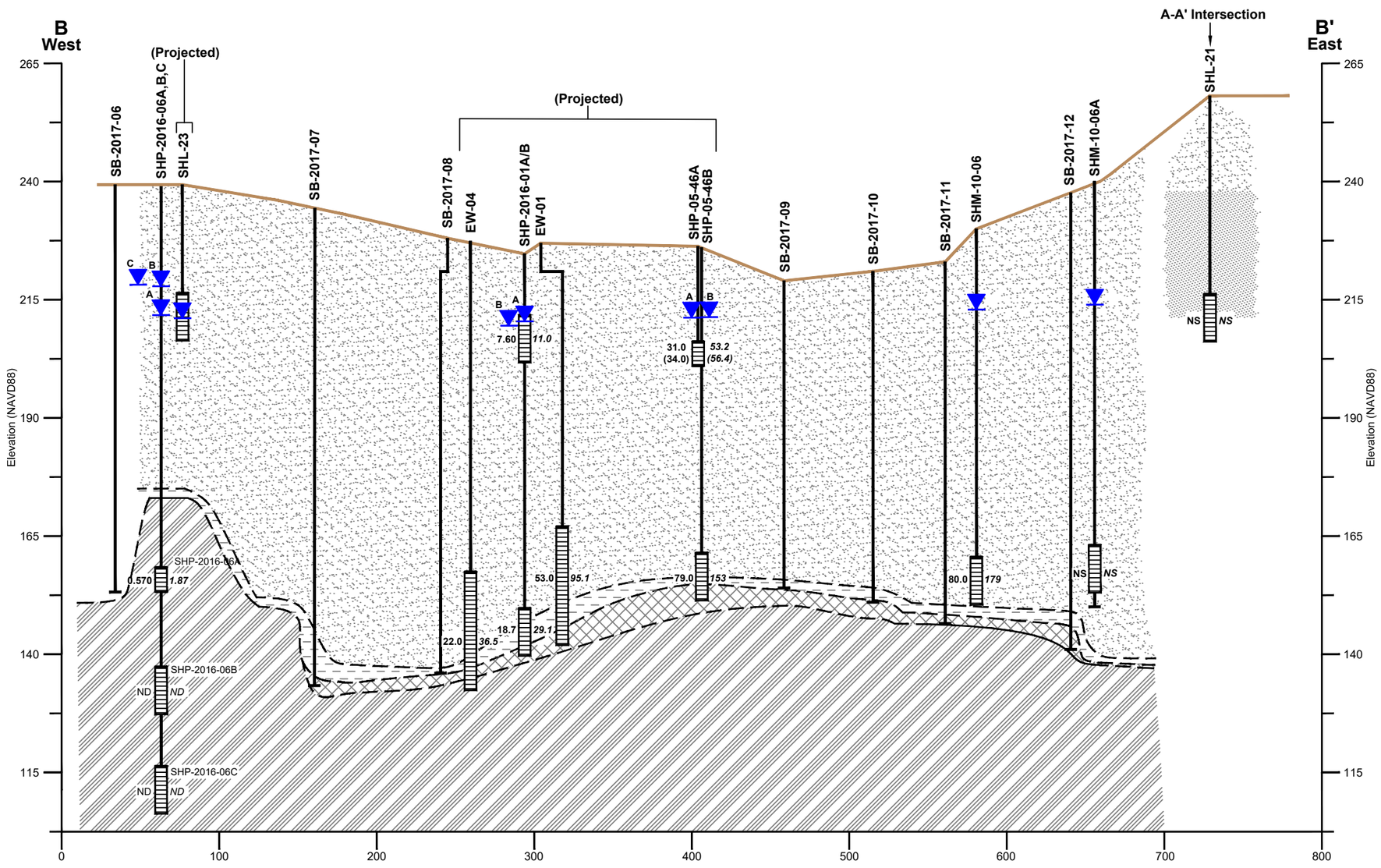
Scale:	Date:	Figure
As Noted	07/13/2020	5-7

X:\HS_Environmental\FortDevens_Mass\Drawings\PSC_Report\Area2\PSC_A2_ShepleyHill_XS.dwg



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

Screened
Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)

VERTICAL SCALE (IN FEET) 25

HORIZONTAL SCALE (IN FEET) 75

Shepley's Landfill Cross Section, B-B'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

KOMAN Government Solutions, LLC
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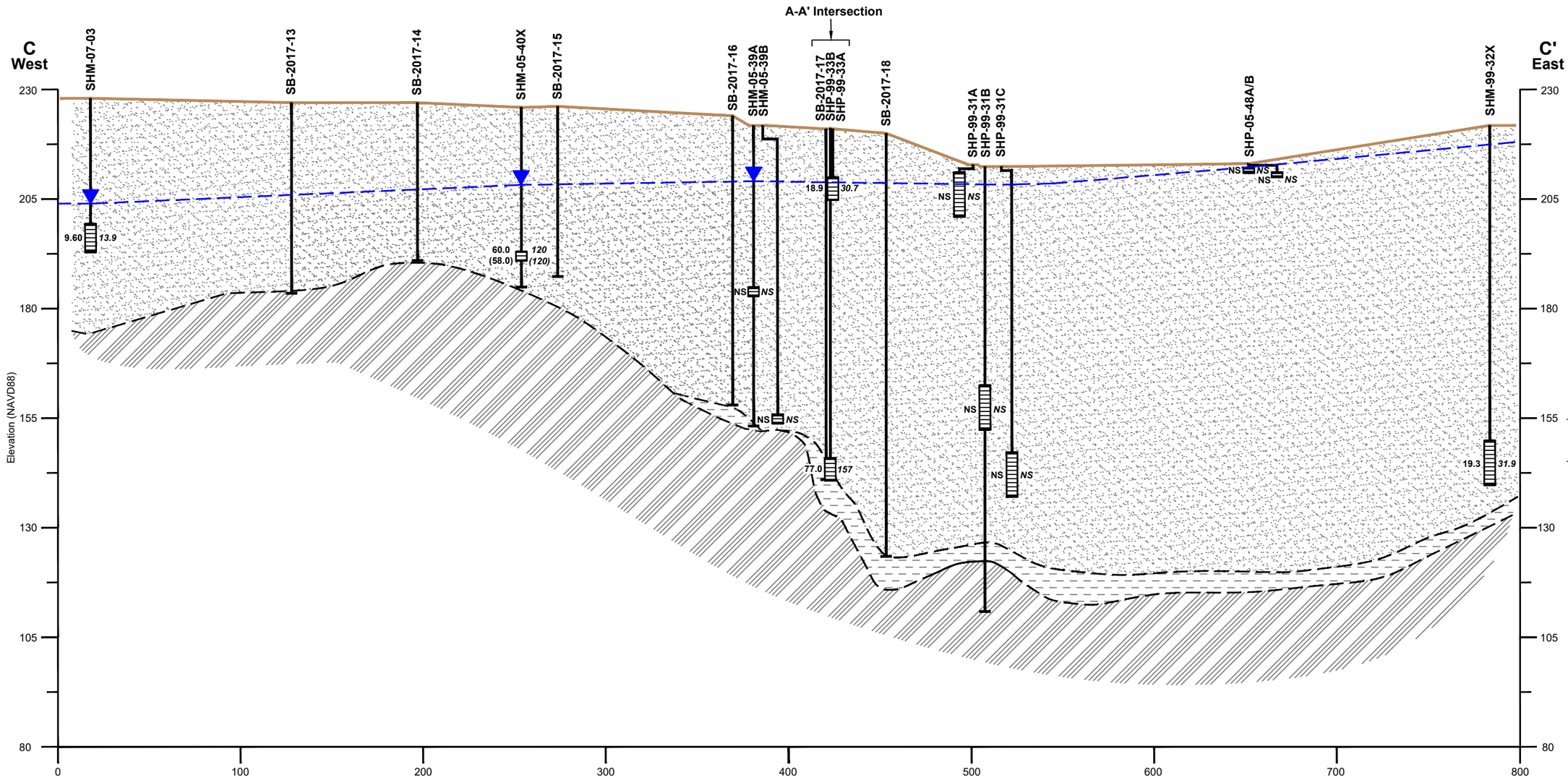
Scale:	Date:	Figure
As Noted	07/13/2020	5-8

X:\HS_Environmental\FortDevens_Mass\Drawings\PSC_Report\Area2\PSC_A2_ShepleyHill_XS.dwg



Legend

Vertical Profile

1.39 U
EPA LHA
Concentration
(sum of PFOA
and PFOS)

2.59 U
MassDEP
Concentration
(sum of PFOS + PFOA
+ PFDA + PFHpA +
PFHxS + PFNA)

Monitoring Well

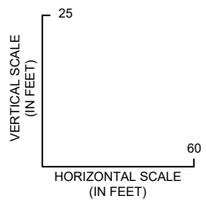
Screened
Interval

- Sand with Gravel/Sand
- Sand with Silt/Silty Sand
- Silt
- Silt, Sand, Gravel, with Clay
- Till
- Weathered Bedrock
- Bedrock
- Unknown
- Water Table

Notes:

All results in ng/L
ng/L = nanograms per liter
ND = non-detect
NS = no sample
( ) = field duplicate

Perfluorooctanesulfonic acid (PFOS)
Perfluorooctanoic acid (PFOA)
Perfluorodecanoic acid (PFDA)
Perfluoroheptanoic acid (PFHpA)
Perfluorohexanesulfonic acid (PFHxS)
Perfluorononanoic acid (PFNA)



Shepley's Landfill Cross Section, C-C'
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation and Sudbury Annex
Devens, Massachusetts

KOMAN Government Solutions, LLC
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Scale:	Date:	Figure
As Noted	07/13/2020	5-9

X:\HS_Environmental\FortDevens_Mass\Drawings\PSC_Report\Area2\PSC_A2_ShepleyHill_XS.dwg


AYR-MW002
AYR-MW003
AYR-MW004
AYR-MW001
MPVP-19-08
NB-18-05
MPP-93-03
MPP-93-02
MPVP-19-07
MPVP-19-01
MPP-93-01
MACPHERSON WATER SUPPLY WELL
MPPZ-19-03
MPVP-19-06
McPh-Sentinel
MPVP-19-02
WB-18-06
NB-18-04
SHM-10-04
SHM-10-03
SHMSG-13-03G
NB-18-07
NB-18-06
SHM-13-14D
SHM-13-14S
SHM-13-15
NB-18-02
SHMSG-13-02G
SHM-13-03
SHM-10-10
NB-18-03
SHM-10-02
SHM-13-02
SHM-10-01
SHM-10-08
SHMSG-13-01G
SHM-13-01
SHM-13-08
SHM-13-07
SHM-13-06
SHM-13-05
SHP-99-33A
SHP-99-33B
SHM-05-39B
SHM-05-39A
SHM-13-04
SHM-05-40X
SHM-07-05X
SHM-07-03
SHP-07-03A/B
SHM-10-16
SHM-05-41A
SHM-05-41B
SHM-05-41C
SHP-2016-2A
SHP-2016-2B
SHP-2016-4A
SHP-2016-4B
EPA-PZ-2012-7A
EPA-PZ-2012-7B
SHP-2016-5A
SHP-2016-5B
EPA-PZ-2012-6A
EPA-PZ-2012-6B
SHL-23
SHP-2016-06A
SHP-2016-06B
SHP-2016-06C
EW-04/4S
SHP-2017-02
SHP-2016-1A
SHP-2016-1B
EW-01/1S
SHP-2017-01
EPA-PZ-2012-4A
EPA-PZ-2012-4B
Q5-1
Q5-2
27-30B-1
27-30B-2
MW-22
27-2
27-1
MW-11A
20-1
20-2
MW-16
Q4-1
Q4-2
3A-2
3A-1
3-2
3-1
SHP-2016-07A
SHP-2016-07B
MW-14
MW-7
CAP-1B
MW-9
2-1
2-2
MW-4-1
CAP-2B
CAP-4
MW-1
CH-1D
CH-1S
CAP-3
SHM-10-14
N5-P1
N5-P2
SHP-99-29X
SHM-10-15
SHP-05-45A
SHP-05-45B
SHP-05-46A
SHP-05-46B
SHM-10-13
SHM-99-31A
SHM-99-31B
SHM-99-31C
SHP-05-48A
SHP-05-48B
SHM-10-05A
SHM-05-42A
SHM-05-42B
SHP-2016-3A
SHP-2016-3B
SHP-05-49B
SHP-05-49A
SHM-99-32X
SHP-99-34B
SHM-93-22C
SHL-22
SHM-93-22B
EPA-PZ-2012-5A
EPA-PZ-2012-5B
SHM-96-5B
SHL-5/ WT-5
SHL-9
SHP-05-47A
SHP-05-47B
NB-18-01
SHMSG-14-01G
SHL-8S, SHL-8D
PSP-01
SHL-13
EPA-PZ-2012-2A
EPA-PZ-2012-2B
N1-P1
N1-P2
N1-P3
SHM-96-5C
EPA-PZ-2012-1A
EPA-PZ-2012-1B
SHL-21
SHM-10-06A
SHM-10-06
SHP-05-43
PS-18-05
SHP-01-36X
SHP-05-44
SHP-01-37X
N2-P1
N2-P2
SHM-11-06
PZ-12-01
RSK 35
RSK 34
PZ-12-02
SHL-11
SHL-20
PZ-12-03
PZ-12-04
RSK 32
PZ-12-05
SHM-11-07
RSK 28
PZ-12-06
RSK 27
SHM-11-02
SHM-10-07
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RSK 23
RSK 24
PZ-12-08
PZ-12-07
RSK 25
SHL-19
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PZ-12-10
PZ-12-09
N6-P1
SHM-10-12
SHP-99-35X
SHL-1
SHP-99-01C
SHP-99-01B
SHM-10-11
SHM-95-27X
SHL-3
SHL-4
SHL-10
SHM-93-10C
SHM-93-10E
PS-18-06
SHM-93-10D
RSK 1,2,3,4,5,6,7
RSK 16,17,18,19,20,21
PS-18-02
RSK 50
SHP-01-38Z
SHP-01-38B
SHP-01-38A
N3-P2
N3-P1
RSK 36,37,38,39,40,41,42,43
RSK 13,14,15
SHL-18
SHM-93-18B
SHL-7
32VP-19-07
PS-18-04
PS-18-03
PS-18-01
Plow Shop Pond
SHM-93-24A
SHL-24
32VP-19-06
32PZ-19-01
32VP-19-10
32VP-19-09
32VP-19-05
32VP-19-04
32VP-19-08
32VP-19-11
32VP-19-02
32VP-19-03
32PZ-19-02
32VP-19-12
32SB-19-11
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32SB-19-05
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32Z-01-06XBR
SHL-16
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32M-01-16XBR
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43AVP-19-02
43AVP-19-01
43AVP-19-04
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N7-P2
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SHL-7
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SHM-95-27X
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5702VP-19-05
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75VP-18-05
75SB-19-02
75VP-18-02
75MW-19-02C
75MW-19-02B
75MW-19-02A
75SB-19-06
75VP-18-06
75SB-19-03
75MW-19-02BR
75VP-18-06A
75VP-18-01
75PZ-20-06
75VP-18-03
75VP-19-03
75VP-19-08
75SB-19-04
75PZ-19-04
75VP-19-07
75SB-19-08
75VP-19-01
75VP-19-04
75SB-19-07
75VP-18-07
75VP-18-04
75VP-20-01
75PZ-20-01
75PZ-20-03
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75VP-19-09
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75VP-18-13
75PZ-20-07
75PZ-20-05
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SHM-10-67
SHM-10-68
SHM-10-69
SHM-10-70
SHM-10-71
SHM-10-72
SHM-10-73
SHM-10-74
SHM-10-75



Legend

- Monitoring Well/Vertical Profiling Location
- Water Supply Well
- Former Fort Devens Boundary

EPA LHA
(sum of PFOA and PFOS) (ng/L)

- EPA LHA ≥ 70 ng/L
- EPA LHA < 70 ng/L
- EPA LHA No detection

MassDEP
(sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)

- MassDEP ≥ 20 ng/L
- MassDEP < 20ng/L
- MassDEP no detection

Notes:

MassDEP GW-1 = sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA
MassDEP Exceedance Criteria is defined as equal to or greater than 20 ng/L

EPA LHA (Lifetime Health Advisory) = sum of PFOA and PFOS
EPA LHA Exceedance Criteria is defined as equal to or greater than 70 ng/L

Aerial Source: USGS, MassGIS Orthoimagery 2019

Area 2 Groundwater Results
Devens PFAS RI - Area 2 PSCS

Former Fort Devens Army Installation
Devens, Massachusetts

KOMAN Government Solutions, LLC
293 Boston Post Road West, Suite 100, Marlborough, MA 01752

0 175 350 700
Feet

Date: 07/22/2020

Plate 2

File: PFAS_RI_A2_PSCS_Plate_GWResults_Dsize.mxd



TABLES

Table 1-1
Select PFAS Criteria
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	EPA											Massachusetts			
	Lifetime Health Advisory Drinking Water		Site-Specific PFAS Screening Levels For the Former Fort Devens									ORSG Guidelines for Drinking Water and GW-1 Standard		GW-3 Standard	S-1 SOIL & GW-1
	Summed Value	Individual Concentrations	Ingestion, Surface water	Ingestion, Groundwater		Dermal + Ingestion, Soil				Ingestion, Fish		Summed Value	Individual Concentrations	Individual Concentrations	Individual Concentrations
			Child Recreator	Child Resident	Adult Commercial Worker	Child Recreator	Child Resident	Adult Commercial Worker	Adult Construction Worker	Adult	Child				
	ng/L		ng/L	ng/L		µg/kg				mg/kg		ng/L		ng/L	µg/kg
PFBS			2,030,000	40,100	234,000	609,000	126,000	428,000	631,000	7.95	6.13				
PFOS	70	70	2,030	40.1	234	609	126	631	428	7.95X10-3	6.13X10-3	20	20	5.0E+05	2
PFOA		70	2,030	40.1	234	609	126	631	428	7.95X10-3	6.13X10-3		20	4.0E+07	0.72
PFDA													20	4.0E+07	0.3
PFHpA													20	4.0E+07	0.5
PFHxS													20	5.0E+05	0.3
PFNA													20	4.0E+07	0.32

ORSG = Office of Standards and Guidelines
PFBS = Perfluorobutanesulfonic Acid
PFDA = Perfluorodecanoic Acid
PFHpA = Perfluoroheptanoic Acid
PFHxS = Perfluorohexanesulfonic Acid
PFNA = Perfluorononanoic Acid
PFOS = Perfluorooctanesulfonic Acid
PFOA = Perfluorooctanoic Acid
ng/L = nanograms per liter
µg/L = micrograms per liter
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
6892	3019369.81	637629.81	232.91	Bedrock confirmed
6899	3015693.68	638403.63	317.50	Bedrock confirmed
6902	3012476.05	633915.96	264.81	Bedrock confirmed
19466	3013984.65	639129.95	367.30	Bedrock confirmed
19541	3018147.46	635070.53	215.14	Bedrock confirmed
19542	3018251.61	635163.35	208.33	Bedrock confirmed
19568	3013978.98	639185.57	358.34	Bedrock confirmed
19569	3013973.93	639180.18	341.34	Bedrock confirmed
19572	3014051.74	639116.87	340.52	Bedrock confirmed
19573	3014046.69	639111.48	330.52	Bedrock confirmed
19576	3019022.54	637590.83	286.51	Bedrock confirmed
19578	3014056.67	639122.13	362.88	Bedrock confirmed
19581	3016366.19	637642.97	253.95	Bedrock confirmed
19597	3013755.82	629547.79	333.04	Bedrock confirmed
19606	3018167.83	635115.57	180.18	Bedrock confirmed
19612	3014513.16	631363.78	408.40	Bedrock confirmed
19617	3018167.83	635115.57	170.18	Bedrock confirmed
19638	3016867.57	631398.99	365.78	Bedrock confirmed
19643	3018712.75	635422.80	138.48	Bedrock confirmed
19647	3017885.98	639368.35	351.59	Bedrock confirmed
19672	3019682.65	631942.43	109.53	Bedrock confirmed
19679	3016655.01	631825.75	358.79	Bedrock confirmed
19683	3016565.04	631781.72	338.20	Bedrock confirmed
19684	3016696.72	631664.33	375.76	Bedrock confirmed
19685	3016753.85	631746.61	365.45	Bedrock confirmed
19687	3016823.64	631575.78	377.77	Bedrock confirmed
19689	3017010.22	631593.50	368.84	Bedrock confirmed
20388	3028805.15	624936.08	158.81	Bedrock confirmed
20397	3028805.15	624936.08	155.81	Bedrock confirmed
20604	3028980.41	624996.59	96.05	Bedrock confirmed
20634	3029641.10	632392.17	256.11	Bedrock confirmed
20642	3026405.03	638157.73	145.46	Bedrock confirmed
20644	3026405.03	638157.73	218.46	Bedrock confirmed
20645	3026405.03	638157.73	170.46	Bedrock confirmed
20648	3026405.03	638157.73	148.46	Bedrock confirmed
20649	3026405.03	638157.73	148.46	Bedrock confirmed
20650	3026405.03	638157.73	147.46	Bedrock confirmed
3-2	3027010.14	629207.26	267.28	Bedrock confirmed
100172	3017116.80	634702.45	265.61	Bedrock confirmed
112915	3019842.31	637491.04	228.40	Bedrock confirmed
116354	3023227.20	635700.46	262.00	Bedrock confirmed
116380	3012811.73	630070.84	348.30	Bedrock confirmed
120605	3019016.07	636262.35	220.47	Bedrock confirmed
122636	3013326.81	634249.15	290.38	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
124393	3022025.87	626272.36	247.65	Bedrock confirmed
124394	3022084.27	625375.53	294.83	Bedrock confirmed
125411	3024306.14	636865.17	240.00	Bedrock confirmed
125983	3021921.85	639335.32	172.58	Bedrock confirmed
135693	3016427.39	631000.37	313.00	Bedrock confirmed
137190	3017905.67	630347.19	236.69	Bedrock confirmed
139875	3012922.31	630685.34	370.31	Bedrock confirmed
141452	3017358.63	634999.39	200.28	Bedrock confirmed
154142	3019981.57	633661.25	201.42	Bedrock confirmed
155274	3016667.93	630989.31	287.68	Bedrock confirmed
158532	3019845.70	632862.23	229.94	Bedrock confirmed
163457	3015455.46	631414.93	406.66	Bedrock confirmed
259017	3025319.25	629598.32	253.10	Bedrock confirmed
263203	3021440.75	626136.84	282.44	Bedrock confirmed
272055	3015740.44	638542.01	289.56	Bedrock confirmed
600579	3021455.28	629423.52	229.57	Bedrock confirmed
604832	3016596.62	632954.37	332.40	Bedrock confirmed
608632	3018915.67	636043.13	170.21	Bedrock confirmed
636470	3018173.46	630637.85	206.42	Bedrock confirmed
654229	3024855.22	636465.80	200.99	Bedrock confirmed
655357	3020348.84	632723.00	179.58	Bedrock confirmed
658624	3013361.80	628807.50	338.03	Bedrock confirmed
659493	3012530.73	632203.64	350.51	Bedrock confirmed
661314	3023606.29	636323.12	249.29	Bedrock confirmed
661407	3017990.62	631198.31	272.71	Bedrock confirmed
662300	3018649.56	636126.46	221.07	Bedrock confirmed
1E-D	3018993.00	629332.90	159.10	Refusal
20-1	3027170.82	629112.41	277.78	Bedrock confirmed
20-2	3027166.71	629111.41	277.30	Bedrock confirmed
2125021-01G	3016629.42	632957.09	298.00	Bedrock confirmed
2125021-02G	3016589.32	632973.23	307.00	Bedrock confirmed
2125021-03G	3016538.30	632965.09	306.00	Bedrock confirmed
2125021-04G	3016509.11	633002.80	309.00	Bedrock confirmed
2446-02 MW-2	3018147.75	623480.94	353.20	Refusal
27-1	3027214.79	629165.47	268.09	Bedrock confirmed
27-2	3027240.60	629172.50	273.07	Bedrock confirmed
27-30B-1	3027281.23	629203.61	271.56	Bedrock confirmed
27-30B-2	3027284.76	629206.48	271.75	Bedrock confirmed
32M-01-13XBR	3025296.45	629547.21	251.30	Bedrock confirmed
32M-01-14XBR	3025386.10	629684.78	224.90	Bedrock confirmed
32M-01-15XBR	3025254.04	629568.09	253.20	Bedrock confirmed
32M-01-16XBR	3025101.97	629604.12	240.72	Bedrock confirmed
32M-01-17XBR	3025238.37	629698.54	218.30	Bedrock confirmed
32M-01-18XBR	3025246.91	629515.04	248.60	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
32VP-19-01	3025306.37	630204.66	176.96	Refusal
32VP-19-02	3025523.59	630202.20	170.46	Refusal
32VP-19-03	3024888.63	630129.63	202.86	Refusal
32VP-19-06	3025854.25	631324.64	133.01	Refusal
32VP-19-07	3026159.02	631312.89	143.77	Refusal
32VP-19-08	3024454.76	629466.05	245.91	Refusal
32VP-19-09	3025549.90	630381.43	150.65	Refusal
32VP-19-10	3025650.83	630756.50	130.86	Refusal
32VP-19-11	3025173.29	630471.70	145.79	Refusal
32VP-19-12	3024968.92	630585.90	118.31	Refusal
32Z-01-04XBR	3024501.97	629578.95	252.70	Bedrock confirmed
32Z-01-06XBR	3025592.12	629526.37	248.80	Bedrock confirmed
32Z-01-10XBR	3024914.37	629597.33	250.32	Bedrock confirmed
32Z-01-11XBR	3025496.11	629315.82	254.04	Bedrock confirmed
32Z-01-12XBR	3025272.70	629002.21	231.30	Bedrock confirmed
3A-2	3027046.42	629233.07	263.27	Bedrock confirmed
43AVP-19-01	3024626.48	628433.51	179.97	Refusal
43AVP-19-02	3024764.19	628440.23	177.49	Refusal
43AVP-19-03	3024888.29	628514.41	193.30	Refusal
43AVP-19-04	3024520.26	628624.35	190.09	Refusal
43GVP-19-04	3020797.50	627076.93	226.74	Refusal
43GVP-19-05	3020945.00	627082.00	218.09	Refusal
43GVP-19-06	3021117.00	627228.00	204.02	Refusal
43GVP-19-07	3020685.00	627042.00	229.20	Refusal
43GVP-19-08	3021393.00	628085.70	140.73	Refusal
43GVP-19-09	3021603.55	627222.60	195.51	Refusal
43GVP-19-10	3021680.40	626733.25	232.85	Refusal
43GVP-19-11	3021151.50	626843.59	229.26	Refusal
43J-92-01X	3018162.47	623451.62	361.80	Bedrock confirmed
43M-01-16XBR	3025055.12	628980.91	211.50	Bedrock confirmed
43M-01-17XBR	3024934.85	629073.30	214.00	Bedrock confirmed
43M-01-20XBR	3024830.04	628852.12	193.36	Bedrock confirmed
48-OMR	3020148.74	633218.82	235.91	Bedrock confirmed
5702MW-19-01	3023020.86	632237.00	97.60	Bedrock confirmed
5702MW-20-01	3022574.41	632761.63	107.27	Bedrock confirmed
5702MW-20-03	3022636.00	632530.26	89.70	Bedrock confirmed
5702MW-20-05	3022545.98	632578.79	92.09	Bedrock confirmed
5703MW-20-02A	3022994.58	633213.60	149.46	Bedrock confirmed
5703VP-19-01	3023322.79	633621.49	168.14	Refusal
74PZ-19-10	3023949.00	634140.80	188.03	Refusal
74VP-18-01	3024093.50	633760.55	131.85	Refusal
74VP-18-02	3023875.13	634038.49	168.12	Refusal
74VP-18-03	3023897.80	633502.96	123.19	Refusal
74VP-18-04	3024257.72	633990.70	153.48	Refusal

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
74VP-18-05	3024359.94	633819.70	128.87	Refusal
74VP-18-06	3023940.54	633800.45	142.32	Refusal
74VP-18-08	3024483.67	633723.43	101.44	Refusal
74VP-18-09	3023987.55	634147.17	182.85	Refusal
74VP-18-10	3023801.51	633867.83	176.22	Refusal
74VP-18-11	3024179.62	633266.66	145.19	Refusal
74VP-18-12	3024634.59	633907.92	145.94	Refusal
74VP-18-13	3024450.12	634201.21	159.03	Refusal
74VP-19-03	3024285.56	634403.90	188.96	Refusal
74VP-19-04	3024119.61	634318.93	182.49	Refusal
75MW-19-01BR	3021955.16	628945.47	232.79	Bedrock confirmed
75MW-19-02	3022530.02	630771.18	-49.13	Bedrock confirmed
75MW-19-04	3022030.68	631713.03	135.57	Bedrock confirmed
75VP-19-03	3022507.51	629633.92	203.90	Refusal
75VP-19-04	3022260.89	629582.86	205.23	Refusal
75VP-19-06	3022003.80	629499.80	221.76	Refusal
75VP-19-07	3022255.47	629335.90	231.42	Refusal
75VP-19-08	3022520.54	629274.19	220.89	Refusal
76VP-19-01	3022565.00	626638.00	219.79	Refusal
76VP-19-02	3022441.24	626688.54	221.99	Refusal
76VP-19-03	3022341.00	627036.00	191.17	Refusal
76VP-19-04	3022704.43	626829.69	204.34	Refusal
76VP-19-05	3022590.00	626959.00	184.68	Refusal
76VP-19-06	3022466.41	627204.18	171.91	Refusal
76VP-19-07	3023123.00	626796.00	179.80	Refusal
76VP-19-08	3022734.83	627023.84	189.71	Refusal
76VP-19-09	3022978.06	627177.65	183.56	Refusal
76VP-19-10	3022933.00	627231.00	165.31	Refusal
76VP-19-11	3022635.00	627283.00	149.02	Refusal
76VP-19-12	3022376.81	627495.79	164.05	Refusal
76VP-19-13	3022828.00	627783.00	172.04	Refusal
76VP-19-14	3022424.82	627295.82	174.70	Refusal
76VP-19-15	3022322.00	627305.00	186.85	Refusal
76VP-19-16	3024060.00	627490.00	170.93	Refusal
76VP-19-17	3022897.48	627335.14	158.17	Refusal
76VP-19-18	3023076.01	627324.01	156.99	Refusal
76VP-19-19	3024048.00	627189.00	145.02	Refusal
76VP-19-20	3022218.00	627711.00	168.56	Refusal
76VP-19-21	3024032.00	626786.00	181.85	Refusal
76VP-19-22	3025578.00	626606.00	148.80	Refusal
76VP-19-23	3025570.85	627108.29	182.05	Refusal
76VP-19-24	3025486.34	627766.68	130.05	Refusal
76VP-19-25	3026471.00	626845.00	143.31	Refusal
76VP-19-26	3026673.00	627309.00	172.68	Refusal

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
76VP-19-27	3026356.00	626355.00	179.07	Refusal
76VP-19-28	3026155.00	625292.00	168.20	Refusal
76VP-19-29	3022191.20	628031.25	184.15	Refusal
76VP-19-31	3022548.97	628006.90	212.41	Refusal
76VP-19-32	3023682.00	626097.00	226.50	Refusal
76VP-19-33	3025081.01	625671.43	185.25	Refusal
92-5	3026858.08	633898.88	181.87	Refusal
AAFES-2	3020965.13	626168.53	274.47	Bedrock confirmed
AAFES-3	3021032.38	626005.31	281.95	Bedrock confirmed
AAFES-5	3020999.40	626200.16	269.51	Bedrock confirmed
AAFES-6R	3020910.95	626119.77	271.77	Bedrock confirmed
AAFES-ID	3020929.41	626148.56	274.20	Bedrock confirmed
Ayer Pathfinder	3023629.40	632370.90	93.00	Bedrock confirmed
Br. # H-9-10, C-W Hwy. over Bower's Brook	3015582.91	636278.85	224.34	Bedrock confirmed
Br. # H-9-11, C-W Hwy. under Rte. 110	3015825.60	633936.72	302.30	Bedrock confirmed
Br. # H-9-12, C-W Hwy. under Boxboro Rd.	3015406.21	637995.12	280.96	Bedrock confirmed
-9-17, C-W Hwy. over B&	3013356.47	627399.96	194.04	Bedrock confirmed
9-18, C-W Hwy. over Dep	3014254.21	629402.55	315.89	Bedrock confirmed
r. #A-19-7 - West Main S	3028340.07	628919.41	183.44	Bedrock confirmed
BRIDGE # A-19-7	3028340.07	628919.41	155.28	Bedrock confirmed
CAP-1B	3027165.45	629318.93	236.13	Bedrock confirmed
CAP-2B	3027118.86	629296.39	240.66	Bedrock confirmed
CAP-3	3027047.54	629269.85	245.45	Bedrock confirmed
CAP-4	3027088.57	629284.53	237.73	Bedrock confirmed
CH-1D	3027062.71	629287.99	230.46	Bedrock confirmed
CSM-93-02A	3018164.08	628075.66	132.30	Bedrock confirmed
Deven Pathfinder	3021479.60	629419.20	215.31	Bedrock confirmed
EW-01	3027960.20	629942.81	130.95	Bedrock confirmed
EW-04	3027991.00	629895.33	120.40	Bedrock confirmed
GF-1	3025991.64	634345.89	111.04	Bedrock confirmed
GF-2	3026015.85	634184.51	111.58	Bedrock confirmed
GPMW-19-01	3025551.65	633756.22	99.33	Bedrock confirmed
GPMW-19-01A	3025549.93	633761.04	99.33	Bedrock confirmed
GPMW-19-01BR	3025551.65	633756.22	99.33	Bedrock confirmed
GPVP-18-01	3026944.26	633523.97	203.44	Refusal
GPVP-18-02	3026775.09	634465.62	189.84	Refusal
GPVP-18-03	3026862.72	635021.12	195.67	Refusal
GPVP-18-04	3026424.94	635682.46	204.81	Refusal
GPVP-18-05	3025683.86	634879.86	143.17	Refusal

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
GPVP-18-06	3025456.71	634491.63	112.71	Refusal
GPVP-18-07	3025504.43	634247.71	134.14	Refusal
GPVP-18-08	3025523.94	634013.75	110.70	Refusal
GPVP-18-10	3025555.89	633458.74	93.66	Refusal
GPVP-18-11	3025633.51	633154.97	109.82	Refusal
GPVP-18-12	3025799.18	632892.79	118.83	Refusal
GPVP-19-02	3025149.35	632760.07	156.09	Refusal
GPVP-19-03	3025088.32	633181.86	111.12	Refusal
GPVP-19-06	3024725.06	632092.00	155.60	Refusal
GPVP-19-10	3025325.41	632104.79	144.91	Refusal
GPVP-19-13	3025637.86	632668.47	130.36	Refusal
GPVP-19-14	3025561.54	632898.81	141.84	Refusal
GPVP-19-15	3025731.59	633095.54	132.58	Refusal
HA-1B	3018026.98	623550.04	346.50	Bedrock confirmed
HA-2B	3018078.41	623648.13	338.60	Bedrock confirmed
HA-3B	3018253.33	623729.29	330.70	Bedrock confirmed
HA-4B	3018170.43	623729.51	332.80	Bedrock confirmed
HA-5S	3018140.12	623478.15	352.10	Bedrock confirmed
LFM-99-01B	3018613.31	624305.81	293.60	Bedrock confirmed
LFM-99-02B	3018229.31	624305.59	329.23	Bedrock confirmed
LFM-99-03B	3019102.62	624498.69	293.78	Bedrock confirmed
LFM-99-04B	3019101.41	624498.82	297.65	Bedrock confirmed
LFM-99-05A	3018947.95	624886.54	287.48	Bedrock confirmed
LFM-99-05B	3018950.88	624874.17	259.98	Bedrock confirmed
LFM-99-06A	3018340.60	624993.40	318.01	Bedrock confirmed
LIDAR1	3025637.95	628118.41	237.48	Bedrock confirmed
LIDAR10	3025734.83	628548.77	313.49	Bedrock confirmed
LIDAR11	3025930.46	628467.01	338.44	Bedrock confirmed
LIDAR12	3026669.19	628423.21	341.14	Bedrock confirmed
LIDAR13	3027686.65	628528.99	239.72	Bedrock confirmed
LIDAR14	3026287.17	629073.02	279.61	Bedrock confirmed
LIDAR15	3026997.72	628952.41	316.61	Bedrock confirmed
LIDAR16	3027063.38	628837.83	312.56	Bedrock confirmed
LIDAR17	3027822.07	628534.20	236.16	Bedrock confirmed
LIDAR18	3025939.42	628656.35	330.17	Bedrock confirmed
LIDAR19	3022628.36	628369.57	295.05	Bedrock confirmed
LIDAR2	3026140.69	628069.90	266.46	Bedrock confirmed
LIDAR20	3027454.88	629268.57	292.95	Bedrock confirmed
LIDAR21	3026912.16	628922.09	328.42	Bedrock confirmed
LIDAR22	3027475.72	629328.47	284.54	Bedrock confirmed
LIDAR23	3026829.79	628767.76	347.80	Bedrock confirmed
LIDAR24	3026298.85	629280.33	284.22	Bedrock confirmed
LIDAR25	3026293.01	629338.73	281.31	Bedrock confirmed
LIDAR26	3024003.36	628102.21	263.54	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
LIDAR27	3023940.86	628119.57	260.77	Bedrock confirmed
LIDAR28	3021864.47	629064.01	262.95	Bedrock confirmed
LIDAR29	3024055.45	628036.24	265.52	Bedrock confirmed
LIDAR3	3026278.09	627940.79	245.09	Bedrock confirmed
LIDAR30	3022176.97	628268.87	269.10	Bedrock confirmed
LIDAR31	3022486.00	628459.85	286.74	Bedrock confirmed
LIDAR32	3023956.84	628349.08	260.32	Bedrock confirmed
LIDAR33	3026411.30	628858.46	342.61	Bedrock confirmed
LIDAR34	3026300.30	628847.36	328.42	Bedrock confirmed
LIDAR35	3023568.81	628414.19	261.78	Bedrock confirmed
LIDAR36	3022756.84	628699.43	281.76	Bedrock confirmed
LIDAR37	3030483.53	630520.31	257.34	Bedrock confirmed
LIDAR4	3026856.07	628426.13	308.11	Bedrock confirmed
LIDAR5	3026666.62	628262.72	312.85	Bedrock confirmed
LIDAR6	3025777.65	628856.88	279.28	Bedrock confirmed
LIDAR7	3027767.38	629200.86	277.24	Bedrock confirmed
LIDAR8	3027814.26	629375.34	271.51	Bedrock confirmed
LIDAR9	3026123.17	628218.82	306.62	Bedrock confirmed
MA-HIW_116	3017499.88	636306.43	236.63	Bedrock confirmed
MA-HIW_117	3019017.42	637430.83	216.71	Bedrock confirmed
MA-HIW_122	3021749.68	638705.74	180.59	Bedrock confirmed
MA-SMW_74	3028040.27	625163.67	89.23	Bedrock confirmed
MPVP-19-01	3028348.23	626014.80	113.43	Refusal
MPVP-19-02	3027861.05	626185.67	117.85	Refusal
MPVP-19-03	3027549.00	626769.00	132.86	Refusal
MPVP-19-04	3027636.00	627594.00	163.41	Refusal
MPVP-19-06	3028163.00	626523.00	121.34	Refusal
MPVP-19-07	3028478.01	626276.77	113.74	Refusal
MPVP-19-08	3029282.73	627333.91	146.50	Refusal
N1-P2	3027867.76	630723.38	156.28	Bedrock confirmed
N2-P2	3027311.05	630658.72	178.03	Bedrock confirmed
N3-P2	3027130.23	630777.95	192.23	Bedrock confirmed
N4-P1	3026763.55	631241.15	133.10	Bedrock confirmed
N5-P2	3027173.21	629805.75	151.89	Bedrock confirmed
N6-P1	3026338.61	630017.06	176.78	Bedrock confirmed
N7-P2	3025618.25	629990.92	193.51	Bedrock confirmed
PWPZ-19-04-F1	3016816.68	629767.37	251.17	Refusal
PWPZ-19-04-F2	3016928.42	629238.35	219.67	Refusal
PWVP-19-01	3020032.16	626701.74	236.29	Refusal
PWVP-19-03	3019038.18	627604.00	182.96	Refusal
PWVP-19-05	3018548.45	626877.05	192.95	Refusal
PWVP-19-06	3018991.14	629350.01	159.03	Refusal
PWVP-19-07	3017800.39	629411.02	191.19	Refusal
PWVP-19-08	3019328.79	626466.48	237.88	Refusal

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
PWVP-19-09	3019177.00	628836.70	169.76	Refusal
PWVP-19-10	3019425.00	629733.70	164.06	Refusal
PWVP-19-11	3019103.36	630177.38	202.70	Refusal
PWVP-19-12	3018441.00	630045.00	229.11	Refusal
PWVP-20-01	3017383.20	627584.88	173.94	Refusal
PZ-12-09	3026801.42	630740.93	208.26	Bedrock confirmed
Q4-1	3027091.94	629194.72	266.20	Bedrock confirmed
Q4-2	3027060.36	629172.56	262.55	Bedrock confirmed
Q5-1	3027166.14	629228.23	259.32	Bedrock confirmed
SAJ08	3017990.09	623616.53	338.49	Refusal
SAJ09	3018096.19	623685.27	355.02	Refusal
SB-03	3028012.67	629815.70	127.30	Bedrock confirmed
SB-16-06	3027901.38	629772.99	147.89	Bedrock confirmed
SB-16-07	3027908.62	629816.11	126.04	Bedrock confirmed
SB-16-08	3027908.54	629880.77	136.54	Bedrock confirmed
SB-16-09	3027890.08	630093.61	162.42	Bedrock confirmed
SB-16-10	3027890.01	630150.19	156.30	Bedrock confirmed
SB-16-11	3027889.96	630195.99	145.61	Bedrock confirmed
SB-16-12	3027889.88	630268.74	138.46	Bedrock confirmed
SB-16-13	3028475.67	629515.00	182.61	Bedrock confirmed
SB-16-14	3028495.64	629576.99	188.77	Bedrock confirmed
SB-16-15	3028521.07	629647.07	185.02	Bedrock confirmed
SB-16-16	3028553.76	629742.76	155.88	Bedrock confirmed
SB-16-17	3028524.52	629819.51	149.03	Bedrock confirmed
SB-16-18	3028546.35	629854.56	110.37	Bedrock confirmed
SB-16-19	3028442.69	629652.41	176.84	Bedrock confirmed
SB-16-20	3028274.04	629628.56	195.83	Bedrock confirmed
SB-16-21	3028601.19	629488.72	184.90	Bedrock confirmed
SB-3	3028484.49	629522.42	183.00	Bedrock confirmed
SEA-1/SHL-1	3026531.80	629259.23	245.28	Bedrock confirmed
SEA-5	3026846.23	630886.09	138.40	Bedrock confirmed
SEA-8	3028127.50	630407.22	146.65	Bedrock confirmed
SHB-99-30X	3026397.00	629701.20	228.30	Bedrock confirmed
SHL-10	3026867.70	630877.27	207.58	Bedrock confirmed
SHL-11	3027316.40	630495.92	193.97	Bedrock confirmed
SHL-14A	3026748.58	629288.95	256.20	Bedrock confirmed
SHL-20	3027329.59	630463.33	186.69	Bedrock confirmed
SHL-22	3028163.04	630056.40	104.06	Bedrock confirmed
SHL-24	3025638.53	631302.97	122.20	Bedrock confirmed
SHL-5/WT-5	3028125.10	630192.21	138.81	Bedrock confirmed
SHL-8D	3028126.57	630407.10	146.95	Bedrock confirmed
SHM-05-39A	3028544.28	629761.38	152.79	Bedrock confirmed
SHM-05-39B	3028543.68	629765.33	152.78	Bedrock confirmed
SHM-05-40X	3028514.16	629636.83	185.55	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
SHM-07-03	3028444.63	629411.08	174.00	Bedrock confirmed
SHM-07-05	3028513.39	629631.98	177.62	Bedrock confirmed
SHM-10-01	3028617.32	628868.44	131.64	Bedrock confirmed
SHM-10-02	3028700.13	628381.41	118.12	Bedrock confirmed
SHM-10-03	3029000.27	628436.33	157.70	Bedrock confirmed
SHM-10-04	3029485.34	628959.21	114.73	Bedrock confirmed
SHM-10-05A	3028943.39	630441.84	125.24	Bedrock confirmed
SHM-10-06	3027882.54	630215.62	149.99	Bedrock confirmed
SHM-10-06A	3027895.73	630300.71	135.46	Bedrock confirmed
SHM-10-07	3026889.79	630301.42	196.76	Bedrock confirmed
SHM-10-08	3028526.47	628351.74	149.18	Bedrock confirmed
SHM-10-09	3028460.97	628759.22	126.00	Bedrock confirmed
SHM-10-10	3028873.64	629105.25	143.43	Bedrock confirmed
SHM-10-11	3025971.51	629990.62	199.86	Bedrock confirmed
SHM-10-12	3026718.54	629717.49	182.52	Bedrock confirmed
SHM-10-13	3027156.89	629906.12	157.41	Bedrock confirmed
SHM-10-14	3027372.85	629784.78	144.81	Bedrock confirmed
SHM-10-15	3027101.42	629680.93	181.91	Bedrock confirmed
SHM-10-16	3028355.25	629834.23	121.72	Bedrock confirmed
SHM-11-01	3027429.04	630459.18	193.90	Bedrock confirmed
SHM-11-02	3027075.65	630457.81	194.63	Bedrock confirmed
SHM-11-03	3026892.95	630622.47	211.38	Bedrock confirmed
SHM-11-04	3027252.60	630473.96	197.13	Bedrock confirmed
SHM-11-05	3026979.39	630573.68	204.65	Bedrock confirmed
SHM-11-06	3027590.05	630411.30	181.27	Bedrock confirmed
SHM-11-07	3027132.51	630414.59	192.19	Bedrock confirmed
SHM-11-08	3026970.62	630486.79	199.48	Bedrock confirmed
SHM-12-01	3026755.83	630771.77	213.28	Bedrock confirmed
SHM-12-02	3027066.64	630443.83	174.82	Bedrock confirmed
SHM-12-04	3027168.22	630452.46	191.11	Bedrock confirmed
SHM-12-05	3027492.04	630446.38	168.10	Bedrock confirmed
SHM-12-06	3027082.93	630468.55	194.66	Bedrock confirmed
SHM-13-01	3028294.76	628556.66	154.79	Bedrock confirmed
SHM-13-02	3028713.88	628980.64	145.88	Bedrock confirmed
SHM-13-03	3028990.91	629173.39	156.83	Bedrock confirmed
SHM-13-04	3028606.18	629479.56	182.34	Bedrock confirmed
SHM-13-05	3028776.73	629829.47	140.57	Bedrock confirmed
SHM-13-06	3028694.87	629245.10	167.23	Bedrock confirmed
SHM-13-08	3028837.54	629515.32	157.17	Bedrock confirmed
SHM-93-01A	3026711.96	630676.98	214.10	Bedrock confirmed
SHM-93-10C	3026846.23	630886.09	209.30	Bedrock confirmed
SHM-93-18B	3026453.24	631180.16	141.79	Bedrock confirmed
SHM-93-22C	3028158.60	630045.70	104.02	Bedrock confirmed
SHM-96-5B	3028112.94	630158.14	125.93	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
SHM-99-31X	3028561.83	629908.75	110.65	Bedrock confirmed
SHM-99-32X	3028574.65	630168.76	131.07	Bedrock confirmed
SHP-2016-06	3027906.15	629710.34	173.05	Bedrock confirmed
SHP-2016-07	3026881.95	629219.76	254.98	Bedrock confirmed
SHP-2016-1B	3027975.00	629925.01	122.69	Bedrock confirmed
SHP-2016-2B	3028205.00	629925.00	110.73	Bedrock confirmed
SHP-2016-3B	3028179.99	630000.01	108.13	Bedrock confirmed
SHP-2016-4B	3028150.00	629899.99	112.57	Bedrock confirmed
SHP-2016-5B	3028120.01	629960.01	102.38	Bedrock confirmed
SHP-99-01C	3026540.97	629215.98	262.36	Bedrock confirmed
SHP-99-29X	3027143.35	629539.09	203.88	Bedrock confirmed
SHP-99-31A	3028559.08	629895.03	110.76	Bedrock confirmed
SHP-99-35X	3026547.20	629722.70	220.69	Bedrock confirmed
SHW-07-05	3028455.38	628555.24	177.62	Bedrock confirmed
SWMW-20-01A	3017855.05	623813.13	338.96	Bedrock confirmed
SWPZ-19-02	3017684.34	625630.18	255.58	Refusal
SWPZ-19-02-F1	3017684.34	625630.18	255.58	Refusal
SWVP-19-01	3015815.08	625598.71	155.64	Refusal
SWVP-19-02	3014740.64	626755.38	286.58	
SWVP-19-03	3014012.64	626152.94	185.50	Refusal
SWVP-19-04	3014479.30	625367.56	151.56	Refusal
SWVP-19-06	3015553.23	623974.74	194.20	Refusal
SWVP-20-01	3016220.83	624504.24	266.65	Refusal
SWVP-20-03	3017049.30	623460.84	309.80	Refusal
SWVP-20-04	3016909.50	625457.38	172.20	Refusal
XGB-93-04X	3020838.60	625538.97	283.54	Bedrock confirmed
XGB-93-05X	3020787.70	625494.76	281.00	Bedrock confirmed
XGB-93-06X	3020742.78	625510.90	282.45	Bedrock confirmed
XGB-93-07X	3020785.78	625541.21	288.53	Bedrock confirmed
XGB-93-08X	3021041.37	625745.09	280.34	Bedrock confirmed
XGB-93-09X	3020945.01	625,648.166	277.50	Bedrock confirmed
XGB-94-10X	3020982.03	626105.93	281.20	Bedrock confirmed
XGB-94-11X	3020998.24	626103.88	280.91	Bedrock confirmed
XGB-94-12X	3020989.51	626109.49	278.60	Bedrock confirmed
XGB-94-13X	3020973.25	626113.27	279.25	Bedrock confirmed
XGB-94-14X	3020965.34	626009.38	281.10	Bedrock confirmed
XGB-94-15X	3021012.01	626000.61	280.00	Bedrock confirmed
XGM-20-01A	3021077.41	626682.57	242.90	Bedrock confirmed
XGM-20-02A	3021013.90	626578.52	254.40	Bedrock confirmed
XGM-20-03A	3020862.35	626603.92	243.88	Bedrock confirmed
XGM-93-01X	3020993.26	625846.17	280.75	Bedrock confirmed
XGM-93-02X	3020956.87	626109.44	274.90	Bedrock confirmed
XGM-94-03X	3020946.00	626168.33	272.40	Bedrock confirmed
XGM-94-04X	3020880.04	626072.55	280.30	Bedrock confirmed

Table 2-1
Bedrock Elevations
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location Name	Northing	Easting	Bedrock Elevation (ft NAVD88)	Notes
XGM-94-05X	3021000.89	626277.72	271.50	Bedrock confirmed
XGM-94-06X	3020773.57	626429.96	254.40	Bedrock confirmed
XGM-94-07X	3020925.63	626257.94	271.70	Bedrock confirmed
XGM-94-08X	3020799.50	626239.62	269.40	Bedrock confirmed
XGM-94-09X	3020819.91	626001.97	277.10	Bedrock confirmed
XGM-94-10X	3020730.49	626132.59	269.00	Bedrock confirmed
XGM-97-12X	3020989.42	626086.01	279.26	Bedrock confirmed
XGP-94-01X	3020846.68	626040.75	274.90	Bedrock confirmed
XGP-94-02X	3020768.42	626434.35	253.90	Bedrock confirmed
XGP-94-05X	3020869.14	626065.06	282.00	Bedrock confirmed
XGP-94-06X	3020852.70	626079.34	276.50	Bedrock confirmed
XGP-94-07X	3020867.18	626100.74	277.80	Bedrock confirmed
XJB-94-03X / SAJ02	3018130.28	623514.40	351.12	Bedrock confirmed
XJB-94-04X	3018202.56	623516.36	346.97	Bedrock confirmed
XJB-94-05X	3018188.62	623499.66	351.31	Bedrock confirmed
XJB-94-06X	3018176.42	623486.34	351.39	Bedrock confirmed
XJB-94-07X	3018221.36	623542.94	348.19	Bedrock confirmed
XJB-94-08X	3018153.80	623479.82	355.85	Bedrock confirmed
XJB-94-09X	3018180.58	623552.12	348.07	Bedrock confirmed
XJB-94-10X	3018130.37	623548.48	346.47	Bedrock confirmed
XJB-94-11X	3018103.90	623511.42	349.13	Bedrock confirmed
XJB-94-12X	3018061.35	623457.25	352.20	Bedrock confirmed
XJB-94-13X	3018027.38	623482.80	347.78	Bedrock confirmed
XJB-94-15X	3017980.93	623544.51	343.77	Bedrock confirmed
XJM-93-01X	3018256.15	623416.31	355.30	Bedrock confirmed
XJM-93-04X	3018150.54	623399.70	367.20	Bedrock confirmed
XJM-94-05X	3018126.42	623509.51	352.00	Bedrock confirmed
XJM-94-06X	3018168.62	623646.69	351.10	Bedrock confirmed
XJM-94-07X	3018055.81	623743.83	352.40	Bedrock confirmed
XJM-94-09X	3018066.02	623414.43	346.20	Bedrock confirmed
XJM-94-10X	3017979.67	623640.39	345.70	Bedrock confirmed
XJM-97-11X	3017992.65	623378.02	347.00	Bedrock confirmed
XJM-97-12X	3018120.60	623496.13	352.00	Bedrock confirmed
XJM-97-13X	3017979.53	623640.48	328.30	Bedrock confirmed

ft NAVD88 = feet North America Vertical Datum 1988

Table 2-2
Synoptic Water Level Event AOC 32/43A, December 5, 2018
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type
32M-01-13XBR	257.88	12/05/2018	13.32	244.56	Bedrock
32M-01-14XBR	256.06	12/05/2018	19.25	236.81	Bedrock
32M-01-14XOB	256.56	12/05/2018	22.05	234.51	Overburden
32M-01-15XBR	257.70	12/05/2018	15.33	242.37	Bedrock
32M-01-16XBR	257.50	12/05/2018	19.23	238.27	Bedrock
32M-01-17XBR	259.11	12/05/2018	23.19	235.92	Bedrock
32M-01-18XBR	258.32	12/05/2018	14.55	243.77	Bedrock
32M-92-01X	260.17	12/05/2018	14.70	245.47	Overburden
32M-92-03X	260.02	12/05/2018	23.85	236.17	Overburden
32Z-01-05XOB	260.60	12/05/2018	25.65	234.95	Overburden
32Z-01-06XBR	261.85	12/05/2018	12.90	248.95	Bedrock
32Z-01-07XOB	259.48	12/05/2018	12.30	247.18	Overburden
32Z-01-08XOB	260.49	12/05/2018	15.50	244.99	Overburden
32Z-01-09XOB	257.37	12/05/2018	24.82	232.55	Overburden
32Z-01-10XBR	257.41	12/05/2018	13.38	244.03	Bedrock
32Z-01-11XBR	261.50	12/05/2018	15.99	245.51	Bedrock
32Z-01-12XBR	257.85	12/05/2018	19.21	238.64	Bedrock
32Z-99-02X	259.71	12/05/2018	21.00	238.71	Overburden
43M-01-16XBR	256.84	12/05/2018	21.25	235.59	Bedrock
43M-01-16XOB	256.88	12/05/2018	21.23	235.65	Overburden
43M-01-17XBR	258.29	12/05/2018	23.12	235.17	Bedrock
43M-01-17XOB	258.08	12/05/2018	23.90	234.18	Overburden
43M-01-20XBR	257.30	12/05/2018	24.59	232.71	Bedrock
43M-01-20XOB	257.40	12/05/2018	25.91	231.49	Overburden
N7-P1	255.59	12/05/2018	27.98	227.61	Bedrock
N7-P2	256.04	12/05/2018	27.95	228.09	Overburden
SHL-12	248.62	12/05/2018	18.80	229.82	Overburden
SHL-15	259.92	12/05/2018	15.55	244.37	Overburden
SHL-17	233.79	12/05/2018	3.85	229.94	Overburden
SHL-25	258.01	12/05/2018	23.86	234.15	Overburden
SHM-10-11	263.76	12/05/2018	37.85	225.91	Deep Overburden

MPE = Measuring Point Elevation
NAVD88 = North America Vertical Datum 1988

Table 2-3
Synoptic Water Level Event AOC 76 and MacPherson, May 16, 2019
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type	Notes
76PZ-19-01	264.51	05/16/2019	20.63	243.88	Overburden	
76PZ-19-02	234.96	05/16/2019	4.19	230.77	Overburden	
76PZ-19-03	256.74	05/16/2019	12.22	244.52	Overburden	
76PZ-19-04	249.14	05/16/2019	5.70	243.44	Overburden	
76PZ-19-05	262.1	05/16/2019	19.32	242.78	Overburden	
76PZ-19-06	258.61	05/16/2019	25.94	232.67	Overburden	
76PZ-19-07	254.3	05/16/2019	13.35	240.95	Overburden	
76PZ-19-08	232.03	05/16/2019	12.60	219.43	Overburden	
76PZ-19-09	228.35	05/16/2019	15.00	213.35	Overburden	
76PZ-19-10	244.7	05/16/2019	3.45	241.25	Overburden	
76PZ-19-11	247.53	05/16/2019	5.00	242.53	Overburden	
76PZ-19-12	224.28	05/16/2019	12.10	212.18	Overburden	
76PZ-19-13	251.93	05/16/2019	9.72	242.21	Overburden	
76PZ-19-14	230.78	05/16/2019	16.3	214.48	Overburden	
76PZ-19-15	245.83	05/16/2019	2.65	243.18	Overburden	
76PZ-19-16	258.52	05/16/2019	25.69	232.83	Overburden	
McPh-Sentinel	214.11	05/16/2019	8.7	205.41	Overburden	
MPP-93-02	214.51	05/16/2019	9.45	205.06	Overburden	
MPP-93-03	214.51	05/16/2019	9.58	204.93	Overburden	
MPPZ-19-01	211.45	05/16/2019	4.83	206.62	Overburden	
MPPZ-19-03	213.94	05/16/2019	8.43	205.51	Overburden	
ZWM-01-26X	226.81	05/16/2019	5.95	220.86	Overburden	
ZWM-95-17X	237.83	05/16/2019	12.95	224.88	Overburden	
ZWP-95-01X	226.04	05/16/2019	4.2	221.84	Overburden	
69WP-13-01	220.70	05/16/2019	1.5	219.20	Overburden	Not used for contouring, due to uncertainty of MPE elevation.

MPE = Measuring Point Elevation
NAVD88 = North America Vertical Datum 1988

Table 2-4
Synoptic Water Level Event AOC 43G and AOC 76, June 28, 2019
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type	Notes
43GPZ-19-01	280.67	06/28/2019	18.71	261.96	Overburden	
43GPZ-19-02	290.09	06/28/2019	24.2	265.89	Overburden	
43GPZ-19-03	307.99	06/28/2019	22.98	285.01	Overburden	
43GPZ-19-04	256.75	06/28/2019	7.05	249.7	Overburden	
43GPZ-19-05	254.82	06/28/2019	7.91	246.91	Overburden	
43GPZ-19-06	254.86	06/28/2019	9.67	245.19	Overburden	
69WP-08-01	NA	06/28/2019	2.1	NA	Overburden	MPE Elevation unknown
76PZ-19-01	264.51	06/28/2019	22.12	242.39	Overburden	
76PZ-19-02	234.96	06/28/2019	4.4	230.56	Overburden	
76PZ-19-03	256.74	06/28/2019	13.49	243.25	Overburden	
76PZ-19-04	249.14	06/28/2019	6.26	242.88	Overburden	
76PZ-19-05	262.1	06/28/2019	18.5	243.6	Overburden	
76PZ-19-06	258.61	06/28/2019	25.5	233.11	Overburden	
76PZ-19-07	254.3	06/28/2019	14.4	239.9	Overburden	
76PZ-19-08	232.03	06/28/2019	13.15	218.88	Overburden	
76PZ-19-09	228.35	06/28/2019	15.73	212.62	Overburden	
76PZ-19-10	244.7	06/28/2019	4.15	240.55	Overburden	
76PZ-19-11	247.53	06/28/2019	5.88	241.65	Overburden	
76PZ-19-12	224.28	06/28/2019	12.83	211.45	Overburden	
76PZ-19-13	251.93	06/28/2019	10.52	241.41	Overburden	
76PZ-19-14	230.78	06/28/2019	17.06	213.72	Overburden	
76PZ-19-15	245.83	06/28/2019	3.41	242.42	Overburden	
76PZ-19-16	258.52	06/28/2019	26.21	232.31	Overburden	
76PZ-19-17	229.95	06/28/2019	18.24	211.71	Overburden	
76PZ-19-18	248.01	06/28/2019	4.52	243.49	Overburden	
76PZ-19-19	258.99	06/28/2019	21.75	237.24	Overburden	
AAFES-2	301.72	06/28/2019	22.67	279.05	Overburden/Bedrock	
AAFES-5	299.8	06/28/2019	22.05	277.75	Overburden	
AAFES-7	258.8	06/28/2019	8.05	250.75	Overburden	
McPh-Sentinel	214.11	06/28/2019	9.85	204.26	Overburden	
MPP-93-02	214.51	06/28/2019	10.69	203.82	Overburden	
MPP-93-03	214.51	06/28/2019	10.84	203.67	Overburden	
MPPZ-19-01	211.45	06/28/2019	5.43	206.02	Overburden	
MPPZ-19-02	222.95	06/28/2019	16.34	206.61	Overburden	
MPPZ-19-03	213.94	06/28/2019	9.56	204.38	Overburden	
XGM-94-04X	300.69	06/28/2019	19.44	281.25	Bedrock	
XGM-94-06X	284.07	06/28/2019	21.19	262.88	Overburden	
XGM-94-07X	294.82	06/28/2019	14.72	280.1	Weathered Bedrock	
XGM-94-08X	298.98	06/28/2019	26.05	272.93	Weathered Bedrock/Bedrock	
XGM-94-10X	301.96	06/28/2019	25.18	276.78	Overburden	
XGM-97-12X	308.7	06/28/2019	25.15	283.55	Overburden/Bedrock	
ZWM-01-26X	226.81	06/28/2019	4.37	222.44	Overburden	
ZWM-95-17X	237.83	06/28/2019	13.45	224.38	Overburden	
ZWP-95-01X	226.04	06/28/2019	2.72	223.32	Overburden	

MPE = Measuring Point Elevation
NA = not available
NAVD88 = North America Vertical Datum 1988

Table 2-5
Synoptic Water Level Event SHL, October 22, 2019
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type	Notes
20-1	278.52	10/22/2019	39.50	239.02	Bedrock	
27-1	270.66	10/22/2019	41.12	229.54	Bedrock	
27-2	275.15	10/22/2019	47.45	227.70	Bedrock	
3-2	268.20	10/22/2019	39.53	228.67	Bedrock	
32M-01-14XOB	256.56	10/22/2019	26.38	230.18	Overburden	
32M-01-14XBR	256.06	10/22/2019	25.65	230.41	Bedrock	
32M-01-15XBR	257.70	10/22/2019	22.57	235.13	Bedrock	
32M-01-16XBR	257.50	10/22/2019	24.54	232.96	Bedrock	
32M-92-01X	260.17	10/22/2019	11.38	248.79	Overburden	
32Z-01-07XOB	259.48	10/22/2019	19.38	240.10	Overburden	
CAP-2B	250.21	10/22/2019	22.80	227.41	Bedrock	
CH-1D	250.59	10/22/2019	21.80	228.79	Bedrock	
CH-1S	250.63	10/22/2019	22.00	228.63	Bedrock	
EPA-PZ-2012-1A	223.79	10/22/2019	12.15	211.64	Shallow Overburden	
EPA-PZ-2012-1B	223.53	10/22/2019	11.80	211.73	Deep Overburden	
EPA-PZ-2012-2A	223.38	10/22/2019	11.42	211.96	Shallow Overburden	
EPA-PZ-2012-2B	223.37	10/22/2019	11.44	211.93	Deep Overburden	
EPA-PZ-2012-3A	222.65	10/22/2019	11.68	210.97	Shallow Overburden	
EPA-PZ-2012-3B	222.57	10/22/2019	11.60	210.97	Deep Overburden	
EPA-PZ-2012-4A	226.60	10/22/2019	15.92	210.68	Shallow Overburden	
EPA-PZ-2012-4B	226.39	10/22/2019	15.76	210.63	Deep Overburden	
EPA-PZ-2012-5A	220.01	10/22/2019	8.96	211.05	Shallow Overburden	
EPA-PZ-2012-5B	219.38	10/22/2019	8.24	211.14	Deep Overburden	
EPA-PZ-2012-6A	234.25	10/22/2019	23.68	210.57	Shallow Overburden	
EPA-PZ-2012-6B	234.08	10/22/2019	23.55	210.53	Deep Overburden	
EPA-PZ-2012-7A	234.16	10/22/2019	27.79	206.37	Shallow Overburden	
EPA-PZ-2012-7B	234.03	10/22/2019	23.39	210.64	Deep Overburden	
MW 4-1	247.33	10/22/2019	dry	NA	Overburden	Dry well
MW 7	249.10	10/22/2019	dry	NA	Overburden	Dry well
MW-1	251.84	10/22/2019	dry	NA	Overburden	Dry well
MW-11A	258.57	10/22/2019	8.90	249.67	Overburden	
MW-14	256.61	10/22/2019	dry	NA	Overburden	Dry well
MW-16	270.23	10/22/2019	9.55	260.68	Overburden	
MW-22	267.64	10/22/2019	dry	NA	Overburden	Dry well
MW-9	243.91	10/22/2019	dry	NA	Overburden	Dry well
N1-P1	229.92	10/22/2019	12.99	216.93	Deep Overburden	
N1-P2	229.93	10/22/2019	13.01	216.92	Mid Overburden	
N1-P3	230.08	10/22/2019	12.97	217.11	Shallow Overburden	
N2-P1	222.01	10/22/2019	4.65	217.36	Overburden	
N2-P2	222.16	10/22/2019	4.99	217.17	Shallow Water Table	
N3-P1	220.83	10/22/2019	4.15	216.68	Bedrock	
N3-P2	220.84	10/22/2019	3.85	216.99	Shallow Water Table	
N5-P1	242.65	10/22/2019	24.00	218.65	Bedrock	
N5-P2	242.69	10/22/2019	24.25	218.44	Overburden	
N6-P1	258.60	10/22/2019	36.68	221.92	Bedrock	
N7-P1	255.59	10/22/2019	31.15	224.44	Bedrock	
N7-P2	256.04	10/22/2019	31.20	224.84	Overburden	
PZ-12-01	237.55	10/22/2019	20.12	217.43	Shallow Overburden	
PZ-12-02	237.79	10/22/2019	20.08	217.71	Shallow Overburden	
PZ-12-03	236.40	10/22/2019	19.95	216.45	Shallow Overburden	
PZ-12-04	238.20	10/22/2019	19.90	218.30	Shallow Overburden	
PZ-12-05	238.73	10/22/2019	21.09	217.64	Mid-Overburden	
PZ-12-06	242.18	10/22/2019	23.64	218.54	Mid-Overburden	

Table 2-5
Synoptic Water Level Event SHL, October 22, 2019
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type	Notes
PZ-12-07	244.59	10/22/2019	27.08	217.51	Mid-Overburden	
PZ-12-08	244.83	10/22/2019	26.41	218.42	Mid-Overburden	
PZ-12-09	241.93	10/22/2019	23.97	217.96	Shallow Overburden	
PZ-12-10	242.28	10/22/2019	22.81	219.47	Shallow Overburden	
Q4-1	268.38	10/22/2019	32.70	235.68	Bedrock	
Q5-1	260.99	10/22/2019	28.53	232.46	Bedrock	
RSK 15	225.54	10/22/2019	8.05	217.49	Unknown	
RSK 19	218.76	10/22/2019	1.35	217.41	Unknown	
RSK 25	239.21	10/22/2019	21.69	217.52	Unknown	
RSK 27	241.45	10/22/2019	22.37	219.08	Unknown	
RSK 28	239.24	10/22/2019	20.75	218.49	Unknown	
RSK 32	236.91	10/22/2019	18.61	218.30	Unknown	
RSK 34	233.16	10/22/2019	16.06	217.10	Unknown	
RSK 35	233.64	10/22/2019	17.01	216.63	Unknown	
RSK 37	220.55	10/22/2019	3.10	217.45	Unknown	
RSK 7	222.01	10/22/2019	4.63	217.38	Unknown	
SHL-1	272.27	10/22/2019	7.75	264.52	Unknown	
SHL-10	248.02	10/22/2019	30.56	217.46	Shallow Overburden	
SHL-11	235.47	10/22/2019	18.05	217.42	Shallow Overburden	
SHL-12	248.62	10/22/2019	22.58	226.04	Overburden	
SHL-13	220.71	10/22/2019	6.59	214.12	Shallow Overburden	
SHL-15	259.92	10/22/2019	20.47	239.45	Overburden	
SHL-17	233.79	10/22/2019	8.88	224.91	Overburden	
SHL-18	237.56	10/22/2019	25.12	212.44	Overburden	
SHL-19	240.50	10/22/2019	22.97	217.53	Shallow Overburden	
SHL-20	235.95	10/22/2019	18.00	217.95	Deep Overburden	
SHL-22	219.58	10/22/2019	8.68	210.90	Deep Overburden/Till	
SHL-23	241.29	10/22/2019	30.21	211.08	Overburden	
SHL-24	238.75	10/22/2019	15.79	222.96	Overburden/Till/Bedrock	
SHL-25	258.01	10/22/2019	27.68	230.33	Overburden	
SHL-3	246.95	10/22/2019	29.35	217.60	Mid-Overburden	
SHL-4	227.48	10/22/2019	10.00	217.48	Shallow Overburden	
SHL-5	217.60	10/22/2019	5.65	211.95	Shallow Overburden	
SHL-7	236.33	10/22/2019	18.14	218.19	Overburden	
SHL-8D	220.78	10/22/2019	8.21	212.57	Deep Overburden	
SHL-8S	220.97	10/22/2019	8.33	212.64	Shallow Overburden	
SHL-9	221.95	10/22/2019	12.18	209.77	Shallow Overburden	
SHM-05-39A	221.53	10/22/2019	12.45	209.08	Mid Overburden	
SHM-05-39B	221.51	10/22/2019	dry	NA	Deep Overburden	Dry well
SHM-05-40X	223.19	10/22/2019	14.95	208.24	Mid Overburden/Till	
SHM-05-41A	222.48	10/22/2019	11.95	210.53	Shallow Overburden	
SHM-05-41B	222.33	10/22/2019	40.09	182.24	Mid Overburden	
SHM-05-41C	222.57	10/22/2019	12.15	210.42	Deep Overburden/Till	
SHM-05-42A	216.81	10/22/2019	8.05	208.76	Shallow Overburden	
SHM-05-42B	216.80	10/22/2019	7.50	209.30	Mid Overburden	
SHM-07-03	227.90	10/22/2019	24.00	203.90	Shallow Overburden	
SHM-07-05X	223.40	10/22/2019	15.30	208.10	Mid Overburden	
SHM-10-01	209.65	10/22/2019	4.20	205.45	Deep Overburden/Till	
SHM-10-02	223.03	10/22/2019	18.24	204.79	Mid Overburden	
SHM-10-03	232.05	10/22/2019	26.87	205.18	Mid Overburden	
SHM-10-04	212.61	10/22/2019	6.69	205.92	Mid Overburden	
SHM-10-05A	235.09	10/22/2019	25.72	209.37	Mid Overburden	
SHM-10-06	232.91	10/22/2019	20.00	212.91	Deep Overburden	

Table 2-5
Synoptic Water Level Event SHL, October 22, 2019
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type	Notes
SHM-10-06A	248.54	10/22/2019	35.30	213.24	Deep Overburden	
SHM-10-07	246.82	10/22/2019	27.08	219.74	Mid Overburden	
SHM-10-08	214.36	10/22/2019	9.97	204.39	Deep Overburden/Till	
SHM-10-10	217.11	10/22/2019	11.05	206.06	Deep Overburden/Till	
SHM-10-11	263.76	10/22/2019	40.23	223.53	Deep Overburden	
SHM-10-12	255.17	10/22/2019	33.75	221.42	Mid Overburden	
SHM-10-13	244.77	10/22/2019	25.95	218.82	Deep Overburden	
SHM-10-14	237.62	10/22/2019	20.48	217.14	Deep Overburden	
SHM-10-15	243.68	10/22/2019	24.40	219.28	Mid Overburden	
SHM-10-16	219.23	10/22/2019	8.62	210.61	Deep Overburden	
SHM-11-02	240.73	10/22/2019	22.32	218.41	Bedrock	
SHM-11-06	236.17	10/22/2019	20.11	216.06	Shallow Overburden	
SHM-11-07	240.83	10/22/2019	22.40	218.43	Bedrock	
SHM-13-01	208.08	10/22/2019	3.48	204.60	Mid Overburden	
SHM-13-02	218.72	10/22/2019	13.03	205.69	Deep Overburden	
SHM-13-03	212.05	10/22/2019	5.68	206.37	Deep OB / Till	
SHM-13-04	227.02	10/22/2019	19.71	207.31	Shallow Overburden	
SHM-13-05	225.14	10/22/2019	17.15	207.99	Deep Overburden	
SHM-13-06	223.89	10/22/2019	17.72	206.17	Deep Overburden/Till	
SHM-13-07	225.64	10/22/2019	19.23	206.41	Unknown	
SHM-13-08	227.90	10/22/2019	20.90	207.00	Mid Overburden/Till	
SHM-13-14D	210.48	10/22/2019	3.98	206.50	Deep Overburden	
SHM-13-14S	210.55	10/22/2019	4.12	206.43	Shallow Overburden	
SHM-13-15	210.58	10/22/2019	4.32	206.26	Deep Overburden	
SHM-93-10D	248.01	10/22/2019	30.03	217.98	Bedrock	
SHM-93-18B	237.31	10/22/2019	15.64	221.67	Overburden	
SHM-93-22B	219.39	10/22/2019	8.48	210.91	Mid-depth Overburden	
SHM-93-22C	220.69	10/22/2019	9.85	210.84	Deep Bedrock	
SHM-93-24A	238.42	10/22/2019	16.12	222.30	Overburden	
SHM-96-5B	218.92	10/22/2019	7.49	211.43	Sand/Till	
SHM-96-5C	218.39	10/22/2019	6.97	211.42	Mid Overburden	
SHM-99-31A	214.34	10/22/2019	3.98	210.36	Shallow Overburden /	
SHM-99-31B	214.39	10/22/2019	4.85	209.54	Mid Overburden	
SHM-99-31C	214.60	10/22/2019	5.15	209.45	Deep Overburden	
SHM-99-32X	221.28	10/22/2019	10.80	210.48	Deep Overburden	
SHP-01-36X	223.95	10/22/2019	6.67	217.28	Shallow Overburden	
SHP-01-37X	222.79	10/22/2019	5.85	216.94	Shallow Overburden	
SHP-01-38A	220.86	10/22/2019	3.32	217.54	Shallow Overburden	
SHP-01-38B	221.03	10/22/2019	3.49	217.54	Deep Overburden	
SHP-05-43	260.71	10/22/2019	45.05	215.66	Shallow Overburden	
SHP-05-44	258.14	10/22/2019	42.41	215.73	Mid Overburden	
SHP-05-45A	228.48	10/22/2019	17.73	210.75	Shallow Overburden	
SHP-05-45B	229.11	10/22/2019	18.42	210.69	Mid Overburden	
SHP-05-46A	228.18	10/22/2019	16.95	211.23	Mid Overburden	
SHP-05-46B	227.60	10/22/2019	16.30	211.30	Shallow Overburden	
SHP-05-47A	217.39	10/22/2019	5.56	211.83	Shallow Water Table	
SHP-05-47B	215.40	10/22/2019	2.43	212.97	Shallow Water Table	
SHP-05-48A	217.31	10/22/2019	3.82	213.49	Shallow Water Table	
SHP-05-48B	215.96	10/22/2019	2.84	213.12	Shallow Water Table	
SHP-05-49A	216.67	10/22/2019	5.68	210.99	Shallow Water Table	
SHP-05-49B	215.14	10/22/2019	4.18	210.96	Shallow Water Table	
SHP-2016-06A	241.90	10/22/2019	30.17	211.73	Bedrock	
SHP-2016-06B	241.89	10/22/2019	24.05	217.84	Bedrock	

Table 2-5
Synoptic Water Level Event SHL, October 22, 2019
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type	Notes
SHP-2016-06C	241.92	10/22/2019	23.75	218.17	Bedrock	
SHP-2016-07A	265.30	10/22/2019	dry	NA	Bedrock	Dry well
SHP-2016-07B	265.33	10/22/2019	35.80	229.53	Bedrock	
SHP-2016-1A	227.27	10/22/2019	16.85	210.42	Shallow Overburden	
SHP-2016-1B	227.24	10/22/2019	17.75	209.49	Deep Overburden	
SHP-2016-2A	225.93	10/22/2019	15.41	210.52	Shallow Overburden	
SHP-2016-2B	225.95	10/22/2019	16.29	209.66	Deep Overburden	
SHP-2016-3A	223.18	10/22/2019	12.50	210.68	Shallow Overburden	
SHP-2016-3B	223.18	10/22/2019	12.37	210.81	Deep Overburden	
SHP-2016-4A	229.97	10/22/2019	24.83	205.14	Shallow Overburden	
SHP-2016-4B	229.75	10/22/2019	19.10	210.65	Deep Overburden	
SHP-2016-5A	227.01	10/22/2019	16.10	210.91	Shallow Overburden	
SHP-2016-5B	226.95	10/22/2019	16.28	210.67	Deep Overburden	
SHP-2017-01	229.63	10/22/2019	20.17	209.46	Overburden	
SHP-2017-02	230.05	10/22/2019	20.80	209.25	Overburden	
SHP-95-27X	237.45	10/22/2019	14.03	223.42	Overburden	
SHP-99-01B	273.16	10/22/2019	9.85	263.31	Shallow Overburden	
SHP-99-01C	274.15	10/22/2019	24.54	249.61	Bedrock	
SHP-99-29X	243.34	10/22/2019	23.95	219.39	Shallow Overburden	
SHP-99-34B	224.91	10/22/2019	13.80	211.11	Overburden	
SHP-99-35X	258.23	10/22/2019	36.35	221.88	Shallow Overburden	
PSP-01	218.14	10/22/2019	2.8	217.62	NA	
SHSG-13-01G	205.53	10/22/2019	1.5	203.03	NA	
SHSG-13-02G	208.25	10/22/2019	NA	NA	NA	obstructed view
SHSG-13-03G	209.99	10/22/2019	NA	NA	NA	obstructed view
SHSG-14-01G	213.71	10/22/2019	2.3	213.01	NA	

Data if from the Draft 2019 Annual Operations, Minatenance, and Monitoring Report Shepley's Hill Landfill. Bedrock wells were not used to contour groundwater elevations. The average of water elevations was used at well clusters to contour groundwater elevations.

MPE = Measuring Point Elevation

NA = not applicable

NAVD88 = North America Vertical Datum 1988

Table 2-6
Synoptic Water Level Event AOC 32/43A, April 29, 2020
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Location ID	MPE (ft NAVD88)	Measurement Date	Depth to Water from MPE (ft)	Groundwater Elevation (ft NAVD88)	Formation Type	Notes
32M-01-13XBR	257.88	04/29/2020	14.23	243.65	Bedrock	
32M-01-14XBR	256.06	04/29/2020	21.36	234.70	Bedrock	
32M-01-14XOB	256.56	04/29/2020	23.18	233.38	Overburden	
32M-01-15XBR	257.70	04/29/2020	18.52	239.18	Bedrock	
32M-01-16XBR	257.50	04/29/2020	20.15	237.35	Bedrock	
32M-01-17XBR	259.11	04/29/2020	23.21	235.90	Bedrock	
32M-01-18XBR	258.32	04/29/2020	14.83	243.49	Bedrock	
32M-92-01X	260.17	04/29/2020	15.72	244.45	Overburden	
32M-92-03X	260.02	04/29/2020	25.91	234.11	Overburden	
32PZ-19-01	238.20	04/29/2020	11.04	227.16	Overburden	
32PZ-19-02	249.96	04/29/2020	22.01	227.95	Overburden	
32Z-01-05XOB	260.60	04/29/2020	27.92	232.68	Overburden	
32Z-01-06XBR	261.85	04/29/2020	13.67	248.18	Bedrock	
32Z-01-07XOB	259.48	04/29/2020	13.08	246.40	Overburden	
32Z-01-08XOB	260.49	04/29/2020	16.47	244.02	Overburden	
32Z-01-09XOB	257.37	04/29/2020	24.84	232.53	Overburden	
32Z-01-10XBR	257.41	04/29/2020	14.06	243.35	Bedrock	
32Z-01-11XBR	261.50	04/29/2020	15.82	245.68	Bedrock	
32Z-01-12XBR	257.85	04/29/2020	17.88	239.97	Bedrock	
32Z-99-02X	259.71	04/29/2020	21.98	237.73	Overburden	
43M-01-16XBR	256.84	04/29/2020	24.15	232.69	Bedrock	
43M-01-16XOB	256.88	04/29/2020	23.43	233.45	Overburden	
43M-01-17XBR	258.29	04/29/2020	25.72	232.57	Bedrock	
43M-01-17XOB	258.08	04/29/2020	25.03	233.05	Overburden	
43M-01-20XBR	257.30	04/29/2020	24.75	232.55	Bedrock	
43M-01-20XOB	257.40	04/29/2020	24.92	232.48	Overburden	
N6-P1	258.60	04/29/2020	34.93	223.67	Bedrock	
N7-P1	255.59	04/29/2020	29.43	226.16	Bedrock	
N7-P2	256.04	04/29/2020	29.54	226.50	Overburden	
SHL-12	248.62	04/29/2020	20.71	227.91	Overburden	
SHL-15	259.92	04/29/2020	16.11	243.81	Overburden	
SHL-17	233.79	04/29/2020	5.51	228.28	Overburden	
SHL-18	237.56	04/29/2020	18.25	219.31	Overburden	
SHL-24	238.75	04/29/2020	14.47	224.28	Overburden/Bedrock	
SHL-25	258.01	04/29/2020	24.75	233.26	Overburden	
SHL-3	246.95	04/29/2020	29.70	217.25	Overburden	
SHL-7	236.33	04/29/2020	17.04	219.29	Overburden	
SHM-10-11	263.76	04/29/2020	38.62	225.14	Overburden	
SHM-10-12	255.17	04/29/2020	31.94	223.23	Overburden	
SHM-93-01A	242.42	04/29/2020	20.60	221.82	Overburden	
SHM-93-18B	237.31	04/29/2020	17.90	219.41	Overburden	
SHM-93-24A	238.42	04/29/2020	14.85	223.57	Overburden	
SHM-95-27X	237.45	04/29/2020	13.14	224.31	Overburden	
SHP-99-35X	258.23	04/29/2020	34.79	223.44	Overburden	

MPE = Measuring Point Elevation
NAVD88 = North America Vertical Datum 1988

Table 3-1
AOC 32/43A Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Existing Monitoring Well Sampling													
Existing Monitoring Well Sampling	32M-01-13XBR	3025296.45	629547.21	UKN	12/1/2001	258.3	UKN	UKN	257.88	13.7	23.7	244.60	234.60
	32M-01-14XBR	3025386.10	629684.78	UKN	11/1/2001	254.11	UKN	UKN	256.06	35.8	45.8	218.31	208.31
	32M-01-14XOB	3025381.95	629692.68	UKN	11/1/2001	254.3	UKN	UKN	256.56	17.3	27.3	237.00	227.00
	32M-01-15XBR	3025254.04	629568.09	UKN	UKN	258.03	UKN	UKN	257.7	34.5	44.5	223.53	213.53
	32M-01-16XBR	3025101.97	629604.12	UKN	1/1/2002	257.7	UKN	UKN	257.5	21	31	236.70	226.70
	32M-01-17XBR	3025242.15	629696.54	UKN	UKN	256.85	UKN	UKN	259.11	41.4	51.4	215.45	205.45
	32M-01-18XBR	3025246.91	629515.04	UKN	1/1/2002	258.61	UKN	UKN	258.32	14	24	244.61	234.61
	32M-92-01X	3025739.99	629189.60	UKN	10/1/1992	258.26	UKN	UKN	260.17	13	23	245.26	235.26
	32M-92-03X	3025213.18	628772.04	UKN	10/1/1992	258.23	UKN	UKN	260.02	23.2	33.2	235.03	225.03
	32Z-01-05XOB	3024524.85	629137.53	UKN	UKN	261	UKN	UKN	260.6	25.5	35.5	235.50	225.50
	32Z-01-06XBR	3025592.12	629526.37	UKN	11/1/2001	259.82	UKN	UKN	261.85	16.7	26.7	243.12	233.12
	32Z-01-07XOB	3025655.59	629418.40	UKN	11/1/2001	257.68	UKN	UKN	259.48	12.7	22.7	244.98	234.98
	32Z-01-08XOB	3025511.58	629071.00	UKN	UKN	258.59	UKN	UKN	260.49	12	22	246.59	236.59
	32Z-01-09XOB	3024575.85	628871.69	UKN	UKN	257.8	UKN	UKN	257.37	23.5	33.5	234.30	224.30
	32Z-01-10XBR	3024914.37	629597.33	UKN	1/1/2002	257.76	UKN	UKN	257.41	12.5	22.5	245.26	235.26
	32Z-01-11XBR*	3025496.11	629315.82	UKN	11/1/2001	262.07	UKN	UKN	261.5	8.42	18.42	253.65	243.65
	32Z-01-12XBR	3025272.70	629002.21	UKN	11/1/2001	258.24	UKN	UKN	257.85	27.78	37.78	230.46	220.46
	32Z-99-02X	3024769.05	629874.14	UKN	UKN	257.48	UKN	UKN	259.71	14.5	29.5	242.98	227.98
	SHL-12	3025341.6	630003.02	UKN	UKN	247.22	UKN	UKN	248.62	15	30	232.22	217.22
	SHL-17	3025390.8	630287.49	UKN	6/1/1991	231.88	UKN	UKN	233.79	6	16	225.88	215.88
	SHL-25	3025251.9	629698.61	UKN	7/1/1991	256.28	UKN	UKN	258.01	23.5	33.5	232.78	222.78
	SHM-93-24A	3025647.4	631308.05	UKN	UKN	235.39	UKN	UKN	238.42	13.2	23.2	222.19	212.19
	43M-01-16XBR	3025055.12	628980.91	UKN	12/1/2001	257.04	UKN	UKN	256.84	47.5	57.5	209.54	199.54
	43M-01-16XOB	3025060.35	628981.18	UKN	12/1/2001	257.11	UKN	UKN	256.88	24	34	233.11	223.11
	43M-01-17XBR	3024934.85	629073.30	UKN	12/1/2001	258.53	UKN	UKN	258.29	47.5	57.5	211.03	201.03
	43M-01-17XOB	3024940.96	629073.25	UKN	12/1/2001	258.51	UKN	UKN	258.08	23.5	33.5	235.01	225.01
	43M-01-20XBR	3024830.04	628852.12	UKN	11/1/2001	257.78	UKN	UKN	257.3	68.3	78.3	189.48	179.48
	43M-01-20XOB	3024833.82	628852.01	UKN	11/1/2001	257.78	UKN	UKN	257.4	24	34	233.78	223.78
Suface Water and Sediment Sampling													
Surface Water and Sediment Sampling	DP-18-01	3025279.68	630324.81	NA	12/5/2018	NA	NA	NA	NA	NA	NA	NA	NA

Table 3-1
AOC 32/43A Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Vertical Profiles													
Initial Vertical Profiles	32VP-19-01	3025306.37	630204.66	GP	5/14/2019	240.96	64	refusal	NA	NA	NA	NA	NA
	32VP-19-02	3025523.59	630202.20	GP	6/18/2019	240.96	70.5	refusal	NA	NA	NA	NA	NA
	32VP-19-03	3024888.63	630129.63	GP	3/15/2019	256.86	54	refusal	NA	NA	NA	NA	NA
	32VP-19-04	3025274.56	631325.49	GP	2/5/2019	244.67	101	end of boring	NA	NA	NA	NA	NA
	32VP-19-05	3025473.81	631365.76	GP	2/5/2019	241.11	106	end of boring	NA	NA	NA	NA	NA
	32VP-19-06	3025854.25	631324.64	GP	2/26/2019	229.01	96	refusal	NA	NA	NA	NA	NA
	32VP-19-07	3026159.02	631312.89	GP	2/26/2019	234.77	91	refusal	NA	NA	NA	NA	NA
	32VP-19-08	3024454.76	629466.05	GP	3/25/2019	260.91	15	refusal	NA	NA	NA	NA	NA
	43AVP-19-01	3024626.48	628433.51	GP	4/22/2019	258.97	79	refusal	NA	NA	NA	NA	NA
	43AVP-19-02	3024764.19	628440.23	GP	5/10/2019	259.49	82	refusal	NA	NA	NA	NA	NA
	43AVP-19-03	3024888.29	628514.41	GP	3/29/2019	259.8	66.5	refusal	NA	NA	NA	NA	NA
	43AVP-19-04	3024520.26	628624.35	GP	3/28/2019	260.09	70	refusal	NA	NA	NA	NA	NA
Second Set of Vertical Profiles	32VP-19-09	3025549.90	630381.43	GP	9/19/2019	238.15	87.5	refusal	NA	NA	NA	NA	NA
	32VP-19-10	3025650.83	630756.50	GP	9/16/2019	235.86	105	refusal	NA	NA	NA	NA	NA
	32VP-19-11	3025173.29	630471.70	GP	9/24/2019	253.79	108	refusal	NA	NA	NA	NA	NA
	32VP-19-12	3024968.92	630585.90	GP	9/27/2019	250.31	132	refusal	NA	NA	NA	NA	NA
Soil Borings													
Initial Soil Borings	32SB-19-01	3025301.62	630175.19	GP	10/29/2019	246.75	25	end of boring	NA	NA	NA	NA	NA
	32SB-19-02	3025299.73	630067.96	GP	10/29/2019	250.72	25	end of boring	NA	NA	NA	NA	NA
	32SB-19-03	3025304.54	630199.44	GP	10/29/2019	245.41	25	end of boring	NA	NA	NA	NA	NA
	32SB-19-04	3025288.37	629580.62	GP	10/30/2019	257.35	3	refusal	NA	NA	NA	NA	NA
	32SB-19-05	3025689.92	629363.99	GP	10/30/2019	257.26	19	end of boring	NA	NA	NA	NA	NA
	32SB-19-06	3025718.10	629313.09	GP	10/29/2019	256.84	20	end of boring	NA	NA	NA	NA	NA
	32SB-19-07	3025774.34	629368.38	GP	10/30/2019	257.04	14	refusal	NA	NA	NA	NA	NA
	32SB-19-08	3025694.14	629247.25	GP	10/30/2019	257.62	20	end of boring	NA	NA	NA	NA	NA
	32SB-19-09	3025752.23	629258.69	GP	10/29/2019	256.56	20	end of boring	NA	NA	NA	NA	NA
	32SB-19-10	3025793.63	629120.61	GP	10/31/2019	258.09	16	refusal	NA	NA	NA	NA	NA
	32SB-19-11	3025939.51	629152.19	GP	10/31/2019	259.33	14	refusal	NA	NA	NA	NA	NA
Piezometer Installation													
Initial Piezometers	32PZ-19-01	3025650.80	630756.50	GP	9/19/2019	235.86	17.5	end of boring	238.20	7.5	17.5	228.36	218.36
	32PZ-19-02	3024968.90	630585.90	GP	10/17/2019	250.31	32	end of boring	249.96	22	32	228.31	218.31

* = a sample could not be collected because the well was dry
BGS = below ground surface
ft = feet
GP = Geoprobe
NA = not applicable
UKN = unknown
NAD83 = North American Datum 1983
NAVD88 = North American Vertical Datum 1988

Table 3-2
AOC 32 Summary of PFAS Exceedances from Vertical Profile Samples
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	1/87	---	---	23.0 J	23.0 J	32VP-19-10-9-13
8:2 Fluorotelomer sulfonate (8:2 FTS)	1/87	---	---	23.0	23.0	32VP-19-10-9-13
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2/87	---	---	20.0	5.50 J	32VP-19-10-9-13
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1/87	---	---	17.0 J	17.0 J	32VP-19-10-9-13
Perfluorobutanesulfonic acid (PFBS)	78/87	---	---	38.0	0.410 J	32VP-19-01-17-21
Perfluorodecanoic acid (PFDA)	30/87	---	---	4.90	0.480 J	32VP-19-03-37-41
Perfluorododecanoic acid (PFDoA)	1/87	---	---	0.860 J	0.860 J	32VP-19-05-82-86
Perfluoroheptanoic acid (PFHpA)	75/87	---	3	67.0	0.610 J	32VP-19-12-22-26
Perfluorohexanesulfonic acid (PFHxS)	83/87	---	11	1400	0.740 J	32VP-19-01-17-21
Perfluorohexanoic acid (PFHxA)	84/87	---	---	150	0.430 J	32VP-19-01-17-21
Perfluorononanoic acid (PFNA)	64/87	---	---	5.10	0.490 J	32VP-19-10-9-13
Perfluorooctanesulfonic acid (PFOS)	84/87	8	16	2800	1.20 J	32VP-19-01-17-21
Perfluorooctanoic acid (PFOA)	85/87	4	10	440	0.570 J	32VP-19-12-22-26
Perfluorotetradecanoic acid (PFTA)	0/87	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/87	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	4/87	---	---	1.60 J	0.790 J	32VP-19-05-82-86
EPA LHA	---	12	---	2880	3.20	32VP-19-01-17-21
MassDEP GW-1	---	---	57	4300	3.17	32VP-19-01-17-21

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 3-3
AOC 32 Summary of PFAS Exceedances from Monitoring Well Samples
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/25	---	---	---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/25	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/25	---	---	---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/25	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	25/25	---	---	14.0	1.20 J	SHL-12
Perfluorodecanoic acid (PFDA)	5/25	---	---	1.10 J	0.620 J	SHL-12
Perfluorododecanoic acid (PFDoA)	0/25	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	24/25	---	2	59.0	1.90 J	32Z-01-07XOB
Perfluorohexanesulfonic acid (PFHxS)	24/25	---	9	250	5.20	SHL-12
Perfluorohexanoic acid (PFHxA)	24/25	---	---	66.0	2.10	32Z-01-07XOB
Perfluorononanoic acid (PFNA)	15/25	---	---	7.00	0.520 J	32Z-01-07XOB
Perfluorooctanesulfonic acid (PFOS)	22/25	---	9	94.0	1.30 J	SHL-12
Perfluorooctanoic acid (PFOA)	24/25	1	10	120	3.20	32Z-01-07XOB
Perfluorotetradecanoic acid (PFTA)	0/25	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/25	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	0/25	---	---	---	---	---
EPA LHA	---	7	---	177	6.10	32Z-01-07XOB
MassDEP GW-1	---	---	23	353	14.9	SHL-12

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 3-4
AOC 43A Summary of PFAS Exceedances from Vertical Profile Samples
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/20	---	---	---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/20	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/20	---	---	---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/20	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	20/20	---	---	3.50	0.960 J	43AVP-19-03-27-31
Perfluorodecanoic acid (PFDA)	8/20	---	---	1.80 J	0.740 J	43AVP-19-01-47-51
Perfluorododecanoic acid (PFDoA)	1/20	---	---	1.90	1.90	43AVP-19-01-47-51
Perfluoroheptanoic acid (PFHpA)	20/20	---	---	4.70	1.10 J	43AVP-19-01-47-51
Perfluorohexanesulfonic acid (PFHxS)	20/20	---	6	33.0	2.60	43AVP-19-03-27-31
Perfluorohexanoic acid (PFHxA)	20/20	---	---	11.0	1.40 J	43AVP-19-03-27-31
Perfluorononanoic acid (PFNA)	11/20	---	---	1.60 J	0.540 J	43AVP-19-01-47-51
Perfluorooctanesulfonic acid (PFOS)	20/20	---	---	19.0	2.40 J	43AVP-19-01-67-71
Perfluorooctanoic acid (PFOA)	20/20	---	---	16.0	2.00	43AVP-19-01-47-51
Perfluorotetradecanoic acid (PFTA)	0/20	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/20	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	2/20	---	---	4.40	0.950 J	43AVP-19-01-47-51
EPA LHA	---	---	---	30.0	5.00	43AVP-19-01-67-71
MassDEP GW-1	---	---	18	60.4	13.2	43AVP-19-03-27-31

J = estimated value
ng/L = nanograms per liter
EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.
MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 3-5
AOC 43A Summary of PFAS Exceedances from Monitoring Wells
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Location of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/6	---	---	---		---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/6	---	---	---		---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/6	---	---	---		---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/6	---	---	---		---
Perfluorobutanesulfonic acid (PFBS)	5/6	---	---	4	1.1 J	43M-01-16XOB
Perfluorodecanoic acid (PFDA)	0/6	---	---	---		---
Perfluorododecanoic acid (PFDoA)	0/6	---	---	---		---
Perfluoroheptanoic acid (PFHpA)	5/6	---	---	9.6	3.3	43M-01-16XOB
Perfluorohexanesulfonic acid (PFHxS)	6/6	---	1	35	1 J	43M-01-16XOB
Perfluorohexanoic acid (PFHxA)	6/6	---	---	25	0.47 J	43M-01-16XOB
Perfluorononanoic acid (PFNA)	1/6	---	---	1.2 J	1.2 J	43M-01-17XBR
Perfluorooctanesulfonic acid (PFOS)	4/6	---	1	23	2.5 J	43M-01-17XBR
Perfluorooctanoic acid (PFOA)	5/6	---	---	11	4	43M-01-17XBR
Perfluorotetradecanoic acid (PFTA)	0/6	---	---	---		---
Perfluorotridecanoic acid (PFTrDA)	0/6	---	---	---		---
Perfluoroundecanoic acid (PFUnA)	1/6	---	---	0.68 J	0.68 J	43M-01-17XBR
EPA LHA	---	---	---	34	6.5	43M-01-17XBR
MassDEP GW-1	---	---	5	56.2	22.1	43M-01-16XOB

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 4-1
AOC 76 Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Water Supply Well													
Water Supply Well	MacPherson	3028260.43	626257.98	UKN	UKN	210.9	UKN	UKN	UKN	75	93	135.9	117.9
AOC 69W and MacPherson Existing Monitoring Wells													
Existing Monitoring Wells	69W-94-12	3025287.93	627516.1	UKN	UKN	225.65	UKN	UKN	228.14	3	13	222.65	212.65
	69W-94-13	3025279.08	627446.83	UKN	UKN	224.5	UKN	UKN	226.99	3	13	221.5	211.5
	69W-94-14	3025372.83	627389.53	UKN	UKN	224.73	UKN	UKN	227.22	3	13	221.73	211.73
	69WP-08-01[a]	3025651.23	627344.35	UKN	UKN	UKN	UKN	UKN	UKN	10	13	UKN	UKN
	69WP-13-01	3025781.08	627169.62	UKN	UKN	UKN	UKN	UKN	220.7	UKN	UKN	UKN	UKN
	ZWM-01-25X	3025484.33	627456.68	UKN	UKN	222.58	UKN	UKN	224.71	6.13	16.13	216.45	206.45
	ZWM-01-26X	3025430.94	627550.43	UKN	UKN	224.36	UKN	UKN	226.81	6.45	16.45	217.91	207.91
	ZWM-95-15X	3025417.05	627316.05	UKN	UKN	222.14	UKN	UKN	225.01	5.87	15.87	216.27	206.27
	ZWM-95-16X	3025146.44	627553.08	UKN	UKN	228.21	UKN	UKN	227.58	5.67	15.67	222.54	212.54
	ZWM-95-17X	3024871.09	627675.02	UKN	UKN	235.27	UKN	UKN	237.83	14.76	24.76	220.51	210.51
	ZWM-95-18X	3025554.35	627306.68	UKN	UKN	219.93	UKN	UKN	222.15	5.22	15.22	214.71	204.71
	ZWM-99-22X	3025190.19	627463.58	UKN	UKN	226.89	UKN	UKN	226.72	4.6	14.6	222.29	212.29
	ZWM-99-23X	3025406.2	627474.04	UKN	UKN	223.4	UKN	UKN	225.08	4.68	14.68	218.72	208.72
	ZWM-99-24X	3025302.51	627307.24	UKN	UKN	222.83	UKN	UKN	225.85	5.52	15.52	217.31	207.31
	ZWP-95-01X	3025297.67	627245.39	UKN	UKN	223.63	UKN	UKN	226.04	10	12	213.63	211.63
	ZWP-95-02X	3025503.83	627252.17	UKN	UKN	219.91	UKN	UKN	222.83	9.5	11.5	210.41	208.41
	McPh-Sentinel	3028078.71	626470.02	UKN	UKN	211.91	UKN	UKN	214.11	93	98	118.91	113.91
	MPP-93-01[b]	3028161.8	626139.46	UKN	UKN	213.8	UKN	UKN	UKN	UKN	UKN	UKN	UKN
	MPP-93-02	3028511.63	626050.28	UKN	UKN	212.72	UKN	UKN	214.51	25	30	187.72	182.72
	MPP-93-03	3028924.49	626054.71	UKN	UKN	212.09	UKN	UKN	214.51	25	30	187.09	182.09
	AYR-MW001	3029145.16	627186.97	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN
	AYR-MW002	3030088.98	627542.4	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN
	AYR-MW003	3029596.44	627041.87	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN
	AYR-MW004	3029355.49	627592.98	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN	UKN
Suface Water and Sediment Samples													
Surface Water and Sediment Samples	WB-18-01	3021608.54	627896.7	NA	12/17/2018	NA	NA	NA	NA	NA	NA	NA	NA
	WB-18-02	3022437.94	627401.73	NA	12/17/2018	NA	NA	NA	NA	NA	NA	NA	NA
	WB-18-03	3023204.05	627369.96	NA	12/13/2018	NA	NA	NA	NA	NA	NA	NA	NA
	WB-18-04	3025005.2	627080.68	NA	12/13/2018	NA	NA	NA	NA	NA	NA	NA	NA
	WB-18-05	3026639.28	627077.87	NA	12/13/2018	NA	NA	NA	NA	NA	NA	NA	NA
	WB-18-06	3028167.23	627205.9	NA	12/13/2018	NA	NA	NA	NA	NA	NA	NA	NA

Table 4-1
AOC 76 Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
MacPherson Vertical Profiles													
Initial Set of Vertical Profiles	MPVP-19-01	3028348.23	626014.8	GP	3/26/2019	213.43	100	refusal	NA	NA	NA	NA	NA
	MPVP-19-02	3027861.05	626185.67	GP	4/15/2019	214.85	97	refusal	NA	NA	NA	NA	NA
	MPVP-19-03	3027549	626769	GP	4/1/2019	208.86	76	refusal	NA	NA	NA	NA	NA
	MPVP-19-04	3027636	627594	GP	6/4/2019	223.41	60	refusal	NA	NA	NA	NA	NA
	MPVP-19-05[c]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MPVP-19-06	3028163	626523	GP	4/24/2019	210.84	89.5	refusal	NA	NA	NA	NA	NA
	MPVP-19-07	3028478.01	626276.77	GP	4/4/2019	211.24	97.5	refusal	NA	NA	NA	NA	NA
	MPVP-19-08	3029282.73	627333.91	GP	4/3/2019	235.5	89	refusal	NA	NA	NA	NA	NA
AOC 76 Vertical Profiles													
Initial Set of Vertical Profiles	76VP-19-03	3022356.67	627041.2	GP	2/6/2019	256.17	65	refusal	NA	NA	NA	NA	NA
	76VP-19-05	3022610.64	626964.12	GP	1/30/2019	261.68	77	refusal	NA	NA	NA	NA	NA
	76VP-19-10	3022944.15	627235.82	GP	1/2/2019	244.31	79	refusal	NA	NA	NA	NA	NA
	76VP-19-12	3022376.81	627495.79	GP	2/7/2019	252.05	88	refusal	NA	NA	NA	NA	NA
	76VP-19-14	3022424.82	627295.82	GP	1/2/2019	251.7	77	refusal	NA	NA	NA	NA	NA
	76VP-19-18	3023076.01	627324.01	GP	1/3/2019	242.49	85.5	refusal	NA	NA	NA	NA	NA
Second Set of Vertical Profiles	76VP-19-01	3022585.86	626644.54	GP	3/1/2019	263.79	44	refusal	NA	NA	NA	NA	NA
	76VP-19-02	3022441.24	626688.54	GP	3/15/2019	267.99	46	refusal	NA	NA	NA	NA	NA
	76VP-19-04	3022704.43	626829.69	GP	3/12/2019	256.34	52	refusal	NA	NA	NA	NA	NA
	76VP-19-06	3022466.41	627204.18	GP	3/13/2019	253.91	82	refusal	NA	NA	NA	NA	NA
	76VP-19-07	3023126.99	626799.05	GP	4/18/2019	254.8	75	refusal	NA	NA	NA	NA	NA
	76VP-19-08	3022734.83	627023.84	GP	3/6/2019	245.71	56	refusal	NA	NA	NA	NA	NA
	76VP-19-09	3022978.06	627177.65	GP	3/1/2019	248.06	64.5	refusal	NA	NA	NA	NA	NA
	76VP-19-11	3022776.42	627332.27	GP	3/11/2019	243.02	94	refusal	NA	NA	NA	NA	NA
	76VP-19-13	3022831.1	627786.55	GP	4/11/2019	252.04	80	refusal	NA	NA	NA	NA	NA
	76VP-19-15	3022336.79	627305.38	GP	3/13/2019	245.85	59	refusal	NA	NA	NA	NA	NA
	76VP-19-17	3022897.48	627335.14	GP	3/7/2019	242.17	84	refusal	NA	NA	NA	NA	NA
	76VP-19-16	3023128.29	627411.94	GP	4/25/2019	241.93	71	refusal	NA	NA	NA	NA	NA
	76VP-19-19	3024051.2	627192.35	GP	4/8/2019	235.02	90	refusal	NA	NA	NA	NA	NA
	76VP-19-20	3022221.7	627714.39	GP	4/16/2019	249.56	81	refusal	NA	NA	NA	NA	NA
	76VP-19-21	3024035.99	626789.18	GP	4/22/2019	258.85	77	refusal	NA	NA	NA	NA	NA
	76VP-19-22	3025581.67	626609.77	GP	4/18/2019	232.3	83.5	refusal	NA	NA	NA	NA	NA
	76VP-19-23	3025570.85	627108.29	GP	4/5/2019	225.05	43	refusal	NA	NA	NA	NA	NA
	76VP-19-24	3025486.34	627774.61	GP	5/16/2019	226.05	96	refusal	NA	NA	NA	NA	NA
	76VP-19-25	3026474.54	626848.94	GP	4/9/2019	228.81	85.5	refusal	NA	NA	NA	NA	NA
	76VP-19-26	3026676.9	627312.09	GP	4/11/2019	224.68	52	refusal	NA	NA	NA	NA	NA
	76VP-19-27	3026359.8	626358.05	GP	4/8/2019	231.07	52	refusal	NA	NA	NA	NA	NA

Table 4-1
AOC 76 Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Third Set of Vertical Profiles	76VP-19-28	3026158.26	625295.72	GP	6/12/2019	230.2	62	refusal	NA	NA	NA	NA	NA
	76VP-19-29	3022191.2	628031.25	GP	6/6/2019	250.15	66	refusal	NA	NA	NA	NA	NA
	76VP-19-30	3021731.99	627858.59	GP	6/13/2019	248.26	101	end of boring	NA	NA	NA	NA	NA
	76VP-19-31	3022548.97	628006.9	GP	6/6/2019	251.41	39	refusal	NA	NA	NA	NA	NA
	76VP-19-32	3023685.88	626100.4	GP	6/12/2019	259	32.5	refusal	NA	NA	NA	NA	NA
	76VP-19-33	3025081.01	625671.43	GP	6/11/2019	256.25	71	refusal	NA	NA	NA	NA	NA
Soil Borings													
Soil Borings	76SB-19-01	3022771.03	626917.59	NA	6/19/2019	251.18	5	end of boring	NA	NA	NA	NA	NA
	76SB-19-02	3022618.3	626916.39	NA	6/18/2019	261.48	20	end of boring	NA	NA	NA	NA	NA
	76SB-19-03	3022692.69	626942.32	NA	1/9/1900	255.35	15	end of boring	NA	NA	NA	NA	NA
	76SB-19-04	3022693.82	626828.29	NA	6/19/2019	256.89	15	end of boring	NA	NA	NA	NA	NA
	76SB-19-05	3022610.69	626964.12	NA	6/18/2019	261.68	20	end of boring	NA	NA	NA	NA	NA
	76SB-19-06	3022466.48	627204.18	NA	6/17/2019	253.91	15	end of boring	NA	NA	NA	NA	NA
	76SB-19-07	3022484.3	627138.2	NA	6/17/2019	254.71	10	end of boring	NA	NA	NA	NA	NA
	76SB-19-08	3022734.88	627023.84	NA	6/19/2019	245.71	5	end of boring	NA	NA	NA	NA	NA
	76SB-19-09	3022361.22	627226.87	NA	6/17/2019	251.55	10	end of boring	NA	NA	NA	NA	NA
	76SB-19-10	3022514.08	626793.55	NA	6/19/2019	265.97	25	end of boring	NA	NA	NA	NA	NA
	76SB-19-11	3022377.57	627121.6	NA	6/17/2019	253.59	15	end of boring	NA	NA	NA	NA	NA
	76SB-19-12	3022548.87	627213.2	NA	6/18/2019	252.31	15	end of boring	NA	NA	NA	NA	NA
	76SB-19-13	3022502.35	627090.55	NA	6/17/2019	256.27	15	end of boring	NA	NA	NA	NA	NA
	76SB-19-14	3022424.86	627295.82	NA	6/18/2019	251.70	10	end of boring	NA	NA	NA	NA	NA
	76SB-19-15	3022336.81	627305.38	NA	6/18/2019	245.85	5	end of boring	NA	NA	NA	NA	NA
AOC 76 Piezometer Installation													
Piezometers	76PZ-19-01	3022568.96	626641.48	GP	3/28/2019	264.97	31.5	end of boring	264.51	21.5	31.5	243.47	233.47
	76PZ-19-02	3024051.18	627192.35	GP	4/10/2019	235.02	13	end of boring	234.96	3	13	232.02	222.02
	76PZ-19-03	3022344.82	627039.92	GP	2/8/2019	257.09	25	end of boring	256.74	15	25	242.09	232.09
	76PZ-19-04	3022221.69	627714.39	GP	4/18/2019	249.56	15	end of boring	249.14	5	15	244.56	234.56
	76PZ-19-05	3022593.48	626962.35	GP	2/8/2019	262.37	23	end of boring	262.1	13	23	249.37	239.37
	76PZ-19-06	3024035.99	626789.17	GP	4/24/2019	258.85	34	end of boring	258.61	24	34	234.85	224.85
	76PZ-19-07	3023126.97	626799.05	GP	4/24/2019	254.80	22	end of boring	254.3	12	22	242.80	232.80
	76PZ-19-08	3025581.66	626609.77	GP	4/22/2019	232.30	32	end of boring	232.03	22	32	210.30	200.30
	76PZ-19-09	3026474.53	626848.94	GP	4/11/2019	228.81	28	end of boring	228.35	18	28	210.81	200.81
	76PZ-19-10	3022936.41	627234.26	GP	3/27/2019	244.78	17	end of boring	244.7	7	17	237.78	227.78
	76PZ-19-11	3022638.79	627286.06	GP	3/27/2019	247.75	17	end of boring	247.53	7	17	240.75	230.75
	76PZ-19-12	3026676.9	627312.08	GP	4/12/2019	224.68	26	end of boring	224.28	16	26	208.68	198.68
	76PZ-19-13	3022831.09	627786.55	GP	4/16/2019	252.04	25	end of boring	251.93	15	25	237.04	227.04
	76PZ-19-14	3026359.8	626358.01	GP	4/9/2019	231.07	28	end of boring	230.78	18	28	213.07	203.07

Table 4-1
AOC 76 Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Piezometers	76PZ-19-15	3022325.33	627308.77	GP	3/28/2019	246.04	14	end of boring	245.83	4	14	242.04	232.04
	76PZ-19-16	3024063.67	627493.25	GP	4/29/2019	258.80	39	end of boring	258.52	29	39	229.80	219.80
	76PZ-19-17	3026158.24	625295.72	GP	6/14/2019	230.20	27	end of boring	229.95	17	27	213.20	203.20
	76PZ-19-18	3021731.97	627858.59	GP	6/17/2019	248.26	16	end of boring	248.01	6	16	242.26	232.26
	76PZ-19-19	3023685.86	626100.4	GP	6/18/2019	259.00	29	end of boring	258.99	19	29	240.00	230.00
MacPherson Piezometer Installation													
Piezometers	MPPZ-19-01	3027552.35	626772.52	GP	4/5/2019	208.86	13	end of boring	211.45	3	13	205.86	195.86
	MPPZ-19-02	3027639.8	627597.75	GP	6/5/2019	223.41	25	end of boring	222.95	15	25	208.41	198.41
	MPPZ-19-03	3028166.82	626527.7	GP	4/26/2019	210.84	14	end of boring	213.94	4	14	206.84	196.84

Blue highlighlighting indicates the monitoring well was sampled for the PFAS RI.

[a] Initially the well was frozen and based on surrounding vertical profile data it was determined the sample from the monitoring well was unnecessary.

[b] Not able to locate well

[c] Location was not drilled

BGS = below ground surface

ft = feet

NA = not applicable

UKN = unknown

NAD83 = North American Datum 1983

NAVD88 = North American Vertical Datum 1988

Table 4-2
AOC 76/MacPherson Summary of PFAS Exceedances from Vertical Profile Samples
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	33/260	---	---	190	6.90 J	76VP-19-16-67-71
8:2 Fluorotelomer sulfonate (8:2 FTS)	13/260	---	---	42.0	2.70 J	76VP-19-07-22-26
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/260	---	---	---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/260	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	253/260	---	---	130	0.420 J	76VP-19-16-67-71
Perfluorodecanoic acid (PFDA)	57/260	---	---	10.0	0.450 J	76VP-19-07-22-26
Perfluorododecanoic acid (PFDoA)	15/260	---	---	43.0	0.480 J	MPVP-19-03-37-41
Perfluoroheptanoic acid (PFHpA)	250/260	---	62	370	0.580 J	76VP-19-14-12-16
Perfluorohexanesulfonic acid (PFHxS)	256/260	---	193	2000	0.530 J	76VP-19-15-7-11
Perfluorohexanoic acid (PFHxA)	255/260	---	---	1300	0.560 J	76VP-19-14-12-16
Perfluorononanoic acid (PFNA)	197/260	---	---	19.0	0.510 J	76VP-19-06-32-36
Perfluorooctanesulfonic acid (PFOS)	254/260	94	192	2700	1.10 J	76VP-19-08-7-11
Perfluorooctanoic acid (PFOA)	256/260	26	160	240	0.680 J	MPVP-19-08-37-41
Perfluorotetradecanoic acid (PFTA)	9/260	---	---	9.60	0.770 J	MPVP-19-03-37-41
Perfluorotridecanoic acid (PFTrDA)	10/260	---	---	26.0	1.10 J	MPVP-19-03-37-41
Perfluoroundecanoic acid (PFUnA)	21/260	---	---	12.0	0.690 J	76VP-19-19-57-61
EPA LHA	---	133	---	2750	2.40	76VP-19-08-7-11
MassDEP GW-1	---	---	244	2960	3.83	76VP-19-08-7-11

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 4-3
AOC 76/MacPherson Summary of PFAS Exceedances from Monitoring Well Samples
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	0/15	---	---	---	---	---
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/15	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/15	---	---	---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/15	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	13/15	---	---	28.0	0.950 J	ZWM-01-25X
Perfluorodecanoic acid (PFDA)	0/15	---	---	---	---	---
Perfluorododecanoic acid (PFDoA)	0/15	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	13/15	---	1	25.0	0.700 J	ZWP-95-01X
Perfluorohexanesulfonic acid (PFHxS)	13/15	---	9	110	4.40	ZWP-95-01X
Perfluorohexanoic acid (PFHxA)	14/15	---	---	56.0	0.430 J	ZWP-95-01X
Perfluorononanoic acid (PFNA)	11/15	---	---	3.40	0.580 J	ZWM-95-15X
Perfluorooctanesulfonic acid (PFOS)	13/15	1	8	110	1.70 J	ZWP-95-01X
Perfluorooctanoic acid (PFOA)	15/15	---	6	46.0	0.600 J	ZWP-95-01X
Perfluorotetradecanoic acid (PFTA)	0/15	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	0/15	---	---	---	---	---
Perfluoroundecanoic acid (PFUnA)	0/15	---	---	---	---	---
EPA LHA	---	2	---	156	1.70	ZWP-95-01X
MassDEP GW-1	---	---	12	291	1.70	ZWP-95-01X

J = estimated value
ng/L = nanograms per liter
EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.
MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.
Includes wells from the MacPherson well area, the Town of Ayer Waste-Water Treatment Plan, and AOC 69W.

Table 4-4
AOC 76 Summary of PFAS Exceedances from Soil Borings
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Samples Exceeding Regulatory Level	Maximum Detected Concentration (µg/kg)	Minimum Detected Concentration (µg/kg)	Project Action Limit Source	Project Action Limit (µg/kg)	Location of Maximum Detected Concentration
Site Inspection Data							
Perfluorobutanesulfonic acid (PFBS)	0/9	---	---	---	---	---	---
Perfluoroheptanoic acid (PFHpA)	7/9	2	1.2	0.059 J	Proposed S-1/GW-1	0.5	FH-17-01
Perfluorohexanesulfonic acid (PFHxS)	7/9	3	2.5	0.037 J	Proposed S-1/GW-1	0.3	FH-17-01
Perfluorononanoic acid (PFNA)	8/9	4	10	0.043 J	Proposed S-1/GW-1	0.32	FH-17-01
Perfluorooctanesulfonic acid (PFOS)	8/9	3	200	0.23 J	Proposed S-1/GW-1	2	FH-17-05
Perfluorooctanoic acid (PFOA)	7/9	3	5.3	0.16 J	Proposed S-1/GW-1	0.72	FH-17-01
Remedial Investigation Data							
6:2 Fluorotelomer sulfonate (6:2 FTS)	6/41	---	2.5 J	0.8 J	---	---	76SB-19-06
8:2 Fluorotelomer sulfonate (8:2 FTS)	10/41	---	7.3	0.33 J	---	---	76SB-19-06
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1/41	---	1.3 J	1.3 J	---	---	76SB-19-05
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/41	---	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	1/41	---	0.2 J	0.2 J	---	---	76SB-19-13
Perfluorodecanoic acid (PFDA)	19/41	14	3.4	0.14 J	Proposed S-1/GW-1	0.3	76SB-19-06
Perfluorododecanoic acid (PFDoA)	11/41	---	2.7	0.13 J	---	---	76SB-19-07

Table 4-4
AOC 76 Summary of PFAS Exceedances from Soil Borings
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Samples Exceeding Regulatory Level	Maximum Detected Concentration (µg/kg)	Minimum Detected Concentration (µg/kg)	Project Action Limit Source	Project Action Limit (µg/kg)	Location of Maximum Detected Concentration
Perfluoroheptanoic acid (PFHpA)	25/41	2	1.5	0.093 J	Proposed S-1/GW-1	0.5	76SB-19-13
Perfluorohexanesulfonic acid (PFHxS)	30/41	11	26	0.074 J	Proposed S-1/GW-1	0.3	76SB-19-13
Perfluorohexanoic acid (PFHxA)	24/41	---	1.1	0.071 J	---	---	76SB-19-15
Perfluorononanoic acid (PFNA)	24/41	11	1.9	0.11 J	Proposed S-1/GW-1	0.32	76SB-19-06
Perfluorooctanesulfonic acid (PFOS)	32/41	16	130	0.34 J	Proposed S-1/GW-1	2	76SB-19-05
Perfluorooctanoic acid (PFOA)	30/41	6	1.5	0.13 J	Proposed S-1/GW-1	0.72	76SB-19-15
Perfluorotetradecanoic acid (PFTA)	6/41	---	0.76	0.14 J	---	---	76SB-19-07
Perfluorotridecanoic acid (PFTrDA)	6/41	---	0.63	0.19 J	---	---	76SB-19-01
Perfluoroundecanoic acid (PFUnA)	14/41	---	2.6	0.14 J	---	---	76SB-19-05

Notes:
µg/kg = micrograms per kilogram; J = estimated

Table 5-1
Shepley's Hill Landfill Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
AOC 5 Existing Monitoring Wells														
Upgradient Area	SHL-12	3025341.62	630003.02	UKN	1/1/1900	247.22	UKN	UKN	Overburden	248.62	15	30	232.22	217.22
	SHL-15	3025829.38	629326.44	UKN	7/1/1991	259.02	UKN	UKN	Overburden	259.92	14	24	245.02	235.02
	SHL-17	3025390.83	630287.49	UKN	6/1/1991	231.88	UKN	UKN	Overburden	233.79	6	16	225.88	215.88
	SHL-24	3025638.53	631302.97	UKN	7/1/1991	236.79	UKN	UKN	OB/Till/BR	238.75	110	120	126.79	116.79
	SHL-25	3025251.89	629698.61	UKN	7/1/1991	256.28	UKN	UKN	Overburden	258.01	23.5	33.5	232.78	222.78
	SHM-93-24A	3025647.36	631308.05	UKN	1/1/1900	235.39	UKN	UKN	Overburden	238.42	13.2	23.2	222.19	212.19
	SHL-7	3026277.88	631332.83	UKN	9/1/1986	234.79	UKN	UKN	Overburden	236.33	11	21	223.79	213.79
Landfill Area	N5-P1	3027173.21	629805.75	UKN	8/1/1995	240.46	UKN	UKN	Bedrock	242.65	95.5	97.5	144.96	142.96
	N5-P2	3027173.21	629805.75	UKN	8/1/1995	240.46	UKN	UKN	Overburden	242.69	23	28	217.46	212.46
	N7-P1	3025618.25	629990.92	UKN	7/1/1995	253.18	UKN	UKN	Bedrock	255.59	66	68	187.18	185.18
	N7-P2	3025618.25	629990.92	UKN	7/1/1995	253.18	UKN	UKN	Overburden	256.04	29	34	224.18	219.18
	SHL-1	3026531.8	629259.23	UKN	3/1/1986	271.76	UKN	UKN	UKN	272.27	2	7	269.76	264.76
	SHL-18	3026475.16	631186.42	UKN	6/1/1991	235.67	UKN	UKN	Overburden	237.56	16	26	219.67	209.67
	SHM-93-18B	3026453.23	631180.16	UKN	2/1/1993	235.21	UKN	UKN	Overburden	237.31	78.5	88.5	156.71	146.71
	SHM-10-07	3026889.79	630301.42	UKN	5/1/2010	244.98	UKN	UKN	Mid Overburden	246.82	40	50	204.98	194.98
	SHM-10-12	3026718.54	629717.49	UKN	8/1/2010	252.57	UKN	UKN	Mid Overburden	255.17	45	55	207.57	197.57
	SHM-10-13	3027156.89	629906.12	UKN	8/1/2010	241.51	UKN	UKN	Deep Overburden	244.77	60	70	181.51	171.51
	SHM-10-14	3027372.85	629784.78	UKN	8/1/2010	234.80	UKN	UKN	Deep Overburden	237.62	60	80	174.80	154.80
	SHM-10-15	3027101.42	629680.93	UKN	8/11/2010	241.95	UKN	UKN	Mid Overburden	243.68	45	55	196.95	186.95
	SHP-95-27X	3026164.53	630752.7	UKN	1/1/1900	235.31	UKN	UKN	Overburden	237.45	30.5	40.5	204.81	194.81
	SHP-99-01B	3026537.28	629226.62	UKN	5/1/1999	271.76	UKN	UKN	Shallow Overburden	273.16	4	8	267.76	263.76
	SHP-99-01C	3026540.97	629215.98	UKN	5/1/1999	272.16	UKN	UKN	Bedrock	274.15	19.7	29.7	252.46	242.46
	SHP-99-29X	3027143.35	629539.09	UKN	5/1/1999	241.46	UKN	UKN	Shallow Overburden	243.34	19	29	222.46	212.46
	SHP-99-35X	3026547.2	629722.7	UKN	5/1/1999	256.70	UKN	UKN	Shallow Overburden	258.23	30.2	40.2	226.50	216.50
	N6-P1	3026338.61	630017.06	UKN	8/1/1995	256.06	UKN	UKN	Bedrock	258.60	85.5	87.5	170.56	168.56
	SHM-10-11	3025971.51	629990.62	UKN	6/1/2010	261.16	UKN	UKN	Deep Overburden	263.76	50	60	211.16	201.16
	SHP-2016-07A	3026881.95	629219.76	UKN	7/8/1905	262.98	UKN	UKN	Bedrock	265.30	22	32	240.98	230.98
	SHP-2016-07B	3026881.95	629219.76	UKN	7/8/1905	262.98	UKN	UKN	Bedrock	265.33	70	80	192.98	182.98
Shepley's Hill Area	CH-1S	3027062.71	629287.99	UKN	10/1/2009	248.46	UKN	UKN	Bedrock	250.63	36	41	212.46	207.46
	CH-1D	3027062.71	629287.99	UKN	10/1/2009	248.46	UKN	UKN	Bedrock	250.59	85	95	163.46	153.46
	2-1	UKN	UKN	UKN	UKN	243.51	UKN	UKN	UKN	245.90	UKN	UKN	UKN	UNK
	2-2	UKN	UKN	UKN	UKN	245.63	UKN	UKN	UKN	248.06	UKN	UKN	UKN	UNK
	20-1	3027170.82	629112.41	UKN	9/1/2009	277.78	UKN	UKN	Bedrock	278.52	40	55	237.78	222.78

Table 5-1
Shepley's Hill Landfill Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Shepley's Hill Area	20-2	3027166.71	629111.41	UKN	1/1/1900	277.3	UKN	UKN	Bedrock	277.71	0	25	277.30	252.30
	27-1	3027214.79	629165.47	UKN	9/1/2009	268.09	UKN	UKN	Bedrock	270.66	58.25	63.25	209.84	204.84
	27-2	3027240.6	629172.5	UKN	9/1/2009	273.07	UKN	UKN	Bedrock	275.15	58	68	215.07	205.07
	27-30B-1	3027281.23	629203.61	UKN	9/1/2009	271.56	UKN	UKN	Bedrock	272.95	35	45	236.56	226.56
	27-30B-2	3027284.76	629206.48	UKN	1/1/1900	271.75	UKN	UKN	Bedrock	274.00	0	22.25	271.75	249.50
	CAP-1B	3027165.45	629318.93	UKN	1/1/1900	243.13	UKN	UKN	Bedrock	245.98	7	54.9	236.13	188.23
	CAP-2B	3027118.86	629296.39	UKN	9/1/2009	248.66	UKN	UKN	Bedrock	250.21	52	57	196.66	191.66
	CAP-3	3027047.54	629269.85	UKN	1/1/1900	251.45	UKN	UKN	Bedrock	252.63	6	40	245.45	211.45
	CAP-4	3027088.57	629284.53	UKN	1/1/1900	246.73	UKN	UKN	Bedrock	248.63	9	13.8	237.73	232.93
	MW-1	3027071.24	629284.7	UKN	1/1/1900	248.89	UKN	UKN	Overburden	251.84	6.58	8.58	242.31	240.31
	MW-11A	3027102.58	629249.11	UKN	1/1/1900	255.60	UKN	UKN	Overburden	258.57	4.18	6.18	251.42	249.42
	MW-14	3027135.21	629245.98	UKN	1/1/1900	253.75	UKN	UKN	Overburden	256.61	5.14	7.14	248.61	246.61
	MW-16	3027110.91	629182.24	UKN	1/1/1900	267.71	UKN	UKN	Overburden	270.23	5.18	7.18	262.53	260.53
	MW-22	3027213.72	629196.85	UKN	1/1/1900	265.53	UKN	UKN	Overburden	267.64	4.7	6.7	260.83	258.83
	MW-4-1	3027133.44	629299.76	UKN	1/1/1900	245.39	UKN	UKN	Overburden	247.33	3.72	5.72	241.67	239.67
	MW-7	3027169.61	629304.66	UKN	1/1/1900	246.09	UKN	UKN	Overburden	249.10	6.58	9.58	239.51	236.51
	MW-9	3027212.24	629340.62	UKN	1/1/1900	241.05	UKN	UKN	Overburden	243.91	7.65	9.652	233.40	231.40
	Q4-1	3027091.94	629194.72	UKN	9/1/2009	266.20	UKN	UKN	Bedrock	268.38	30	40	236.20	226.20
	Q4-2	3027060.36	629172.56	UKN	1/1/1900	271.05	UKN	UKN	Bedrock	273.37	8.5	53	262.55	218.05
	Q5-1	3027166.14	629228.23	UKN	9/1/2009	259.32	UKN	UKN	Bedrock	260.99	47	52	212.32	207.32
	Q5-2	3027165.28	629230.7	UKN	1/1/1900	259.14	UKN	UKN	UKN	259.90	UKN	UKN	UKN	UKN
	3-1	3027005.04	629219.01	UKN	1/1/1900	264.10	UKN	UKN	UKN	265.18	UKN	UKN	UKN	UKN
	Well 3-2	3027010.14	629207.26	UKN	9/1/2009	267.28	UKN	UKN	Bedrock	268.20	54	59	213.28	208.28
	3A-1	3027036.18	629224.54	UKN	1/1/1900	266.05	UKN	UKN	UKN	266.90	UKN	UKN	UKN	UKN
	3A-2	3027046.42	629233.07	UKN	1/1/1900	263.27	UKN	UKN	Bedrock	264.56	0	54.9	263.27	208.37
Barrier Wall Area	N1-P1	3027867.76	630723.38	UKN	8/1/1995	227.78	UKN	UKN	Deep Overburden	229.92	65	70	162.78	157.78
	N1-P2	3027867.76	630723.38	UKN	8/1/1995	227.78	UKN	UKN	Mid Overburden	229.93	40	45	187.78	182.78
	N1-P3	3027867.76	630723.38	UKN	8/1/1995	227.78	UKN	UKN	Shallow Overburden	230.08	12	17	215.78	210.78
	N2-P1	3027311.05	630658.72	UKN	8/1/1995	220.55	UKN	UKN	Overburden	222.16	35	40	185.55	180.55
	N2-P2	3027311.05	630658.72	UKN	8/1/1995	220.55	UKN	UKN	Shallow Water Table	222.01	4	9	216.55	211.55
	N3-P1	3027130.23	630777.95	UKN	8/1/1995	218.81	UKN	UKN	Bedrock	220.83	32	35	186.81	183.81
	N3-P2	3027130.23	630777.95	UKN	8/1/1995	218.81	UKN	UKN	Shallow Water Table	220.84	4	9	214.81	209.81
	SHL-10	3026867.7	630877.27	UKN	1/1/1989	246.62	UKN	UKN	Shallow Overburden	248.02	24	39	222.62	207.62
	SHM-93-01A	3026711.96	630676.98	UKN	1/1/1993	240.68	UKN	UKN	UKN	242.42	15.5	25.5	225.18	215.18
	SHM-93-10C	3026846.23	630886.09	UKN	2/1/1993	246.06	UKN	UKN	Bedrock	247.68	44	54	202.06	192.06
	SHM-93-10D	3026828.82	630894.7	UKN	11/1/1993	245.51	UKN	UKN	Bedrock	248.01	46	56	199.51	189.51

Table 5-1
Shepley's Hill Landfill Field Activities
Area 2 Preliminary Site Characterization Summary
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	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Barrier Wall Area	SHM-93-10E	3026841.68	630878.36	UKN	1/1/1900	245.60	UKN	UKN	UKN	247.54	UKN	UNK	UKN	UNK
	SHL-11	3027316.4	630495.92	UKN	9/1/1986	233.95	UKN	UKN	Shallow Overburden	235.47	12	27	221.95	206.95
	SHL-19	3026946.02	630665.04	UKN	6/1/1991	238.59	UKN	UKN	Shallow Overburden	240.50	20	30	218.59	208.59
	SHL-20	3027329.59	630463.33	UKN	7/1/1991	234.72	UKN	UKN	Deep Overburden	235.95	39	49	195.72	185.72
	SHL-3	3026705.24	630910.97	UKN	2/1/1986	245.8	UKN	UKN	Mid-Overburden	246.95	24	34	221.80	211.80
	SHL-4	3027057.23	630576.22	UKN	2/1/1986	226.08	UKN	UKN	Shallow Overburden	227.48	3	13	223.08	213.08
	SHM-11-02	3027075.65	630457.81	UKN	12/1/2011	238.66	UKN	UKN	Bedrock	240.73	52	66	186.66	172.66
	SHM-11-06	3027590.05	630411.3	UKN	12/1/2011	233.33	UKN	UKN	Shallow Overburden	236.17	25	35	208.33	198.33
	SHM-11-07	3027132.51	630414.59	UKN	11/1/2011	238.22	UKN	UKN	Bedrock	240.83	41	46	197.22	192.22
	SHP-01-36X	3027688.84	630737.88	UKN	1/1/1900	219.97	UKN	UKN	Shallow Overburden	223.95	3	8	216.97	211.97
	SHP-01-37X	3027498.37	630696.92	UKN	1/1/1900	218.67	UKN	UKN	Shallow Overburden	222.79	1	6	217.67	212.67
	SHP-01-38A	3027171.48	630545.54	UKN	1/1/1900	218.77	UKN	UKN	Shallow Overburden	220.86	1.5	6.5	217.27	212.27
	SHP-01-38B	3027178.16	630544.01	UKN	1/1/1900	218.88	UKN	UKN	Deep Overburden	221.03	18	23	200.88	195.88
	SHP-01-38Z	3027183.77	630544.46	UKN	1/1/1900	218.66	UKN	UKN	UKN	220.75	UKN	UKN	UKN	UKN
	SHP-05-43	3027747.03	630532.51	UKN	12/1/2004	258.38	UKN	UKN	Shallow Overburden	260.71	50.5	60.5	207.88	197.88
	SHP-05-44	3027588.48	630587.63	UKN	12/1/2004	255.56	UKN	UKN	Mid Overburden	258.14	51	61	204.56	194.56
	PZ-12-01	3027384.39	630488.47	UKN	10/1/2012	233.85	UKN	UKN	Shallow Overburden	237.55	24	34	209.85	199.85
	PZ-12-02	3027383.95	630467.76	UKN	10/1/2012	233.75	UKN	UKN	Shallow Overburden	237.79	24	34	209.75	199.75
	PZ-12-03	3027193.47	630474.5	UKN	10/1/2012	232.85	UKN	UKN	Shallow Overburden	236.40	24	34	208.85	198.85
	PZ-12-04	3027193.77	630452.88	UKN	10/1/2012	235.05	UKN	UKN	Shallow Overburden	238.20	24	34	211.05	201.05
	PZ-12-05	3027087.34	630479.44	UKN	10/1/2012	236.08	UKN	UKN	Mid-Overburden	238.73	26	36	210.08	200.08
	PZ-12-06	3027081.85	630454.8	UKN	10/1/2012	238.42	UKN	UKN	Mid-Overburden	242.18	25	35	213.42	203.42

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Shepley's Hill Landfill Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Barrier Wall Area	PZ-12-07	3026971.84	630568.49	UKN	10/1/2012	240.80	UKN	UKN	Mid-Overburden	244.59	20	30	220.80	210.80
	PZ-12-08	3026962.31	630546.08	UKN	10/1/2012	241.74	UKN	UKN	Mid-Overburden	244.83	22	32	219.74	209.74
	PZ-12-09	3026801.42	630740.93	UKN	10/1/2012	238.43	UKN	UKN	Shallow Overburden	241.93	20	30	218.43	208.43
	PZ-12-10	3026778.49	630723.97	UKN	10/1/2012	238.98	UKN	UKN	Shallow Overburden	242.28	20	30	218.98	208.98
	RSK 1	3027266.1	630634.8	UKN	1/1/1900	221.44	UKN	UKN	UKN	222.58	30.02	35.02	191.42	186.42
	RSK 2	3027267.25	630633.33	UKN	1/1/1900	221.57	UKN	UKN	UKN	222.15	25.05	30.05	196.52	191.52
	RSK 3	3027268.52	630631.53	UKN	1/1/1900	221.83	UKN	UKN	UKN	222.95	20.01	25.01	201.82	196.82
	RSK 4	3027271.11	630631.99	UKN	1/1/1900	221.69	UKN	UKN	UKN	222.97	14.67	19.67	207.02	202.02
	RSK 5	3027269.43	630633.2	UKN	1/1/1900	221.68	UKN	UKN	UKN	222.75	9.96	14.96	211.72	206.72
	RSK 6	3027268.54	630634.8	UKN	1/1/1900	221.54	UKN	UKN	UKN	222.49	20.12	25.12	201.42	196.42
	RSK 7	3027270.38	630635.71	UKN	1/1/1900	221.56	UKN	UKN	UKN	222.01	4.24	9.24	217.32	212.32
	RSK 8	3027098.75	630514.84	UKN	1/1/1900	225.98	UKN	UKN	UKN	226.96	28.06	33.06	197.92	192.92
	RSK 9	3027099.75	630516.31	UKN	1/1/1900	225.71	UKN	UKN	UKN	226.45	22.29	27.29	203.42	198.42
	RSK 10	3027098.46	630517.99	UKN	1/1/1900	225.62	UKN	UKN	UKN	226.37	17.2	22.2	208.42	203.42
	RSK 11	3027097.24	630517.04	UKN	1/1/1900	226.07	UKN	UKN	UKN	226.75	12.35	17.35	213.72	208.72
	RSK 12	3027093.09	630520.67	UKN	1/1/1900	225.63	UKN	UKN	UKN	226.42	8	13	217.63	212.63
	RSK 13	3027063.92	630583.64	UKN	1/1/1900	224.58	UKN	UKN	UKN	225.37	16.26	21.26	208.32	203.32
	RSK 14	3027064.22	630585.91	UKN	1/1/1900	224.47	UKN	UKN	UKN	225.30	12.35	17.35	212.12	207.12
	RSK 15	3027062.01	630585.33	UKN	1/1/1900	224.69	UKN	UKN	UKN	225.54	7.27	12.27	217.42	212.42
	RSK 16	3027217.52	630561.67	UKN	1/1/1900	218.04	UKN	UKN	UKN	218.58	16.72	21.72	201.32	196.32
	RSK 17	3027217.29	630559.66	UKN	1/1/1900	217.72	UKN	UKN	UKN	218.85	12.2	17.2	205.52	200.52
	RSK 18	3027219.26	630558.85	UKN	1/1/1900	217.97	UKN	UKN	UKN	218.73	7.15	12.15	210.82	205.82
	RSK 19	3027219.54	630560.38	UKN	1/1/1900	217.78	UKN	UKN	UKN	218.76	2.06	7.06	215.72	210.72
	RSK 20	3027221	630560.17	UKN	1/1/1900	218.05	UKN	UKN	UKN	219.05	12.13	17.13	205.92	200.92
	RSK 21	3027220.43	630562.36	UKN	1/1/1900	218.05	UKN	UKN	UKN	220.04	1.33	21.33	216.72	196.72
	RSK 23	3027071.1	630534.82	UKN	1/1/1900	227.53	UKN	UKN	UKN	227.80	5.31	30.31	222.22	197.22
	RSK 24	3026959.55	630502.44	UKN	1/1/1900	240.38	UKN	UKN	UKN	240.41	18.16	23.16	222.22	217.22
	RSK 25	3026970.64	630636.32	UKN	1/1/1900	239.53	UKN	UKN	UKN	239.21	20.21	25.21	219.32	214.32
	RSK 27	3027048.54	630421.76	UKN	1/1/1900	240.23	UKN	UKN	UKN	241.45	19.43	24.43	220.80	215.80
	RSK 28	3027126.34	630418.55	UKN	1/1/1900	238.24	UKN	UKN	UKN	239.24	19.62	24.62	218.62	213.62
	RSK 32	3027211.48	630425.12	UKN	1/1/1900	235.87	UKN	UKN	UKN	236.91	19.49	24.49	216.38	211.38
	RSK 34	3027452.01	630396.4	UKN	1/1/1900	233.55	UKN	UKN	UKN	233.16	17.84	22.84	215.71	210.71
	RSK 35	3027522.23	630438.29	UKN	1/1/1900	232.99	UKN	UKN	UKN	233.64	20.42	25.42	212.57	207.57
	RSK 36	3027111.24	630731.76	UKN	1/1/1900	220.05	UKN	UKN	UKN	220.22	3.7	23.7	216.35	196.35
	RSK 37	3027114.54	630730.23	UKN	1/1/1900	219.64	UKN	UKN	UKN	220.55	2.13	7.13	217.51	212.51
	RSK 38	3027115.34	630733.1	UKN	1/1/1900	219.61	UKN	UKN	UKN	220.53	5.11	10.11	214.50	209.50
	RSK 39	3027117.49	630733.57	UKN	1/1/1900	219.56	UKN	UKN	UKN	220.33	9.91	14.91	209.65	204.65

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Shepley's Hill Landfill Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Barrier Wall Area	RSK 40	3027118.47	630732.2	UKN	1/1/1900	219.57	UKN	UKN	UKN	220.39	15.07	20.07	204.50	199.50
	RSK 41	3027116.1	630731.13	UKN	1/1/1900	219.53	UKN	UKN	UKN	220.41	20.09	25.09	199.44	194.44
	RSK 42	3027113.39	630732.78	UKN	1/1/1900	219.66	UKN	UKN	UKN	220.57	10.15	15.15	209.51	204.51
	RSK 43	3027116.08	630734.96	UKN	1/1/1900	219.62	UKN	UKN	UKN	220.43	3.91	23.91	215.71	195.71
	RSK 47	3027093.47	630520.49	UKN	1/1/1900	225.87	UKN	UKN	UKN	226.83	11.21	16.21	214.66	209.66
	RSK 50	3027185.71	630554.92	UKN	1/1/1900	218.04	UKN	UKN	UKN	220.23	2.31	2.81	215.73	215.23
Nearfield Area	SHL-13	3028105.35	630540.38	UKN	2/1/1990	218.98	UKN	UKN	Shallow Overburden	220.71	5	20	213.98	198.98
	SHL-21	3027884.35	630363.98	UKN	6/1/1991	258.14	UKN	UKN	Overburden	260.00	42	52	216.14	206.14
	SHL-22	3028163.04	630056.4	UKN	7/1/1991	218.90	UKN	UKN	Deep Overburden/Till	219.58	105	115	113.90	103.90
	SHL-23	3027915.85	629712.8	UKN	7/1/1991	239.44	UKN	UKN	Overburden	241.29	23	33	216.44	206.44
	SHL-5	3028125.1	630192.21	UKN	2/28/1986	216.90	13.54	Total Casing Depth	Shallow Overburden	217.60	3	13	213.90	203.90
	SHL-8D	3028126.57	630407.1	UKN	2/1/1990	218.83	UKN	UKN	Deep Overburden	220.78	68	70	150.83	148.83
	SHL-8S	3028126.57	630407.1	UKN	2/1/1990	218.83	UKN	UKN	Shallow Overburden	220.97	52	54	166.83	164.83
	SHL-9	3028146.84	630009.57	UKN	9/1/1986	220.72	UKN	UKN	Shallow Overburden	221.95	15	25	205.72	195.72
	SHM-05-41A	3028290.82	629796.11	UKN	2/1/2005	222.72	UKN	UKN	Shallow Overburden	222.48	42	44	180.72	178.72
	SHM-05-41B	3028299.22	629796.25	UKN	3/1/2005	222.50	UKN	UKN	Mid Overburden	222.33	62	64	160.50	158.50
	SHM-05-41C	3028285.47	629795.79	UKN	2/1/2005	222.91	UKN	UKN	Deep Overburden/Till	222.57	88	93	134.91	129.91
	SHM-05-42A	3028376.14	630017.63	UKN	2/1/2005	213.65	UKN	UKN	Shallow Overburden	216.81	40	42	173.65	171.65
	SHM-05-42B	3028376.14	630017.63	UKN	2/1/2005	213.65	UKN	UKN	Mid Overburden	216.80	70	72	143.65	141.65
	SHM-10-06	3027882.54	630215.62	UKN	7/1/2010	230.03	UKN	UKN	Deep Overburden	232.91	69.5	79.5	160.53	150.53
	SHM-10-06A	3027895.73	630300.71	UKN	7/1/2010	245.96	UKN	UKN	Deep Overburden	248.54	77	87	168.96	158.96
	SHM-10-16	3028355.25	629834.23	UKN	8/1/2010	216.72	UKN	UKN	Deep Overburden	219.23	75	85	141.72	131.72
	SHM-93-22B	3028169.92	630071.91	UKN	2/1/1993	218.84	UKN	UKN	Mid-depth Overburden	219.39	82.3	92.3	136.54	126.54
	SHM-93-22C	3028158.6	630045.7	UKN	1/1/1993	218.92	UKN	UKN	Deep Bedrock	220.69	124.3	134.3	94.62	84.62

Table 5-1
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	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Nearfield Area	SHM-96-5B	3028112.94	630158.14	UKN	1/1/1900	217.38	UKN	UKN	Sand/Till	218.92	80	90	137.38	127.38
	SHM-96-5C	3028105.39	630172.72	UKN	8/1/1996	217.39	UKN	UKN	Mid Overburden	218.39	50	60	167.39	157.39
	SHP-05-45A	3027962.03	629995.49	UKN	1/1/2005	226.32	UKN	UKN	Shallow Overburden	228.48	20	25	206.32	201.32
	SHP-05-45B	3027956.77	629995.45	UKN	1/1/2005	226.72	UKN	UKN	Mid Overburden	229.11	65	75	161.72	151.72
	SHP-05-46A	3027941.12	630041.46	UKN	1/1/2005	226.31	UKN	UKN	Mid Overburden	228.18	20	25	206.31	201.31
	SHP-05-46B	3027946.62	630041.84	UKN	1/1/2005	226.03	UKN	UKN	Shallow Overburden	227.60	65	75	161.03	151.03
	SHP-05-47A	3028226.35	630523.31	UKN	1/1/2005	213.35	UKN	UKN	Shallow Water Table	217.39	1	2	212.35	211.35
	SHP-05-47B	3028226.32	630524.03	UKN	1/1/2005	213.33	UKN	UKN	Shallow Water Table	215.40	3	4	210.33	209.33
	SHP-2017-01	3027948	629939.7	UKN	10/1/2017	227.22	UKN	UKN	Overburden	229.63	70	75	157.22	152.22
	SHP-2017-02	3027978.8	629893.6	UKN	10/1/2017	227.26	UKN	UKN	Overburden	230.05	85	90	142.26	137.26
	EPA-PZ-2012-1A	3028055.85	630191.11	UKN	7/4/1905	219.91	UKN	UKN	Shallow Overburden	223.79	20	25	199.91	194.91
	EPA-PZ-2012-1B	3028057.05	630192.91	UKN	7/4/1905	219.81	UKN	UKN	Deep Overburden	223.53	70	75	149.81	144.81
	EPA-PZ-2012-2A	3028124.73	630287.28	UKN	7/4/1905	219.72	UKN	UKN	Shallow Overburden	223.38	20	25	199.72	194.72
	EPA-PZ-2012-2B	3028124.72	630290.4	UKN	7/4/1905	219.76	UKN	UKN	Deep Overburden	223.37	75	80	144.76	139.76
	EPA-PZ-2012-3A	3028088.07	630062.52	UKN	7/4/1905	219.20	UKN	UKN	Shallow Overburden	222.65	20	25	199.20	194.20
	EPA-PZ-2012-3B	3028086.13	630064.63	UKN	7/4/1905	219.25	UKN	UKN	Deep Overburden	222.57	70	75	149.25	144.25
	EPA-PZ-2012-4A	3028045.34	629992.07	UKN	7/4/1905	223.30	UKN	UKN	Shallow Overburden	226.60	20	25	203.30	198.30
	EPA-PZ-2012-4B	3028043.8	629989.87	UKN	7/4/1905	223.51	UKN	UKN	Deep Overburden	226.39	70	75	153.51	148.51
	EPA-PZ-2012-5A	3028184.86	630151.89	UKN	7/4/1905	216.33	UKN	UKN	Shallow Overburden	220.01	20	25	196.33	191.33
	EPA-PZ-2012-5B	3028186.12	630155.26	UKN	7/4/1905	216.20	UKN	UKN	Deep Overburden	219.38	80	85	136.20	131.20
	EPA-PZ-2012-6A	3028066.25	629894.69	UKN	7/4/1905	230.71	UKN	UKN	Shallow Overburden	234.25	25	30	205.71	200.71
	EPA-PZ-2012-6B	3028069.24	629894.4	UKN	7/4/1905	230.85	UKN	UKN	Deep Overburden	234.08	75	80	155.85	150.85

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	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Nearfield Area	EPA-PZ-2012-7A	3028106.48	629801.05	UKN	7/4/1905	234.42	UKN	UKN	Shallow Overburden	234.16	25	30	209.42	204.42
	EPA-PZ-2012-7B	3028109.22	629800.87	UKN	7/4/1905	234.28	UKN	UKN	Deep Overburden	234.03	60	65	174.28	169.28
	SHP-2016-1A	3027979.56	629933.53	UKN	7/8/1905	224.69	UKN	UKN	Shallow Overburden	227.27	13	23	211.69	201.69
	SHP-2016-1B	3027979.56	629933.53	UKN	7/8/1905	224.69	UKN	UKN	Deep Overburden	227.24	75	85	149.69	139.69
	SHP-2016-2A	3028200.3	629925.84	UKN	7/8/1905	223.73	UKN	UKN	Shallow Overburden	225.93	20	25	203.73	198.73
	SHP-2016-2B	3028200.3	629925.84	UKN	7/8/1905	223.73	UKN	UKN	Deep Overburden	225.95	80	85	143.73	138.73
	SHP-2016-3A	3028174.29	630007.26	UKN	7/8/1905	221.13	UKN	UKN	Shallow Overburden	223.18	20	25	201.13	196.13
	SHP-2016-3B	3028174.29	630007.26	UKN	7/8/1905	221.13	UKN	UKN	Deep Overburden	223.18	80	85	141.13	136.13
	SHP-2016-4A	3028146.65	629902.15	UKN	7/8/1905	227.57	UKN	UKN	Shallow Overburden	229.97	25	30	202.57	197.57
	SHP-2016-4B	3028146.65	629902.15	UKN	7/8/1905	227.57	UKN	UKN	Deep Overburden	229.75	85	90	142.57	137.57
	SHP-2016-5A	3028113.45	629963.58	UKN	7/8/1905	224.88	UKN	UKN	Shallow Overburden	227.01	25	30	199.88	194.88
	SHP-2016-5B	3028113.45	629963.58	UKN	7/8/1905	224.88	UKN	UKN	Deep Overburden	226.95	85	90	139.88	134.88
	SHP-2016-06A	3027906.15	629710.34	UKN	7/8/1905	240.05	UKN	UKN	Bedrock	241.90	81	86	159.05	154.05
	SHP-2016-06B	3027906.15	629710.34	UKN	7/8/1905	240.05	UKN	UKN	Bedrock	241.89	102	112	138.05	128.05
	SHP-2016-06C	3027906.15	629710.34	UKN	7/8/1905	240.05	UKN	UKN	Bedrock	241.92	123	133	117.05	107.05
	SHM-10-01	3028617.32	628868.44	UKN	6/1/2010	206.69	UKN	UKN	Deep Overburden/Till	209.65	60.5	70.5	146.19	136.19
	SHM-10-02	3028700.13	628381.41	UKN	7/1/2010	220.19	UKN	UKN	Mid Overburden	223.03	53	63	167.19	157.19
	SHM-10-03	3029000.27	628436.33	UKN	6/1/2010	229.77	UKN	UKN	Mid Overburden	232.05	58.5	68.5	171.27	161.27
	SHM-10-04	3029485.34	628959.21	UKN	6/1/2010	210.00	UKN	UKN	Mid Overburden	212.61	55	65	155	145
	SHM-10-05A	3028943.39	630441.84	UKN	7/1/2010	235.41	UKN	UKN	Mid Overburden	235.09	50	60	185.41	175.41
	SHM-10-08	3028526.47	628351.74	UKN	6/1/2010	211.86	UKN	UKN	Deep OB / Till	214.36	46	56	165.86	155.86
	SHM-10-10	3028873.64	629105.25	UKN	6/1/2010	215.40	UKN	UKN	Deep OB / Till	217.11	56	66	159.4	149.4
	SHM-05-39A	3028544.28	629761.38	UKN	2/1/2005	221.79	UKN	UKN	Mid Overburden	221.53	37	39	184.79	182.79
	SHM-05-39B	3028543.68	629765.33	UKN	2/1/2005	221.77	UKN	UKN	Deep Overburden	221.51	66	68	155.77	153.77
	SHM-13-01	3028294.76	628556.66	UKN	5/1/2013	205.77	UKN	UKN	Mid Overburden	208.08	39	49	166.77	156.77
	SHM-13-02	3028713.88	628980.64	UKN	4/1/2013	216.92	UKN	UKN	Deep Overburden	218.72	60	70	156.92	146.92

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Nearfield Area	SHM-13-05	3028776.73	629829.47	UKN	4/1/2013	225.39	UKN	UKN	Deep Overburden	225.14	75	85	150.39	140.39
	SHM-13-14D	3029016.63	629391.87	UKN	1/1/2014	207.48	UKN	UKN	Deep Overburden	210.48	45	55	162.48	152.48
	SHM-13-14S	3029020.58	629392.28	UKN	1/1/2014	207.67	UKN	UKN	Shallow Overburden	210.55	5	15	202.67	192.67
	SHM-13-15	3029072.16	629273.49	UKN	2/1/2014	205.98	UKN	UKN	Deep Overburden	210.58	50	60	155.98	145.98
	SHM-99-32X	3028574.65	630168.76	UKN	1/1/1900	219.12	UKN	UKN	Deep Overburden	221.28	72	82	147.12	137.12
	SHM-99-31A	3028559.08	629895.03	UKN	5/1/1999	212.82	UKN	UKN	Shallow OB / WT	214.34	4	14	208.82	198.82
	SHM-99-31B	3028559.47	629901.16	UKN	1/1/1900	212.52	UKN	UKN	Mid Overburden	214.39	50	60	162.52	152.52
	SHM-99-31C	3028561.83	629908.75	UKN	1/1/1900	212.64	UKN	UKN	Deep Overburden	214.60	68	78	144.64	134.64
	SHP-99-33A	3028551.6	629818.1	UKN	1/1/1900	221.06	UKN	UKN	Overburden	223.03	10.5	15.5	210.56	205.56
	SHP-99-33B	3028550.2	629815.6	UKN	1/1/1900	221.16	UKN	UKN	Overburden	222.65	74.5	79.5	146.66	141.66
	SHM-99-34B	3028552.44	630294.37	UKN	1/1/1900	222.69	UKN	UKN	Deep Overburden	224.91	74.5	79.5	148.19	143.19
	SHP-05-48A	3028569.63	630046.35	UKN	1/1/2005	213.09	UKN	UKN	Shallow Water Table	217.31	1	2	212.09	211.09
	SHP-05-48B	3028569.69	630045.57	UKN	1/1/2005	213.03	UKN	UKN	Shallow Water Table	215.96	2	3	211.03	210.03
	SHP-05-49A	3028663.65	630250.63	UKN	1/1/2005	212.34	UKN	UKN	Shallow Water Table	216.67	1	2	211.34	210.34
	SHP-05-49B	3028663.85	630250.05	UKN	1/1/2005	212.39	UKN	UKN	Shallow Water Table	215.14	2.5	3.5	209.89	208.89
	SHM-05-40X	3028514.16	629636.83	UKN	2/1/2005	223.48	UKN	UKN	Mid Overburden/Till	223.19	32	34	191.48	189.48
	SHM-07-03	3028444.63	629411.08	UKN	1/1/1900	227.96	UKN	UKN	Shallow Overburden	227.90	25	35	202.96	192.96
	SHM-07-05X	3028513.33	629632.06	UKN	1/1/1900	223.66	UKN	UKN	Mid Overburden	223.40	55	65	168.66	158.66
	SHM-13-03	3028990.91	629173.39	UKN	4/1/2013	209.91	UKN	UKN	Deep OB / Till	212.05	42	52	167.91	157.91
	SHM-13-04	3028606.18	629479.56	UKN	4/1/2012	227.34	UKN	UKN	Shallow Overburden	227.02	20	30	207.34	197.34
	SHM-13-06	3028694.87	629245.1	UKN	5/1/2013	224.23	UKN	UKN	Deep Overburden/Till	223.89	36	46	188.23	178.23
	SHM-13-07	3028760.82	629331.42	UKN	10/1/2013	226.11	UKN	UKN	Unknown	225.64	27	37	199.11	189.11
	SHM-13-08	3028837.54	629515.32	UKN	5/1/2013	228.19	UKN	UKN	Mid Overburden/Till	227.90	55	65	173.19	163.19
AOC 5 Extraction Wells														
Extraction Wells	EW-1	3027960.2	629942.81	UKN	1/1/2005	226.97	UKN	UKN	Overburden	226.8	60	85	166.97	141.97
	EW-4	3027991	629895.33	UKN	2/1/2005	227.36	UKN	UKN	Overburden	227.03	70	95	157.36	132.36

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Shepley's Hill Landfill Field Activities
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	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Description of Total Depth	Formation Type at Screen Interval	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Surface Water and Sediment Sampling Locations														
Surface Water and Sediment Sampling Locations	NB-18-01	3028207.11	630554.77	NA	12/11/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	NB-18-02	3029041.41	629192.11	NA	12/11/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	NB-18-03	3028764.48	628652.44	NA	12/6/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	NB-18-04	3028197.8	628246.48	NA	12/6/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	NB-18-05	3028990.99	626503.75	NA	12/6/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	NB-18-06	3029253.57	630045.95	NA	12/11/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	NB-18-07	3029491.82	630455.87	NA	12/11/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-18-01	3027208.23	631730.5	NA	12/14/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-18-02	3027218.5	630576.06	NA	12/17/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-18-03	3027937.15	631854.17	NA	12/14/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-18-04	3028302.26	631507.35	NA	12/14/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-18-05	3027700	630750.49	NA	12/17/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA
	PS-18-06	3026815.58	630976.44	NA	12/17/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA

Blue highlighlighting indicates the monitoring well was sampled for the PFAS RI.
BGS = below ground surface
ft = feet
NA = not applicable
UKN = unknown
NAD83 = North American Datum 1983
NAVD88 = North American Vertical Datum 1988

Table 5-2
Shepley's Hill Landfill Summary of PFAS Exceedances from Monitoring Wells
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

Parameter	Sample Count with Detected Concentrations	Number of Samples Exceeding EPA LHA	Number of Samples Exceeding MassDEP GW-1	Maximum Detected Concentration (ng/L)	Minimum Detected Concentration (ng/L)	Sample Identifier of Maximum Detected Concentration
6:2 Fluorotelomer sulfonate (6:2 FTS)	2/65	---	---	18.0 J	16.0 J	SHP-2016-06B
8:2 Fluorotelomer sulfonate (8:2 FTS)	0/65	---	---	---	---	---
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0/65	---	---	---	---	---
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0/65	---	---	---	---	---
Perfluorobutanesulfonic acid (PFBS)	61/65	---	---	14	0.520 J	N7-P2
Perfluorodecanoic acid (PFDA)	6/65	---	---	0.850 J	0.540 J	SHM-96-5B
Perfluorododecanoic acid (PFDoA)	1/65	---	---	0.760 J	0.760 J	N7-P2
Perfluoroheptanoic acid (PFHpA)	59/65	---	---	10.0	0.630 J	SHP-99-33B
Perfluorohexanesulfonic acid (PFHxS)	59/65	---	36	150	0.570 J	N7-P2
Perfluorohexanoic acid (PFHxA)	61/65	---	---	33.0	0.790 J	SHP-05-43
Perfluorononanoic acid (PFNA)	42/65	---	---	3.30	0.500 J	SHL-15
Perfluorooctanesulfonic acid (PFOS)	61/65	9	33	150	1.40 J	N7-P2
Perfluorooctanoic acid (PFOA)	61/65	---	25	44.0	0.570 J	SHP-99-33B
Perfluorotetradecanoic acid (PFTA)	0/65	---	---	---	---	---
Perfluorotridecanoic acid (PFTrDA)	1/65	---	---	2.30 J	2.30 J	N7-P2
Perfluoroundecanoic acid (PFUnA)	2/65	---	---	5.00	0.690 J	N7-P2
EPA LHA	---	22	---	170	2.20	N7-P2
MassDEP GW-1	---	---	49	275	3.70	N7-P2

J = estimated value

ng/L = nanograms per liter

EPA Life-time Health Advisory (LHA) is the individual or sum of PFOS and PFOA = 70 ng/L.

MassDEP GW-1 is the individual concentration or sum of PFOA, PFOS, PFHpA, PFHxS, PFNA, PFDA = 20 ng/L.

Table 6-1
Devens Car Wash Well Field Activities
Area 2 Preliminary Site Characterization Summary
Devens PFAS Remedial Investigation

	Location	North Coordinate (ft NAD83)	East Coordinate (ft NAD83)	Construction Method	Establishing Date	Surface Elevation (ft NAVD88)	Total Depth (ft BGS)	Top of Casing Elevation (ft NAVD88)	Depth to Top of Screen (ft BGS)	Depth to Bottom of Screen (ft BGS)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)
Water Supply Well												
Water Supply Well	A2-IG1	3022135.49	625144.43	UKN	UKN	UKN	420	UKN	UKN	UKN	UKN	UKN

BGS = below ground surface
ft = feet
NA = not applicable
UKN = unknown
NAD83 = North American Datum 1983
NAVD88 = North American Vertical Datum 1988

APPENDIX A MONITORING WELL FIELD SHEETS

Field Low Flow Forms

AOC 32/43A

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-13KBR

Project: PFAS RI - Existing Well Sampling Date: 12/10/19

Location: Fort Devens Massachusetts Sampler: CH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	15.65
Depth to bottom (ft BTOR)	
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method: LF-PER Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1050/1145 Tubing diameter: 1/4" Air source: –

Field Instrument (Model/S/N): _____

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
05	100	16.89	12.74	6.63	1.776	4.49	383.7	25.7	clear
1110	100	17.01	12.75	6.66	1.756	3.98	380.0	15.0	
1115	100	17.25	12.65	6.62	1.739	3.57	376	16.0	
1120	100	17.46	12.63	6.56	1.736	3.58	374.6	14.7	
1125	100	17.65	12.62	6.55	1.728	3.52	371.6	15.5	
1130	100		12.73	6.54	17.127	3.54	369.1	12.2	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

did not stabilize

Sampling Details

Field Filtered (Y/N): N Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: – Dup ID/Time: –

Comments _____

Signature

12-16-19

Date

Tub + DO drift

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-15XBR

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/20/18
Sampler: GH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	18.90
Depth to bottom (ft BTOR)	44.17
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method: LF
Purge start/stop time: 935 / 950
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 556 ONPS

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
950	100	21.76	12.08	6.50	27.76	14.56	443.5	22.9	clear
955	100	22.30	11.83	6.45	25.36	15.4	450.8	13.7	clear
16:00	100	22.75	11.87	6.45	24.91	15.57	452.4	11.2	clear
10:05	100	23.43	11.80	6.44	23.20	16.37	455.3	11.5	clear
1010	100	23.75	11.82	6.45	22.91	16.59	455.6	10.1	clear
1015	100	23.90	11.85	6.43	22.95	16.66	456.0	18.4	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: —
Duplicate (Y/N): N
Dup ID/Time: —
MS/MSD (Y/N): N

Comments

Signature

12-20-18
Date

Trb +00 drift

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ~~32M-01-11SXR~~ 32M-01-16XBR

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/12/18
Sampler: CW

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"	
Material	PVC	
Depth to water (ft ~~BTOR~~)	19.95'	BGS
Depth to bottom (ft ~~BTOR~~)	31.35'	BGS
Screen Interval (ft ~~BTOR~~)	21.00' - 31.00'	BGS
Total volume purged (gal)	~2 gal	

(CW)

Sampling Type

Purging Method: Peri Pump
Purge start/stop time: 1020 - 1055
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): (CW) Y
Air source: -

Field Instrument (Model/S/N): YSI 556 MPS 06192823A7 HACH 2100Q 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1020 1030	200 ml/min	19.95	9.69	5.70	963	5.40	232.3	36.4	clear/clear
1035	↓	↓	10.17	5.78	979	5.05	230.0	31.4	↓
1040			9.99	5.79	986	4.95	229.0	25.9	
1045			10.07	5.75	983	4.85	231.1	26.1	
1050			10.08	5.78	986	4.74	229.5	24.0	
1055	↓	↓	9.98	5.81	987	4.80	226.2	24.2	↓ Sample Time
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Duplicate (Y/N): N
MS/MSD (Y/N): N
Filter Size: -
Dup ID/Time: -

Comments Pulled out dedicated pump for sampling; put pump back in after sampling was finished (Turb variance) (Sp Cond: variance)

CW
Signature

12/12/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-92-01X-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens, MA

Date: 12/13/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	15.56
Depth to bottom (ft BTOR)	27.05
Screen Interval (ft BTOR)	13.70 - 23.70
Total volume purged (gal)	1.25gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1215/1310
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H828ZAL) Hach 2100Q (192.0C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1230 (1220)	130	15.65	8.77	6.37	349	8.08	166.8	3.57	clear
1235	↓	15.66	8.85	6.25	328	7.95	168.0	2.71	↓
1240		15.65	8.93	6.18	309	7.87	169.6	2.71	
1245		15.65	9.11	6.08	288	8.28	173.8	3.14	
1250		15.66	9.39	6.12	285	7.54	169.9	2.88	
1255		15.66	9.26	6.07	283	7.54	172.1	2.85	
1300		15.66	9.30	6.00	276	7.57	175.4	2.70	
1305	↓	15.66	9.27	5.99	275	7.51	175.5	2.81	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 1305 Dissolved oxygen ~~and turbidity~~ (DO 1/3/19) experienced variance. Post cal issue with HACH.

Signature

12/13/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 327-01-06XBR

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/20/18
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	14.71
Depth to bottom (ft BTOR)	28.80
Screen Interval (ft BTOR)	16.7-26.7 bgs
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1130 -
Tubing type: HDPE
Tubing diameter: 4" OD
Dedicated pump (Y/N): N
Air source: N/A
Field Instrument (Model/S/N): _____

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
35 (1135)	90	17.42	10.21	6.41	323	0.92	-48.2	156	Brown/cloudy
1140	85	18.86	10.28	6.44	323	0.86	-54.6	129	"
1145	85	19.10	10.38	6.49	319	0.50	-59.4	113	"
1150	85	19.30	10.40	6.50	316	0.47	-60.2	100	"
1155	85	19.35	10.42	6.51	316	0.37	-60.5	83.1	"
1200	85	19.35	10.46	6.52	318	0.34	-61.1	82.4	"
1205	85	19.35	10.45	6.52	318	0.36	-61.3	78.0	"
1210	65	19.35	10.46	6.53	319	0.35	-61.4	77.9	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/(N))
Filter Size: _____
Duplicate (Y/(N)): _____
Dup ID/Time: _____
MS/MSD (Y/(N)): _____

Comments Sample @ 1210

Signature

12/20/18
Date

YSI Drift
pH 10
SPC
DO

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 322-01-10xBR

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/14/18
Sampler: CH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	15.71
Depth to bottom (ft BTOR)	22.39
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method: LF
Tubing type: HDPE
Dedicated pump (Y/N): N
Purge start/stop time: 1245/1305
Tubing diameter: 1/4"
Air source: –

Field Instrument (Model/S/N): YSI 556 MPS

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1305	100	16.60	13.64	6.75	0.725	14.00	200.7	15.7	clear
1310	100	17.01	12.93	6.67	0.807	7.71	205.5	11.3	clear
1315	100	16.45	13.30	6.74	0.810	7.67	207.6	9.3	
1320	100	16.50	13.31	6.78	0.813	7.56	199.9	10.5	
1325	100	16.55	13.17	6.81	0.825	7.48	190.3	8.7	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

↓ Did not stabilize

Sampling Details

Field Filtered (Y/N): N
Duplicate (Y/N): Y
MS/MSD (Y/N): N
Filter Size: _____
Dup ID/Time: 322-DUP02-DEC18

Comments: DUP Sample Taken

Signature

12/14/18
Date

Turb, DO, pH drift

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 327-01-08xOB

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/18/18
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	16.23' BGS
Depth to bottom (ft BTOR)	24.40' BGS
Screen Interval (ft BTOR)	12.00'-24.00' BGS
Total volume purged (gal)	~2 gal

(CV)

Sampling Type
Purging Method: Peri Pump
Purge start/stop time: 1140-1235
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 556 MPS: 06192823A1 HACH 2100Q: 16120C054215

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1200	200 ml/min	16.23'	10.29	5.15	89	6.30	209.6	11.1	clear/clear
1205	↓	↓	10.27	5.06	90	6.43	212.3	10.5	↓
1210			10.18	4.92	86	6.47	215.4	8.61	
1215			10.19	4.79	85	6.49	219.2	8.08	
1220			10.31	4.79	85	6.34	216.5	5.12	
1225			10.35	4.75	84	6.43	218.1	5.17	
1230			10.38	4.70	84	6.56	219.4	4.81	
1235	↓	↓	10.41	4.71	84	6.50	219.9	4.84	↓ Sample Time
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details
Field Filtered (Y/N): N
Filter Size: —
Duplicate (Y/N): N
Dup ID/Time: —
MS/MSD (Y/N): N

Comments pH is lower than normal ; Turb variance (calibration) (Spiked variance)

Signature

12/18/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 322-01-07X

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/20/18
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	14.00
Depth to bottom (ft BTOR)	28.90
Screen Interval (ft ~~BTOR~~)	12.7-22.7 bgs
Total volume purged (gal)	3.5

Sampling Type
Purging Method: Peristaltic ~~1250~~
Purge start/stop time: 1250-
Tubing type: HDPE
Tubing diameter: 1/4"OD
Dedicated pump (Y/(N)): N
Air source: NA

Field Instrument (Model/S/N): YSI 556MPS : 14A100102
Hach 2100Q : 13110C029663

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
15	200	14.10	9.74	6.07	146	6.61	67.4	158	Brown
1320	200	14.10	10.00	5.94	147	5.87	86.8	111	"
1325	200	14.10	10.09	5.91	150	5.29	93.4	104	"
1330	200	14.10	10.04	5.90	152	5.02	99.6	83.8	"
1335	200	14.10	10.08	5.90	153	4.91	104.8	74.4	"
1340	200	14.10	10.11	5.89	158	4.40	112.3	66.8	"
1345	200	14.10	10.20	5.88	162	4.00	117.3	55.3	"
1350	200	14.10	10.20	5.88	163	3.69	119.7	39.6	"
1355	200	14.10	10.16	5.88	163	3.62	120.1	20.4	"
1400	200	14.10	10.17	5.88	164	3.56	120.9	18.7	"
1405	200	14.10	10.20	5.87	164	3.51	123.7	17.9	"
1410	200	14.10	10.19	5.87	163	3.47	125.1	17.3	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/(N)): —
Duplicate (Y/(N)): —
MS/MSD (Y/(N)): —
Filter Size: _____
Dup ID/Time: —

Comments Sample 322-01-07X-DEC18 @ Pulled 2 sets of LDPE/Teflon from well prior to sampling

Signature

12/20/18
Date

YSI Drift
pH 10
SPC
DO

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 327-01-12BR

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/04/18
Sampler: GH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	17.81
Depth to bottom (ft BTOR)	37.7
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method: LF
Purge start/stop time: 1350
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: –

Field Instrument (Model/S/N): YSI 556 MPS

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1405	108	17.81	13.65	6.09	0.408	2.47	275.2	5.09	clear
1410	100	17.82	13.44	6.18	0.414	2.34	274.1	4.48	
1415	100	17.82	13.45	6.12	0.412	2.47	274.2	3.44	
1420	100	17.82	13.50	6.13	0.410	2.59	274.8	2.72	
1425	100		13.28	6.16	0.406	2.61	271.9		
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: --
Duplicate (Y/N): N
Dup ID/Time: –
MS/MSD (Y/N): N

Comments

Signature

12-28-18
Date

Trb + DO drift

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-92-03X - JAN19

Project: Existing PFAS ~~RIT~~ RI (wells)
Location: AOC 32 / AOC 43A

Date: 01/02/2019
Sampler: EV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft ~~BTOR~~)	24.61' BGS
Depth to bottom (ft ~~BTOR~~)	35.59' BGS
Pump Set Depth (ft ~~BTOR~~)	~~28.00~~ BGS
Screen Interval (ft ~~BTOR~~)	~~30.15 - 35.15~~ 23.20' - 33.20' BGS
Total volume purged (gal)	~1.5 gal

(w)

Sampling Type

Purging Method: Peri Pump
Purge start/stop time: 1320 -
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YST 556 MPS : 06H2823AL HACH 2100Q : 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1335	200	24.61	10.38	5.20	143	5.16	266.8	20.9	clear/clear
1340	↓	↓	9.79	4.45	155	4.88	279.1	19.6	↓
1345			9.15	4.25	152	4.87	289.6	15.8	
1350			8.89	3.92	143	4.73	302.4	10.2	
1355			8.81	3.88	139	4.76	304.7	10.9	
1400	↓	↓	8.75	3.83	139	4.74	306.2	10.7	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: -
Duplicate (Y/N): ~~N~~ N
Dup ID/Time: -
MS/MSD (Y/N): N/

Comments pH unusually low ; variance in Turbidity while calibrating; ~~assumed screen interval was~~ (w)

Signature

01/02/2019
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-17xBR

Project: Devens PFAS RI- Existing Wells
Location: AOC 32/43A
Date: 01/04/19
Sampler: CN

Well Integrity

	Yes	No	N/A
Casing Secure	✓	✓	
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"	
Material	PVC	
Depth to water (ft ~~BTOR~~)	23.20'	BGS
Depth to bottom (ft ~~BTOR~~)	51.32'	BGS
Pump Set Depth (ft ~~BTOR~~)	46.5'	BGS
Screen Interval (ft ~~BTOR~~)	41.40 - 51.40'	BGS
Total volume purged (gal)	~1.0 gal	

Sampling Type

Purging Method: Peri Pump
Purge start/stop time: 0935
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 556 MPS: 06H2823AL HACH 2100Q: 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	100 ml/min	23.30'	10.59	6.62	1,276	2.27	239.3	8.93	clear/clear
0950		23.33'	10.49	6.59	1,272	1.90	238.2	6.39	
0955		23.34'	10.47	6.69	1,287	1.45	229.1	6.26	
1000		↓	10.44	6.71	1,287	1.35	226.1	5.72	
1005			10.34	6.74	1,291	1.30	223.0	4.95	
1010			10.43	6.73	1,280	1.21	222.6	4.99	
1015			10.47	6.78	1,286	1.20	219.6	4.88	
1020		↓	10.52	6.80	1,289	1.18	218.5	4.76	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Duplicate (Y/N): N
MS/MSD (Y/N): N
Filter Size: —
Dup ID/Time: —

Comments Found bladder pump (1 of 4) tubing within well, but no pump; ST @ 1020 ; old lock present; ~~was directly cut with~~ however, part of the well cap was snapped

Signature

- turbidity variance while post calibrating meter

01/04/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-18XBR

Project: Devens PFAS
Location: AOC 32/43A
Date: 1/10/19
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure		~~✓~~	✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	One Missing
Locked (stickup wells)			✓

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	15.93
Depth to bottom (ft BTOR)	24.89
Pump Set Depth (ft BTOR)	20
Screen Interval (ft BTOR)	~~5-20~~ 14-24
Total volume purged (gal)	1gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 0840
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A
Field Instrument (Model/S/N): YSI 556 (06H2823AL) HACH 2100Q (16120C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0855	100	17.03	9.79	5.79	2053	7.96	279.7	22.4	clear
0900	100	17.05	9.74	5.82	2164	7.76	296.2	16.6	clear
0905	100	17.09	9.66	5.88	2187	7.51	315.2	13.0	clear
0910	100	17.11	9.55	5.86	2198	6.94	329.3	13.9	clear
0915	100	17.12	9.55	5.86	2197	6.67	339.5	13.1	clear
0920	100	17.12	9.54	5.89	2258	6.67	347.8	12.6	clear
0925	100	17.14	9.58	5.91	2165	6.30	351.7	12.9	clear
0930	100	17.15	9.50	5.95	2155	6.17	355.8	12.6	clear
0935	100	17.15	9.54	5.99	2149	6.26	357.7	12.1	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Duplicate (Y/N): N
MS/MSD (Y/N): N
Filter Size: N/A
Dup ID/Time: N/A

Comments Sample @ 0935 M537 PFAs Isotope dilution

* Dissolved oxygen and turbidity experienced variance.

Signature

1/10/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-14X0B

Project: Devens PFAS
Location: AOC 32/43A

Date: 1/10/19
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	23.01
Depth to bottom (ft BTOR)	30.47
Pump Set Depth (ft BTOR)	25.00
Screen Interval (ft BTOR)	[redacted] 17.3-27.3
Total volume purged (gal)	1gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1235 / 1330
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H2823AL) HACH 21009 (161200054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1250	90	23.48	7.26	6.41	696	4.73	285.0	15.4	clear
1255	90	23.64	7.25	6.31	689	1.69	274.6	12.9	Clear
1300	90	23.72	7.25	6.20	686	1.40	268.0	15.4	Clear
1305	90	23.83	7.37	6.12	670	1.11	261.9	15.4	clear
1310	90	23.86	7.14	6.08	679	0.95	255.4	13.6	Clear
1315	90	23.83	7.10	6.04	676	0.89	247.3	10.2	Clear
1320	90	23.80	7.21	6.02	674	0.87	240.9	10.6	clear
1325	90	23.84	7.18	6.05	673	0.84	238.1	10.8	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 1325 M537 PFAS Isotope Dilution

* Dissolved oxygen and turbidity experienced variance.

Signature

1/10/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-14XBR

Project: Devens PFAS
Location: AOC 43A/32

Date: 1/10/19
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	21.61
Depth to bottom (ft BTOR)	46.90
Pump Set Depth (ft BTOR)	43.00
Screen Interval (ft BTOR)	34-44
Total volume purged (gal)	1gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1100/1140
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A
Field Instrument (Model/S/N): YSI 556 (06H823AL) HACH 2100Q (1C12C0C54715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH ✓ (STD)	SPC ✓ (µS/cm^c)	DO ✓ (mg/L)	ORP ✓ (mv)	Turbidity ✓ (NTU)	Color/Clarity
1120	100	24.02	5.72	6.29	780	1.58	356.4	5.35	clear
2(1125)	100	24.45	6.66	6.18	766	1.35	352.1	5.62	clear
1130	100	25.18	6.80	6.32	767	1.29	342.3	5.32	clear
1135	100	25.91	7.43	6.34	754	1.12	335.2	4.94	clear
1140	100	26.30	7.48	6.39	754	1.10	332.1	4.63	clear
1145	100	26.83	7.60	6.42	754	1.06	327.8	4.21	clear
1150	100	27.22	7.47	6.36	753	1.12	328.2	4.27	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 1150 M537 PFAS Isotope Dilution

* DTW unstable before sample *
* Dissolved oxygen and turbidity experienced variance.

Signature

1/10/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 327-01-09X03

Project: Devens PFAS RI - Existing Wells
Location: AOC 32/43A

Date: 01/15/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	23.42'
Depth to bottom (ft BTOR)	33.45'
Pump Set Depth (ft BTOR)	28.50'
Screen Interval (ft BTOR)	23.50'-33.50' BGS
Total volume purged (gal)	~2 gal

Sampling Type

Purging Method: Peri Pump
Purge start/stop time: 0800 - 0845
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: —

Field Instrument (Model/S/N): YSI 556 MPS: 06H2823AL HACH 2100Q: 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0815	200 ml/min	23.42'	9.04	5.27	1,106	7.10	247.8	67.1	clear/clear
0820	↓	↓	9.00	5.12	1,108	7.11	245.9	45.3	↓
0825			8.92	5.03	1,103	6.85	240.9	33.6	
0830			8.89	4.98	1,091	7.01	239.5	20.4	
0835			8.80	5.00	1,080	6.94	234.1	20.1	
0840			8.75	4.99	1,078	6.90	229.3	19.2	
0845	↓	↓	8.77	5.00	1,075	6.89	228.1	19.3	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: —
Duplicate (Y/N): N
Dup ID/Time: —
MS/MSD (Y/N): N

Comments Roadbox partially paved over, managed to pry open anyways; ST: 0845
Variance in Turbidity and Spcnd during Post calibration

Signature

01/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 327-01-11XBR

Project: Devens ~~Shepley's Hill Landfill - Fall 2018~~ PFAS RI Existing Wells

Location: ~~Fort Devens Massachusetts~~ AOC 32/43A

Date: 01/15/19

Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	DRY
Depth to bottom (ft BTOR)	17.13'
Screen Interval (ft BTOR)	9.00'-19.00' BGS
Total volume purged (gal)	—

Pump Set Depth (ft): —

Sampling Type

Purging Method: Peri Pump

Purge start/stop time: —

Tubing type: HDPE

Tubing diameter: 1/4"

Dedicated pump (Y/N): N

Air source: —

Field Instrument (Model/S/N): YSI 556 MPS: 06H2823AL HACH 2100Q: 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0905									
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N

Filter Size: —

Duplicate (Y/N): N

Dup ID/Time: —

MS/MSD (Y/N): N

Comments Measured DTB as 17.13' BGS; DTW: none, well is dry

Signature

01/15/19

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32Z-01-05X013

Project: Devens PFAS RI- Existing Wells
Location: AOC 32/43A

Date: 01/15/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	26.42' BGS
Depth to bottom (ft BTOR)	35.31' BGS
Pump Set Depth (ft BTOR)	30.50' BGS
Screen Interval (ft BTOR)	25.50'-35.50' BGS
Total volume purged (gal)	~2 gal

Sampling Type

Purging Method: Air Pump
Purge start/stop time: 0930-1005
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556 MPS: 06I+2823AL HACH2100Q: 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm[c])	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0940	200 mL/min	26.42'	9.06	5.46	1,517	3.46	213.3	76.4	clear/clear
0945	↓	26.47'	9.17	5.47	1,480	4.10	205.6	53.0	↓
0950		↓	9.18	5.47	1,425	4.25	200.6	45.4	
0955			9.22	5.45	1,410	4.14	199.3	42.4	
1000			9.25	5.43	1,403	4.16	197.8	40.9	
1005	↓	↓	9.28	5.40	1,399	4.17	195.9	40.7	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Duplicate (Y/N): N
MS/MSD (Y/N): N
Filter Size: -
Dup ID/Time: -

Comments ST: 1005

Variance in turbidity and Sp Cond during post-calibration

Signature

01/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 327-99-02X

Project: Downs PFAS RI: Existing Wells
Location: AOC 32/43A
Date: 01/15/19
Sampler: CN

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	24.39'
Depth to bottom (ft BTOR)	30.03' BGS
Pump Set Depth (ft BTOR)	29.50' BGS
Screen Interval (ft BTOR)	14.50'-29.50' BGS
Total volume purged (gal)	~1.4 gal

Sampling Type

Purging Method: Peri Pump
Purge start/stop time: 1120-1220
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: –

Field Instrument (Model/S/N): YSI 556 MPS: 06H2823AL HACH 2100Q: 161200054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1150	80 ml/min	24.39'	7.77	5.20	103	4.89	237.5	42.8	red / cloudy
1155	↓	24.60'	7.96	5.01	112	4.01	240.6	39.8	red / cloudy
1200	↓	24.60'	7.49	4.85	125	3.80	239.6	35.3	red / clear
1205	↓	↓	7.53	4.64	127	2.97	239.5	33.2	clear / clear
1210	↓	↓	7.49	4.68	128	2.89	235.1	30.2	↓
1215	↓	↓	7.39	4.72	128	2.92	231.4	29.2	↓
1220	↓	↓	7.42	4.73	128	2.80	226.6	29.7	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: –
Duplicate (Y/N): N
Dup ID/Time: –
MS/MSD (Y/N): N

Comments Low recharge; high iron content (red color, rust?); transducer removed prior to sampling, returned to well afterwards (purged for 30 minutes due to opaque, red water)

ST: 1220

Variance in turbidity and spCond during post-stabilization

Signature

01/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-14XBR

Project: LTM - Fall 2019 Date: 11/15/19

Location: Fort Devens, Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓	✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	21.90
Depth to bottom (ft BTOR)	46.40
Pump Set Depth (ft BTOR)	42
Screen Interval (ft BTOR)	35.81 - 45.81
Total volume purged (gal)	1.0

Sampling Type

Purging Method Peri Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 0855-0940 Tubing diameter — Air source N/A

Field Instrument (Model/S/N) YSI 556 MPS 15F101567

Hach 2100Q 16010C047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0905	90	26.50	10.00	6.92	817	2.36	162.4	12.8	clear
0910	90	27.00	9.47	6.71	817	1.70	157.6	12.4	clear
0915	80	27.50	9.20	6.58	812	1.36	151.6	11.9	"
0920	80	28.00	8.80	6.55	814	1.12	150.6	11.4	"
0925	80	28.40	9.10	6.50	811	1.20	148.9	11.0	"
0930	80	28.65	9.30	6.50	809	1.26	146.0	10.8	"
0935	80	29.43	9.31	6.50	808	1.25	147.1	10.7	"
0940	80	29.96	9.28	6.49	806	1.23	145.9	10.5	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	—	—	—	→	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 32M-01-14XBR-FALL9

Sample Time: 0940 Duplicate (Y/N): N MS/MSD (Y/N): —

Field Filtered (Y/N): N Dup ID: —

Filter Size: — Dup Time: —

Comments PFAS only, DTW constant drawdown @ lowest pump rate

Signature

11/15/19

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 32M-01-14XBR **AOC Name:** 32

Project: Spring 2020 Supplemental Event Date: 5/8/20

Location: Fort Devens, Massachusetts Sampler: MM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present	✓		✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	20.92
Depth to bottom (ft BTOR)	45.61
Pump Set Depth (ft BTOR)	40'
Screen Interval (ft BTOR)	35.81-45.81
Total volume purged (gal)	1.5

Sampling Type

Purging Method geoprobe Tubing type MDPE Dedicated pump (Y/N) Y

Purge start/stop time 1110/1140 Tubing diameter 1/4" Air source N/A

Field Instrument (Model/S/N) YSI 556MPS 06L657A1

Conductivity Turbidity 3711 3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1110	150	23.62	11.62	7.09	672	1.45	72.8	31.7	clear
1105	150	24.31	11.47	7.09	670	1.30	69.7	17.0	clear
1110	150	25.21	11.44	7.08	667	1.29	67.0	15.0	clear
1115	150	25.78	11.43	7.07	663	1.27	66.6	13.2	clear
1120	150	26.62	11.39	7.06	664	1.25	66.4	~~13.9~~	clear
1125	150	27.39	11.37	7.04	663	1.24	66.2	12.8	clear
1130	150	28.01	11.48	7.03	662	1.23	65.9	12.7	clear
1135	150	28.69	11.47	7.05	660	1.22	65.8	11.9	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 32M-01-14XBR-SR20

Sample Time: 1140 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): N Dup ID: N/A

Filter Size: N/A Dup Time: N/A

Comments PFAS

Signature

5/8/20

Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 43M-01-16X OB

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/18/18
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"	
Material	PVC	
Depth to water (ft ~~BTOR~~)	21.60'	BGS
Depth to bottom (ft ~~BTOR~~)	34.64'	BGS
Screen Interval (ft ~~BTOR~~)	24.00-34.00	BGS
Total volume purged (gal)	~2 gal	

CV

Sampling Type

Purging Method: Peri Pump
Purge start/stop time: 0845-0915
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556 MPS: 06192823A1 Hach 2100Q: 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0850	200 ml/min	21.60'	10.39	4.16	177	7.40	293.8	6.15	clear/clear
0855	↓	↓	10.48	4.14	177	6.85	298.2	4.19	↓
0900			10.47	4.19	174	6.96	281.5	4.18	
0905			10.50	4.47	173	7.14	267.8	3.80	
0910			10.55	4.57	173	7.19	263.4	4.11	
0915	↓	↓	10.61	4.55	172	7.01	258.2	3.56	↓ Sample Time
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: -
Duplicate (Y/N): N
Dup ID/Time: N/
MS/MSD (Y/N): N/

Comments pH lower than normal (pH calibrated fine, however...) (Turb: variance) (SpCond: variance)

Signature

12/18/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 43M-01-16XBR

Project: PFAS RI - Existing Well Sampling AOC 32/43A Date: 01/03/2019
Location: Fort Devens Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft ~~BTOR~~)	22.6' BGS
Depth to bottom (ft ~~BTOR~~)	57.45 BGS
Screen Interval (ft ~~BTOR~~)	47.5'-57.5' BGS
Total volume purged (gal)	0.25 gal

pump set depth : 52.5' BGS

Sampling Type

Purging Method Peri Tubing type HDPE Dedicated pump (Y/N) N
Purge start/stop time 0805-0835 Tubing diameter 1/4" Air source -

Field Instrument (Model/S/N) YSI 556 MPS: 06H2823AL HACH 2100Q: 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0810	80mL/min	22.6'	10.48	5.74	405	3.79	276.7	22.5	clear/clear
0815	↓	23.4'	10.47	5.68	403	3.01	280.4	14.1	↓
0820		23.6'	10.41	5.49	400	2.08	286.0	10.8	
0825		23.8'	10.33	5.51	399	2.02	284.6	10.5	
0830		23.92'	10.21	5.54	397	1.92	283.1	9.9	
0835	↓	24.02'	10.12	5.60	398	1.85	282.8	9.5	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N Duplicate (Y/N): N MS/MSD (Y/N): N
Filter Size: - Dup ID/Time: -

Comments very low recharge ; ST @ 0835

Signature 01/03/18 Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 43M-01-20XBR-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens, MA

Date: 12/13/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓	One Bolt	Missing
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	22.60
Depth to bottom (ft BTOR)	79.87
Screen Interval (ft BTOR)	68.30-78.30
Total volume purged (gal)	1.75gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1005/1140
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556(06H2823AL) Hach 21009(161200054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1020	100	23.10	8.54	5.60	485	1.78	209.7	6.43	Clear
1025	↓	↓	8.85	5.64	491	1.66	204.3	5.49	↓
1030			8.94	5.62	502	1.46	203.6	4.60	
1035			8.70	5.61	516	1.36	201.2	4.79	
1040			8.78	5.63	556	1.55	196.9	4.60	
1045			9.21	5.58	610	1.34	197.1	4.53	
1050			9.31	5.68	757	1.25	190.5	3.76	
1055			9.07	5.69	1157	1.09	190.7	4.60	
1100			10.19	5.60	1682	0.93	195.7	4.23	
1105			10.26	5.90	3780	0.91	185.5	4.10	
1110			10.09	6.11	4720	0.92	184.9	4.33	
1115	↓	↓	10.45	6.30	5122	0.63	179.9	4.38	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 1135 Dissolved oxygen ~~and turbidity~~ experienced variance. Post cal issue with HACH. 05 1/3/19

Signature

12/13/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 43M-01-20XBR-FAL18

Project: PFAS RI - Existing Well sampling
Location: Fort Devens, MA

Date: 12/13/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓	One Bolt	Missing
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	22.60
Depth to bottom (ft BTOR)	79.87
Screen Interval (ft BTOR)	68.30-78.30
Total volume purged (gal)	1.75gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1005/1140
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556(06H2823AL) Hach 2100Q(1612C0054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1120 (1126)	100	23.10	10.22	6.43	5257	0.58	176.7	4.10	Clear
1125	↓	↓	9.73	6.51	5358	0.60	174.9	3.55	↓
1130	↓	↓	9.77	6.55	5353	0.58	173.0	3.79	↓
1135	↓	↓	9.67	6.59	5376	0.61	171.1	3.57	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 1135 Dissolved oxygen ~~and turbidity~~ experienced variance. OJ 1/3/19
Post Cal issue with HACH.

Signature

12/13/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 43M-01-20X08-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens, MA

Date: 12/13/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	22.82
Depth to bottom (ft BTOR)	34.17
Screen Interval (ft BTOR)	24 - 34
Total volume purged (gal)	1.25gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 0830/0945
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H282BAL) Hach 2100Q (161200054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0845	100	22.84	5.38	3.95	211	9.49	308.8	30.0	Clear
0850	↓	↓	8.43	4.18	206	7.04	294.1	55.6	↓
0855			7.69	5.63	205	8.77	223.2	19.4	
0900			8.63	5.66	196	7.86	218.5	16.0	
0905			9.31	5.72	195	7.63	212.7	16.2	
0910			9.41	5.72	197	7.86	209.6	Missid Reading	
0915			9.59	5.77	195	8.07	204.1	7.74	
0920			9.56	5.72	191	8.05	204.6	6.80	
0925			9.66	5.64	188	7.85	205.9	4.69	
0930			9.56	5.64	190	7.78	203.0	4.55	
0935			9.63	5.71	190	7.61	195.8	4.96	
0940	↓	↓	9.65	5.66	190	7.68	195.4	4.23	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 0940 Dissolved oxygen ~~and turbidity~~ experienced Variance. OJ 1/3/19
Post cal issue with HACH.

Signature

12/13/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 43M-01-17KBR

Project: PFAS RI - Existing Well Sampling — Date: 01/03/2019

Location: Fort Devens Massachusetts AOC 32/43A — Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft ~~BTOR~~)	23.20' BGS
Depth to bottom (ft ~~BTOR~~)	57.18' BGS
Screen Interval (ft ~~BTOR~~)	47.5'-57.5' BGS
Total volume purged (gal)	~ ~~0.75~~ 0.75 gal

pump set depth: 52.5' BGS

Sampling Type

Purging Method: Peri Pump — Tubing type: HDPE — Dedicated pump (Y/N): N

Purge start/stop time: 1040-1115 — Tubing diameter: 1/4" — Air source: -

Field Instrument (Model/S/N): YSI 556 MPS: 06H2823AL HACH 2100Q: 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1050	80 mL/min	23.20'	9.11	6.09	412	7.12	232.1	15.10	clear/clear
1055	↓	23.98'	9.20	6.31	414	1.90	238.4	8.90	↓
1100		24.32'	9.33	6.50	417	1.70	246.9	6.70	
1105		24.51'	9.63	6.56	417	1.74	244.7	5.68	
1110		24.62'	9.71	6.61	420	1.69	238.5	4.76	
1115	↓	24.74'	9.75	6.65	424	1.60	235.4	4.93	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N — Duplicate (Y/N): N — MS/MSD (Y/N): N

Filter Size: ← — Dup ID/Time: ←

Comments ST @ MW5 ; very low recharge rate @

Signature — 01/03/18 Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 43M-01-17X03

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts AOC 32/43A

Date: 01/03/2019
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure			✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft ~~BTOR~~)	23.15' BGS
Depth to bottom (ft ~~BTOR~~)	33.48 BGS
Screen Interval (ft ~~BTOR~~)	23.5-33.5' BGS
Total volume purged (gal)	~1.5 gal

pump set depth = 28.5' BGS

CV

Sampling Type

Purging Method: Peristaltic pump
Purge start/stop time: 0935-1020
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 556 MPS : 06H2823AL HACH 2100Q : 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	100 ml/min	23.15'	11.12	5.57	132	8.00	238.5	92.1	brown/clear
0950	↓	↓	11.22	5.35	134	7.76	237.4	79.8	clear/clear
0955	↓	↓	11.13	5.22	130	8.04	237.5	79.2	↓
1000	↓	↓	11.21	5.07	130	7.74	236.8	64.6	↓
1005	↓	↓	11.27	4.98	128	8.00	235.5	60.1	↓
1010	↓	↓	11.30	4.98	128	7.90	234.4	59.5	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: -
Duplicate (Y/N): Y
Dup ID/Time: 1020 / A2-MW-DUP08-010319
MS/MSD (Y/N): N

Comments: ST @ 1010 & DUP08 taken

Signature

01/03/2019
Date

MacPherson

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: MPP-93-02

Project: Devens PFAS
Location: Macpherson Water Supply

Date: 1/15/19
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	10.12
Depth to bottom (ft BTOR)	32.20
Pump Set Depth (ft BTOR)	27.00
Screen Interval (ft BTOR)	12-32
Total volume purged (gal)	1.25

Sampling Type

Purging Method: Peri
Purge start/stop time: 0940/1030
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (14A100102) HACH 2100Q (13110C029663)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1000	150	10.20	8.12	5.94	271	5.40	166.1	8.30	Clear
1005	150	10.20	8.39	5.94	269	5.33	169.7	7.92	Clear
1010	150	10.20	8.59	5.91	267	5.15	173.3	7.25	Clear
1015	150	10.16	8.60	5.90	266	5.15	175.2	4.92	Clear
1020	150	10.18	8.67	5.89	266	5.16	176.8	4.12	Clear
1025	150	10.18	8.72	5.88	266	4.97	178.1	3.85	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 1025 M537 PFAS Isotope Dilution

Signature

1/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: MPP-93-03

Project: Devens PFAS
Location: MacPherson Water supply

Date: 1/15/19
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	10.45
Depth to bottom (ft BTOR)	33.08
Pump Set Depth (ft BTOR)	28.00
Screen Interval (ft BTOR)	23-33
Total volume purged (gal)	1

Sampling Type

Purging Method: Peri
Purge start/stop time: 0800/0845
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (14A100102) HACH 2100Q (13110C02963)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0815	110	10.51	6.84	5.74	331	5.50	213.7	6.12	Clear
0820	110	10.51	6.74	5.65	325	5.46	217.4	2.92	Clear
0825	110	10.51	6.66	5.60	311	5.50	220.3	4.79	Clear
0830	110	10.51	6.76	5.58	307	5.48	221.1	3.12	Clear
0835	110	10.51	6.67	5.56	305	5.35	220.7	1.73	Clear
0840	110	10.51	6.65	5.55	304	5.35	220.4	2.12	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 0840 M537 PFAS Isotope Dilution

Signature

1/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 93-98.

Project: PFAS RI
Location: Macpherson

Date: 4/4/19
Sampler: Melissa Miller

Well Integrity

	Yes	No	N/A
Casing Secure		X	
Concrete Pad intact			X
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	8.55
Depth to bottom (ft BTOR)	100.45
Pump Set Depth (ft BTOR)	95.00
Screen Interval (ft BTOR)	90-100
Total volume purged (gal)	3.75

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 1145 / 1235
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: NA

Field Instrument (Model/S/N): YSI 650 MDS 01K0893A1
Lamotte 2020e 1116 0719

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1215	250	8.70	9.75	7.20	789	1.30	166.8	0.32	clear
1220	175	8.65	9.73	7.21	790	1.25	161.3	0.27	clear
1225	175	8.60	9.71	7.22	794	1.20	155.8	0.28	clear
1230	175	8.60	9.70	7.23	794	1.19	150.3	0.30	clear
1235	175	8.60	9.69	7.24	794	1.18	149.8	0.35	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: 93-98-APR19
Sample Time: 1235
Field Filtered (Y/N): N
Filter Size: NA
Duplicate (Y/N): N
Dup ID: N
Dup Time: NA
MS/MSD (Y/N): N

Comments Well lid is Broken & needs replacement

Signature

4/4/19
Date

AOC 69W

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-95-17X-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/11/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	12.24
Depth to bottom (ft BTOR)	16.95
Screen Interval (ft BTOR)	12.2-22.2
Total volume purged (gal)	1 gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 0900/0940
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 2100Q (16120C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0910	200	12.28	8.98	6.60	753	5.16	213.1	2.71	Clear
0915	↓	↓	9.14	6.36	740	5.29	217.8	2.12	↓
0920	↓	↓	9.09	6.26	745	5.42	218.2	1.99	↓
0925	↓	↓	9.15	6.21	746	5.35	216.5	1.85	↓
0930	↓	↓	9.19	6.18	749	5.42	214.8	1.79	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): Y
Dup ID/Time: 0940 ZWM-DUP01-FAL18
MS/MSD (Y/N): N

Comments: Sample @ 0930 Specific Conductivity experienced variance. Turbidity experienced variance.

Signature

12/11/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-01-25X-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/11/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	4.01
Depth to bottom (ft BTOR)	16.18
Screen Interval (ft BTOR)	4-14
Total volume purged (gal)	3 gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1135/1250
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A
Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 2100Q (16120C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1150	180	4.07	9.69	6.20	422	2.06	200.1	15.6	Clear
1155	↓	4.08	9.58	6.13	465	1.96	204.4	10.8	↓
1200		4.09	9.49	6.11	491	1.84	205.6	10.0	
1205		↓	9.50	6.06	515	1.62	207.7	8.43	
1210			9.48	6.06	538	1.45	207.5	8.29	
1215			9.52	6.06	576	1.32	207.4	4.65	
1220			9.47	6.00	606	1.18	211.3	4.58	
1225			9.49	6.00	627	1.05	210.6	4.03	
1230			9.40	5.99	649	0.99	212.1	4.52	
1235			9.45	5.97	654	0.93	211.8	4.36	
1240			9.38	5.97	670	0.86	212.9	4.80	
1245	↓	↓	9.40	5.95	666	0.88	213.1	4.51	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments: Sample @ 1245 specific Conductivity experienced variance. Turbidity experienced variance.

Signature

12/11/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 2WP-95-01X-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts

Date: 12/11/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	4.03
Depth to bottom (ft BTOR)	14.89
Screen Interval (ft BTOR)	10 - 12
Total volume purged (gal)	1 gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1005/1050
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 2100Q (1612C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1020	190	4.14	8.63	6.04	999	4.10	215.9	7.25	Clear
1025	190	4.15	9.37	6.04	996	3.80	213.1	4.89	↓
1030	180	4.19	9.64	6.03	997	3.61	211.7	4.63	↓
1035	↓	4.18	9.85	5.99	997	3.62	211.6	3.95	↓
1040	↓	4.18	9.98	5.99	997	3.59	210.6	4.44	↓
1045	↓	4.18	9.97	5.95	998	3.57	211.7	4.75	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments: Sample @ 1045 Specific Conductivity experienced Variance. Turbidity experienced Variance

Signature

12/11/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-95-18X

Project: PFAS RI - Existing Well Sampling | Date: 12/19/18

Location: Fort Devens Massachusetts | Sampler: B/A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	N/A	✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	2.20
Depth to bottom (ft BTOR)	~~18.30~~ 15.46
Screen Interval (ft ~~BTOR~~)	3.0-13.0 bgs
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peristaltic | Tubing type: HDPE | Dedicated pump (Y/(N)): N

Purge start/stop time: 1235- | Tubing diameter: 1/4" OD | Air source: N/A

Field Instrument (Model/S/N) YSI 556MPS: 14A100102

Hach 2100Q: 13110C029603

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
245 (1245)	200	2.25	12.74	6.44	1037	4.00	172.3	3.97	clear
1250	200	2.25	12.37	6.34	1043	3.77	174.1	3.55	"
1255	200	2.25	12.41	6.17	1040	3.36	177.9	2.98	"
1300	200	2.25	12.31	6.12	1040	3.35	178.9	2.73	"
1305	200	2.25	12.17	6.09	1038	3.41	178.8	2.31	"
1310	200	2.25	12.15	6.09	1038	3.43	178.7	2.01	"
1315	200	2.25	12.19	6.08	1038	3.42	178.7	1.96	"
1320	200	2.25	12.21	6.07	1038	3.42	178.4	1.98	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/(N)): | Duplicate (Y/(N)): — | MS/MSD (Y/N): Yes

Filter Size: — | Dup ID/Time: —

Comments ZWM-95-18X-DEC18 @ 1320 (MS/MSD)

Signature

12/19/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: 69WP-08-01

Project: Devens PFAS
Location: AOC 69W

Date: 1/15/19 1145
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	2"
Material	Steel
Depth to ice (ft BTOR)	1.74
Depth to bottom (ft BTOR)	N/A
Pump Set Depth (ft BTOR)	N/A
Screen Interval (ft BTOR)	10-13
Total volume purged (gal)	N/A

Sampling Type

Purging Method: Peri
Purge start/stop time: N/A
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (19A100102) HACH 2100Q ([redacted]13110C029663)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

Frozen, Unable to low flow

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments OJ 1/15 M537 PFAS Isotope Dilution

* Well was completely Frozen, unable to low flow.

Signature

1/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: ZWM-95-15X

Project: LTM - Fall 2019
Location: Fort Devens, Massachusetts
Date: 10/4/19
Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	7.52
Depth to bottom (ft BTOR)	14.95
Pump Set Depth (ft BTOR)	14.0
Screen Interval (ft BTOR)	8.74-18.74
Total volume purged (gal)	~5.25

Sampling Type

Purging Method: Peri-pump
Purge start/stop time: 1035-1140
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: -

Field Instrument (Model/S/N): YSI 650 MDS: 11G100386 HACH 2100Q: 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1045	300	7.52	13.65	6.12	1,201	3.14	96.4	15.12	yellow/brown/clear
1050		7.52	13.67	6.13	1,225	2.60	90.1	14.59	
1055		7.52	13.69	6.05	1,243	2.09	82.9	14.39	
~~10~~ 1100		7.52	13.70	6.01	1,251	1.79	73.4	14.20	
1105		7.52	13.75	5.94	1,261	1.51	70.5	13.93	
1110		7.52	13.81	5.85	1,274	1.09	69.9	13.41	
1115		7.52	13.90	5.80	1,291	0.70	67.3	13.02	
1120		7.52	13.94	5.78	1,302	0.61	64.8	12.91	
1125		7.52	14.00	5.77	1,307	0.50	62.9	12.53	
1130		7.52	14.04	5.76	1,307	0.44	58.1	12.25	
1135		7.52	14.06	5.76	1,307	0.41	56.3	12.12	
1140		7.52	14.10	5.75	1,307	0.42	54.1	12.95	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: ZWM-95-15X_FAL19
Sample Time: 1140
Duplicate (Y/N): N
MS/MSD (Y/N): Y
Field Filtered (Y/N): Y*
Dup ID: -
Filter Size: 0.45 µm
Dup Time: -

Comments Removed LDPE tubing and used HDPE tubing to sample (PFAS); Y* => Field filtered for metals

[signature]
Signature

10/4/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-95-17X

Project: LTM - Fall 2019 Date: 10/4/19
Location: Fort Devens, Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	15.98
Depth to bottom (ft BTOR)	16.71
Pump Set Depth (ft BTOR)	16.50
Screen Interval (ft BTOR)	14.70-24.70
Total volume purged (gal)	~2.5

Sampling Type
Purging Method: Peri Pump Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 0800 - 0845 Tubing diameter: 1/4" Air source: -

Field Instrument (Model/S/N): YSI 650 MDS : 16J100386 HACH 2100Q : 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0810	700	15.98	12.00	6.01	914	6.76	201.4	2.76	clear/clear
0815	↓	15.98	11.88	5.98	913	6.60	199.5	2.10	↓
0820		15.98	11.83	5.98	912	6.53	196.5	2.39	
0825		15.98	11.85	5.99	908	6.45	194.7	2.25	
0830		15.98	11.84	5.99	906	6.42	191.2	1.76	
0835		15.98	11.85	6.00	905	6.41	160.4	2.12	
0840		15.98	11.86	6.00	905	6.37	157.1	1.88	
0845	✓	15.98	11.86	6.00	905	6.34	154.5	2.08	✓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: ZWM-95-17X_FAL19
Sample Time: 0845 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments LDPE tubing present, took old tubing out and put new HDPE tubing in (for PFAS sampling)

Signature

10/4/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-~~[illegible]~~ 95-15X- **AOC Name:** 69W

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/18/20
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	3.70
Depth to bottom (ft BTOR)	14.78
Pump Set Depth (ft BTOR)	10'
Screen Interval (ft BTOR)	3-15-87
Total volume purged (gal)	3.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 905/945
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS 05619 41AD
LaMotte 2020 WF 5088-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
905	200	3.88	10.62	6.72	924	1.28	-49.0	18.7	clear
910	200	3.88	10.69	6.68	920	0.90	-71.7	13.1	clear
915	200	3.88	10.70	6.65	919	0.87	-89.6	9.03	clear
920	200	3.88	10.70	6.63	918	0.85	-95.2	2.06	clear
925	200	3.88	10.72	6.62	917	0.85	-96.7	2.04	clear
930	200	3.88	10.73	6.62	916	0.84	-96.5	2.02	clear
935	200	3.88	10.72	6.62	915	0.83	-97.1	2.10	clear
940	200	3.88	10.73	6.62	912	0.82	-98.9	2.07	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: ~~[illegible]~~ ZWM-95-15X-5R20
Sample Time: 945
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments: PFAS

[signature]
Signature

5/18/20
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: ZWM-95-17X **AOC Name:** 69W

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts

Date: 5/18/20
Sampler: MM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present			✓
Locked (stickup wells)		added lock	

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	13.21
Depth to bottom (ft BTOR)	16.74
Pump Set Depth (ft BTOR)	~~16~~ 16'
Screen Interval (ft BTOR)	12.2-24.7
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 725/805
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS 05619418
Formate 2 Flow 5088-3014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
725	200	13.21	11.87	6.92	728	7.48	-27.8	28.6	clear
730	200	13.21	11.80	6.47	730	6.61	-20.6	2.67	clear
735	200	13.21	11.76	6.36	731	6.67	-19.5	0.92	clear
740	200	13.21	11.75	6.37	730	6.66	-19.2	0.99	clear
745	200	13.21	11.73	6.36	730	6.65	-18.6	0.97	clear
750	200	13.21	11.71	6.36	732	6.64	-17.9	1.00	clear
755	200	13.21	11.69	6.37	733	6.59	-17.4	0.93	clear
800	200	13.21	11.68	6.35	737	6.57	-17.2	0.91	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: ZWM-95-17X-SPR20
Sample Time: 805
Duplicate (Y/N): N
MS/MSD (Y/N): ✓
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments PFAS ; added lock ✓

Signature

5/18/20
Date

AOC 5

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-06B

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/7/2018

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	1.5"
Material	PVC
Depth to water (ft BTOR)	18.92
Depth to bottom (ft BTOR)	111.75
Screen Interval (ft BTOR)	103.84 - 113.84
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Micro bladder Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1245-1400 Tubing diameter: 1/4" OD Air source: N/A

Field Instrument (Model/S/N): YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1300	90	22.88	11.15	7.48	765	3.36	-21.5	89.3	cloudy
1305	90	23.45	10.72	7.47	1033	2.54	-30.2	68.9	cloudy
1310	90	23.92	10.66	7.49	1096	2.01	-34.7	54.3	cloudy
1315	90	24.15	10.62	7.51	1168	1.46	-41.1	49.8	cloudy
1320	90	24.34	10.54	7.52	1366	1.06	-45.5	47.6	cloudy
1325	90	24.65	10.38	7.56	1736	0.88	-59.2	46.6	cloudy
1330	90	24.71	10.37	7.58	1848	0.71	-65.8	45.2	cloudy
1335	90	24.83	10.37	7.61	1873	0.69	-70.8	42.1	cloudy
1340	90	24.90	10.36	7.63	1894	0.65	-74.1	40.9	cloudy
1345	90	24.91	10.36	7.63	1899	0.65	-75.2	41.8	cloudy
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: N/A

Comments Sample SHP-2016-06B_FAL18 @ 1350 (PFAS+LTM) removed dedicated LDPE tubing at 1040

Signature

11/7/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-06C

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/7/2018

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	1.5"
Material	PVC
Depth to water (ft BTOR)	19.98
Depth to bottom (ft BTOR)	132.69
Screen Interval (ft BTOR)	124.87 - 134.87
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Micro bladder Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1100-1215 Tubing diameter: 1/4" OD Air source: Nitrogen

Field Instrument (Model/S/N): YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (^{0}C)	pH (STD)	SPC (μS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1125	80	20.14	11.73	7.36	255	1.72	-24.9	60.0	cloudy
1130	80	20.67	11.36	7.50	255	1.10	-32.0	37.9	cloudy
1135	80	20.68	11.21	7.53	255	0.92	-33.4	28.3	cloudy
1140	80	20.70	11.18	7.56	255	0.72	-34.2	24.8	cloudy
1145	80	20.71	11.10	7.59	255	0.49	-34.9	14.3	clear
1150	80	20.73	11.13	7.61	255	0.39	-36.0	11.7	clear
1155	80	20.74	11.14	7.62	255	0.41	-37.1	9.81	clear
1200	80	20.76	11.15	7.62	255	0.43	-37.2	9.76	clear
1205	80	20.78	11.15	7.64	255	0.38	-37.5	9.74	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: N/A

Comments Sample SHP-2016-06C_FAL18 @ 1210 (PFAS+LTM) removed dedicated LDPE tubing at 1040

Signature

11/7/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-10-11

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/9/18
Location: Fort Devens Massachusetts Sampler: BIA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	39.02
Depth to bottom (ft BTOR)	62.35
Screen Interval (ft BTOR)	52.6-62.6
Total volume purged (gal)	2.5

Sampling Type
Purging Method 1.75" Bladder Pump Tubing type HDPE Dedicated pump (Y/N) N
Purge start/stop time 0900 Tubing diameter 1/4" OD Air source Nitrogen

Field Instrument (Model/S/N) YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0915	200	39.10	10.71	6.47	499	0.33	-27.1	43.5	clear
0920	200	39.10	10.76	6.38	501	0.24	-34.7	39.2	
0925	200	39.10	10.77	6.37	502	0.23	-37.2	14.1	
0930	200	39.10	10.71	6.35	502	0.20	-40.4	9.24	
0935	200	39.10	10.91	6.34	503	0.20	-45.8	6.13	
0940	200	39.10	11.09	6.33	503	0.21	-48.1	5.98	
0945	200	39.10	11.26	6.33	504	0.21	-49.8	5.88	
0950	200	39.10	11.31	6.33	504	0.20	-50.1	5.79	
0955	200	39.10	11.33	6.34	504	0.21	-49.9	5.81	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): — MS/MSD (Y/N): —
Filter Size: 0.45µm Dup ID/Time: —

Comments Sample SHM-10-11-FALL8 @ 0955 (LTM + PFAS)

Signature

11/9/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-06A

Project: Devens Shepley's Hill Landfill - Fall 2018
Location: Fort Devens Massachusetts
Date: 11/9/18
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1.5"
Material	PVC
Depth to water (ft BTOR)	25.92
Depth to bottom (ft BTOR)	85.97
Screen Interval (ft BTOR)	82.85-87.85
Total volume purged (gal)	2.0

Sampling Type

Purging Method: micro bladder
Tubing type: HDPE
Dedicated pump (Y/N): N
Purge start/stop time: 1135-1255
Tubing diameter: 1/4" OD
Air source: N/A

Field Instrument (Model/S/N): YSI 556MPS (09G100702)
Hach 2100Q (~~[illegible]~~ 11090C012345)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1150	100	31.02	9.19	7.11	485	1.34	-39.7	20.5	Clear
1155	~~100~~ 90	31.12	9.17	7.20	480	1.13	-62.4	16.3	"
1200	80	32.30	9.14	7.32	463	1.02	-101.5	12.7	"
1205	80	33.36	9.13	7.39	451	0.95	-123.2	9.61	"
1210	80	33.96	9.12	7.43	443	0.91	-136.9	8.42	"
1215	80	34.93	9.11	7.49	432	0.86	-155.8	5.64	"
1220	80	35.00	9.10	7.57	427	0.70	-184.9	4.97	"
1225	80	36.19	9.19	7.58	427	0.65	-183.2	4.72	"
1230	80	36.46	9.21	7.58	428	0.63	-183.0	4.61	"
1235	80	36.59	9.23	7.57	428	0.64	-182.7	4.58	"
1240	80	36.72	9.27	7.57	427	0.62	-182.6	4.57	"
1245	80	36.78	9.21	7.57	427	0.60	-182.5	4.55	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Duplicate (Y/N): N
MS/MSD (Y/N): N
Filter Size: 0.45µm
Dup ID/Time: –

Comments Sample SHP-2016-06A-FAL18 @ 1245 DTW not stable (D)

[signature]
Signature

11/9/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-15

Project:	Devens Shepley's Hill Landfill - Fall 2018	Date:	11/12/2018
Location:	Fort Devens Massachusetts	Sampler:	BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	26.88
Depth to bottom (ft BTOR)	35.55
Screen Interval (ft BTOR)	24.85 - 34.85
Total volume purged (gal)	2.0

Sampling Type

Purging Method Peristaltic Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 0900-1015 Tubing diameter 1/4" OD Air source N/A

Field Instrument (Model/S/N) YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (^{0}C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0930	150	16.60	12.07	6.04	270	0.80	41.2	20.4	clear
0935	150	16.60	12.09	6.01	270	0.88	39.1	16.1	clear
0940	150	16.60	12.19	5.93	269	0.86	32.3	4.21	clear
0945	150	16.60	12.49	5.85	265	0.78	20.4	3.97	clear
0950	150	16.60	12.53	5.83	261	0.76	15.7	4.40	clear
0955	150	16.60	12.51	5.84	267	0.74	13.4	4.16	clear
1000	150	16.60	12.52	5.84	268	0.72	12.9	4.35	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): Y MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: SHL-DUP11_FAL18 @ 1010

Comments Sample SHL-15_FAL18 @ 1000 (PFAS+LTM)

Brett Cox
Signature

~~11/8/18~~ 11/12/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-10-06

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/12/2018

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	19.75
Depth to bottom (ft BTOR)	81.89
Screen Interval (ft BTOR)	72.38 -82.38
Total volume purged (gal)	2.0

Sampling Type

Purging Method Peristaltic Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 1200-1245 Tubing diameter 1/4" OD Air source N/A

Field Instrument (Model/S/N) YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (^{0}C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1215	150	17.51	12.17	6.60	595	0.34	-70.6	5.92	clear
1220	150	17.51	12.14	6.62	594	0.26	-79.3	4.64	clear
1225	150	17.51	12.05	6.62	594	0.26	-80.8	3.92	clear
1230	150	17.51	12.12	6.63	593	0.21	-79.9	3.01	clear
1235	150	17.51	12.18	6.64	592	0.19	-81.5	2.96	clear
1240	150	17.51	12.20	6.64	592	0.20	-82.1	2.94	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: N/A

Comments Sample SHM-10-06_FAL18 @ 1240 (PFAS+LTM) Removed dedicated TLPE @1150

Signature

11/12/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM93-18B

Project: LTM - Fall 2019 Date: 11/13/19
Location: Fort Devens, Massachusetts Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	18.87
Depth to bottom (ft BTOR)	~90'
Pump Set Depth (ft BTOR)	~85'
Screen Interval (ft BTOR)	80.60-90.60
Total volume purged (gal)	3.5

Sampling Type

Purging Method: Geotech Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 945/1025 Tubing diameter: 1/4" Air source: N/A
Field Instrument (Model/S/N): YSI 650XL 11B100186
Turbidimeter 2020WB 3590-3513

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
945	200	18.87	9.38	7.40	298	9.87	5.9	2.06	Clear
950		18.87	9.30	7.50	309	7.77	4.2	2.09	Clear
955		18.87	9.22	7.64	305	7.69	3.9	1.97	Clear
1000		18.87	9.29	7.64	309	7.68	2.8	1.98	Clear
1005		18.87	9.26	7.68	311	7.66	2.6	1.92	Clear
1010		18.87	9.22	7.69	313	7.65	2.4	1.90	Clear
1015		18.87	9.21	7.68	315	7.64	2.2	1.91	Clear
1020	↓	18.87	9.22	7.67	317	7.59	2.3	1.89	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHM-93-18B
Sample Time: 1025 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y Dup ID: N
Filter Size: .45 Dup Time: N

Comments

Signature

11/13/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: EPA-PZ-2012-2A

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/13/18

Location: Fort Devens Massachusetts Sampler: J. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	8.81
Depth to bottom (ft BTOR)	28.01
Screen Interval (ft BTOR)	23.66-28.66
Total volume purged (gal)	

Sampling Type

Purging Method GEOPROBE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 1110 / 1140 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595 AF / HACH 21000 / 161200054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1115	200	9.02	11.07	5.60	124	2.74	42.2	5.82	Clear
1120	200	9.00	10.90	5.46	122	2.64	39.7	1.25	Clear
1125	200	9.00	11.13	5.40	121	2.66	36.3	1.01	Clear
1130	200	8.98	11.22	5.43	121	2.63	32.5	~~99.2~~ 0.99	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW9060A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45 µm Dup ID/Time: N/A

Comments _____

_____ _____

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: EPA-PZ-2012-25

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/13/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	9.05'
Depth to bottom (ft BTOR)	80.12'
Screen Interval (ft BTOR)	78.62' - 83.62'
Total volume purged (gal)	

Sampling Type

Purging Method GEOPROBE Tubing type ____ Dedicated pump (Y/N) N

Purge start/stop time 1145 / 1235 Tubing diameter ____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595 AF / HACH 2100Q / 161200054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1155	200	9.10	10.39	5.82	424	0.74	2.1	8.21	Clear
1200	200	9.15	10.38	5.86	470	0.58	-11.1	4.28	Clear
1205	200	9.15	10.36	5.91	500	0.35	-18.9	4.12	Clear
1210	200	9.15	10.30	5.90	504	0.32	-21.6	4.01	Clear
1215	200	9.16	10.27	5.92	510	0.28	-24.9	3.98	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW9060A Duplicate (Y/N): N MS/MSD (Y/N): Y [PFAs]

Filter Size: 45 µm Dup ID/Time: N/A

Comments ____

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: EPA-P2-2012-3A

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/14/18
Location: Fort Devens Massachusetts Sampler: B/A

Well Integrity

	Yes	No	N/A
Casing Secure	~		
Concrete Pad intact			~
PVC casing intact	~		
Well gripper present	~		
Bolts present	~		→
Locked (stickup wells)	~		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	8.10
Depth to bottom (ft BTOR)	27.89
Screen Interval (ft BTOR)	23.45-28.45
Total volume purged (gal)	2.0

Sampling Type
Purging Method ~~Peristaltic~~ Tubing type ~~HDPE~~ Dedicated pump (Y/N) N
Purge start/stop time 1055-1130 Tubing diameter 1/4"OD Air source ~~Nitrogen~~ MA

Field Instrument (Model/S/N) YSI 556 MPS (09G100702)
Hach 2100Q (1109C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1105	200	8.35	10.01	5.59	384	1.42	41.1	6.14	clear
1110	↓	8.35	9.72	5.57	371	0.85	41.4	5.97	↓
1115		8.35	9.70	5.52	373	0.8	42.6	5.48	
1120	↓	8.35	9.66	~~5.55~~ 5.51	373	0.81	42.7	5.46	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): — MS/MSD (Y/N) —
Filter Size: 0.45µm Dup ID/Time: —

Comments Sample EPA-P2-2012-3A. FAILS @1120

Signature

11/14/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: EPA-PZ-2012-3B

Project: Devens Shepley's Hill Landfill - Fall 2018
Date: 11/14/18
Location: Fort Devens Massachusetts
Sampler: BM

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	PVC
Material	1"
Depth to water (ft BTOR)	8.04
Depth to bottom (ft BTOR)	76.94
Screen Interval (ft BTOR)	73.32 - 78.32
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peri
Tubing type: HDPE
Dedicated pump (Y/N): N
Purge start/stop time: 0915
Tubing diameter: 1/4" OD
Air source: —

Field Instrument (Model/S/N): YSI 556 MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0925	200	8.30	8.25	6.59	581	0.59	-38.9	97.5	~~clear~~ cloudy
0930	200	8.30	8.35	6.51	581	0.49	-40.3	72.8	cloudy
0935	200	8.30	8.45	6.40	581	0.43	-43.6	59.3	cloudy
0940	200	8.30	8.57	6.34	579	0.45	-46.4	41.2	cloudy
0945	200	8.30	8.63	6.33	576	0.44	-49.7	22.8	cloudy
0950	200	8.30	8.44	6.35	577	0.27	-54.4	17.4	clear
0955	200	8.30	8.59	6.35	578	0.20	-55.4	14.3	clear
1000	200	8.30	8.74	6.33	577	0.46	-54.9	13.9	clear
1005	200	8.30	8.75	6.34	577	0.19	-53.8	14.1	clear
1010	200	8.30	8.77	6.34	577	0.18	-53.6	14.4	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y
Duplicate (Y/N): —
MS/MSD (Y/N): —
Filter Size: 0.45µm
Dup ID/Time: —

Comments Sample EPA-PZ-2012-3B-FAL18@ (PFAS+LTM)
(+) Removed TLPE tubing at 0845 prior to sampling

[signature]
Signature

11/14/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-4

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/14/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	9.95'
Depth to bottom (ft BTOR)	14.25'
Screen Interval (ft BTOR)	4.40'-14.40'
Total volume purged (gal)	

Sampling Type

Purging Method GEOPROBE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 1320/1425 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556/ 06J1595 AF / HACH 2100Q / 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity /(NTU)	Color/Clarity
1330	200	10.00	9.90	7.12	325	0.98	-27.8	320	ORANGE / Cloudy
1335	200	10.02	10.88	6.86	320	0.46	-33.2	211	ORANGE / Cloudy
1340	200	10.00	11.28	6.72	320	0.22	-27.9	148	ORANGE / Cloudy
1345	200	10.00	11.39	6.64	321	0.23	-26.0	108	Yellow / Cloudy
1350	200	10.00	11.43	6.56	321	0.36	-25.7	60.6	Yellow / Clear
1355	200	10.00	11.39	6.52	318	0.31	-17.8	41.4	Yellow / Clear
1400	200	10.01	11.61	6.46	316	0.27	-25.5	26.2	Yellow / Clear
1405	200	10.00	11.67	6.41	313	0.22	-23.4	19.4	Yellow / Clear
1410	200	10.01	11.70	6.36	313	0.21	-19.0	18.3	Yellow / Clear
1415	200	10.02	11.32	6.32	313	0.21	-15.2	22.4	Yellow / Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW9060A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: N/A

Comments @1355 flipped YSI 556 chamber to purge particulates.

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-5 / WT-5

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/14/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	1.45'
Depth to bottom (ft BTOR)	14.85'
Screen Interval (ft BTOR)	3.70'-13.70'
Total volume purged (gal)	

Sampling Type

Purging Method GEOPURGE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 0800 / 0845 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595AF / HACH 210000 / 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0810	200	1.82	6.67	5.50	129	1.46	83.5	7.29	Yellow / Clear
0815	200	1.84	7.44	5.56	128	1.09	31.3	5.34	Yellow / Clear
0820	200	1.80	7.99	5.60	128	0.54	8.3	3.82	Yellow / Clear
0825	200	1.80	8.36	5.54	129	0.42	0.7	2.58	Yellow / Clear
0830	200	1.80	8.41	5.43	131	0.61	-0.8	2.25	Yellow / Clear
0835	200	1.80	8.38	5.37	132	0.43	3.4	2.11	Yellow / Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW 9060A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45 µm Dup ID/Time: N/A

Comments _____

Signature _____ Date _____

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM.07.03 (PFAS)

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/19/18

Location: Fort Devens Massachusetts Sampler: K. TAYLOR

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	
Locked (stickup wells)			✓

Well Information

Diameter	2-INCH ID
Material	PVC
Depth to water (ft BTOR)	17.54
Depth to bottom (ft BTOR)	32.28
Screen Interval (ft BTOR)	24.94-34.94
Total volume purged (gal)	2.08

Sampling Type

Purging Method PERISTALTIC Tubing type HDPE Dedicated pump (Y(N) N/A

Purge start/stop time 0918/1018 Tubing diameter ¼-INCH OD Air source N/A

Field Instrument (Model/S/N) YSI 556 MPS

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0918	125	N/A	10.35	6.33	0.680	3.26	238.8	N/A	TURBID
0923	125	21.45	9.14	4.89	0.216	2.54	264.6	35.4	TURBID
0938	150	21.47	9.11	4.87	0.525	3.28	258.6	21.3	CLEAR
0943	150	21.54	8.81	5.09	0.540	3.36	247.7	18.8	CLEAR
0948	150	21.58	8.76	5.13	0.575	3.94	244.1	17.7	CLEAR
0953	150	21.64	9.26	5.22	0.592	4.20	239.6	18.5	CLEAR
0958	125	21.52	8.91	5.27	0.605	4.14	235.6	16.5	CLEAR
1003	125	21.55	8.54	5.26	0.612	4.11	236.3	15.8	CLEAR
1008	125	21.54	8.55	5.28	0.609	4.14	235.4	22.4	CLEAR
1013	125	21.54	8.60	5.31	0.622	4.20	232.8	15.4	CLEAR
1018	125	21.55	8.46	5.33	0.638	4.22	231.7	12.5	CLEAR
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y(N): Duplicate (Y/(N) N/A MS/MSD (Y(N) N/A

Filter Size: 3INCH Dup ID/Time: N/A

Comments SAMPLED BETWEEN 1013-1030

Signature

11/19/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-12

Project: ~~Devens FTAS RI (0108J-0011-003)~~ Devens LTM
Location: Fort Devens
Date: 11/26/18
Sampler: Dave Kortjohn

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	X		
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	19.20
Depth to bottom (ft BTOR)	28.80
Screen Interval (ft BTOR)	16.40 - 31.40
Total volume purged (gal)	2.25

Sampling Type

Purging Method: Low Flow w/ Peristaltic pump
Tubing type: HDPE
Dedicated pump (Y/N): N
Purge start/stop time: 1410
Tubing diameter: 1/4"
Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS/15K100983; LaMotte 2020we / 1828-0412; Geotech Peristaltic Pump

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1420	175	19.34	11.35	6.37	285	4.26	90.3	9.23	clear
1425	175	19.34	11.47	6.21	293	4.06	95.2	7.38	
1430	175	19.34	11.54	6.07	302	4.02	100.3	4.14	
1435	175	19.34	11.53	6.01	316	3.89	103.2	3.29	
1440	175	19.34	11.59	6.00	329	3.88	103.9	3.25	
1445	175	19.34	11.58	5.99	341	3.86	104.5	3.21	
1450	175	19.34	11.59	6.00	340	3.88	104.7	3.23	V
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y (Metals & DOC)
Duplicate (Y/N): N
MS/MSD (Y/N): N
Filter Size: 0.45µM
Dup ID/Time: N/A

Comments Sample ID: SHL-12_FAL18 @ 1450

Signature

11/26/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-05-40X
Devens LTM Sampling
Project: ~~Devens PFAS RI (0182-0011-0003)~~ Date: 11/26/18
Location: _____ Sampler: Dave Kortjohn

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact	X		
PVC casing intact	X		
Well gripper present	X		
Bolts present	X		
Locked (stickup wells)			X

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	12.14
Depth to bottom (ft BTOR)	33.25
Screen Interval (ft BTOR)	31.93-33.93
Total volume purged (gal)	2.5gal

Sampling Type
Purging Method: Low Flow w/ Peristaltic Pump Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 850 Tubing diameter: 1/4" Air source: N/A
Field Instrument (Model/S/N): YSI 650 MDS/15K100983 LaMotte 2020we / 1828-0412 Geotech Peristaltic pump

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
900	200	12.22	9.25	6.51	461	2.32	176.7	22.4	clear
905	200	12.22	9.13	6.40	514	1.53	138.6	12.0	
910	200	12.22	9.16	6.39	525	1.29	97.8	10.61	
915	200	12.22	9.21	6.41	527	1.24	64.6	10.52	
920	200	12.22	9.10	6.41	529	1.29	41.3	9.34	
925	200	12.22	9.03	6.41	530	1.34	24.4	8.79	
930	200	12.22	8.88	6.41	531	1.20	13.3	7.59	
935	200	12.22	8.89	6.42	530	1.19	6.7	7.48	
940	200	12.22	8.94	6.42	531	1.20	0.7	6.46	
945	200	12.22	8.99	6.43	532	1.18	1.0	6.43	
950	200	12.22	9.00	6.43	532	1.19	0.6	6.41	
955	200	12.22	8.98	6.44	532	1.20	0.5	6.49	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details
Field Filtered (Y/N): Y (metals & DOC) Duplicate (Y/N): Y MS/MSD (Y/N): N
Filter Size: 0.45µm Dup ID/Time: 1010 / SHL-DUP10_FAL18

Comments Sample ID: SHM-05-40X_FAL18 @ 955

Dave Kortjohn
Signature

11/26/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: SHM-10-03

Project: ~~Devens PFAS RI (01082-0011-003)~~ Devens LTM

Location: Fort Devens

Date: 11/28/18

Sampler: Dave Kortjohn

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact			X
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)	X		

Well Information

Diameter	1.5"
Material	PVC
Depth to water (ft BTOR)	24.10
Depth to bottom (ft BTOR)	70.80
Screen Interval (ft BTOR)	60.78-70.78
Total volume purged (gal)	2.25

Sampling Type

Purging Method: Low Flow w/ Peristaltic pump

Tubing type: HDPE

Dedicated pump (Y/N): N

Purge start/stop time: 1100

Tubing diameter: 1/4"

Air source: N/A

Field Instrument (Model/S/N): YSI650 MDS/15K100983 LaMotte 2020we/18280412

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1110	~~200~~ 175 DK	24.12	9.92	6.86	1124	2.01	152.3	3.76	clear
1115	175	24.12	9.88	6.82	1147	2.15	153.9	3.59	
1120	175	24.12	9.74	6.83	1175	2.19	152.9	2.63	
1125	175	24.12	9.85	6.83	1174	2.20	151.6	2.45	
1130	175	24.12	9.82	6.83	1175	2.21	152.0	2.41	
1135	175	24.12	9.80	6.83	1174	2.21	151.9	2.39	
1140	175	24.12	9.80	6.83	1174	2.21	151.7	2.37	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y (Metals & DOC)

Duplicate (Y/N): N

MS/MSD (Y/N): N

Filter Size: 0.45 µm

Dup ID/Time: N/A

Comments Sample ID: SHM-10-03_FAL18 @ 1140

[signature]

Signature

11/28/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: SHM-10-10 (PFAS)

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/20/18
Location: Fort Devens Massachusetts Sampler: K.TAYLOR

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)	✓		

Well Information

Diameter	1.5-INCH
Material	PVC
Depth to water (ft BTOR)	9.24
Depth to bottom (ft BTOR)	65.59
Screen Interval (ft BTOR)	57.71-67.91
Total volume purged (gal)	2.1

Sampling Type

Purging Method PERISTALTIC Tubing type HDPE Dedicated pump (Y/N) N/A
Purge start/stop time 0740/0838 Tubing diameter 1/4-INCH O.D. Air source N/A

Field Instrument (Model/S/N) YSI 556 MPS

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0758	250	9.41	10.44	6.36	0.793	2.21	206.5	N/A	N/A
0808	200	9.29	8.92	6.32	0.995	0.57	196.8	4.46	CLEAR
0818	200	9.29	8.94	6.29	1.109	0.50	194.1	4.81	CLEAR
0823	200	9.29	9.03	6.32	1.123	0.38	191.4	5.83	CLEAR
0828	200	9.29	9.19	6.34	1.139	0.25	189.5	6.30	CLEAR
0833	200	9.29	9.22	6.34	1.152	0.25	188.0	6.05	CLEAR
0838	200	9.29	9.31	6.37	1.153	0.21	185.5	6.19	CLEAR
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): N/A MS/MSD (Y/N): N/A
Filter Size: 3-INCH Dup ID/Time: N/A

Comments 0740-0808- PURGED/GOT PUMP FLOW ; SAMPLED FROM 0840-

[signature]
Signature

11/20/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-11-06

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/12/2018

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	19.75
Depth to bottom (ft BTOR)	81.89
Screen Interval (ft BTOR)	72.38 -82.38
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peristaltic Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1335-1440 Tubing diameter: 1/4" OD Air source: N/A

Field Instrument (Model/S/N): YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1350	200	18.99	13.15	6.55	552	0.34	-38.4	42.7	cloudy
1355	200	18.99	12.97	6.54	556	0.23	-54.5	31.3	cloudy
1400	200	18.99	12.75	6.54	559	0.43	-64.2	22.6	clear
1405	200	18.99	12.76	6.54	559	0.23	-69.6	16.2	clear
1410	200	18.99	12.53	6.53	560	0.19	-69.7	14.7	clear
1415	200	18.99	12.51	6.53	560	0.18	-69.8	14.1	clear
1420	200	18.99	12.48	6.53	560	0.22	-69.9	14.0	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): Y MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: SHL-DUP03_FAL18 @ 1430

Comments Sample SHM-11-06_FAL18 @ 1420 (PFAS+LTM) Removed dedicated TLPE @1310

Signature

11/12/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM.B.03 (PFAS)

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/19/18

Location: Fort Devens Massachusetts Sampler: K.TAYLOR

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)	✓		

Well Information

Diameter	2 INCH
Material	PVC
Depth to water (ft BTOR)	3.82
Depth to bottom (ft BTOR)	50.48
Screen Interval (ft BTOR)	44.14-54.14
Total volume purged (gal)	2.38

Sampling Type

Purging Method: PERISTALTIC Tubing type: HDPE Dedicated pump (Y/N): N/A

Purge start/stop time: 1352 - 1456 (1410) Tubing diameter: ¼-INCH O.D. Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1411	200	3.81	9.86	6.81	0.913	2.62	111.8	28.9	SL. TURBID
1421	200	3.82	9.85	6.38	1.012	0.54	70.3	6.52	CLEAR
1431	200	3.82	10.01	6.44	1.003	0.46	77.8	3.91	CLEAR
1436	200	3.82	10.07	6.47	0.998	0.36	72.4	5.06	CLEAR
1441	200	3.82	10.04	6.49	1.001	0.29	68.8	3.19	CLEAR
1446	200	3.82	9.83	6.50	0.998	0.28	65.6	3.77	CLEAR
1451	200	3.82	9.82	6.51	0.993	0.25	62.7	3.80	CLEAR
1456	200	3.82	9.84	6.52	0.993	0.23	59.9	3.97	CLEAR
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): N/A MS/MSD (Y/N): C

Filter Size: 3-INCH Dup ID/Time: N/A

Comments C1405 - SUSTAINED TURBINE ; SAMPLED @ 1456 - 1525

Signature

11/19/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-13-04

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/13/18

Location: Fort Devens Massachusetts Sampler: CV

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	17.30'
Depth to bottom (ft BTOR)	29.90'
Screen Interval (ft BTOR)	19.68'-29.68'
Total volume purged (gal)	4 gal

Sampling Type

Purging Method: Peri Pump Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 0855-0910 Tubing diameter: 1/4" Air source: –

Field Instrument (Model/S/N): YSI 556 MPS: 12K101899 / HACH 2100Q: 11090C012349

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0910	250 ml/min	12.30'	12.58	6.41	603	5.50	68.9	58.3	clear/clear
0915	↓	↓	12.44	6.32	602	6.06	69.7	52.0	↓
0920			12.36	6.39	596	6.13	60.4	56.6	
0925			12.18	6.45	586	6.08	37.3	55.9	
0930			12.29	6.55	579	6.02	17.1	52.1	
0935			12.32	6.63	569	5.89	7.5	47.1	
0940	✓	✓	12.27	6.63	565	5.82	7.3	49.5	✓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 microns Dup ID/Time: –

Comments Field filtered for preserved samples. PFAS sample collected @ this location

Signature

11/13/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM93-18B

Project: LTM - Fall 2019 Date: 11/13/19
Location: Fort Devens, Massachusetts Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	18.87
Depth to bottom (ft BTOR)	~90'
Pump Set Depth (ft BTOR)	~85'
Screen Interval (ft BTOR)	80.60-90.60
Total volume purged (gal)	3.5

Sampling Type

Purging Method: Geotech Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 945/1025 Tubing diameter: 1/4" Air source: N/A
Field Instrument (Model/S/N): YSI 650XL 11B100186
Turbidimeter 2020WB 3590-3513

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
945	200	18.87	9.38	7.40	298	9.87	5.9	2.06	Clear
950		18.87	9.30	7.50	309	7.77	4.2	2.09	Clear
955		18.87	9.22	7.64	305	7.69	3.9	1.97	Clear
1000		18.87	9.29	7.64	309	7.68	2.8	1.98	Clear
1005		18.87	9.26	7.68	311	7.66	2.6	1.92	Clear
1010		18.87	9.22	7.69	313	7.65	2.4	1.90	Clear
1015		18.87	9.21	7.68	315	7.64	2.2	1.91	Clear
1020	↓	18.87	9.22	7.67	317	7.59	2.3	1.89	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHM-93-18B
Sample Time: 1025 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y Dup ID: N
Filter Size: .45 Dup Time: N

Comments

Signature

11/13/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM.13.08 (PFAS)

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/19/18

Location: Fort Devens Massachusetts Sampler: K. TAYLOR

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2-INCH
Material	PVC
Depth to water (ft BTOR)	18.52
Depth to bottom (ft BTOR)	64.55
Screen Interval (ft BTOR)	57.71-64.71
Total volume purged (gal)	1.98

Sampling Type

Purging Method PERISTALTIC Tubing type HDPE Dedicated pump (Y/(N)) N/A

Purge start/stop time 1108/1208 Tubing diameter ¼-INCH ID Air source N/A

Field Instrument (Model/S/N) _____

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1108	150	18.72	9.03	6.09	0.509	5.36	201.3	N/A	TURBID
1118	100	18.73	9.09	6.35	0.451	1.16	197.4	45.3	TURBID
1128	90	18.72	8.65	6.36	0.430	0.79	199.8	40.6	TURBID
1133	100	18.73	8.84	6.38	0.429	0.69	195.9	41.4	TURBID
1138	125	18.72	9.14	6.38	0.427	0.65	193.3	43.1	TURBID
1143	125	18.72	9.49	6.45	0.427	0.54	164.1	42.7	TURBID
1148	125	18.72	9.60	6.48	0.430	0.48	154.1	46.6	TURBID
1153	125	18.72	9.51	6.37	0.436	0.56	125.6	43.4	TURBID
1158	125	18.73	9.44	6.58	0.440	0.50	98.3	43.1	TURBID
1203	125	18.72	9.72	6.68	0.440	0.40	57.7	37.6	TURBID
1208	125	18.72	9.75	6.71	0.442	0.39	29.8	33.2	TURBID
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/(N)): Duplicate (Y/(N)): N/A MS/MSD (Y/(N)): N/A

Filter Size: 8-INCH Dup ID/Time: N/A

Comments C115) - PUMP SHUT OFF FOR 1-2 MIN ; SAMPLES BETWEEN 1208 & 1213 AFTER PURGING FOR 1 HR.

Signature

11/19/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-13-15

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/15/2018

Location: Fort Devens Massachusetts Sampler: BA

Well Integrity

	Yes	No	N/A
Casing Secure	X		
Concrete Pad intact			X
PVC casing intact	X		
Well gripper present	X		
Bolts present			X
Locked (stickup wells)		X	

Well Information

Diameter	2
Material	PVC
Depth to water (ft BTOR)	1.65
Depth to bottom (ft BTOR)	52.19
Screen Interval (ft BTOR)	54.6-64.6
Total volume purged (gal)	2

Sampling Type

Purging Method Peristaltic Tubing type LDPE Dedicated pump (Y/N) N

Purge start/stop time 1120/1155 Tubing diameter 0.25 Air source NA

Field Instrument (Model/S/N) YSI 556 (09G100702); Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1130	200	1.65	8.83	7.14	610	0.58	49.4	3.10	Cloudy
1135	200	1.65	8.72	7.19	608	0.45	47.3	2.01	Clear
1140	200	1.65	8.88	7.19	608	0.38	47.2	1.53	Clear
1145	200	1.65	8.93	7.20	608	0.35	46.8	1.09	Clear
1150	200	1.65	8.94	7.20	607	0.33	46.6	1.05	Clear
1155	200	1.65	8.95	7.20	607	0.33	46.5	1.03	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time:

Comments Sample collected at 1155

Brett Anchukaitis 11/15/2018

Signature **Date**

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-05-41B

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/16/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	8.15'
Depth to bottom (ft BTOR)	66.23'
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method GEOPUMP Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 1035 / 1150 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595AF / HACH 2100Q / 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1045	200	8.22	9.68	5.61	154	0.17	-17.3	68.3	Clear
1050	200	8.21	9.72	5.60	177	0.18	-31.0	63.4	Clear
1055	200	8.21	9.63	5.69	198	0.14	-33.2	68.9	Clear
1100	200	8.20	9.66	5.84	213	0.15	-44.9	58.4	Clear
1105	200	8.22	9.72	5.89	241	0.13	-49.1	49.2	Clear
1110	200	8.20	9.68	6.00	246	0.14	-55.7	38.1	Clear
1115	200	8.21	9.73	5.88	336	0.12	-51.6	17.3	Clear
1120	200	8.21	9.83	6.03	379	0.12	-63.7	11.7	Clear
1125	200	8.22	9.69	5.98	405	0.17	-62.4	7.58	Clear
1130	200	8.22	9.84	6.04	422	0.17	-66.0	5.23	Clear
1135	200	8.22	9.85	6.08	431	0.18	-67.8	5.15	Clear
1140	200	8.22	9.91	6.13	437	0.19	-70.0	5.01	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW 6010/6020 SW 9060A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: N/A

Comments _____

_____ _____

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-05-42A

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/15/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	2.82'
Depth to bottom (ft BTOR)	45.27'
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method GEOPROBE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 1400/1450 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595 AF / HACH 2100Q / 16070C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1405	200	2.89	7.33	6.73	181	0.89	29.8	19.7	Clear
1410	200	2.89	7.49	6.48	171	0.54	37.6	10.3	Clear
1415	200	2.90	7.57	6.32	164	0.34	35.3	5.02	Clear
1420	200	2.91	7.43	6.18	163	0.27	41.7	2.81	Clear
1425	200	2.90	7.66	6.07	162	0.41	42.2	2.08	Clear
1430	200	2.92	7.52	6.01	163	0.28	43.6	1.82	Clear
1435	200	2.90	7.48	5.94	163	0.28	45.7	1.77	Clear
1440	200	2.89	7.47	5.92	164	0.24	46.7	2.01	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW 9060A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: N/A

Comments _____

Signature _____ Date _____

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-05-41-A

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/16/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	8.38'
Depth to bottom (ft BTOR)	40.70'
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method GEOPROBE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 0845 / 1000 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595AF / HACH 21060 / 161200054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0855	200	8.40	10.46	5.21	183	0.55	56.7	23.1	Clear
0900	200	8.42	10.42	5.26	184	0.39	40.4	19.7	Clear
0905	200	8.42	10.39	5.32	185	0.32	27.4	16.2	Clear
0910	200	8.42	10.40	5.30	186	0.33	21.3	10.4	Clear
0915	200	8.42	10.38	5.37	188	0.45	14.3	8.12	Clear
0920	200	8.41	10.34	5.39	189	0.80	11.8	6.42	Clear
0925	200	8.42	10.33	5.38	189	0.85	10.4	4.82	Clear
0930	200	8.41	10.34	5.43	190	0.62	5.9	4.46	Clear
0935	200	8.41	10.39	5.48	191	0.40	2.4	3.31	Clear
0940	200	8.42	10.37	5.52	192	0.28	-0.1	2.62	Clear
0945	200	8.41	10.38	5.53	192	0.24	-1.8	2.47	Clear
0950	200	8.41	10.38	5.52	193	0.21	-0.9	2.55	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW9060A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: N/A

Comments _____

_____ _____

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-10-16

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/15/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	5.30
Depth to bottom (ft BTOR)	87.30
Screen Interval (ft BTOR)	77.51'-87.51'
Total volume purged (gal)	

Sampling Type

Purging Method GEOPAGE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 0840/0925 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556/ 06J1595 AF / HATCH 2100Q / 16120C054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0850	200	5.32	8.77	6.66	757	0.42	-50.6	3.82	Clear
0855	200	5.32	8.81	6.66	760	0.62	-52.6	1.01	Clear
0900	200	5.33	8.92	6.62	755	0.42	-51.0	0.91	Clear
0905	200	5.32	8.99	6.63	755	0.37	-52.2	0.72	Clear
0910	200	5.32	9.02	6.64	756	0.33	-50.1	0.50	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW9060A Duplicate (Y/N): Y [DUP08] MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: DUP08/0920

Comments _____

_____ **Signature** _____ Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-93-24A_FAL18

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/26/18

Location: Fort Devens Massachusetts Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	13.77
Depth to bottom (ft BTOR)	25.90
Screen Interval (ft BTOR)	
Total volume purged (gal)	1.75gal

Sampling Type

Purging Method: Peristaltic Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1230/1335 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 556(09G100702) Hach 2100Q(11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1245	150	13.79	11.18	6.36	722	9.04	31.4	4.86	Clear
1250	↓	13.77	11.24	6.11	730	8.21	35.4	3.93	↓
1255		13.77	11.17	6.01	732	7.76	37.4	3.79	
1300		13.77	10.90	5.99	732	7.57	40.3	3.62	
1305		13.77	10.83	5.81	731	7.94	42.1	3.10	
1310		13.78	10.77	5.76	729	8.01	43.4	3.73	
1315		13.78	10.46	5.74	729	7.80	44.8	3.40	
1320		13.78	10.49	5.68	727	7.83	45.0	3.16	
1325		13.77	10.50	5.65	726	8.48	45.9	2.70	
1330		13.77	10.53	5.65	725	8.12	46.0	3.13	
1335	↓	13.79	10.42	5.63	722	8.01	45.7	2.86	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): Y, PFAS only

Filter Size: 0.45µm Dup ID/Time: N/A

Comments Sample @ 1335

Signature

11/26/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-96-5B_FAL18

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/26/18

Location: Fort Devens Massachusetts Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	3.68
Depth to bottom (ft BTOR)	96.65
Screen Interval (ft BTOR)	
Total volume purged (gal)	1.5 gal

Sampling Type

Purging Method: Peristaltic Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 0920/1010 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 556 (09G100702) Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0930	130	3.91	9.72	6.84	514	4.19	61.5	33.4	Brown
0935	↓	3.90	9.82	6.78	505	4.27	52.7	35.7	Brown
0940	↓	↓	9.78	6.73	505	4.20	41.9	27.9	Clear
0945	↓	↓	9.83	6.72	504	4.19	40.0	25.5	↓
0950	↓	↓	9.87	6.70	502	4.10	38.0	24.2	↓
0955	↓	↓	9.81	6.69	502	4.05	37.2	25.7	↓
1000	↓	↓	9.76	6.68	501	4.02	36.8	2.12	↓
1005	↓	↓	9.91	6.68	499	4.08	36.5	2.18	↓
1010	↓	↓	9.82	6.67	500	4.02	36.4	2.41	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): Y PFAS MS/MSD (Y/N): N

Filter Size: 0.45µm Dup ID/Time: 1020

Comments Sample @ 1010

Signature

11/26/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-96-5C FALL18

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/20/18

Location: Fort Devens Massachusetts Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	3.26
Depth to bottom (ft BTOR)	81.65
Screen Interval (ft BTOR)	51.00-61.00
Total volume purged (gal)	3gal

Sampling Type

Purging Method Peristaltic Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 0900/1040 Tubing diameter 1/4" Air source N/A

Field Instrument (Model/S/N) YSI 556 (09G100702) Hach 2100Q (13110C029663)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0905	120	3.28	8.80	6.32	357	.60	24.7	61.7	Clear
0910	↓	↓	8.77	6.30	357	.49	23.2	14.8	↓
0915			8.73	6.28	358	.52	22.5	22.6	
0920			8.57	6.26	359	.44	21.8	17.3	
0925			8.26	6.23	359	.35	21.5	12.5	
0930	↓	↓	8.01	6.20	359	.31	21.7	16.9	↓
0935	—	—	Pump Not Working, Missed Readings						—
0940	↓		↓		↓		↓		↓
0945	↓		↓		↓		↓		↓
0950	160	3.30	8.76	6.15	355	.80	32.2	13.1	Clear
0955	↓	↓	8.94	6.15	356	.40	27.4	14.7	↓
1000	↓	↓	9.14	6.14	356	.40	25.3	15.6	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45µm Dup ID/Time: N/A

Comments Sample @ 1040 Turbidity stable but not within parameters.

Signature

11/20/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-96-5C FALL8

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/20/18

Location: Fort Devens Massachusetts Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	3.26
Depth to bottom (ft BTOR)	81.65
Screen Interval (ft BTOR)	51.00 - 61.00
Total volume purged (gal)	3gal

Sampling Type

Purging Method: Peristaltic Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 0900 / 1040 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 556 (09G100702) Hach 2100Q (13110C029663)

Stabilization Parameters Turbidity (NTU) ORP (mv)

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	[redacted]	[redacted]	Color/Clarity
1005	160	3.30	9.25	6.14	356	.27	17.9	24.2	Clear
1010	↓	↓	9.28	6.13	357	.26	20.3	24.7	↓
1015			9.09	6.12	359	.24	31.3	25.0	
1020			9.03	6.11	360	.27	18.4	25.1	
1025			8.95	6.10	361	.26	13.3	24.8	
1030			8.74	6.08	361	.24	13.2	24.5	
1035	↓	↓	8.93	6.07	360	.25	15.6	24.2	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45µm Dup ID/Time: N/A

Comments Sample @ 1040 Turbidity stable but not within parameters

Signature

11/20/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-05-42B

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/15/18

Location: Fort Devens Massachusetts Sampler: S GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	2.80'
Depth to bottom (ft BTOR)	75.10'
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method GEOPROBE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 1500/1550 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595AF / HACH 2100Q / 161200054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1505	200	2.84	7.58	6.24	441	2.26	45.2	15.6	Clear
1510	200	2.82	7.52	6.45	495	0.63	-8.9	17.8	Clear
1515	200	2.82	7.54	6.54	505	0.43	-30.8	13.3	Clear
1520	200	2.82	7.44	6.54	511	0.54	-35.9	7.88	Clear
1525	200	2.82	7.52	6.56	513	0.58	-38.8	5.58	Clear
1530	200	2.82	7.44	6.55	516	0.49	-40.2	4.00	Clear
1535	200	2.82	7.49	6.54	515	0.49	-39.8	3.76	Clear
1540	200	2.82	7.52	6.54	517	0.47	-38.1	3.52	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

SW6010/6020

Field Filtered (Y/N): SW9030A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: N/A

Comments _____

_____ _____

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-01A

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/13/18

Location: Fort Devens Massachusetts Sampler: B+A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	13.00
Depth to bottom (ft BTOR)	26.10
Screen Interval (ft BTOR)	15.55-25.55
Total volume purged (gal)	2.0

Sampling Type

Purging Method Peri Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 1200-1300 Tubing diameter 1/4" OD Air source MA

Field Instrument (Model/S/N) YSI 556 MPS (05G100702)

Hach 2100Q (11050C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1220	150	13.10	12.19	5.45	63	5.93	60.1	12.7	clear
1230	150	13.10	12.30	5.38	63	5.95	67.4	9.24	↓
1235	150	13.10	12.40	5.37	63	2.71	70.4	8.24	
1240	150	13.10	12.44	5.37	63	2.84	75.6	7.68	
1245	150	13.10	12.46	5.36	63	2.80	77.4	6.99	
1250	150	13.10	12.47	5.35	63	2.79	79.6	6.98	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N) _____ MS/MSD (Y/N): MS/MSD (LJM)

Filter Size: 0.45µm Dup ID/Time: _____

Comments Sample SHP-2016-01A-FALL8 @ 1250 (LJM - MS/MSD, PFAS) Removed TLPE @ 1045

B+A

Signature

11/13/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-1B

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/13/2018

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	14.92
Depth to bottom (ft BTOR)	85.60
Screen Interval (ft BTOR)	77.56 - 87.56
Total volume purged (gal)	2.0

Sampling Type

Purging Method Peristaltic Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 1100-1155 Tubing diameter 1/4" OD Air source N/A

Field Instrument (Model/S/N) YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (^{0}C)	pH (STD)	SPC (μS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1115	100	15.01	9.03	6.16	174	0.95	6.3	47.3	cloudy
1120	100	15.01	9.07	6.14	174	0.89	1.4	23.5	cloudy
1125	100	15.01	9.09	6.13	179	0.89	-2.3	12.7	clear
1130	100	15.01	9.19	6.11	186	0.84	-6.5	9.23	clear
1135	100	15.01	9.23	6.11	185	0.85	-8.4	8.14	clear
1140	100	15.01	9.24	6.11	188	0.89	-9.6	7.63	clear
1145	100	15.01	9.24	6.10	189	0.90	-9.9	7.52	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Y Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: N/A

Comments Sample SHP-2016-1B_FAL18 @ 1145

Ruth Cox

Signature

11/13/18

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2018-2A

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/15/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	11.98'
Depth to bottom (ft BTOR)	27.20'
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method GEOPROBE Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 1100/1215 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06S1595 AF / HATCH 2100Q / 161200054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1105	200	11.92	8.38	8.63	237	1.72	-24.5	26.4	Clear
1110	200	11.94	8.98	9.44	244	1.15	-36.3	23.8	Clear
1115	200	11.93	9.18	9.83	235	0.86	-28.5	22.0	Clear
1120	200	11.95	9.08	9.85	230	1.16	-20.4	21.9	Clear
1125	200	11.92	9.24	9.82	218	1.72	-11.4	20.4	Clear
1130	200	11.91	9.22	9.77	213	2.09	-9.4	22.0	Clear
1135	200	11.90	9.18	9.70	207	2.34	-26.3	20.3	Clear
1140	200	11.90	9.08	9.67	201	2.49	-35.5	19.7	Clear
1145	200	11.92	9.15	9.59	195	2.88	-43.0	19.0	Clear
1150	200	11.90	9.00	9.51	189	2.89	-48.7	20.4	Clear
1155	200	11.90	8.98	9.47	188	3.01	-51.4	19.5	Clear
1200	200	11.91	9.14	9.44	184	3.07	-51.4	22.4	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6020/6020 SW9060A Duplicate (Y/N): Y MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: SHC-DUP07 / 1210

Comments _____

Signature _____ Date _____

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-2.B

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/15/18

Location: Fort Devens Massachusetts Sampler: S. GEORGES

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	11.69'
Depth to bottom (ft BTOR)	87.15'
Screen Interval (ft BTOR)	
Total volume purged (gal)	

Sampling Type

Purging Method GROUNDFOS Tubing type _____ Dedicated pump (Y/N) N

Purge start/stop time 1235/1320 Tubing diameter _____ Air source N/A

Field Instrument (Model/S/N) YSI 556 / 06J1595AF / HACH 2100Q / 161200054715

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1240	200	11.75	8.21	7.67	622	1.28	-96.9	15.02	Clear
1245	200	11.80	8.16	7.20	635	0.35	-85.7	4.89	Clear
1250	200	11.81	8.30	7.10	634	0.40	-83.7	2.57	Clear
1255	200	11.78	8.27	6.97	633	0.30	-84.0	1.68	Clear
1300	200	11.74	8.07	6.89	636	0.28	-80.0	1.56	Clear
1305	200	11.72	7.99	6.82	637	0.26	-78.9	1.37	Clear
1310	200	11.71	8.14	6.79	634	0.27	-79.6	1.44	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): SW6010/6020 SW9060A Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 45µm Dup ID/Time: N/A

Comments _____

_____ _____

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N2-PI-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/6/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	5.98
Depth to bottom (ft BTOR)	42.60
Screen Interval (ft BTOR)	35-40
Total volume purged (gal)	2

Sampling Type

Purging Method: Peri
Purge start/stop time: 1040/1130
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 21000 (K1200C05)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1055	150	6.04	9.37	6.43	529	1.07	29.2	9.27	Clear
1100	↓	↓	9.62	6.42	534	0.95	29.0	23.2	↓
1105			9.60	6.45	537	0.84	25.2	11.8	
1110			9.72	6.49	539	0.76	20.3	12.0	
1115			9.90	6.55	540	0.70	15.4	13.3	
1120			10.00	6.50	543	0.65	17.5	3.07	
1125			10.08	6.50	544	0.63	16.5	4.69	
1130	↓	↓	10.15	6.52	544	0.68	14.2	4.53	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments: Sample @ 1130 Specific Conductivity and Dissolved Oxygen experienced Post cal issue with HACH. variance.

Signature

12/6/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N6-P1

Project: Devens PFAS
Location: Shepley's Landfill

Date: 1/15/19
Sampler: OJ / BCA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	38.10
Depth to bottom (ft BTOR)	90.68
Pump Set Depth (ft BTOR)	85.0
Screen Interval (ft BTOR)	80-90
Total volume purged (gal)	1.5

Sampling Type

Purging Method: micro bladder
Purge start/stop time: 1308-1430
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: Nitrogen

Field Instrument (Model/S/N): YSI 556 MPS (12C100125)
Lamotte 2020 we (1865-042)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1325	80	37.86	7.54	6.50	561	3.66	-8.2	11.5	Clear
1330	80	37.96	7.85	6.55	594	2.53	-21.1	7.63	Clear
1335	80	37.92	7.78	6.55	631	1.69	-28.1	5.07	Clear
1340	80	37.92	7.83	6.58	661	1.23	-33.4	3.45	clear
1345	80	37.92	7.78	6.59	685	0.94	-38.0	3.12	Clear
1350	80	37.92	7.98	6.61	698	0.81	-39.2	2.88	Clear
1355	80	37.92	8.02	6.62	700	0.69	-39.9	2.79	Clear
1400	80	37.92	8.13	6.63	701	0.58	-41.4	1.16	Clear
1405	80	37.92	8.18	6.63	701	0.53	-42.4	1.60	Clear
1410	80	37.92	8.28	6.65	700	0.48	-43.0	1.24	Clear
1415	80	37.92	8.25	6.65	700	0.49	-43.1	1.20	clear
1420	80	37.92	8.26	6.65	700	0.47	-43.2	1.19	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): —
Dup ID/Time: —
MS/MSD (Y/N): —

Comments Sample N6-P1-JAN19 @ 1420 M537 PFAS Isotope Dillution

[signature]
Signature

1/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N7-P1

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/20/18
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	27.90
Depth to bottom (ft BTOR)	71.30
Screen Interval (ft ~~BTOR~~)	66 – 66 bgs
Total volume purged (gal)	2.0

Well Condition: good, tags ✓

Sampling Type

Purging Method: Peristaltic
Purge start/stop time: 0920 –
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS : 14A100102
Hach 2100Q : 13110C029663

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0930	120	27.95	10.13	7.63	373	2.60	11.2	6.29	clear
0935	120	28.00	10.04	7.29	392	0.75	-49.2	4.62	"
0940	120	28.00	10.17	7.04	420	0.49	-51.9	4.14	"
0945	120	28.00	10.02	6.79	501	0.41	-49.8	4.03	"
0950	120	28.00	9.97	6.68	542	0.60	-48.7	3.99	"
0955	120	28.00	10.05	6.65	554	0.53	-48.1	3.97	"
1000	120	28.00	9.95	6.63	557	0.50	-46.5	3.90	"
1005	120	28.00	9.98	6.63	559	0.49	-45.1	3.89	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10% <0.5 = stable	± 10mv	10% <5 = stable	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/(N)): —
Duplicate (Y/(N)): —
MS/MSD ((Y)/N): Yes
Filter Size: —
Dup ID/Time: —

Comments Sample N7-P1-DEC18C 1005 (MS/MSD)

Signature

12/20/18
Date

YSI Draft
pH 10
SPC
DO

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N7-P2

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/20/18
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	—		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	28.01
Depth to bottom (ft BTOR)	35.15
Screen Interval (ft ~~BTOR~~)	29-34 bgs
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peristaltic
Tubing type: HDPE
Dedicated pump (Y/N): N
Purge start/stop time: 1020-
Tubing diameter: 1/4" OD
Air source: MA

Field Instrument (Model/S/N): YSI 556MPS : 14A100102
Hach 2100Q : 13110C029663

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1030 (1020)	150	28.10	10.48	6.30	371	0.87	-41.0	4.65	clear
1035	150	28.10	10.46	6.24	365	0.57	-44.3	4.57	"
1040	150	28.10	10.43	6.23	364	0.47	-45.5	4.42	"
1045	150	28.10	10.52	6.21	362	0.44	-46.0	4.38	"
1050	150	28.10	10.58	6.20	361	0.40	-46.7	4.29	"
1055	150	28.10	10.60	6.20	360	0.43	-47.0	4.27	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N)
Filter Size: —
Duplicate (Y/N): —
Dup ID/Time: —
MS/MSD (Y/N): —

Comments Sample N7-P2-DEC18 @ 1055

Signature

12/20/18
Date

YSI Drift
pH10
SPC
DO

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-17-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/10/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	4.60
Depth to bottom (ft BTOR)	13.90
Screen Interval (ft BTOR)	6.0-16.0
Total volume purged (gal)	2.5gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1330/1425
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 2100Q (16120C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1340	200	4.80	[redacted]	5.81	555	1.14	192.3	18.5	Clear
1345	↓	↓	4.45	5.80	564	0.88	190.0	13.8	↓
1350			4.41	5.77	572	0.74	188.8	11.1	
1355			4.35	5.67	583	0.58	191.3	9.10	
1400			4.41	5.63	592	0.58	192.3	6.72	
1405			4.38	5.63	599	0.56	191.2	4.41	
1410			4.30	5.60	610	0.53	191.4	4.14	
1415	↓	↓	4.36	5.57	620	0.55	191.6	4.92	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments: Sample @ 1415 Specific Conductivity, Dissolved Oxygen, and turbidity all experienced variance.

Signature

12/10/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-25-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/10/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	23.90
Depth to bottom (ft BTOR)	38.20
Screen Interval (ft BTOR)	23.5-33.5
Total volume purged (gal)	1.25 gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 1110 / 1200
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H283AL) Hach 2100Q (16120C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1120	150	23.95	9.75	5.84	866	5.28	160.5	65.7	Cloudy
1125	↓	23.96	10.04	5.84	905	5.18	160.7	32.4	↓
1130		23.95	10.02	5.87	931	5.08	159.3	21.3	↓
1135		↓	10.22	5.87	933	4.73	159.1	6.23	Clear
1140			10.39	5.90	944	4.58	158.3	4.52	↓
1145			10.38	5.89	952	4.79	159.6	4.08	↓
1150	↓	↓	10.40	5.88	955	4.80	160.9	3.20	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments: Sample @ 1150 Specific Conductivity, Dissolved Oxygen, and turbidity all experienced variance.

Signature

12/10/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-01-388-FALIB

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts

Date: 12/6/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact			✓
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	Steel
Depth to water (ft BTOR)	3.85
Depth to bottom (ft BTOR)	25.57
Screen Interval (ft BTOR)	18-23
Total volume purged (gal)	2.5

Sampling Type

Purging Method: Peri
Purge start/stop time: 0920/1005
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 2100Q (16120C05)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0930	160	3.87	9.77	6.63	440	1.63	47.6	12.2	Clear
0935	↓	3.87	9.88	6.55	432	1.40	-4.5	12.2	↓
0940		3.86	10.01	6.54	425	1.11	-29.9	8.75	
0945		↓	9.93	6.46	421	0.96	-32.5	8.96	
0950			9.94	6.36	418	0.86	-32.1	2.86	
0955			9.64	6.35	417	0.82	-34.9	3.12	
1000			9.50	6.31	417	0.77	-34.8	3.02	
1005	↓	↓	9.48	6.29	415	0.76	-36.0	3.15	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): Y
Dup ID/Time: 1015
MS/MSD (Y/N): N

Comments: Sample @ 1005 Specific Conductivity and Dissolved Oxygen experienced variance. Post cal issue with HACH.

Signature

12/6/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-05-46A

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/6/18
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			/
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			/
Locked (stickup wells)	/		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	12.20
Depth to bottom (ft BTOR)	27.35
Screen Interval (ft BTOR)	21.87 - 26.87
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peri
Purge start/stop time: 0830 -
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: NA

Field Instrument (Model/S/N): YSI 556MPS : 14A100102
Hach 2100Q : 13110C029603

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0845	150	12.60	8.41	5.89	337	0.66	1.0	36.1	clear
0850	150	12.60	8.09	5.94	385	0.51	-17.0	22.8	clear
0855	150	12.60	8.51	5.89	394	0.50	-23.5	13.4	
0900	150	12.60	8.52	5.88	397	0.49	-26.7	10.3	
0905	150	12.60	8.51	5.91	415	0.40	-29.9	9.72	
0910	150	12.60	9.13	5.91	431	0.19	-37.5	8.91	
0915	150	12.60	9.15	5.91	434	0.18	-37.7	8.89	
0920	150	12.60	9.20	5.92	435	0.17	-39.0	8.79	
0925	150	12.60	9.21	5.92	436	0.17	-39.6	8.77	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: —
Duplicate (Y/N): Yes
Dup ID/Time: 0935
MS/MSD (Y/N): —

Comments: SHP-05-46A-FA18 @ 0925 (FD)

Signature

12/10/18
Date

YSI Drift SPC

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-05-46B

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/10/18
Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	—		
Well gripper present	—		
Bolts present			—
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	11.75
Depth to bottom (ft BTOR)	75.86
Screen Interval (ft BTOR)	66.57-76.57
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peri
Purge start/stop time: 1050 -
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS : 14A100102
Hach 2100Q : 13110C029663

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1100	150	11.85	9.71	6.69	182	0.45	-46.3	4.28	clear
1105	150	11.85	9.74	6.54	393	0.45	-51.9	3.96	clear
1110	150	11.85	9.67	6.58	452	0.38	-65.0	3.26	clear
1115	150	11.85	9.65	6.58	466	0.30	-68.9	3.17	↓
1120	150	11.85	9.64	6.58	467	0.32	-70.1	2.99	↓
1125	150	11.85	9.64	6.58	468	0.31	-70.5	2.96	↓
1130	150	11.85	9.66	6.58	468	0.34	-70.6	2.95	↓
~~1135~~									
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): —
Dup ID/Time: —
MS/MSD (Y/N): —

Comments: Sampled SHP-05-46B-FAL18 @ 1130

[signature]
Signature

12/10/18
Date

YSI Drift
SPC

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-99-33A-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/10/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	Steel
Depth to water (ft BTOR)	10.80
Depth to bottom (ft BTOR)	17.79
Screen Interval (ft BTOR)	10.5-15.5
Total volume purged (gal)	1gal

Sampling Type

Purging Method: Peri
Purge start/stop time: 0820/0940
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A
Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 2100Q (16120C054715)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0835	130	11.53	4.89	4.78	92	1.19	235.6	31.9	Clear
0840	110	11.52	5.55	4.79	87	1.00	216.0	11.6	↓
0845	110	11.55	5.49	4.86	86	0.90	199.2	5.43	
0850	↓	11.51	5.47	4.77	85	0.92	195.5	4.66	
0855		11.50	5.21	4.69	87	0.87	189.9	4.45	
0900		11.51	5.52	4.66	85	0.84	186.2	4.20	
0905		11.53	5.88	4.83	86	0.80	171.1	4.76	
0910		11.53	5.85	4.99	87	0.74	157.4	4.11	
0915		11.51	5.89	4.92	88	0.67	156.6	3.72	
0920		11.53	5.91	4.95	88	0.66	148.5	4.28	
0925	↓	11.53	5.93	4.94	88	0.64	147.2	4.35	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): Y

Comments: Sample @ 0925 Specific Conductivity, Dissolved Oxygen, and turbidity all experienced variance.

Signature

12/10/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-99-33B-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/6/18
Sampler: Owen Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact			✓
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	steel
Depth to water (ft BTOR)	10.55
Depth to bottom (ft BTOR)	77.98
Screen Interval (ft BTOR)	[redacted] 74.5-79.5
Total volume purged (gal)	2

Sampling Type

Purging Method: Peri
Purge start/stop time: 1235/1425
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H2823AL) Hach 2100Q (16120C05)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1255	100	10.80	8.76	7.06	596	1.03	-88.9	296	Black
1300	Missed	Reading							
1305	100	10.80	8.79	6.94	660	0.76	-88.7	530	Black
1310	↓	10.82	8.62	6.72	681	0.80	-67.5	894	↓
1315		10.85	8.66	6.68	689	0.71	-73.2	out of range	
1320		10.85	8.75	6.71	691	0.58	-79.6	out of range	
1325		10.89	8.48	6.72	692	0.56	-84.6	245	
1330		10.90	8.46	6.71	682	0.57	-87.0	618	
1335		10.90	8.56	6.65	698	0.50	-85.5	out of range	
1340		10.90	8.18	6.67	698	0.48	-86.4	918	
1345		10.88	8.03	6.61	697	0.49	-84.3	284	
1350	↓	10.90	7.85	6.57	690	0.50	-84.0	418	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments: Sample @ 1425 * Turbidity would not stabilize prior to sampling * Specific Conductivity and Dissolved Oxygen experienced Post cal issues with HACH variance.

Signature

12/6/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-99-38B-FAL18

Project: PFAS RI - Existing Well Sampling
Location: Fort Devens Massachusetts
Date: 12/6/18
Sampler: Ower, Jackson

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact			✓
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	Steel
Depth to water (ft BTOR)	10.55
Depth to bottom (ft BTOR)	77.98
Screen Interval (ft BTOR)	[redacted] 74.5-79.5
Total volume purged (gal)	2

Sampling Type

Purging Method: Peri
Purge start/stop time: 1235/1425
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 (06H823AL) Hach 2100Q (16120C05)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1355 (1355)	100	10.90	7.81	6.56	696	0.53	-82.7	458	Dark grey
1400	↓	10.90	7.84	6.56	696	0.58	-82.7	386	↓
1405		10.90	8.12	6.62	696	0.57	-86.4	380	
1410		10.88	8.05	6.64	696	0.58	-88.2	390	
1415		10.88	8.11	6.63	695	0.60	-86.1	237	
1420		10.88	8.08	6.58	692	0.59	-81.3	223	
1425	↓	10.88	8.03	6.57	694	0.63	-81.5	208	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: N/A
Duplicate (Y/N): N
Dup ID/Time: N/A
MS/MSD (Y/N): N

Comments Sample @ 1425 *Turbidity would not stabilize prior to sampling* Specific Conductivity and Dissolved Oxygen experienced Post cal issues with HACH. Variance.

Signature

12/6/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-06A

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/9/18

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1.5"
Material	PVC
Depth to water (ft BTOR)	25.92
Depth to bottom (ft BTOR)	85.97
Screen Interval (ft BTOR)	82.85-87.85
Total volume purged (gal)	2.0

Sampling Type

Purging Method micro bladder Tubing type HDPE Dedicated pump (Y/N) N

Purge start/stop time 1135-1255 Tubing diameter 1/4" OD Air source N/A

Field Instrument (Model/S/N) YSI 556MPS (09G100702)

Hach 2100Q (~~[illegible]~~ 11090C012345)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1150	100	31.02	9.19	7.11	485	1.34	-39.7	20.5	Clear
1155	~~100~~ 90	31.12	9.17	7.20	480	1.13	-62.4	16.3	"
1200	80	32.30	9.14	7.32	463	1.02	-101.5	12.7	"
1205	80	33.36	9.13	7.39	451	0.95	-123.2	9.61	"
1210	80	33.96	9.12	7.43	443	0.91	-136.9	8.42	"
1215	80	34.93	9.11	7.49	432	0.86	-155.8	5.64	"
1220	80	35.00	9.10	7.57	427	0.70	-184.9	4.97	"
1225	80	36.19	9.19	7.58	427	0.65	-183.2	4.72	"
1230	80	36.46	9.21	7.58	428	0.63	-183.0	4.61	"
1235	80	36.59	9.23	7.57	428	0.64	-182.7	4.58	"
1240	80	36.72	9.27	7.57	427	0.62	-182.6	4.57	"
1245	80	36.78	9.21	7.57	427	0.60	-182.5	4.55	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N) – MS/MSD (Y/N) –

Filter Size: 0.45µm Dup ID/Time: –

Comments Sample SHP-2016-06A-FAL18 @ 1245 DTW not stable (D)

[signature] 11/9/18

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-06B

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/7/2018

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	1.5"
Material	PVC
Depth to water (ft BTOR)	18.92
Depth to bottom (ft BTOR)	111.75
Screen Interval (ft BTOR)	103.84 - 113.84
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Micro bladder Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1245-1400 Tubing diameter: 1/4" OD Air source: N/A

Field Instrument (Model/S/N): YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1300	90	22.88	11.15	7.48	765	3.36	-21.5	89.3	cloudy
1305	90	23.45	10.72	7.47	1033	2.54	-30.2	68.9	cloudy
1310	90	23.92	10.66	7.49	1096	2.01	-34.7	54.3	cloudy
1315	90	24.15	10.62	7.51	1168	1.46	-41.1	49.8	cloudy
1320	90	24.34	10.54	7.52	1366	1.06	-45.5	47.6	cloudy
1325	90	24.65	10.38	7.56	1736	0.88	-59.2	46.6	cloudy
1330	90	24.71	10.37	7.58	1848	0.71	-65.8	45.2	cloudy
1335	90	24.83	10.37	7.61	1873	0.69	-70.8	42.1	cloudy
1340	90	24.90	10.36	7.63	1894	0.65	-74.1	40.9	cloudy
1345	90	24.91	10.36	7.63	1899	0.65	-75.2	41.8	cloudy
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: N/A

Comments Sample SHP-2016-06B_FAL18 @ 1350 (PFAS+LTM) removed dedicated LDPE tubing at 1040

Signature

11/7/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-2016-06C

Project: Devens Shepley's Hill Landfill - Fall 2018 Date: 11/7/2018

Location: Fort Devens Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	x		
Concrete Pad intact			x
PVC casing intact	x		
Well gripper present	x		
Bolts present			x
Locked (stickup wells)	x		

Well Information

Diameter	1.5"
Material	PVC
Depth to water (ft BTOR)	19.98
Depth to bottom (ft BTOR)	132.69
Screen Interval (ft BTOR)	124.87 - 134.87
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Micro bladder Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1100-1215 Tubing diameter: 1/4" OD Air source: Nitrogen

Field Instrument (Model/S/N): YSI 556MPS (09G100702)
Hach 2100Q (11090C012349)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (^{0}C)	pH (STD)	SPC (μS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1125	80	20.14	11.73	7.36	255	1.72	-24.9	60.0	cloudy
1130	80	20.67	11.36	7.50	255	1.10	-32.0	37.9	cloudy
1135	80	20.68	11.21	7.53	255	0.92	-33.4	28.3	cloudy
1140	80	20.70	11.18	7.56	255	0.72	-34.2	24.8	cloudy
1145	80	20.71	11.10	7.59	255	0.49	-34.9	14.3	clear
1150	80	20.73	11.13	7.61	255	0.39	-36.0	11.7	clear
1155	80	20.74	11.14	7.62	255	0.41	-37.1	9.81	clear
1200	80	20.76	11.15	7.62	255	0.43	-37.2	9.76	clear
1205	80	20.78	11.15	7.64	255	0.38	-37.5	9.74	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): N MS/MSD (Y/N): N

Filter Size: 0.45 micron Dup ID/Time: N/A

Comments Sample SHP-2016-06C_FAL18 @ 1210 (PFAS+LTM) removed dedicated LDPE tubing at 1040

Signature

11/7/18
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: SHP-05-43

Project: PEAS 121 Date: 1/11/19

Location: Sampler: BNA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	—		
Bolts present			—
Locked (stickup wells)	—		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	42.91
Depth to bottom (ft BTOR)	60.95
Pump Set Depth (ft BTOR)	55.00
Screen Interval (ft BTOR)	60-50
Total volume purged (gal)	1.0

Sampling Type

Purging Method MB Tubing type HDPE Dedicated pump (Y/N)

Purge start/stop time 1230- Tubing diameter 1/4" OD Air source N_2

Field Instrument (Model/S/N) YSI 556 MPS (14A100102)
Hch 2100Q (13100029663)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1305	40	43.61	7.28	6.27	268	5.31	226.6	178	cloudy
1310	40	43.61	~~6.22~~ 7.75	6.22	267	4.18	223.2	138	cloudy
1315	40	43.61	8.01	6.17	275	3.00	215.1	58.8	cloudy
1320	40	43.61	8.02	6.14	279	2.19	210.5	17.6	clear
1325	40	43.61	8.03	6.14	280	2.13	210.1	12.8	clear
1330	40	43.61	8.03	6.14	282	2.01	210.0	9.97	clear
1335	40	43.61	8.04	6.13	283	1.97	209.3	9.81	clear
1340	40	43.61	8.04	6.13	285	1.99	209.0	9.79	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): Duplicate (Y/N): — MS/MSD (Y/N): —

Filter Size: — Dup ID/Time: —

Comments Sample SHP-05-43-JANIS @ 1340

[signature] 1/11/19

Signature Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-05-44

Project: PFAS RI Existing Well
Location: SHL
Date: 1/15/19
Sampler: B & A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	41.57
Depth to bottom (ft BTOR)	60.75
Pump Set Depth (ft BTOR)	55.0
Screen Interval (ft BTOR)	50-60
Total volume purged (gal)	1.5

Sampling Type

Purging Method: micro bladder
Purge start/stop time: 1035 - 1150
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: Nitrogen

Field Instrument (Model/S/N): YSI 556 MPS (12C100125)
& Lamotte 2020we (1865042)

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1055	~~100~~ 80	41.70	7.19	6.34	289	4.19	11.2	15.6	clear
1100	80	41.70	7.13	6.22	267	4.08	4.6	10.9	clear
1105	~~100~~ 80	41.70	7.29	6.17	249	3.65	4.9	3.27	clear
1110	80	41.70	7.47	6.14	238	3.92	5.0	5.59	clear
1115	80	41.70	7.65	6.12	230	3.94	6.5	4.93	clear
1120	80	41.70	7.93	6.10	223	3.71	9.3	3.43	clear
1125	80	41.70	8.04	6.08	218	3.48	13.2	2.56	clear
1130	80	41.70	8.26	6.06	214	3.44	16.2	2.17	clear
1135	80	41.70	8.28	6.06	212	3.28	18.1	2.09	clear
1140	80	41.70	8.30	6.07	210	3.30	19.3	1.99	clear
1145	80	41.70	8.31	6.05	209	3.32	19.7	2.04	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	

2" Screen Volume = 0.163 gal/ft or 616 ml per foot

Sampling Details

Field Filtered (Y/N): N
Filter Size: —
Duplicate (Y/N): —
Dup ID/Time: —
MS/MSD (Y/N): —

Comments Sample SHP-05-44-JAN19 @ 1145

B A G
Signature

1/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: SHL-8D

Project: LTM- Fall 2019
Location: Fort Devens, MA

Date: 9/30/19
Sampler: Kristen Eshler

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present	✓		
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	9.2
Depth to bottom (ft BTOR)	
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	68 - 70
Total volume purged (gal)	2

Sampling Type
Purging Method: peristaltic low flow
Purge start/stop time: 11:00/12:00
Tubing type: HDPE
Tubing diameter:
Dedicated pump (Y/N): N
Air source:
Field Instrument (Model/S/N): 45 ProDSS / 18L100145

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
~~1105~~ 1105	150	9.2	12.5	6.32	0.139	3.92	167.1	21.5	clear
1110	100	9.3	11.8	6.40	0.138	5.57	160.0	20.4	clear
1125	150	9.3	11.7	6.33	0.138	3.66	156.3	11.56	clear
1135	150	9.35	11.8	6.47	0.138	5.34	154.1	8.83	clear
1145	150	9.35	11.9	6.47	0.138	3.92	150.6	8.73	clear
1155	150	9.35	11.9	6.46	0.138	3.69	149.7	8.07	clear
1200	150	9.3	12.1	6.50	0.138	3.70	148.3	7.82	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: SHL-8D-SEP19
Sample Time: 1205
Field Filtered (Y/N): N
Filter Size: /
Duplicate (Y/N): N
Dup ID: /
Dup Time: /
MS/MSD (Y/N): N

Comments Turbidity did not stabalize after an hour - talked to Melissa

9/30/19
Date

Signature

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

KGS

Well Identification: SHM-99-32X

Project: LTM - Fall 2019
Location: Fort Devens, MA

Date: 9/30/19
Sampler: Kristen Esser

Well Integrity

	Yes	No	N/A
Casing Secure	✓		✓
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	11.3
Depth to bottom (ft BTOR)	84.4
Pump Set Depth (ft BTOR)	
Screen Interval (ft BTOR)	72-82
Total volume purged (gal)	3.5

Sampling Type peristaltic
Purging Method low flow
Purge start/stop time 1330

Tubing type HDPE
Tubing diameter 1/4"

Dedicated pump (Y/N) N
Air source —

Field Instrument (Model/S/N) YSI ProDSS/18L100145

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1340	200	11.4	14.8	10.34	0.257	7.51	165.8	15.2	Slightly cloudy
1350	200	11.4	13.8	10.18	0.266	4.86	155.4	11.05	clear
1400	200	11.4	14.4	7.39	0.277	3.00	139.1	9.04	clear
1415	250	11.4	14.7	7.44	0.280	2.94	129.3	9.82	clear
1425	200	11.4	14.3	7.46	0.278	2.89	126.2	8.96	clear
1430	200	11.4	14.1	7.43	0.277	2.84	120.4	8.99	clear
1435	200	11.4	14.1	7.44	0.276	2.86	119.5	8.95	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft

Post Cal. Check Varience Observed (Y/N):

Sampling Details

Sampling ID: SHM-99-32X_SEP19
Sample Time: 1445
Field Filtered (Y/N): N
Filter Size: —

Duplicate (Y/N): N
Dup ID: —
Dup Time: —

MS/MSD (Y/N): N

Comments

Signature

9/30/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N1-P1

Project: LTM - Fall 2019 Date: 11/14/19
Location: Fort Devens, Massachusetts Sampler: Kristen Eyster

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	15'
Depth to bottom (ft BTOR)	~~73.6'~~
Pump Set Depth (ft BTOR)	NA
Screen Interval (ft BTOR)	65 - 70
Total volume purged (gal)	3.7

Sampling Type
Purging Method: peristaltic Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 1090 Tubing diameter: 1/4" Air source: NA
Field Instrument (Model/S/N): YSI 1058 MDS / 116 100387

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1055	300.0	15.1	10.81	6.87	0.303	1.12	82.4	16.9	slightly cloudy
1100	300.0	15.1	11.08	6.68	0.304	0.89	79.3	15.8	slightly cloudy
1105	300.0	15.1	11.23	6.48	0.385	0.54	69.8	15.6	slightly cloudy
1110	300.0	15.1	11.28	6.52	0.396	0.47	65.6	15.2	slightly cloudy
1115	300.0	15.1	11.25	6.54	0.401	0.41	64.5	15.1	slightly cloudy
1120	300.0	15.1	11.22	6.56	0.406	0.37	62.7	15.1	slightly cloudy
1125	300.0	15.1	11.17	6.57	0.410	0.34	61.6	15.2	slightly cloudy
1130	300.0	15.1	11.18	6.58	0.407	0.35	60.7	15.2	slightly cloudy
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	Y	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: N1-P1_FALL9
Sample Time: 1130 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: —
Filter Size: — Dup Time: —

Comments PFAS Sample only

Signature

11/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N1-P2

Project: LTM - Fall 2019 Date: 11/14/19
Location: Fort Devens, Massachusetts Sampler: Kristen Esser

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	15'
Depth to bottom (ft BTOR)	48.91
Pump Set Depth (ft BTOR)	NA
Screen Interval (ft BTOR)	40 - 45'
Total volume purged (gal)	3.7

Sampling Type

Purging Method: peristaltic Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 1210/ Tubing diameter: 1/4" Air source: NA

Field Instrument (Model/S/N): YSI 650MDS/11A100387

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1215	300.0	15.1	11.75	6.72	0.325	0.39	59.4	15.2	Slightly cloudy
1220	300.0	15.1	11.83	6.67	0.328	0.30	49.6	15.2	Slightly cloudy
1225	300.0	15.1	11.85	6.66	0.328	0.27	44.0	14.9	Slightly cloudy
1230	300.0	15.1	11.88	6.63	0.329	0.25	36.7	14.8	Slightly cloudy
1235	300.0	15.1	11.89	6.62	0.329	0.25	30.7	14.7	Slightly cloudy
1240	300.0	15.1	11.87	6.62	0.329	0.24	28.4	14.6	Slightly cloudy
1245	300.0	15.1	11.88	6.61	0.329	0.23	21.7	14.6	Slightly cloudy
1250	300.0	15.1	11.91	6.61	0.328	0.22	19.4	14.5	Slightly cloudy
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: N1 - P2 - FALL9
Sample Time: 1250 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: —
Filter Size: — Dup Time: —

Comments: PFAS Sample Only

Signature

11/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N2-P1

Project: LTM - Fall 2019 Date: 11/4/19

Location: Fort Devens, Massachusetts Sampler: A. Cartwright

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	6.10
Depth to bottom (ft BTOR)	13.5 ?
Pump Set Depth (ft BTOR)	37 ?
Screen Interval (ft BTOR)	35 - 40
Total volume purged (gal)	2.3

Sampling Type

Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1315/1325 Tubing diameter: 1/4" OD Air source:

Field Instrument (Model/S/N): YSI 650 MDS 00M0743 AG
HACH 2100Q 170600059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1325	250	6.15	13.45	6.43	589	0.88	-47.1	2.77	clear
1330	250	6.15	13.33	6.48	592	0.55	-55.3	2.77	clear
1335	250	6.15	13.56	6.50	593	0.47	-58.4	2.24	clear
1340	250	6.15	13.37	6.51	595	0.36	-50.2	2.41	clear
1345	250	6.15	13.44	6.52	594	0.29	-61.6	2.87	clear
1350	250	6.15	13.56	6.53	595	0.26	-62.4	3.00	clear
1355	250	6.15	13.34	6.54	596	0.28	-63.2	3.14	clear
1400	250	6.15	13.22	6.53	596	0.27	-62.7	3.12	clear
			✓	✓	✓	✓	✓	✓	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	Y	Y	N	Y	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: N2-P1_FAL19

Sample Time: 1400 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): Y Dup ID:

Filter Size: 0.45 µm Dup Time:

Comments

Abigail Cartwright
Signature

11/4/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N2 - P2

Project: LTM - Fall 2019 Date: 11/14/19

Location: Fort Devens, Massachusetts Sampler: Kristen Eaker

Well Integrity

	Yes	No	N/A
Casing Secure	√		
Concrete Pad intact			√
PVC casing intact	√		
Well gripper present	√		
Bolts present			√
Locked (stickup wells)	√		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	6'
Depth to bottom (ft BTOR)	13.45'
Pump Set Depth (ft BTOR)	NA
Screen Interval (ft BTOR)	4-9
Total volume purged (gal)	3.7

Sampling Type

Purging Method: peristaltic Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 0830/ Tubing diameter: 1/4" Air source: NA

Field Instrument (Model/S/N): YSI 650 MDS / 16G 100387

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0835	300.0	6.1	10.68	5.98	0.492	0.66	133.0	61.7	cloudy
0840	300.0	6.1	10.94	6.06	0.500	0.46	110.1	16.7	clear
0845	300.0	6.1	10.94	6.09	0.501	0.46	102.7	13.0	clear
0850	300.0	6.1	10.94	6.12	0.502	0.39	91.5	12.8	clear
0855	300.0	6.1	10.96	6.14	0.502	0.38	85.7	12.4	clear
0900	300.0	6.1	10.98	6.15	0.502	0.37	77.6	12.3	clear
0905	300.0	6.1	11.04	6.17	0.503	0.36	71.1	12.4	clear
0910	300.0	6.1	11.01	6.19	0.503	0.35	69.8	12.3	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):			N	N	Y	N	N		0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: N2 - P2 - FALL9

Sample Time: 0910 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): N Dup ID: —

Filter Size: — Dup Time: —

Comments: PFAS Sample only

Signature

11/14/19

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N3-P1

Project: LTM - Fall 2019 Date: 11/15/19

Location: Fort Devens, Massachusetts Sampler: M. VIDAL

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	4.19
Depth to bottom (ft BTOR)	38.02
Pump Set Depth (ft BTOR)	~34
Screen Interval (ft BTOR)	32-35
Total volume purged (gal)	~4.25

Sampling Type

Purging Method: Low Flow Tubing type: HDPE Dedicated pump (Y/N): PERISTALTIC

Purge start/stop time: 8:50 / 9:40 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 650 MDS S/N 00M0743AG

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
855	300	5.46	9.45	9.21	0.385	2.30	80.8	28.7	CLEAR
900	↓	5.46	9.50	8.83	356	0.76	-1.7	33.3	↓
905		5.48	9.55	8.76	353	0.57	-15.6	NM	
910		5.49	9.61	8.73	353	0.51	-23.7	21.6	
915		5.49	9.57	8.68	353	0.43	-22.5	17.0	
920		5.52	9.64	8.67	352	0.38	-21.2	14.8	
925		5.55	9.69	8.60	351	0.36	-20.8	11.4	
930		5.50	9.66	8.60	351	0.34	-20.5	10.9	
935		5.50	9.65	8.60	351	0.33	-19.6	9.7	
940	↓	5.49	9.63	8.60	351	0.33	-19.1	9.05	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	Y	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: N3-P1_FAL19

Sample Time: 0940 Duplicate (Y/N): N/A MS/MSD (Y/N): N/A

Field Filtered (Y/N): N/A Dup ID: N/A

Filter Size: N/A Dup Time: N/A

Comments

M. Vidal
Signature

11/15/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N3-P2

Project: LTM - Fall 2019 Date: 11/15/19

Location: Fort Devens, Massachusetts Sampler: M. VIDAL

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	8.10 ? *
Depth to bottom (ft BTOR)	12.61
Pump Set Depth (ft BTOR)	4-9 ?
Screen Interval (ft BTOR)	5-8
Total volume purged (gal)	~5.0

Sampling Type

Purging Method: Low-Flow Tubing type: HDPE Dedicated pump (Y/N): PERISTALTIC

Purge start/stop time: 9:55/10:45 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 650 MDS S/N: 00M0743AG

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
10:00	400	8.92	10.56	8.24	58	3.54	20.3	51.6	SLIGHTLY GRAY+ CLOUDY
10:05	400	8.98	10.68	7.97	58	3.45	50.2	33.1	↓
10:10	↓	9.03	10.82	7.72	56	3.37	63.1	49.0	
10:15		9.03	10.85	7.51	56	3.23	72.7	36.3	↓
10:20		9.04	10.86	7.33	55	3.15	81.9	24.8	SLIGHLY CLOUDY
10:25		9.05	10.89	7.20	55	3.06	84.6	17.3	CLEAR
10:30		9.05	10.93	6.94	56	3.02	89.2	12.0	↓
10:35		9.02	10.97	6.92	55	3.02	90.7	10.7	
10:40	↓	9.00	11.01	6.92	55	3.00	93.2	11.3	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	Y	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: N3-P2_FAL19

Sample Time: 10:40 Duplicate (Y/N): N/A MS/MSD (Y/N): N/A

Field Filtered (Y/N): N/A Dup ID: N/A

Filter Size: N/A Dup Time: N/A

Comments * WL METER WAS HAVING INTEFERENCE DUE TO SMALL WELL DIAMETER.

Matilde — Signature

11/15/19 — Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N7-P2

Project: LTM - Fall 2019 Date: 11/7/19

Location: Fort Devens, Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	~		
Concrete Pad intact			~
PVC casing intact	~		
Well gripper present	~		
Bolts present			~
Locked (stickup wells)	~		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	31.25
Depth to bottom (ft BTOR)	37.33
Pump Set Depth (ft BTOR)	35
Screen Interval (ft BTOR)	31.86-36.86
Total volume purged (gal)	2.0

Sampling Type

Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 0815-0910 Tubing diameter: 1/4" OD Air source: NA

Field Instrument (Model/S/N): YSI 556 MPS 15F101567

Hach 2100Q 160100047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0830	60	31.30	11.56	6.31	357	0.70	52.2	21.6	clear
0835	60	31.30	11.48	6.21	354	0.58	25.4	18.0	"
0840	60	31.30	11.29	6.17	353	0.27	3.2	9.28	"
0845	60	31.30	11.25	6.15	351	0.20	-4.4	8.36	"
0850	60	31.30	11.20	6.18	350	0.18	-11.6	7.26	"
0855	60	31.30	11.05	6.14	349	0.17	-19.9	5.01	"
0900	60	31.30	11.03	6.16	349	0.18	-22.9	4.96	"
0905	60	31.30	11.04	6.16	348	0.21	-23.4	4.94	"
0910	60	31.30	11.03	6.14	347	0.22	-23.4	4.90	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N					

Sampling Details

Sampling ID: N7-P2-FALL9

Sample Time: 0910 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): N Dup ID: —

Filter Size: — Dup Time: —

Comments PFAS only

Signature

11/7/19

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-3

Project: LTM - Fall 2019 Date: 11/15/19

Location: Fort Devens, Massachusetts Sampler: Brd

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	—		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	30.20
Depth to bottom (ft BTOR)	33.95
Pump Set Depth (ft BTOR)	32
Screen Interval (ft BTOR)	25.15-35.15
Total volume purged (gal)	2.0

Sampling Type

Purging Method: 1.75" Bladder Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1040-1130 Tubing diameter: 1/4"OD Air source: N2

Field Instrument (Model/S/N): YSI 556 MPS 15F1015567

Hach 21008 160100047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1050	250	30.40	11.78	6.44	179	5.66	159.0	14.7	clear
1055	250	30.40	11.73	6.23	176	5.01	157.9	12.8	"
1100	250	30.40	11.78	6.11	176	4.84	155.9	11.6	"
1105	250	30.40	11.78	6.08	176	4.81	156.2	10.2	"
1110	250	30.40	11.67	5.97	177	4.82	160.2	9.97	"
1115	250	30.40	11.72	6.01	177	4.80	158.7	10.1	"
1120	250	30.40	11.70	5.94	177	4.80	161.0	9.90	"
1125	250	30.40	11.75	6.00	178	4.89	159.3	9.98	"
1130	250	30.40	11.73	5.98	178	4.83	160.8	10.0	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	—			—	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHL-3-FAL19

Sample Time: 1130 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): N Dup ID: -

Filter Size: - Dup Time: -

Comments PFAS only

Signature

11/15/19

Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-12

Project: LTM - Fall 2019 Date: 11/7/19

Location: Fort Devens, Massachusetts Sampler: Kristen Fisher

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	22.87
Depth to bottom (ft BTOR)	29.55?
Pump Set Depth (ft BTOR)	NA
Screen Interval (ft BTOR)	16.40 – 31.40
Total volume purged (gal)	4.75

Sampling Type

Purging Method: Peristaltic Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1155/1245 Tubing diameter: 3/8" Air source: NA

Field Instrument (Model/S/N): YSI 650 MDS/11G100387

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1200	360.2	22.95	10.38	6.51	0.556	1.45	121.5	13.02	clear
1205	360.4	22.98	10.36	6.29	0.467	2.45	117.0	12.47	clear
1210	360.2	23.00	10.35	6.21	0.447	2.60	113.5	12.61	clear
1215	360.3	23.01	10.36	6.12	0.438	2.85	112.0	11.54	clear
1220	360.5	23.00	10.36	6.10	0.437	3.20	109.6	11.76	clear
1225	360.3	23.00	10.36	6.04	0.435	3.47	109.5	12.17	clear
1230	360.4	23.05	10.36	6.07	0.436	3.42	107.3	10.97	clear
1235	360.3	23.00	10.37	6.04	0.436	3.40	106.3	12.11	clear
1240	360.3	23.00	10.38	5.99	0.435	3.37	108.1	11.73	clear
1245	360.4	23.00	10.39	6.04	0.439	3.44	105.2	12.18	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	→				0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHL-12_FA2_19

Sample Time: 1245 Duplicate (Y/N): N MS/MSD (Y/N): Y, PFAS only

Field Filtered (Y/N): Y Dup ID: —

Filter Size: 0.45 µm Dup Time: —

Comments Depth to Bottom is higher than end of screen

Signature

11/7/19

Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-20

Project: LTM - Fall 2019 Date: 11/1/19
Location: Fort Devens, Massachusetts Sampler: A. Cartwright

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	18.12
Depth to bottom (ft BTOR)	50.53
Pump Set Depth (ft BTOR)	45.2
Screen Interval (ft BTOR)	40.23-50.23
Total volume purged (gal)	2.3

Sampling Type

Purging Method: Peri Tubing type: LDPE Dedicated pump (Y/N): N
Purge start/stop time: 1303/1310 Tubing diameter: 1/4" OD Air source:

Field Instrument (Model/S/N): YSI 650 MDS 00M0743AG
Hach 2100Q 17060C059342

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
13:10	250	18.15	11.53	6.57	548	0.54	-73.6	7.32	clear
13:15	250	18.15	11.46	6.51	544	0.36	-77.6	4.96	clear
13:20	250	18.15	11.43	6.52	545	0.28	-86.8	5.21	clear
13:25	250	18.15	11.43	6.54	543	0.31	-97.3	4.51	clear
13:30	250	18.15	11.53	6.56	545	0.23	-92.8	5.02	clear
13:35	250	18.15	11.31	6.58	545	0.18	-97.1	3.57	clear
13:40	250	18.15	11.30	6.58	546	0.18	-95.1	3.31	clear
13:45	250	18.15	11.37	6.60	546	0.17	-90.8	2.99	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHL-20-FAL19
Sample Time: 13:45 Duplicate (Y/N): Y MS/MSD (Y/N): N
Field Filtered (Y/N): Y Dup ID: SHL-DUP02_FAL19
Filter Size: 0.45 µm Dup Time: 13:50

Comments

Abigail Cartwright
Signature

11/1/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-05-41C

Project: LTM - Fall 2019 Date: 11/8/19
Location: Fort Devens, Massachusetts Sampler: B/A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present		✓	NA
Locked (stickup wells)			✓

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	11.70
Depth to bottom (ft BTOR)	87.71
Pump Set Depth (ft BTOR)	85
Screen Interval (ft BTOR)	82.66-97.66
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 0830-0910 Tubing diameter: 1/4" OD Air source: MA

Field Instrument (Model/S/N): YSI 556 MPS 15F101567
Hach 2100Q 16010C047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0835	150	11.80	8.50	6.92	5895	1.36	75.0	216.1	clear
0840	150	11.80	8.47	6.85	5926	0.54	34.3	19.8	"
0845	150	11.80	8.24	6.78	5950	0.16	-27.9	13.1	"
0850	150	11.80	8.13	6.80	5949	0.14	-38.9	9.14	"
0855	150	11.80	8.13	6.80	5960	0.13	-41.7	7.01	"
0900	150	11.80	8.20	6.79	5955	0.09	-48.7	6.90	"
0905	150	11.80	8.29	6.77	5942	0.08	-50.8	6.93	"
0910	150	11.80	8.30	6.77	5940	0.05	-52.7	6.89	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):			N						0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHM-05-41C-FALIG
Sample Time: 0910 Duplicate (Y/N): N MS/MSD (Y/N): Y (LTM)
Field Filtered (Y/N): Y Dup ID: -
Filter Size: 0.45µm Dup Time: -

Comments LTM + PFAS

Signature

11/8/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-13-05

Project: LTM - Fall 2019 Date: 11/12/19
Location: Fort Devens, Massachusetts Sampler: Kristen Esser

Well Integrity

	Yes	No	N/A
Casing Secure	√		
Concrete Pad intact	√		
PVC casing intact	√		
Well gripper present	√		
Bolts present	√		
Locked (stickup wells)			√

Well Information

Diameter	2"
Material	PVC
Depth to water (ft BTOR)	17.25
Depth to bottom (ft BTOR)	86.16
Pump Set Depth (ft BTOR)	NA
Screen Interval (ft BTOR)	74.75 – 84.75
Total volume purged (gal)	3.25

Sampling Type

Purging Method: peristaltic Tubing type: Teflon lined Dedicated pump (Y/N): N
Purge start/stop time: 1110/ Tubing diameter: 3/8" Air source: NA
Field Instrument (Model/S/N): YSI 650MDS/ 11G100387

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1115	300.0	17.30	9.38	6.63	0.314	2.29	53.7	13.2	clear
1120	300.0	17.30	9.36	6.62	0.543	0.71	54.1	15.58	clear
1125	300.0	17.30	9.34	6.64	0.723	0.48	58.1	15.21	clear
1130	300.0	17.30	9.34	6.70	0.735	0.42	54.9	14.28	clear
1135	300.0	17.30	9.31	6.73	0.737	0.42	53.3	14.08	clear
1140	300.0	17.30	9.28	6.74	0.738	0.39	52.6	14.53	clear
1145	300.0	17.30	9.28	6.76	0.736	0.37	50.3	15.00	clear
1150	300.0	17.30	9.26	6.77	0.740	0.36	48.2	14.74	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N					0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHM-13-05_FAL19
Sample Time: 1150 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y
Filter Size: 0.45 µm Dup ID: —
Dup Time: —

Comments: PFAS sample @ 1200

Signature

11/12/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-93-01A

Project:	LTM - Fall 2019	Date:	11/13/19
Location:	Fort Devens, Massachusetts	Sampler:	[illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	22.47
Depth to bottom (ft BTOR)	~25'
Pump Set Depth (ft BTOR)	~20'
Screen Interval (ft BTOR)	15.5-25.5
Total volume purged (gal)	3.5

Sampling Type

Purging Method: geotech
Purge start/stop time: 805/845
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 650xL 11B100186
LaMotte 2020WE 3590-3513

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
805	200	22.47	7.14	7.69	225	9.80	49.4	1.90	Clear
810	↓	22.47	6.90	6.91	192	9.70	45.1	0.99	Clear
815		22.47	6.89	6.88	185	9.60	43.1	0.97	Clear
820		22.47	6.87	7.01	163	9.49	40.1	0.92	Clear
825		22.47	6.84	7.00	159	9.40	37.1	0.89	Clear
830		22.47	6.83	7.03	157	9.30	36.2	0.83	Clear
835		22.47	6.82	7.02	155	9.27	35.9	0.81	Clear
840		22.47	6.81	7.06	154	9.26	34.7	0.79	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: SHM-93-01A
Sample Time: 845
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: N
Filter Size: N/A
Dup Time: N

Comments

[signature]
Signature

11/13/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-93-10D

Project: LTM - Fall 2019 Date: 10/29/19
Location: Fort Devens, Massachusetts Sampler: B/A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	Steel
Depth to water (ft BTOR)	30.05
Depth to bottom (ft BTOR)	57.72
Pump Set Depth (ft BTOR)	52
Screen Interval (ft BTOR)	48.70-58.70
Total volume purged (gal)	3.0

Sampling Type

Purging Method: 1.75" Bladder Tubing type: Bonded LDPE Dedicated pump (Y/N): N
Purge start/stop time: 0930- Tubing diameter: ¼" OD Air source: N_2

Field Instrument (Model/S/N): YSI 556 MPS Meas 21026

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0945	200	30.70	10.57	10.05	387	6.34	130.7	48.1	clear
0950	100	30.92	10.60	10.61	391	2.80	119.0	37.4	clear
0955	100	31.20	10.65	11.03	395	1.50	109.8	36.1	clear
1000	100	31.50	10.66	11.17	396	1.18	106.4	38.3	clear
1005	100	31.85	10.65	11.31	396	0.91	102.5	36.4	clear
1010	100	32.10	10.66	11.39	397	0.80	99.9	35.8	clear
1015	100	32.20	10.69	11.44	397	0.70	97.2	31.6	clear
1020	100	32.50	10.73	11.50	397	0.62	94.3	28.1	clear
1025	100	32.75	10.74	11.54	397	0.58	92.9	26.3	clear
1030	100	32.90	10.82	11.63	397	0.53	90.6	21.7	
1035	100	32.98	10.85	11.65	397	0.54	89.1	22.8	
1040	100	33.04	10.86	11.67	397	0.51	88.3	20.1	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):									

Sampling Details

Sampling ID: SHM-93-10D-FALL9
Sample Time: 1040 Duplicate (Y/N): N MS/MSD (Y/N): Y
Field Filtered (Y/N): Y Dup ID: —
Filter Size: 0.45µm Dup Time: —

Comments DTW not stabilizing, constant drawdown

Signature

10/29/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-93-10D

Project: LTM - Fall 2019 Date: 11/14/19
Location: Fort Devens, Massachusetts Sampler: BrA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	Steel
Depth to water (ft BTOR)	30.60
Depth to bottom (ft BTOR)	58.05
Pump Set Depth (ft BTOR)	53
Screen Interval (ft BTOR)	48.70-58.70
Total volume purged (gal)	2.0

Sampling Type
Purging Method 1.75" Bladder Tubing type HDPE Dedicated pump (Y/N) N
Purge start/stop time 1230-1325 Tubing diameter 1/4" OD Air source N2

Field Instrument (Model/S/N) YSI 556 MPS 15F101567
Hach 21020 160100047202

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1240	100	31.20	9.59	8.94	285	1.24	-55.4	47.1	clear
1245	100	31.50	9.55	9.51	290	0.88	-116.0	46.8	clear
1250	100	32.00	9.47	10.03	295	0.68	-143.7	42.1	"
1255	100	32.40	9.43	10.38	296	0.58	-157.1	40.6	"
1300	100	32.80	9.46	10.59	297	0.46	-163.0	29.84	"
1305	100	33.10	9.47	10.70	297	0.41	-167.9	29.23	"
1310	100	33.28	9.50	10.77	297	0.38	-168.4	28.04	"
1315	100	33.70	9.46	10.80	297	0.32	-169.4	28.00	"
1320	100	34.21	9.49	10.85	297	0.26	-168.9	27.51	"
1325	100	34.51	9.48	10.89	297	0.27	-171.8	27.45	"
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N					0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHM-93-10D-FAL19
Sample Time: 1325 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): N Dup ID: -
Filter Size: - Dup Time: -

Comments Re-LF for PFAS only; DTW not stable at lowest pump rate

BrA
Signature

11/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM93-18B

Project: LTM - Fall 2019 Date: 11/13/19
Location: Fort Devens, Massachusetts Sampler: MH

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	18.87
Depth to bottom (ft BTOR)	~90'
Pump Set Depth (ft BTOR)	~85'
Screen Interval (ft BTOR)	80.60-90.60
Total volume purged (gal)	3.5

Sampling Type

Purging Method: Geotech Tubing type: HDPE Dedicated pump (Y/N): N
Purge start/stop time: 945/1025 Tubing diameter: 1/4" Air source: N/A
Field Instrument (Model/S/N): YSI 650XL 11B100186
Turbidimeter 2020WB 3590-3513

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
945	200	18.87	9.38	7.40	298	9.87	5.9	2.06	Clear
950		18.87	9.30	7.50	309	7.77	4.2	2.09	Clear
955		18.87	9.22	7.64	305	7.69	3.9	1.97	Clear
1000		18.87	9.29	7.64	309	7.68	2.8	1.98	Clear
1005		18.87	9.26	7.68	311	7.66	2.6	1.92	Clear
1010		18.87	9.22	7.69	313	7.65	2.4	1.90	Clear
1015		18.87	9.21	7.68	315	7.64	2.2	1.91	Clear
1020	↓	18.87	9.22	7.67	317	7.59	2.3	1.89	Clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):									0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHM-93-18B
Sample Time: 1025 Duplicate (Y/N): N MS/MSD (Y/N): N
Field Filtered (Y/N): Y Dup ID: N
Filter Size: .45 Dup Time: N

Comments

Signature

11/13/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-96-5B

Project: LTM - Fall 2019 Date: 11/7/19

Location: Fort Devens, Massachusetts Sampler: A. Cartwright

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	6.95
Depth to bottom (ft BTOR)	91.65
Pump Set Depth (ft BTOR)	86
Screen Interval (ft BTOR)	81.54-91.54
Total volume purged (gal)	2.3

Sampling Type

Purging Method: Peri Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 0830/0840 Tubing diameter: 1/4" OD Air source:

Field Instrument (Model/S/N): YSI 650 MDS 00M0743 AG

LaMotte 2020we 5033-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
08:40	250	7.25	10.52	8.39	609	5.51	202.1	11.0	clear
08:45	250	7.3	10.47	7.64	532	3.87	215.9	9.67	clear
08:50	250	7.3	10.41	7.29	503	3.64	213.9	6.19	clear
08:55	250	7.3	10.32	7.10	498	3.57	197.3	5.63	clear
09:00	250	7.3	10.25	6.95	496	3.47	176.6	5.21	clear
09:05	250	7.3	10.18	6.88	495	3.33	158.0	4.39	clear
09:10	250	7.3	10.13	6.84	494	3.36	153.6	4.49	clear
09:15	250	7.3	10.11	6.82	494	3.35	149.4	4.42	clear
			✓	✓	✓	✓	✓	✓	
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	Y	N	N	N	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHM-96-5B_FAL19

Sample Time: 09:15 Duplicate (Y/N): Y (PFAS) MS/MSD (Y/N): N

Field Filtered (Y/N): Y Dup ID: SHL-DUP-110719

Filter Size: 0.45 µm Dup Time: 09:20

Comments Dedicated tubing already in well is tied to a weight + cannot be removed - not sure if LDPE or HDPE

Abigail Cartwright
Signature

11/7/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-99-33B

Project: LTM - Fall 2019 Date: 11/14/19

Location: Fort Devens, Massachusetts Sampler: M. VIDAL

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact			✓
PVC casing intact	✓		
Well gripper present		✓	
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	PVC/STEEL?
Depth to water (ft BTOR)	12.78
Depth to bottom (ft BTOR)	78.54
Pump Set Depth (ft BTOR)	~75
Screen Interval (ft BTOR)	74.5-79.5
Total volume purged (gal)	~5.0

Sampling Type

Purging Method Low-Flow Tubing type HDPE Dedicated pump (Y/N) PERISTALTIC

Purge start/stop time 10:30/11:35 Tubing diameter 1/4" Air source N/A

Field Instrument (Model/S/N) YSI 556MPS S/N 15L102398

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1035	300	20.18	9.55	7.41	465	3.60	-130.3	OUT OF RANGE	GRAY + CLOUDY; DARK
1040	300	20.77	9.49	6.89	549	0.47	-123.8	↓	↓
1045	150	20.20	9.49	6.86	602	0.49	-124.0		
1050	150	19.99	9.49	6.83	656	0.40	-125.1	↓	↓
1055	150	19.96	9.49	6.81	674	0.31	-125.8	999.5	GRAY + CLOUDY
1100	↓	20.31	9.49	6.79	671	0.29	-126.3	806.1	↓
1105		20.61	9.58	6.79	673	0.30	-127.0	767	
1110		20.88	9.65	6.79	670	0.31	-126.6	608	↓
1115		20.96	9.59	6.78	666	0.25	-126.2	566.3	LIGHT GRAY + CLOUDY
1120		20.99	9.58	6.78	667	0.24	-126.6	411	↓
1125		21.00	9.57	6.78	668	0.23	-126.7	393.2	
1130	↓	21.02	9.55	6.78	669	0.22	-126.5	388	↓
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume =
Post Cal. Check Varience Observed (Y/N):				N	N	Y	Y	Y	0.163 gal/ft or 616 ml/ft

Sampling Details

Sampling ID: SHP-99-33B_FAL19

Sample Time: 1130 Duplicate (Y/N): N/A MS/MSD (Y/N) N/A

Field Filtered (Y/N): N/A Dup ID: N/A

Filter Size: N/A Dup Time: N/A

Comments

M. Vidal
Signature

11/14/19
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: N2-P1 **AOC Name:** S+L

Project:	Spring 2020 Supplemental Event	Date:	5/5/20
Location:	Fort Devens, Massachusetts	Sampler:	[illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	7.87
Depth to bottom (ft BTOR)	41.58
Pump Set Depth (ft BTOR)	37'
Screen Interval (ft BTOR)	35.0 - 40.0
Total volume purged (gal)	3.0

Sampling Type

Purging Method: geotech Tubing type: HDPE Dedicated pump (Y/N): N

Purge start/stop time: 1005/1045 Tubing diameter: 1/4" Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS 06C2657A1 Lamotte Lozane 3711-3913

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1005		7.88	12.23	7.40	541	2.70	-31.6	14.7	clear
1010		7.88	12.30	7.21	531	1.90	-29.1	13.6	clear
1015		7.88	12.25	7.20	527	1.87	-22.2	13.1	clear
1020		7.88	12.24	7.18	528	0.90	-21.9	~~[illegible]~~ 13.0	clear
1025		7.88	12.23	7.17	525	0.73	-21.2	12.9	clear
1030		7.88	12.27	7.18	522	0.72	-21.0	12.7	clear
1035		7.88	12.26	7.17	521	0.71	-21.0	12.6	clear
1040		7.88	12.23	7.16	520	0.69	-20.7	12.4	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: N2-P1-SPR20

Sample Time: 1045 Duplicate (Y/N): N MS/MSD (Y/N): N

Field Filtered (Y/N): N Dup ID: N/A

Filter Size: N/A Dup Time: N/A

Comments PFAS

[signature] 5/5/20

Signature **Date**

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: NW-P2 **AOC Name:** SHL

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts

Date: 5/5/20
Sampler: MA

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		✓
Bolts present			
Locked (stickup wells)	✓		

Well Information

Diameter	1"
Material	PVC
Depth to water (ft BTOR)	29.31
Depth to bottom (ft BTOR)	37.39
Pump Set Depth (ft BTOR)	32'
Screen Interval (ft BTOR)	29.0-34.0
Total volume purged (gal)	3.0

Sampling Type

Purging Method: Geotech
Purge start/stop time: 1050/1130
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A
Field Instrument (Model/S/N): YSI 556MPS 06E265741 3711-3913
Low Flow Probe

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1050	150	29.43	12.31	6.96	310	0.36	-39.6	23.7	clear
1055	150	29.43	12.15	6.89	309	0.36	-38.9	22.7	clear
1100	150	29.43	11.99	6.87	308	0.37	-38.3	22.9	clear
1105	150	29.43	11.98	6.86	307	0.37	-38.6	22.7	clear
1110	150	29.43	12.03	6.85	307	0.36	-37.9	22.0	clear
1115	150	29.43	12.04	6.84	308	0.36	-36.9	22.9	clear
1120	150	29.43	12.03	6.83	309	0.35	-36.8	22.3	clear
1125	150	29.43	12.00	6.85	308	0.35	-37.1	22.4	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: NW-P2-5R20
Sample Time: 1130
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments: PFAS

Signature

5/5/20
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHL-12 **AOC Name:** SHL

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/18/20
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	20.81
Depth to bottom (ft BTOR)	28.64
Pump Set Depth (ft BTOR)	24.5'
Screen Interval (ft BTOR)	16.40 → 31.40
Total volume purged (gal)	3.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 1125/1205
Tubing type: MDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): Tubing
Air source: N/A

Field Instrument (Model/S/N): ~~[illegible]~~ YSI 556 MPS 0561941AD
[illegible] 5088-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
1125	200	20.93	11.49	6.77	441	6.20	-33.8	12.7	clear
1130	200	20.93	10.97	6.47	440	3.00	-31.7	9.70	clear
1135	200	20.93	10.92	6.31	445	3.01	-30.1	9.83	clear
1140	200	20.93	10.96	6.30	450	2.80	-30.0	4.59	clear
1145	200	20.93	10.95	6.25	460	2.72	-24.8	4.21	clear
1150	200	20.93	10.94	6.27	461	2.69	-23.9	4.18	clear
1155	200	20.93	10.92	6.24	463	2.67	-22.6	4.11	clear
W1200	200	20.93	10.90	6.22	465	2.64	-21.7	4.09	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N	

Sampling Details

Sampling ID: SHL-12-SPR20
Sample Time: 1205
Duplicate (Y/N): N
MS/MSD (Y/N): Yes
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments: PFAS

[signature]
Signature

5/18/20
Date

KOMAN GOVERNMENT SOLUTIONS LLC
Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHM-96-5B **AOC Name:** 5-SHL

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/6/2020
Sampler: B+A

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact		✓	
PVC casing intact	✓		
Well gripper present	✓		
Bolts present			✓
Locked (stickup wells)	✓		

Well Information

Diameter	4"
Material	PVC
Depth to water (ft BTOR)	5.33
Depth to bottom (ft BTOR)	92.75
Pump Set Depth (ft BTOR)	85
Screen Interval (ft BTOR)	81.54-91.54
Total volume purged (gal)	3.5

Sampling Type

Purging Method: Peri
Purge start/stop time: ~~0805~~ 0815 - 0910
Tubing type: HDPE
Tubing diameter: 1/4" OD
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556 MPS 05G1941AD
Lamotte 2020 we 9851-2111

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
0815	250	5.33	8.58	7.05	562	5.40	192.8	4.38	clear
0820	250	5.33	8.62	6.69	518	4.62	201.9	1.27	clear
0825	250	5.33	8.67	6.68	508	4.55	209.7	1.24	clear
0830	250	5.33	8.58	6.69	506	4.53	199.4	1.20	clear
0835	250	5.33	8.75	6.70	503	4.40	181.2	1.17	clear
0840	250	5.33	8.87	6.72	502	4.28	164.2	1.28	clear
0845	250	5.33	8.85	6.73	506	4.32	154.3	1.21	clear
0850	250	5.33	8.90	6.74	510	4.26	133.1	1.12	clear
0855	250	5.33	8.92	6.74	510	4.27	123.8	1.08	clear
0900	250	5.33	8.91	6.74	508	4.26	112.9	1.13	clear
0905	250	5.33	8.99	6.77	504	4.21	109.5	1.20	clear
0910	250	5.33	9.03	6.76	505	4.20	105.0	1.09	clear
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				N					

Sampling Details

Sampling ID: SHM-96-5B-SPR20
Sample Time: 0910
Duplicate (Y/N): Y
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: SHL-DUP-050620
Filter Size: —
Dup Time: 0915

Comments: PFAS only

Signature

5/6/2020
Date

KOMAN GOVERNMENT SOLUTIONS LLC

Low Flow/ Low Stress Groundwater Sampling Log

Well Identification: SHP-99-33B **AOC Name:** SML

Project: Spring 2020 Supplemental Event
Location: Fort Devens, Massachusetts
Date: 5/19/20
Sampler: [illegible]

Well Integrity

	Yes	No	N/A
Casing Secure	✓		
Concrete Pad intact	✓		
PVC casing intact			✓
Well gripper present			✓
Bolts present			✓
Locked (stickup wells)		✓	

Well Information

Diameter	1"
Material	Steel
Depth to water (ft BTOR)	11.85
Depth to bottom (ft BTOR)	78.18
Pump Set Depth (ft BTOR)	78'
Screen Interval (ft BTOR)	74.50-79.50
Total volume purged (gal)	2.0

Sampling Type

Purging Method: geotech
Purge start/stop time: 920/1000
Tubing type: HDPE
Tubing diameter: 1/4"
Dedicated pump (Y/N): N
Air source: N/A

Field Instrument (Model/S/N): YSI 556MPS 0561941AD
Lamotte 2020WE 5088-5014

Stabilization Parameters

Time (hhmm)	Flow Rate (ml/min)	Depth to Water (ft)	Temp (°C)	pH (STD)	SPC (µS/cm^c)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Color/Clarity
920	300	14.98	9.77	8.05	361	0.52	-256.4	459	cloudy
925	200	14.56	9.79	6.91	491	0.49	-159.7	2321	cloudy
930	200	14.28	9.89	6.88	556	0.46	-149.5	2480	cloudy
935	200	14.01	10.07	6.83	561	0.37	-150.1	2401	cloudy
940	200	13.81	10.19	6.80	576	0.29	-151.8	2465	cloudy
945	200	13.47	10.21	6.79	578	0.28	-153.1	2470	cloudy
950	200	13.25	10.23	6.78	579	0.27	-152.6	2459	cloudy
955	200	13.10	10.25	6.78	582	0.26	-153.0	2439	cloudy
Acceptance Criteria:		<0.3ft	±3%	±0.1	±3%	±10%	± 10mv	10%	2" Screen Volume = 0.163 gal/ft or 616 ml/ft
Post Cal. Check Varience Observed (Y/N):				✓	✓	✓	✓	✓	

Sampling Details

Sampling ID: SHP-99-33B-SPR20
Sample Time: 1000
Duplicate (Y/N): N
MS/MSD (Y/N): N
Field Filtered (Y/N): N
Dup ID: N/A
Filter Size: N/A
Dup Time: N/A

Comments PFAS

[signature]
Signature

5/19/20
Date

Calibration Field Sheets

Field Instrument Calibration Log

Date: 11/7/18 **Weather:** Sunny, 11°C

Project/Site Name: Devers LTM-SIHL **Instrument:** YSI 556 MPS

Calibrated By: BA **Serial Number:** 09G100702

Parameters	Solution Expiration Date	Morning Calibration Time 0630		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm^c)	6/2019	1367	1413	10.84°C	1403	1413	12.31	±10 µS/cm
pH (7)	3/20	6.69	7.00	9.72°C	7.08	7.00	12.38	± 0.3 Ph *
pH (4)	10/19	3.74	4.00	9.20°C	4.01	4.00	12.40	± 0.3 Ph *
pH (10)	10/19	9.57	9.92	8.71°C	10.16	9.99	12.35	± 0.3 Ph *
ORP (240 mv)	01/23	252.7	240.0	8.43	239.4	240.0	12.37	±10 mv
Dissolved Oxygen (%)	—	101.9	100.0	9.43	99.7	100.0	11.80	-
Dissolved Oxygen (mg/L)	—	12.01	11.44	9.43	11.36	11.39	11.80	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature: [signature] **Date:** 11/7/18

KGS

Field Instrument Calibration Log

Date: 11/07/2018 **Weather:** 50°F, CLEAR

Project/Site Name: SHEPLEY'S HILL LANDFILL **Instrument:** YSI 556 MPS

Calibrated By: ALEX KLISIARIS (JACOBS) **Serial Number:** 12K101899

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1900		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm[c])	MARCH 2019	1.292	1.414	16.73	1.403	1.414	20.28	±10 µS/cm
pH (7)	MARCH 2020	7.02	7.00	18.37	6.95	7.00	20.65	± 0.3 Ph *
pH (4)	MARCH 2020	4.14	4.03	16.90	3.88	3.98	20.46	± 0.3 Ph *
pH (10)	FEB 2020	10.43	10.00	17.45	9.97	10.00	20.14	± 0.3 Ph *
ORP (240 mv)	MARCH 2023	273.2	240.0	17.07	233.4	240.0	19.94	±10 mv
Dissolved Oxygen (%)	—	108.3	99.9	12.60	93.7	99.9	19.07	-
Dissolved Oxygen (mg/L)	—	—	—	—	—	—	—	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	760				760			-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: ✓

Signature: Alex Klisiaris **Date:** 11/07/2018

KGS

Field Instrument Calibration Log

Date: 11/7/18 **Weather:** Sunny

Project/Site Name: LTM Shipley's **Instrument:** YSI 556 MPS

Calibrated By: C.V. **Serial Number:** 15J10092|

Parameters	Solution Expiration Date	Morning Calibration Time 0630		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1,413	1,413	16.20	1,407	1,413	16.15	±10 µS/cm
pH (7)	–	7.05	7.00	15.96	7.01	7.00	15.76	± 0.3 Ph *
pH (4)	3/2020	4.06	4.00	16.32	4.04	4.00	15.97	± 0.3 Ph *
pH (10)	10/2020	9.98	10.00	16.11	9.95	10.00	16.10	± 0.3 Ph *
ORP (240 mv)	10/2022	241.3	240.0	16.71	244.3	240.0	16.25	±10 mv
Dissolved Oxygen (%)	–	105.2	100	–	103.4	100	–	-
Dissolved Oxygen (mg/L)	–	10.85	10.45	–	10.35	10.45	–	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	–	760	760	–	760	760	–	-

Notes: expiration date for pH 7 buffer worn off, cannot read

*** Ph Unit with Ph 7 Buffer**

Variance Noted: /

Signature: C. V. **Date:** 11/7/18

Field Instrument Calibration Log

Date: 11/8/18 **Weather:** Sunny, 40°F

Project/Site Name: Devens - SHL **Instrument:** YSI 556 MPS

Calibrated By: BrA **Serial Number:** 09G100703

Parameters	Solution Expiration Date	Morning Calibration Time 0630		Cal. Temperature °C	Afternoon Calibration Time 1530		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	6/2019	1463	1413	13.30	1420	1413	14.72	±10 µS/cm
pH (7)	3/2020	7.25	7.00	12.12	6.98	7.00	14.71	± 0.3 Ph *
pH (4)	10/2019	3.52	4.00	11.62	3.99	4.00	14.75	± 0.3 Ph *
pH (10)	10/2019	9.72	10.00	10.53	10.15	10.00	14.78	± 0.3 Ph *
ORP (240 mv)	3/1/2023	235.5	240.0	10.74	236.4	240.0	14.69	±10 mv
Dissolved Oxygen (%)	—	106.1	100.0	6.55	97.3	100.1	15.13	-
Dissolved Oxygen (mg/L)	—	13.01	12.25	6.55	11.81	11.97	15.13	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	—	6.55	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: —

Signature: Britt Cox **Date:** 11/8/18

KGS

Field Instrument Calibration Log

Date: 11/08/18 **Weather:** 40°F, CLEAR

Project/Site Name: SHEPLEY'S HILL LANDFILL LTM **Instrument:** YSI 556 MPS 12K101899

Calibrated By: ALEX KLISIARIS (JACOBS) **Serial Number:**

Parameters	Solution Expiration Date	Morning Calibration Time 0715		Cal. Temperature °C	Afternoon Calibration Time 1550		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	03/19	1.408	1.413	16.15	1.419	1.413	15.18	±10 µS/cm
pH (7)	03/20	6.45	7.01	16.15	7.43	7.00	14.98	± 0.3 Ph *
pH (4)	03/20	4.29	4.06	15.69	3.99	4.00	15.31	± 0.3 Ph *
pH (10)	02/20	9.94	10.03	16.41	9.93	10.00	15.51	± 0.3 Ph *
ORP (240 mv)	03/23	247.4	240.1	14.62	240.9	240.0	14.98	±10 mv
Dissolved Oxygen (%)	—	114.2	99.9	10.55	93.7	99.8	12.88	-
Dissolved Oxygen (mg/L)	—							± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)								-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature: [signature] **Date:** 11/8/18

KGS

Field Instrument Calibration Log

Date: 11/8/18 **Weather:** Sunny

Project/Site Name: LTM @ Shopla's **Instrument:** YSI 556 MPS

Calibrated By: CV **Serial Number:** 15J100921

Parameters	Solution Expiration Date	Morning Calibration Time 0640		Cal. Temperature °C	Afternoon Calibration Time 1530		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1,444	1,413	15.10	1,436 ~~6.86~~ (CV)	1,413 ~~7.00~~ (CV)	11.56 (CV) ~~12.13~~	±10 µS/cm
pH (7)	~	7.00	7.00	16.20	(CV) ~~4.05~~ 6.96	7.00	(CV) 12.13 ~~12.10~~	± 0.3 Ph *
pH (4)	3/2020	4.01	4.00	15.18	(CV) ~~4.88~~ 4.05	4.00 (CV)	11.58	± 0.3 Ph *
pH (10)	10/2020	10.01	10.00	13.50	9.88	10.00	11.58	± 0.3 Ph *
ORP (240 mv)	10/2022	250.4	240.0	15.12	241.6	240.0	11.60	±10 mv
Dissolved Oxygen (%)	~	95.7	100	~	1027	100	~	-
Dissolved Oxygen (mg/L)	~	10.80	10.71	~	11.30	11.00	~	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	~	760	760	~	760	760	~	-

Notes: expiration date on pH 7 buffer worn off, cannot read

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature: [signature] **Date:** 11/8/18

KGS

Field Instrument Calibration Log

Date: 11/9/18 **Weather:** 29°F, Fair

Project/Site Name: SHL **Instrument:** YSI556MPS

Calibrated By: BrA **Serial Number:** 09G100702

Parameters	Solution Expiration Date	Morning Calibration Time 0615		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm^c)	06/19	1409	1413	11.73	1398	1413	10.13	±10 µS/cm
pH (7)	03/20	* 6.76	7.00	9.04	6.99	7.00	9.96	± 0.3 Ph *
pH (4)	10/19	3.92	4.00	9.58	3.96	4.00	9.41	± 0.3 Ph *
pH (10)	10/19	9.96	10.00	8.80	10.08	10.00	9.72	± 0.3 Ph *
ORP (240 mv)	01/23	251.6	240.0		248.6	240.0	9.85	±10 mv
Dissolved Oxygen (%)	–	103.6	100.0	3.99	101.5	100.0	8.96	-
Dissolved Oxygen (mg/L)	–	13.59	13.22	3.99	12.97	13.00	8.96	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760	760	3.99	760	760	8.96	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SP C

Signature: [signature] **Date:** 11/9/18

KGS

Field Instrument Calibration Log

Date: 11/09/2018 **Weather:** 32°F, CLEAR

Project/Site Name: SHERLEY'S HILL LANDFILL LTM **Instrument:** YSI 556 MPS

Calibrated By: ALEX KLISIARIS (JACOBS) **Serial Number:** 12K101899

Parameters	Solution Expiration Date	Morning Calibration Time 0745		Cal. Temperature °C	Afternoon Calibration Time 1405		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm[c])	MARCH 2019	1.380	1.413	16.91	1.433	1.413	14.37	±10 µS/cm
pH (7)	MARCH 2020	6.98	7.00	17.45	7.40	7.00	14.63	± 0.3 Ph *
pH (4)	MARCH 2020	4.22	4.04	16.88	3.56	4.00	14.55	± 0.3 Ph *
pH (10)	FEB 2020	10.04	10.00	16.88	10.43	10.00	14.88	± 0.3 Ph *
ORP (240 mv)	MARCH 2023	238.2	240.0	16.84	241.6	240.1	14.53	±10 mv
Dissolved Oxygen (%)	–	112.4	99.5	10.75	94.1	100.0	10.64	-
Dissolved Oxygen (mg/L)	–							± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	760							-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: pH

Signature: [signature] **Date:** 11/09/18

KGS

Field Instrument Calibration Log

Date: 11/9/18 **Weather:** Cloudy

Project/Site Name: Shipley's LTM **Instrument:** YSI 556 MPS : 15510092I

Calibrated By: CV **Serial Number:**

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon Calibration Time 1345		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1,420	1,413	15.01	—	—	10.12	±10 µS/cm
pH (7)	—	6.95	7.00	16.38	6.96	7.00	10.54	± 0.3 Ph *
pH (4)	3/2020	4.03	4.00	13.68	4.06	4.00	10.46	± 0.3 Ph *
pH (10)	10/2020	10.05	10.00	13.75	10.03	10.00	10.18	± 0.3 Ph *
ORP (240 mv)	10/2022	242.0	240.0	15.38	236.6	240.0	10.36	±10 mv
Dissolved Oxygen (%)	—	98.9	100	—	102	100	—	-
Dissolved Oxygen (mg/L)	—	11.35	11.50	—	11.30	11.05	—	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	-	760	760	—	-

Notes: plt 2 bottles expiration date worn off, cannot read

*** Ph Unit with Ph 7 Buffer**

Variance Noted: ✓

Signature: [signature] **Date:** 11/9/18

Field Instrument Calibration Log

Date: 11/12/18 **Weather:** 45° sunny

Project/Site Name: shepleys LTM Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 15J100921

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon Calibration Time _____		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm^{c})	3/2019	1,413	1,413	13.58	1411	1413	8.98	±10 µS/cm
pH (7)	elegible	7.01	7.00	10.72	6.88	7.00	9.42	± 0.3 Ph *
pH (4)	elegible	4.08	4.00	14.97	4.12	4.00	9.44	± 0.3 Ph *
pH (10)	10/2019	9.88	10.00	12.05	9.81	10.06	9.14	± 0.3 Ph *
ORP (240 mv)	elegible	243.7	240.0	12.67	239.0	240.0	9.11	±10 mv
Dissolved Oxygen (%)	N/A	105.8	100.0	7.43	95.3	100.0	8.57	-
Dissolved Oxygen (mg/L)	N/A	12.70	12.00	-	-	-	-	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: ✓

Signature: _____ **Date:** 11/12/18

Field Instrument Calibration Log

Date: 11/12/18 **Weather:** 29°F, Fair

Project/Site Name: SHL LTM **Instrument:** YSI 556 MPS

Calibrated By: B.A **Serial Number:** 09G100702

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon Calibration Time 1600		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	6/19	1428	1413	14.52	1401	1413	11.21	±10 µS/cm
pH (7)	3/20	6.88	7.00	14.87	6.97	7.00	11.42	± 0.3 Ph *
pH (4)	10/19	4.17	4.00	14.38	4.01	4.00	11.63	± 0.3 Ph *
pH (10)	10/19	10.19	10.00	13.73	10.15	10.00	11.57	± 0.3 Ph *
ORP (240 mv)	01/23	226.6	240.0	14.32	239.8	240.0	11.15	±10 mv
Dissolved Oxygen (%)	—	100.7	100.0	13.4	100.0	100.0	10.38	-
Dissolved Oxygen (mg/L)	—	10.60	10.52	13.14	10.48	10.48	10.38	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SP C

Signature: [signature] **Date:** 11/12/18

Field Instrument Calibration Log

Date: Nov 12th 2018 **Weather:** 29°F, Fair

Project/Site Name: Shepley's Hill Landfill **Instrument:** YSI 556

Calibrated By: S. Georges **Serial Number:** 06J1595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1530		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/2018	1353	1413	18.64	1436	1413	14.12	±10 µS/cm
pH (7)	02/29/2020	7.06	7.00	17.41	6.89	7.00	14.17	± 0.3 Ph *
pH (4)	01/31/2020	4.12	4.00	18.01	4.08	4.00	15.16	± 0.3 Ph *
pH (10)	01/31/2020	10.02	10.00	18.99	9.97	10.00	14.76	± 0.3 Ph *
ORP (240 mv)	01/30/2020	245.5	240.0	18.63	256.8	240.0	11.67	±10 mv
Dissolved Oxygen (%)	—	103.8	100.0	19.22	98.4	100.0	13.02	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SP C ORP

Signature: S. Georges **Date:** 11/12/18

Field Instrument Calibration Log

Date: 11/13/18 **Weather:** Rain, 35°F

Project/Site Name: SHL LIM **Instrument:** YSI 556 MPS

Calibrated By: B.A **Serial Number:** 09G100702

Parameters	Solution Expiration Date	Morning Calibration Time 0630		Cal. Temperature °C	Afternoon Calibration Time _____		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm^{c})	6/19	1370	1413	13.84	1412	1413	10.61	±10 µS/cm
pH (7)	3/20	7.11	7.00	14.07	6.97	7.00	10.53	± 0.3 Ph *
pH (4)	10/19	3.95	4.00	15.01	4.05	4.00	10.48	± 0.3 Ph *
pH (10)	10/19	10.11	10.01	15.70	9.82	10.00	10.37	± 0.3 Ph *
ORP (240 mv)	01/23	224.7	240.0	15.45	240.0	240.0	10.58	±10 mv
Dissolved Oxygen (%)	—	98.9	100.0	9.72	99.9	99.9	9.96	-
Dissolved Oxygen (mg/L)	—	12.47	12.59	9.72	12.50	12.50	9.96	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	✓	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: ✓

Signature: [signature] **Date:** 11/13/18

KGS

Field Instrument Calibration Log

Date: 11/13/18 **Weather:** Rainy, 29°F

Project/Site Name: Shipley's LTM Fall '18 **Instrument:** YSI 556 MPS: 12K101899

Calibrated By: CV **Serial Number:** ↙

Parameters	Solution Expiration Date	Morning Calibration Time 0730		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	03/2019	~~6.44~~ 1,421 CV	~~2.00~~ 1,413 CV	18.60	1,439	1,413	9.99	±10 µS/cm
pH (7)	03/2020	~~6.82~~ 6.94 CV	~~7~~.00	19.50	6.92	7.00	10.65	± 0.3 Ph *
pH (4)	03/2020	4.02	4.00	19.91	4.04	4.00	10.79	± 0.3 Ph *
pH (10)	02/2020	10.12	10.00	18.60	9.70	10.00	10.61	± 0.3 Ph *
ORP (240 mv)	03/2023	233.1	240.0	19.30	248.8	240.0	10.14	±10 mv
Dissolved Oxygen (%)	—	104.4%	100%	—	99.1%	100%	—	-
Dissolved Oxygen (mg/L)	—	10.70	10.25	—	10.61	10.15	—	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes: Cold weather/rain may have caused variance during afternoon calibrations

*** Ph Unit with Ph 7 Buffer**

Variance Noted: ~~YES~~ SPC

Signature: [signature] **Date:** 11/13/18

Field Instrument Calibration Log

Date: Nov 13th 2018 **Weather:** 38°F RAIN.

Project/Site Name: SHEPLEY'S HILL LANDFILL **Instrument:** YSI 556

Calibrated By: S. GEORGES **Serial Number:** 06J1595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1440		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/2018	1372	1413	19.19	1382	1413	15.22	±10 µS/cm
pH (7)	02/29/2020	7.06	7.00	20.29	6.97	7.00	15.32	± 0.3 Ph *
pH (4)	01/31/2020	3.96	4.00	19.55	3.92	4.00	15.80	± 0.3 Ph *
pH (10)	01/31/2020	9.83	9.98	19.44	9.95	10.00	15.65	± 0.3 Ph *
ORP (240 mv)	01/30/2020	220.2	240.0	19.27	238.2	240.0	14.40	±10 mv
Dissolved Oxygen (%)		99.4	100.0	21.17	97.7	100.0	15.16	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC

Signature: S. Georges **Date:** 11/13/18

KGS

Field Instrument Calibration Log

Date: 11/14/18 **Weather:** 35°/SUNNY/6-10 MPH LAND

Project/Site Name: DELONG LTM - AOC (SU) AS **Instrument:** YSI 556 MPS

Calibrated By: K. TAYLOR **Serial Number:** 15J100927 (ICON) 037216

Parameters	Solution Expiration Date	Morning Calibration Time 0855		Cal. Temperature °C	Afternoon Calibration Time 1611		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	MAR/2019	1.416	1.413	11.21	1.425	1.413	3.04	±10 µS/cm
pH (7)	N/A	7.34	7.00	10.18	7.05	7.00	2.98	± 0.3 Ph *
pH (4)	N/A	3.85	4.00	10.47	3.96	4.00	3.21	± 0.3 Ph *
pH (10)	N/A	10.47	10.00	8.31	10.11	10.00	3.11	± 0.3 Ph *
ORP (240 mv)	N/A	247.6	240.0	9.82	289.8	240.0	3.14	±10 mv
Dissolved Oxygen (%)	N/A	123.8	99.9	1.37	104.0	100.0	18.46	-
Dissolved Oxygen (mg/L)	N/A	17.49	14.01	1.37	14.23	14.06	18.46	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	N/A	760	1.37	N/A	760	18.46	-

Notes: TEMP ±

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC

Signature: _____ **Date:** 11/14/18

KGS

Field Instrument Calibration Log

Date: 11/14/18 **Weather:** Sunny

Project/Site Name: Shapley's LTM Fall 18 **Instrument:** YSI 556 MPS

Calibrated By: CA **Serial Number:** 12K101899

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1355		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	03/2019	1,406	1,413	18.30	1,410	1,413	8.61	±10 µS/cm
pH (7)	03/2020	7.05	7.00	@ 18.61 ~~18.40~~	7.09	7.00	8.56	± 0.3 Ph *
pH (4)	03/2020	3.99	4.00	18.40	4.01	4.00	8.93	± 0.3 Ph *
pH (10)	03/2020	10.00	10.00	18.21	9.88	10.00	8.58	± 0.3 Ph *
ORP (240 mv)	03/2023	231.2	240.0	18.33	235.3	240.0	8.55	±10 mv
Dissolved Oxygen (%)	–	103.7	100	–	101.3	100	–	-
Dissolved Oxygen (mg/L)	–	9.50	9.21	–	12.50	12.60	–	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	–	760	760	–	760	760	–	-

Notes: probe was very cold when calibrating DO for post-cal; same with pH buffer 10

*** Ph Unit with Ph 7 Buffer**

Variance Noted: yes DO

Signature: [signature] **Date:** 11/14/18

Field Instrument Calibration Log

Date: 11/14/18 **Weather:** 29°F Cloudy

Project/Site Name: Shepley's Hill Landfill **Instrument:** YSI 556

Calibrated By: S. Georges **Serial Number:** 06J1595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0705		Cal. Temperature °C	Afternoon Calibration Time 1450		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/19	1493	1413	17.89	1451	1413	15.11	±10 µS/cm
pH (7)	02/29/20	6.96	7.00	19.04	6.95	7.00	15.19	± 0.3 Ph *
pH (4)	01/31/20	4.11	3.99	18.28	4.02	4.00	16.02	± 0.3 Ph *
pH (10)	01/31/20	10.08	10.02	18.54	10.01	10.01	15.78	± 0.3 Ph *
ORP (240 mv)	01/30/20	244.0	240.0	17.72	243.2	240.0	14.27	±10 mv
Dissolved Oxygen (%)	—	97.2	100.0	17.58	97.9	100.1	15.00	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-
Notes: *** Ph Unit with Ph 7 Buffer**								**Variance Noted:** SPC

Signature: S. Georges **Date:** 11/14/18

KGS

Field Instrument Calibration Log

Date: 11/15/18 **Weather:** 20°; DARK, 0-5 MPH

Project/Site Name: DEVENS LTM - AOC-60) A5 **Instrument:** YSI 556 MPS

Calibrated By: K. TAYLOR **Serial Number:** 033216

Parameters	Solution Expiration Date	Morning Calibration Time 0620		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	MAR/2019	2.303	1.254	19.09	1.864	1.253	19.89	±10 µS/cm
pH (7)	N/A	6.99	7.00	19.30	7.03	7.00	20.02	± 0.3 Ph *
pH (4)	N/A	4.09	4.00	19.21	4.01	4.00	20.11	± 0.3 Ph *
pH (10)	N/A	10.01	10.00	19.98	9.95	10.00	20.35	± 0.3 Ph *
ORP (240 mv)	N/A	219.3	240.0	19.46	248.6	240.0	20.09	±10 mv
Dissolved Oxygen (%)	N/A	82.0	100.0	16.72	99.6	100.0	15.34	-
Dissolved Oxygen (mg/L)	N/A	7.96	9.71	16.72	9.53	10.02	15.34	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	N/A	760	16.72	N/A	760	15.34	-

Notes: @ CALIBRATED IN CONTROLLED ENVIRONMENT. HOTEL ROOM

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC

Signature: _____ **Date:** 11/15/18

KGS

Field Instrument Calibration Log

Date: 11/15/18 **Weather:** Cloudy, 20° F

Project/Site Name: Shipley's LTM Fall 18 **Instrument:** YSI 556 MPS

Calibrated By: CV **Serial Number:** 12K101899

Parameters	Solution Expiration Date	Morning Calibration Time 0615		Cal. Temperature °C	Afternoon Calibration Time 1300		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	03/2019	1,401	1,413	17.87	1,414	1,413	16.65	±10 µS/cm
pH (7)	03/2020	6.92	7.00	18.51	7.02	7.00	16.06	± 0.3 Ph *
pH (4)	03/2020	3.98	4.00	17.92	4.01	4.00	16.03	± 0.3 Ph *
pH (10)	02/2020	10.00	10.00	17.78	10.00	10.00	16.10	± 0.3 Ph *
ORP (240 mv)	03/2023	240.2	240.0	17.98	243.1	240.0	16.60	±10 mv
Dissolved Oxygen (%)	–	95.7	100	–	92.3	100	–	-
Dissolved Oxygen (mg/L)	–	9.05	9.31	–	8.75	9.35	–	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	–	760	760	–	760	760	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: NO

Signature: [signature] **Date:** 11/15/18

KGS

Field Instrument Calibration Log

Date: Nov 15th 2018 **Weather:** 21° F Cloudy

Project/Site Name: Shipsink's Hill Landfill **Instrument:** YSI 556

Calibrated By: S. Georges **Serial Number:** 06031595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0710		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/18	1415	1413	17.00	14 28	1413	14.21	±10 µS/cm
pH (7)	02/29/20	7.05	7.00	18.25	7.04	7.00	14.28	± 0.3 Ph *
pH (4)	01/31/20	4.01	3.99	17.28	4.02	4.00	15.22	± 0.3 Ph *
pH (10)	01/31/20	9.97	10.00	16.90	9.91	10.03	14.98	± 0.3 Ph *
ORP (240 mv)	01/30/20	238.6	240.0	18.04	236.4	240.0	12.81	±10 mv
Dissolved Oxygen (%)	—	98.2	100.0	18.21	102.1	100.0	14.01	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC

Signature: S Georges **Date:** 11/15/18

Turbidity Instrument Calibration Log

Project/Site Name: ~~PFAS RI - EXISTING WELL~~ SHL - LTM

Instrument: Hach 2100 Q

Calibrated By: B.A

Serial Number: 11090C012349

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/5/18 J	9.92	17.8	106	792	9.96	20.1	99.6	801
11/6/18 J	10.9	19.8	99.3	791	10.0	19.9	100	798
11/7/18	10.5	21.4	103	821	9.97	20.3	101	808
11/8/18 J	9.75	22.6	112	792	10.5	19.6	103	812
11/9/18 J	11.4	18.3	97.5	781	9.79	20.0	100	805
11/12/18	9.78	20.1	100	801	10.0	20.4	99.3	800
11/13/18	9.92	20.4	99.7	796	9.98	19.9	101	803

	Post Calibration Criteria			
Variance Noted:	± 0.5 ✓	± 1 ✓	± 5 ✓	± 40 ✓

Signature: Beth Chase

Date: 11/13/18

J

Turbidity Instrument Calibration Log

Project/Site Name: Devon's Shapley's Landfill / Fall 2018

Calibrated By: CV

Instrument: HACH 2100Q ~~11090C012349~~ (CV)

Serial Number: 11090C012349

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/6/18 J	9.90	23.0	94.7	788	10.6	23.4	103.2	798
11/7/18 J	9.00	18.5	88.9	780	9.56	19.3	103	(CV) ~~820~~ 820
11/8/18	9.92	19.8	102	816	9.72	19.7	100	804
11/9/18	9.81	20.4	100	796	9.57	19.9	99.3	805

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 11/9/18

KGS

Turbidity Instrument Calibration Log

Project/Site Name: SHEPLEY'S HILL LANDFILL

Instrument: HACH 2100Q

Calibrated By: ALEX KLISIARIS (JACOBS)

Serial Number: 16120C054715

Date	Pre-Cal 0 NTU 10 NTU AM	Post-Cal 0 NTU 20 NTU AM	Pre-Cal 10 NTU 100 NTU AM	Post-Cal 10 NTU 800 NTU AM	Pre-Cal 0 NTU 10 NTU PM	Post-Cal 0 NTU 20 NTU PM	Pre-Cal 10 NTU 100 NTU PM	Post-Cal 10 NTU 800 NTU PM
11/07/18	9.94	19.3	99.3	789	9.68	19.6	95.7	777
11/08/18 J	9.78	19.4	92.3	793	9.77	20.9	108	817
11/09/18	9.54	19.5	102	784	9.55	21.2	100	823

Post Calibration Criteria			
-	-	± 0.5	Variance Noted: yes

Signature: Alex Klisiaris

Date: 11/09/18

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Shoplys LTM FALL 18

Instrument: Hach 2100Q

Calibrated By: Owen [redacted] Jackson

Serial Number: 11090C012349

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/12/18 JS	9.98/10	20.6/20	99.7/100	793/800	9.99/10	23.2/20	117/100	825/800

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 11/12/18

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Shipley's LTM Fall 18

Calibrated By: CV

Instrument: HACH 2100 Q

Serial Number: 11090C012349

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/13/18 JS	10.8	16.1	87.2	779	10.7	23.5	107	814
11/14/18	9.80	19.0	98.1	793	9.50	19.9	97.7	813
11/15/18	10.5	19.5	99.8	787	10.8	20.5	103	799

	Post Calibration Criteria			
Variance Noted: yes	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 11/15/18

(could be due to frigid weather while calibrating, or not "shaking" calibrating solutions enough.)

Turbidity Instrument Calibration Log

Project/Site Name: Skyline CTR

Calibrated By: S. Geddes

Instrument: 2100Q HACH

Serial Number: 16120C054715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/12/18	9.49 / 10.0	19.5 / 20.0	98.4 / 100	810 / 808	9.57 / 10.0	19.4 / 20.1	90.3 / 101	812 / 802
11/13/18 SJ	9.97 / 10.0	18.2 / 20.0	97.1 / 101	815 / 804	9.63 / 10.0	19.8 / 20.1	92.4 / 102	811 / 800
11/14/18	10.4 / 10.1	20.1 / 20.2	98.9 / 100	805 / 800	9.82 / 10.1	19.7 / 20.0	93.1 / 100	803 / 800
11/15/18	10.8 / 10.0	21.5 / 20.4	109 / 102	827 / 805	10.1 / 10.1	18.3 / 20.0	97.5 / 101	810 / 803
11/16/18 SJ	10.3 / 10.1	24.3 / 21.5	111 / 101	842 / 800	11.9 / 10.2	23.7 / 20.8	115 / 104	806 / 804

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: S. Geddes

Date: 11/16/18

KGS

Turbidity Instrument Calibration Log

Project/Site Name: DEVENS LTM - AOC 50(A5)

Instrument: LAMOTTE 2020WE

Calibrated By: K. TAYLOR - CH2M

Serial Number: ~~13252~~ 024057 (A)

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
11/14/18 J	~~-0.60~~ 0.45 (M)	* OVERRAGE 0.36 PROMPT	10.08	10.00	0.00	0.00	9.82	10.00
11/15/18	0.00	0.00	10.13	10.00	0.38	0.00	10.11	10.00
11/16/18	0.45	0.00	7.81	10.00	0.43	0.00	9.98	10.00
11/19/18	0.36	0.00	9.92	10.00	0.13	0.00	10.00	10.00
11/20/18	0.38	0.00	9.98	10.00	0.30	0.00	9.98	10.00

Post Calibration Criteria			
-	-	± 0.5	Variance Noted: yes

Signature: [signature]

Date: 11/20/18

KGS

Field Instrument Calibration Log

Date: 11/13/18 **Weather:** Rainy

Project/Site Name: Shoplays LTM Fall '18 **Instrument:** YSI 556 MPS: 12K101899

Calibrated By: CV **Serial Number:**

Parameters	Solution Expiration Date	Morning Calibration Time 0730		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	03/2019	CV ~~0.94~~ 1,421	~~2.00~~ 1,413 CV	18.62	1,439	1,413	9.99	±10 µS/cm
pH (7)	03/2020	CV ~~6.82~~ 6.94	~~7.00~~	19.50	6.92	7.00	10.65	± 0.3 Ph *
pH (4)	03/2020	4.02	4.00	19.91	4.04	4.00	10.79	± 0.3 Ph *
pH (10)	02/2020	10.12	10.00	18.60	9.70	10.00	10.61	± 0.3 Ph *
ORP (240 mv)	03/2023	233.1	240.0	19.30	248.8	240.0	10.14	±10 mv
Dissolved Oxygen (%)	—	104.4%	100%	—	99.1%	100%	—	-
Dissolved Oxygen (mg/L)	—	10.70	10.25	—	10.61	10.15	—	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes: Cold weather/rain may have caused variance during afternoon calibrations

*** Ph Unit with Ph 7 Buffer**

Variance Noted: yes

Signature: [signature] **Date:** 11/13/18

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Shopley's LTM Fall 18

Calibrated By: CV

Instrument: HACH 2100 Q

Serial Number: 11090C012349

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/13/18	10.8	16.1	87.2	779	10.7	23.5	107	814
11/14/18	9.80	19.0	98.1	793	9.50	19.9	97.7	813
11/15/18	10.5	19.5	99.8	787	10.8	20.5	103	799

	Post Calibration Criteria			
Variance Noted: yes	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 11/15/18

(could be due to frigid weather while calibrating, or not "shaking" calibrating solutions enough.)

Field Instrument Calibration Log

Date: Nov 12th 2018 **Weather:**

Project/Site Name: Shepley's Hill Landfill **Instrument:** YSI 556

Calibrated By: S. Georges **Serial Number:** 06J1595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1530		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm[c])	12/31/2018	1353	1413	18.64	1436	1413	14.12	±10 µS/cm
pH (7)	02/29/2020	7.00	7.00	17.41	6.89	7.00	14.17	± 0.3 Ph *
pH (4)	01/31/2020	4.12	4.00	18.01	4.08	4.00	15.16	± 0.3 Ph *
pH (10)	01/31/2020	10.02	10.00	18.99	9.97	10.00	14.76	± 0.3 Ph *
ORP (240 mv)	01/30/2020	245.5	240.0	18.63	256.8	240.0	11.67	±10 mv
Dissolved Oxygen (%)	—	113.8	100.0	19.22	98.4	100.0	13.02	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: **Date:**

Field Instrument Calibration Log

Date: Nov 13th 2018 **Weather:** 38°F RAIN.

Project/Site Name: SHEPLEY'S HILL LANDFILL **Instrument:** YSI 556

Calibrated By: S. GEORGES **Serial Number:** 06J1595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1440		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/2018	1372	1413	19.19	1382	1413	15.22	±10 µS/cm
pH (7)	02/29/2020	7.06	7.00	20.29	6.97	7.00	15.32	± 0.3 Ph *
pH (4)	01/31/2020	3.96	4.00	19.55	3.92	4.00	15.80	± 0.3 Ph *
pH (10)	01/31/2020	9.83	9.98	19.44	9.95	10.00	15.65	± 0.3 Ph *
ORP (240 mv)	01/30/2020	220.2	240.0	19.27	238.2	240.0	14.40	±10 mv
Dissolved Oxygen (%)		99.4	100.0	21.17	97.7	100.0	15.16	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: _____ **Date:** _____

Field Instrument Calibration Log

Date: 11/14/18 **Weather:** 29°F Cloudy

Project/Site Name: Shepley's Hill Landfill **Instrument:** Ysi 55C

Calibrated By: S. Georges **Serial Number:** 06J1595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0705		Cal. Temperature °C	Afternoon Calibration Time 1450		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/19	1493	1413	17.89	1451	1413	15.11	±10 µS/cm
pH (7)	02/29/20	6.96	7.00	19.04	6.95	7.00	15.19	± 0.3 Ph *
pH (4)	01/31/20	4.11	3.99	18.28	4.02	4.00	16.02	± 0.3 Ph *
pH (10)	01/31/20	10.08	10.02	18.54	10.01	10.01	15.78	± 0.3 Ph *
ORP (240 mv)	01/30/20	244.0	240.0	17.72	243.2	240.0	14.27	±10 mv
Dissolved Oxygen (%)	–	97.2	100.0	17.58	97.9	100.1	15.00	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-
Notes: *** Ph Unit with Ph 7 Buffer**								**Variance Noted:**

Signature: _____ **Date:** _____

Field Instrument Calibration Log

Date: Nov 15th 2018 **Weather:** 21°F Cloudy

Project/Site Name: Shipley's Hill Landfill **Instrument:** YSI 556

Calibrated By: S. Georges **Serial Number:** 06J31595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0710		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm[c])	12/31/18	1415	1413	17.00	14 28	1413	14.21	±10 µS/cm
pH (7)	02/29/20	7.05	7.00	18.25	7.04	7.00	14.28	± 0.3 Ph *
pH (4)	01/31/20	4.01	3.99	17.28	4.02	4.00	15.22	± 0.3 Ph *
pH (10)	01/31/20	9.97	10.00	16.90	9.91	10.03	14.98	± 0.3 Ph *
ORP (240 mv)	01/30/20	238.6	240.0	18.04	236.4	240.0	12.81	±10 mv
Dissolved Oxygen (%)	—	98.2	100.0	18.21	102.1	100.0	14.01	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: _____ **Date:** _____

Field Instrument Calibration Log

Date: Nov. 16th 2018 **Weather:** 3°C Snow/Sleet.

Project/Site Name: Shepley's Hill Landfill **Instrument:** YSI 556

Calibrated By: S. Georges **Serial Number:** 06031595 AF

Parameters	Solution Expiration Date	Morning Calibration Time 0635		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	12/31/18	1366	1413	18.51	1424	1413	14.59	±10 µS/cm
pH (7)	02/29/20	7.12	7.00	17.99	7.02	7.00	14.67	± 0.3 Ph *
pH (4)	01/31/20	4.08	3.99	18.04	4.01	4.00	15.72	± 0.3 Ph *
pH (10)	01/31/20	9.98	10.00	18.20	10.00	10.00	15.23	± 0.3 Ph *
ORP (240 mv)	01/30/20	245.2	240.0	18.55	242.1	240.0	13.99	±10 mv
Dissolved Oxygen (%)	—	97.5	100.0	16.57	92.3	100.0	14.21	-
Dissolved Oxygen (mg/L)								± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)		760			760			-
Notes: *** Ph Unit with Ph 7 Buffer**								**Variance Noted:**

Signature: _____ **Date:** _____

Turbidity Instrument Calibration Log

Project/Site Name: Skyline CTM

Instrument: 2100Q HACH

Calibrated By: S. GEORGES

Serial Number: 16120C054715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/12/18	9.49 / 10.0	19.5 / 20.0	98.4 / 100	810 / 808	9.57 / 10.0	19.4 / 20.1	90.3 / 101	812 / 802
11/13/18	9.97 / 10.0	18.2 / 20.0	97.1 / 101	815 / 804	9.63 / 10.0	19.8 / 20.1	92.4 / 102	811 / 800
11/14/18	10.4 / 10.1	20.1 / 20.2	98.9 / 100	805 / 800	9.82 / 10.1	19.7 / 20.0	99.1 / 100	805 / 800
11/15/18	10.8 / 10.0	21.5 / 20.4	109 / 102	827 / 805	10.1 / 10.1	18.3 / 20.0	97.5 / 101	810 / 803
11/16/18	10.3 / 10.1	24.3 / 21.5	111 / 101	842 / 800	11.9 / 10.2	23.7 / 20.8	115 / 104	806 / 804

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: _____

Date: _____

Field Instrument Calibration Log

Date: 11/19/18 **Weather:** 34°/CLEAR/CALM/CLOUDY

Project/Site Name: DEVENS - LTM - AOI 5Q(A5) **Instrument:** YSI 556 MPS

Calibrated By: K-TAYLOR **Serial Number:** 03321C

Parameters	Solution Expiration Date	Morning Calibration Time 0555		Cal. Temperature °C	Afternoon Calibration Time 1642		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	MAR/19	1.378	1.413	20.85	1.398	1.413	19.03	±10 µS/cm
pH (7)	N/A	6.94	7.00	20.79	7.01	7.00	19.11	± 0.3 Ph *
pH (4)	N/A	4.14	4.00	20.72	4.03	4.00	19.05	± 0.3 Ph *
pH (10)	N/A	9.97	10.00	20.66	9.88	10.00	19.86	± 0.3 Ph *
ORP (240 mv)	N/A	238.1	240.0	20.85	237.3	240.0	19.50	±10 mv
Dissolved Oxygen (%)	N/A	96.9	100.0	17.91	101.3	100.0	18.02	-
Dissolved Oxygen (mg/L)	N/A	9.18	9.48	17.91	9.77	9.62	18.02	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	~~760~~ N/A	760	17.91	N/A	760	18.02	-

Notes: CALIBRATED IN CONTROLLED ENVIRONMENT – HOTEL ROOM

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 11/19/18

KGS

Field Instrument Calibration Log

Date: 11/20/18 **Weather:** 32/ SNOWING

Project/Site Name: DEVENS - LTM - AOC (AS) **Instrument:** YSI 556 MPS

Calibrated By: K. TAYLOR **Serial Number:** 033216

Parameters	Solution Expiration Date	Morning Calibration Time 0610		Cal. Temperature °C	Afternoon Calibration Time 1110		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm^c)	MAR/19	1.445	~~18.10~~ 1.413 (RI)	18.10	1.349	1.413	9.95	±10 µS/cm
pH (7)	N/A	6.96	7.00	20.37	6.98	7.00	17.34	± 0.3 Ph *
pH (4)	N/A	4.00	4.00	20.33	4.17	4.00	22.34	± 0.3 Ph *
pH (10)	N/A	10.14	10.02	19.88	9.90	10.00	22.38	± 0.3 Ph *
ORP (240 mv)	N/A	245.2	240.0	20.31	232.3	240.0	22.61	±10 mv
Dissolved Oxygen (%)	N/A	141.6	100.0	5.53	105.4	100.1	4.21	-
Dissolved Oxygen (mg/L)	N/A	17.00	12.04	5.53	12.79	12.01	4.21	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	N/A	760	5.53	N/A	760	4.21	-

Notes: CALIBRATED IN CONTROLLED ENVIRONMENT - HOTEL

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 11/20/18

Turbidity Instrument Calibration Log

Project/Site Name: DENNIS LTM - AOC 50(A5)

Instrument: LAMOTTE 2020WE

Calibrated By: K. TAYLOR - CHEM

Serial Number: 18252 024057 (R)

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
11/14/18	~~-0.60~~ 0.45 (R)	* OVERRANGE 0.36 RECHECK	10.08	10.00	0.00	0.00	9.82	10.00
11/15/18	0.00	0.00	10.13	10.00	0.38	0.00	10.11	10.00
11/16/18	0.45	0.00	7.81	10.00	0.43	0.00	9.98	10.00
11/19/18	0.36	0.00	9.92	10.00	0.13	0.00	10.00	10.00
11/20/18	0.38	0.00	9.98	10.00	0.30	0.00	9.98	10.00

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: [signature]

Date: 11/20/18

Field Instrument Calibration Log

Date: 11/20/18 **Weather:** 34° Snow

Project/Site Name: Devens LTM Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 09G100702

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	6/19	1471	1413	17.04	1430	1413	7.95	±10 µS/cm
pH (7)	3/20	7.21	7.00	18.29	6.42	7.00	7.66	± 0.3 Ph *
pH (4)	10/19	4.12	4.00	18.16	4.25	4.00	8.80	± 0.3 Ph *
pH (10)	10/19	9.42	10.00	16.38	9.87	10.00	8.71	± 0.3 Ph *
ORP (240 mv)	elegible	263.7	240.0	16.38	220.1	240.0	8.16	±10 mv
Dissolved Oxygen (%)	–	100.4	100.0	13.03	94.0	100.0	8.18	-
Dissolved Oxygen (mg/L)	–	10.54	10.52	–	11.10	11.80	-	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	–	760	–	-	760	–	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature:  **Date:** 11/20/18

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM Fall 2018 **Instrument:** Hach 2100Q

Calibrated By: Owen Jackson **Serial Number:** 13110C029663

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/20/18	9.82/10.00	19.1/20.00	98.2/100.0	798/800.0	9.15/10.00	21.4/20.00	107/100.0	784/800.0

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: **Date:** 11/20/18

Field Instrument Calibration Log

Date: 11/26/19 **Weather:** 40° Cloudy, light rain

Project/Site Name: Shepleys Fall 2018 LTM **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 09G100702

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	6/2019	1416	1413	16.74	1437	1413	9.62	±10 µS/cm
pH (7)	3/2020	7.33	7.00	17.05	6.92	7.00	10.05	± 0.3 Ph *
pH (4)	10/2019	3.98	4.00	17.34	4.07	4.00	10.23	± 0.3 Ph *
pH (10)	10/2019	9.94	10.00	16.23	10.18	10.00	9.80	± 0.3 Ph *
ORP (240 mv)	2023	261.5	240.0	16.89	223.0	240.0	9.67	±10 mv
Dissolved Oxygen (%)	-	93.4	100.0	14.05	102.5	100.0	Not Recorded	-
Dissolved Oxygen (mg/L)	-	9.67	10.25	14.05	11.17	11.03	Not Recorded	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: **Date:** 11/26/19

Turbidity Instrument Calibration Log

Project/Site Name: Shepley's 2018 Fall LTM

Instrument: Hach 2100Q

Calibrated By: Owen Jackson

Serial Number: 11090C012349

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
11/26/18	9.73	19.5	99.1	781	9.65	18.8	93.7	812

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 11/26/18

KGS

Field Instrument Calibration Log

Date: 11/26/18 **Weather:** 45°F, cloudy

Project/Site Name: Devens **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 15K100983

Parameters	Solution Expiration Date	Morning Calibration Time 720		Cal. Temperature °C	Afternoon Calibration Time 1530		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1.425	1.413	12.30	1.410	–	11.37	±10 µS/cm
pH (7)	3/2020	7.13	7.00	13.46	7.02	–	11.25	± 0.3 Ph *
pH (4)	3/2020	4.10	4.01	12.11	4.09	–	11.26	± 0.3 Ph *
pH (10)	12/2019	10.33	10.00	12.28	10.10	–	11.20	± 0.3 Ph *
ORP (240 mv)	1/2023	251.8	240.1	12.53	241.3	–	11.35	±10 mv
Dissolved Oxygen (%)	–	101.7	100.0	6.87	100.7	–	6.12	-
Dissolved Oxygen (mg/L)	–	12.37	12.22	6.87	12.30	–	6.12	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solutio no negative value
Barometric Pressure (mmHg)	–	760	–	–	760	–	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: Dave Kortjohn **Date:** 11/26/18

KGS

Field Instrument Calibration Log

Date: 11/28/18 **Weather:** 40°F, partly cloudy

Project/Site Name: Devens LTM **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 15K100983

Parameters	Solution Expiration Date	Morning Calibration Time 740		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1.409	1,413	11.80	1.408	–	10.09	±10 µS/cm
pH (7)	3/2020	6.75	7.00	13.93	7.03	–	10.15	± 0.3 Ph *
pH (4)	3/2020	4.05	4.01	11.71	4.19	–	10.00	± 0.3 Ph *
pH (10)	12/2019	10.06	10.00	12.73	10.13	–	10.18	± 0.3 Ph *
ORP (240 mv)	1/2023	247.4	240.0	12.64	240.6	–	10.13	±10 mv
Dissolved Oxygen (%)	–	96.1	100.0	7.43	~~101.1~~ 99.6 DK	–	10.34	-
Dissolved Oxygen (mg/L)	–	11.56	12.02	7.43	~~11.33~~ 11.78 DK	–	10.34	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solutio no negative value
Barometric Pressure (mmHg)	–	760	–	–	760	–	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: Dave Kortjohn **Date:** 11/28/18

KGS

Field Instrument Calibration Log

Date: 12/6/18 **Weather:** 30° Sunny

Project/Site Name: Devens PFAS Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0730		Cal. Temperature °C	Afternoon Calibration Time 1450		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm^c)	3/2019	1,386	1,413	16.37	1,402	1,413	10.49	±10 µS/cm
pH (7)	3/2020	7.16	7.00	17.67	6.90	7.00	10.35	± 0.3 Ph *
pH (4)	3/2020	3.70	4.00	16.49	3.97	4.00	10.22	± 0.3 Ph *
pH (10)	2/2020	9.45	10.00	16.16	9.78	10.00	10.48	± 0.3 Ph *
ORP (240 mv)	3/2023	236.0	240.0	16.44	230.1	240.6	10.24	±10 mv
Dissolved Oxygen (%)	-	134.0	100.0	11.33	81.1	100.0	8.23	-
Dissolved Oxygen (mg/L)	-	14.63	10.94	11.33	9.55	11.77	8.23	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: [redacted], DO, SPC

Signature: [signature] **Date:** 12/6/18

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS Fall 2018

Instrument: HACH 2100Q

Calibrated By: Owen Jackson

Serial Number: 16120C05

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/6/18	9.84	19.8	103	799	Would Not Cal Properly			

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12/6/18

MS/MSD = GWP-08-01
+1 FD
ZWM-DUP01-FALL18

Field Instrument Calibration Log

Date: 12/10/18 **Weather:** 30° sunny

Project/Site Name: Devens PFAS RI Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0715		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	3/2019	1382	1413	12.77	1432	1413	9.50	±10 µS/cm
pH (7)	3/2020	7.14	7.00	14.96	6.86	7.00	8.67	± 0.3 Ph *
pH (4)	3/2020	4.00	4.00	15.35	4.10	4.00	9.31	± 0.3 Ph *
pH (10)	2/2020	9.93	10.00	14.66	9.87	10.00	9.58	± 0.3 Ph *
ORP (240 mv)	3/2023	243.6	240.0	13.18	246.0	240.0	9.58	±10 mv
Dissolved Oxygen (%)	-	103.2	100.0	8.01	99.9	100.0	5.14	-
Dissolved Oxygen (mg/L)	-	12.22	11.84	8.01	12.70	12.72	5.14	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC, DO

Signature: [signature] **Date:** 12/10/18

KGS

Field Instrument Calibration Log

Date: 12/11/18 **Weather:** 25° sunny

Project/Site Name: PFAS RI Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0720		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	3/2019	1417	1413	14.49	1390	1413	10.10	±10 µS/cm
pH (7)	3/2020	7.20	7.00	14.74	6.92	7.00	9.13	± 0.3 Ph *
pH (4)	3/2020	3.87	4.00	14.36	3.98	4.00	9.86	± 0.3 Ph *
pH (10)	2/2020	9.93	10.00	14.21	9.91	10.00	10.16	± 0.3 Ph *
ORP (240 mv)	3/2023	233.2	240.0	14.88	239.7	240.0	10.29	±10 mv
Dissolved Oxygen (%)	-	102.1	100.0	10.59	95.3	100.0	8.95	-
Dissolved Oxygen (mg/L)	-	11.38	11.14	10.59	11.04	11.57	8.95	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC,

Signature: _____ **Date:** 12/11/18

KGS

Field Instrument Calibration Log

Date: 12/13/18 **Weather:** 22° Sunny

Project/Site Name: Devens PFAS RI Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0720		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1391	1413	17.12	1404	1413	12.73	±10 µS/cm
pH (7)	3/2020	7.17	7.00	16.95	6.91	7.00	12.60	± 0.3 Ph *
pH (4)	3/2020	3.97	4.00	17.71	4.00	4.00	12.77	± 0.3 Ph *
pH (10)	2/2020	9.99	10.00	17.55	9.98	10.00	13.27	± 0.3 Ph *
ORP (240 mv)	3/2023	224.4	240.0	17.36	234.1	240.0	13.22	±10 mv
Dissolved Oxygen (%)	-	99.6	100.0	13.70	98.3	100.0	9.40	-
Dissolved Oxygen (mg/L)	-	10.34	10.37	13.70	11.25	11.46	9.40	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature: [signature] **Date:** 12/13/18

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI Fall 2018

Instrument: Hach 2100Q

Calibrated By: Owen Jackson

Serial Number: 16120C059715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/10/18	9.76	19.9	101	789	10.2	21.6	107	836
12/11/18	9.70	18.9	96	783	9.75	21.2	98.8	787
12/13/18	10.1	18.3	98.9	809	Would Not Cal Properly			

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12/13/18

KGS

Field Instrument Calibration Log

Date: ~~12/13/18~~ 12/10/18 **Weather:**

Project/Site Name: PFAS RI Existing Wells **Instrument:** 451 556 MPS

Calibrated By: BrA **Serial Number:** 14A100102

Parameters	Solution Expiration Date	Morning Calibration Time 0730		Cal. Temperature °C	Afternoon Calibration Time _____		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	03/19	1550	1413	17.75	1380	1413	13.00	±10 µS/cm
pH (7)	03/20	6.87	7.00	16.50	6.93	7.00	12.85	± 0.3 Ph *
pH (4)	03/20	3.89	4.00	16.60	4.08	4.00	12.16	± 0.3 Ph *
pH (10)	02/20	10.29	10.00	16.96	9.97	10.00	11.94	± 0.3 Ph *
ORP (240 mv)	10/31/22	235.0	240.0	17.32	243.8	240.0	12.01	±10 mv
Dissolved Oxygen (%)	—	113.6	100.0	15.13	98.4	100.0	11.36	-
Dissolved Oxygen (mg/L)	—	11.45	10.05	15.13	9.72	9.83	11.36	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	—	15.13	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC

Signature: BrA **Date:** ~~12/13/18~~ 12/19/18

KGS

Field Instrument Calibration Log

Date: 12/19/18 **Weather:** Clear Sky, 20°F

Project/Site Name: PFAS Existing Well **Instrument:** YSI 556MPS

Calibrated By: BrA **Serial Number:** HA100102

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1650		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	03/19	1417	1413	10.84	1420	1413	9.72	±10 µS/cm
pH (7)	03/20	6.97	7.00	10.71	7.03	7.00	9.81	± 0.3 Ph *
pH (4)	03/20	4.02	4.00	10.68	3.96	4.00	9.85	± 0.3 Ph *
pH (10)	02/20	10.33	10.00	12.24	9.78	10.01	9.92	± 0.3 Ph *
ORP (240 mv)	10/31/22	240.3	240.0	11.62	239.5	240.0	10.01	±10 mv
Dissolved Oxygen (%)	—	100.9	100.0	14.49	100.1	100.0	8.53	-
Dissolved Oxygen (mg/L)	—	10.29	10.18	14.49	10.16	10.15	8.53	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: BrA **Date:** 12/19/18

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - EXISTING WELL

Calibrated By: BrA

Instrument: Hach 2100Q

Serial Number: 13110C029663

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/~~15~~10/18	9.97/10.0	19.8/20.0	99.2/100	785/800	10.1/10.0	20.0/20.0	101/100	799/800
12/17/18	10.6/10.0	21.7/20.0	111/100	835/800	9.90/10.0	19.6/20.0	102/100	800/800
12/18/18	10.1/10.0	18.7/20.0	90.8/100	800/800	10.0/10.0	20.7/20.0	99/100	796/800
12/19/18	9.95/10.0	19.5/20.0	100/100	~~800~~ 805/800	10.1/10.0	~~19.7~~ 20.0/20.0	~~20.0~~ 102/100	800/800

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: Brett Cox

Date: 12/19/18

Field Instrument Calibration Log

Date: 12/18/18 **Weather:** Sunny (Windy, 20's)

Project/Site Name: Chris Vlynch PFAS RI **Instrument:** YSI 556 MPS

Calibrated By: Chris Vlynch **Serial Number:** 06192823A1

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1315		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1,476	1,413	19.80	1,465	1,413	15.32	±10 µS/cm
pH (7)	3/2020	7.14	7.00	20.15	6.83	7.00	16.71	± 0.3 Ph *
pH (4)	3/2020	3.95	4.00	19.83	3.89	4.00	16.52	± 0.3 Ph *
pH (10)	2/2020	9.91	10.00	20.23	9.91	10.06	15.68	± 0.3 Ph *
ORP (240 mv)	3/2023	228.0	240.0	19.77	237.1	240.0	15.01	±10 mv
Dissolved Oxygen (%)	—	99.5	100	18.90	99.1	100	23.30	-
Dissolved Oxygen (mg/L)	—	9.26	9.12	18.90	8.91	9.02	23.30	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes: Variance in SpCond.

*** Ph Unit with Ph 7 Buffer**

Variance Noted: Yes

Signature: [signature] **Date:** 12/18/18

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI Dec 2018 (12/18/18)

Instrument: HACH 2100 Q

Calibrated By: CV

Serial Number: 16120C054715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/18/18	10.1	20.5	94.0	750	10.4	16.4	107	802

	Post Calibration Criteria			
Variance Noted: yes	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12/18/18

KGS

Field Instrument Calibration Log

Date: 12/19/18 **Weather:** Sunny 30°F

Project/Site Name: FT. Queens **Instrument:** YSI 556 MPS

Calibrated By: L. Harbrouck **Serial Number:** 06H28233AL

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	3/2019	1.400	1.413	17.60	1.419	1.413	17.65	±10 µS/cm
pH (7)	3/2020	7.34	7.00	17.73	6.75	6.94	18.25	± 0.3 Ph *
pH (4)	3/2020	4.15	3.99	17.66	4.31	3.99	17.59	± 0.3 Ph *
pH (10)	2/2020	9.75	10.00	17.75	9.98	10.00	18.55	± 0.3 Ph *
ORP (240 mv)	3/2023	235.3	240.2	17.57	237.6	240.0	17.66	±10 mv
Dissolved Oxygen (%)		106.1	100.1		82.3	100.0		-
Dissolved Oxygen (mg/L)		6.98	8.83		12.63	8.83		± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)								-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: PH4 variance of 0.1 DO variance

Signature: _____ **Date:** _____

xxx - DX - MS/MSD - Dec 18

Field Instrument Calibration Log

Date: 12/20/18 **Weather:** Sunny 35°

Project/Site Name: Devons LTM **Instrument:** YSI 556

Calibrated By: G. Hazebrouck **Serial Number:**

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2018	1.382	1.413	9.10	1.417	1.413	16.66	±10 µS/cm
pH (7)	3/2020	7.12	7.01	9.30	6.88	7.00	16.80	± 0.3 Ph *
pH (4)	3/2020	4.14	3.99	9.23	4.22	4.00	16.20	± 0.3 Ph *
pH (10)	2/2020	9.73	10.00	8.99	9.87	10.00	16.40	± 0.3 Ph *
ORP (240 mv)	3/2023	241.1	240.5	9.15	232.2	240.1	16.56	±10 mv
Dissolved Oxygen (%)		97.7	100.1	13.35	96.1	100.0	12.13	-
Dissolved Oxygen (mg/L)		9.98	8.83	13.46	10.01	8.83	12.09	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)								-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature: [signature] **Date:** 12-20-18

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - EXISTING WELL

Instrument: Hach 2100Q

Calibrated By: G. Hazebrook

Serial Number: 16120C02-4715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/19/18	~~23.7~~/11.7/~~10.8~~	23.3/~~21.0~~	102/~~106~~	853	10.8	21.0	106	791
12/20/18	9.22	19.8	94.3	78.9	10.3	20.4	104	842

	Post Calibration Criteria			
Variance Noted: yes 12/19 12/20	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12-26-18

Field Instrument Calibration Log

Date: 12/20/18 **Weather:** Clear, 20's°F

Project/Site Name: PFAS Existing Well Sampling **Instrument:** YSI 556MPS

Calibrated By: BnA **Serial Number:** 14A100102

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time _____		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm[c])	03/20 ~~3/20~~	1411	1413	14.20	1388	1413	17.49	±10 µS/cm
pH (7)	3/20	6.83	7.00	14.19	6.87	7.00	18.40	± 0.3 Ph *
pH (4)	3/20	4.22	4.00	14.09	4.25	4.00	18.72	± 0.3 Ph *
pH (10)	2/20	10.30	10.05	13.61	10.52	10.00	18.61	± 0.3 Ph *
ORP (240 mv)	10/3/22	237.3	240.0	15.68	239.0	240.0	17.90	±10 mv
Dissolved Oxygen (%)	—	100.8	100.0	19.05	102.0	100.0	12.24	-
Dissolved Oxygen (mg/L)	—	9.35	9.27	15.05	10.93	10.72	12.24	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	19.05	760	760		-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: pH 10 SPC / DO

Signature: BnA **Date:** 12/20

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - EXISTING WELL

Instrument: Hach 2100Q

Calibrated By: B.A

Serial Number: 13110C021663

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/20/18	9.61/10.0	24.5/20.0	120/100	865/800	9.92/10.0	20.3/20.0	101/100	800/800

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12/20

KGS

Field Instrument Calibration Log

Date: 01/02/19 **Weather:** Sunny

Project/Site Name: Existing PFAS RI AOC 32 and 43A **Instrument:** YSI 556 MPS

Calibrated By: CV **Serial Number:** 06142823AL

Parameters	Solution Expiration Date	Morning Calibration Time 1230		Cal. Temperature °C	Afternoon Calibration Time 1430		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	04/2021	1,378	1,413	19.65	1,418	1,413	16.61	±10 µS/cm
pH (7)	01/2021	7.27	7.00	19.57	6.98	7.00	16.23	± 0.3 Ph *
pH (4)	01/2021	3.75	4.00	19.48	3.94	4.00	16.01	± 0.3 Ph *
pH (10)	12/2019	9.75	10.00	19.81	9.93	10.00	16.37	± 0.3 Ph *
ORP (240 mv)	01/2023	216.1	240.0	19.61	234.1	240.0	16.47	±10 mv
Dissolved Oxygen (%)	-	98.7	100	19.01	93.6	100	16.40	-
Dissolved Oxygen (mg/L)	-	8.82	9.10	19.01	8.43	8.79	16.40	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	760	-	760	760	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: [signature] **Date:** 01/02/2019

KGS

Field Instrument Calibration Log

Date: 01/03/2019 **Weather:** Morning: Freezing Rain; turned Sunny around 1000

Project/Site Name: Devons PFAS RI Existing Wells AOC 32/43A **Instrument:** YSI 556 MPS

Calibrated By: CJ **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0630		Cal. Temperature °C	Afternoon Calibration Time 1215		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm[c])	04/2021	1.398	1.413	17.67	1.404	1.413	14.98	±10 µS/cm
pH (7)	01/2021	7.17	7.00	17.41	7.01	7.00	15.38	± 0.3 Ph *
pH (4)	01/2021	4.00	4.00	17.43	4.09	4.00	14.77	± 0.3 Ph *
pH (10)	12/2019	9.96	10.00	17.68	10.02	10.00	15.44	± 0.3 Ph *
ORP (240 mv)	01/2023	241.5	240.0	17.35	247.1	240.0	14.89	±10 mv
Dissolved Oxygen (%)	–	103	100	17.30	98.6	100	14.86	-
Dissolved Oxygen (mg/L)	–	10.81	9.92	17.30	9.80	10.08	14.80	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	–	760	760	–	760	760	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: NO

Signature: [signature] **Date:** 01/03/2019

Field Instrument Calibration Log

Date: 01/04/2019 **Weather:** Sunny, 32°F ~

Project/Site Name: Dewns PFAS RI - Existing Wells (AOC 32/43A) **Instrument:** YSI 556 MPS

Calibrated By: CV **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0630		Cal. Temperature °C	Afternoon Calibration Time 1115		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm[c])	01/2021	1,1143	1,413	15.12	1,418	1,413	14.92	±10 µS/cm
pH (7)	01/2021	7.00	7.00	15.57	7.00	7.00	14.40	± 0.3 Ph *
pH (4)	01/2021	4.01	4.00	14.98	4.05	4.00	14.63	± 0.3 Ph *
pH (10)	12/2019	9.95	10.00	15.05	10.09	10.06	15.02	± 0.3 Ph *
ORP (240 mv)	01/2023	237.4	240.0	15.31	241.9	240.0	15.32	±10 mv
Dissolved Oxygen (%)	—	106.3	100.0	13.78	98.3	100.0	12.98	-
Dissolved Oxygen (mg/L)	—	10.83	10.17	13.78	10.24	10.38	12.98	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: no

Signature: [signature] **Date:** 01/04/2019

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - EXISTING WELL (AOC 32/43A)

Instrument: HACH 2100Q

Calibrated By: CV

Serial Number: 16120C054715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
01/02/2019	9.79	14.5	94.3	742	10.2	17.3	99.3	806
01/03/2019	10.0	29.4	107	801	10.1	20.1	99.6	816
01/04/2019	9.65	20.1	96.5	792	9.84	21.9	105	792
				Post Calibration Criteria				
				Variance Noted: YES (01/02/19) (01/04/19)	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 01/04/2019

KGS

Field Instrument Calibration Log

Date: 04 Jan 2019 **Weather:** Clear, 38°F

Project/Site Name: PFAS Existing Wells A2 **Instrument:** YSI 556MPS

Calibrated By: B&A **Serial Number:** 14A100102

Parameters	Solution Expiration Date	Morning Calibration Time 0615		Cal. Temperature °C	Afternoon Calibration Time 1310		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	04/21	1462	1413	16.35	1375	1413	17.39	±10 µS/cm
pH (7)	01/21	7.15	7.00	16.62	6.95	7.00	17.78	± 0.3 Ph *
pH (4)	01/21	3.83	4.00	16.21	3.99	4.00	17.66	± 0.3 Ph *
pH (10)	12/19	9.89	9.98	16.68	10.00	10.00	17.04	± 0.3 Ph *
ORP (240 mv)	01/23	237.8	240.0	16.77	239.6	~~233~~ 240.0	17.28	±10 mv
Dissolved Oxygen (%)	—	106.0	100.0	16.54	106.5	100.0	15.70	-
Dissolved Oxygen (mg/L)	—	10.35	9.76	16.54	10.58	9.93	15.70	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	16.54	760	760	15.70	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO SPC

Signature: B&A **Date:** 1/4/19

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - EXISTING WELL

Instrument: Hach 2100Q

Calibrated By: B.A

Serial Number: 13110C029663

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
1/4/19	9.71/10.0	16.6/20.0	84.3/100	734/800	10.03/10.0	19.7/20.0	102/100	793/800

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: Brett Gross

Date: 1/4/19

KGS

Field Instrument Calibration Log

Date: 1/10/19 **Weather:** 32° Cloudy

Project/Site Name: Devens PFAS **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0715		Cal. Temperature °C	Afternoon Calibration Time 1406		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm^{c})	04/2021	14 34	1413	14.91	1412	1413	8.86	±10 µS/cm
pH (7)	01/2021	7.10	7.00	14.36	6.86	7.00	7.22	± 0.3 Ph *
pH (4)	01/2021	4.00	4.00	14.31	4.08	4.06	7.92	± 0.3 Ph *
pH (10)	12/2019	9.97	10.00	14.94	9.95	10.00	9.68	± 0.3 Ph *
ORP (240 mv)	01/2023	237.8	240.0	15.71	248.2	240.0	9.07	±10 mv
Dissolved Oxygen (%)	-	98.4	100.0	15.05	102.5	100.0	9.46	-
Dissolved Oxygen (mg/L)	-	9.95	10.10	15.05	11.78	11.44	9.46	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature:  **Date:** 1/10/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS

Calibrated By: Owen Jackson

Instrument: HACH 2100Q

Serial Number: 16120C054715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
1/10/19	9.53	19.4	97.8	801	10.0	21.7	106	764

	Post Calibration Criteria			
Variance Noted: NA	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 1/10/19

Field Instrument Calibration Log

Date: 1/11/19 **Weather:** Sunny, 14°F (RF = 4°F)

Project/Site Name: PFAS RI Existing Well **Instrument:** YSI 556 MPS

Calibrated By: Bart **Serial Number:** 14A100102

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	01/21	1449	1413	17.29	1420	1413	16.21	±10 µS/cm
pH (7)	01/21	6.84	7.00	16.51	6.97	7.00	16.18	± 0.3 Ph *
pH (4)	01/21	3.82	4.00	16.88	4.17	4.00	16.35	± 0.3 Ph *
pH (10)	12/19	9.89	10.00	16.39	9.79	10.00	16.12	± 0.3 Ph *
ORP (240 mv)	01/23	237.3	240.0	16.56	238.4	240.0	16.40	±10 mv
Dissolved Oxygen (%)	—	99.1	100.0	16.33	99.8	100	16.10	-
Dissolved Oxygen (mg/L)	—	9.71	9.87	16.33	9.79	9.82	16.40	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	/	760	760	16.33	760	760	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: BAH **Date:** 1/11/19

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - EXISTING WELL

Calibrated By: BM

Instrument: Hach 2100 Q

Serial Number: 13110C029663

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
1/11/19	10.2/10.0	19.7/20.0	98.9/100	805/800	10.1/10.0	20.2/20.0	100/100	801/800

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: BM

Date: 1/11/19

KGS

Field Instrument Calibration Log

Date: 01/15/19 **Weather:** Sunny, low teens - mid 20s by noon

Project/Site Name: Downs PFAS RI - Existing Wells **Instrument:** YSI 556 MPS

Calibrated By: CV **Serial Number:** 06142823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon Calibration Time 13		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	04/2021	1,426	1,413	16.01	1,398	1,413	16.66	±10 µS/cm
pH (7)	01/2021	7.24	7.00	15.05	6.89	7.00	16.79	± 0.3 Ph *
pH (4)	01/2021	4.01	4.00	15.71	3.92	4.00	16.61	± 0.3 Ph *
pH (10)	12/2019	9.82	10.00	14.95	9.83	10.00	15.96	± 0.3 Ph *
ORP (240 mv)	01/2023	244	240.0	15.51	238.1	240.0	17.12	±10 mv
Dissolved Oxygen (%)	-	96.2	100	14.95	97.5	100	12.81	-
Dissolved Oxygen (mg/L)	-	9.64	10.12	14.95	10.47	10.51	12.81	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: yes, Sp Cond.

Signature: [signature] **Date:** 01/15/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: AOC 43J Existing Well Sampling
AOC 32/43A

Calibrated By: CV

Instrument: ~~YSI 556 MPS~~
HACH 2100Q

Serial Number: 16120C054715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
01/14/19	9.48	17.4	87.2	825	9.56	21.2	110	763
01/15/19	9.53	19.6	95.2	857	10.7	22.2	118	761
Variance Noted: yes (01/14/19) (01/15/19)					**Post Calibration Criteria**			
					± 0.5	± 1	± 5	± 40

Signature: _____

Date: _____

20.6
101
799
9.73

Field Instrument Calibration Log

Date: 1/15/19 **Weather:** 18°

Project/Site Name: Devens PFAS **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 14A100107

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon Calibration Time 1200		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	04/2021	1413	1413	16.86	1420	1413	18.06	±10 µS/cm
pH (7)	01/2021	7.02	7.00	17.03	7.00	7.00	16.01	± 0.3 Ph *
pH (4)	01/2021	4.06	4.00	16.76	4.00	4.00	16.89	± 0.3 Ph *
pH (10)	12/2019	9.97	10.00	16.02	10.09	10.00	17.12	± 0.3 Ph *
ORP (240 mv)	01/2023	238.3	240.0	16.85	243.1	240.0	17.40	±10 mv
Dissolved Oxygen (%)	-	100.6	100.0	16.55	101.5	100.0	18.72	-
Dissolved Oxygen (mg/L)	-	9.82	9.76	16.55	9.47	9.33	18.72	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: NO

Signature: _____ **Date:** 1/15/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS

Calibrated By: Owen Jackson

Instrument: HACH 2100Q

Serial Number: 13110C029663

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
1/15/19	9.73	20.6	101	799	9.82	20.7	110	825

	Post Calibration Criteria			
Variance Noted: Yes	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 1/15/19

KGS

Field Instrument Calibration Log

Date: 1/15/19 **Weather:** Sunny, 10°F

Project/Site Name: PFAS EW **Instrument:** YSI 556 MPS

Calibrated By: B+A **Serial Number:** 17C100125

Parameters	Solution Expiration Date	Morning Calibration Time 0615		Cal. Temperature °C	Afternoon Calibration Time 1545		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	03/19	1405	1413	18.18	1410	1413	17.52	±10 µS/cm
pH (7)	10/20	6.93	7.00	18.38	6.91	7.00	17.28	± 0.3 Ph *
pH (4)	03/20	3.93	4.00	18.59	3.97	4.00	17.31	± 0.3 Ph *
pH (10)	02/20	9.93	9.99	18.62	10.04	10.00	17.70	± 0.3 Ph *
ORP (240 mv)	01/23	238.5	240.0	18.36	239.1	240.0	17.58	±10 mv
Dissolved Oxygen (%)	—	93.3	100.0	17.45	98.5	100.0	16.20	-
Dissolved Oxygen (mg/L)	—	8.43	9.58	17.45	9.27	9.51	16.20	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	17.45	760	760	"	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: BA **Date:** 1/15/19

KGS

Field Instrument Calibration Log

Date: 3/26/2020 **Weather:** 30's

Project/Site Name: Devors **Instrument:** YSI 650XL

Calibrated By: CHA **Serial Number:** 11G100887

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.470	1.413	16.11°	1.419	17.29°	±10 µS/cm	N
pH (7)	3/21	6.83	7.00	16.10°	7.20	17.18°	± 0.3 Ph *	N
pH (4)	3/21	3.82	4.00	16.03°	4.03	17.19°	± 0.3 Ph *	N
pH (10)	2/21	10.11	10.00	16.09°	10.11	17.23°	± 0.3 Ph *	N
ORP (240 mv)	5/20	256.1	240.0	15.97°	245.6	17.09°	±10 mv	N
Dissolved Oxygen (%)	N/A	111.1%	100.0%	15.80°	92.6%	17.11	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.09	15.83°	9.90	17.10°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/26/2020

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Davis

Instrument: LaMotte 2020e

Calibrated By: VMA

Serial Number:

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
3/9/20	0.26	0.00	9.85	10.09	0.05	10.08	N
3/10/20	0.31	0.00	10.17	10.00	0.39	10.30	N
3/11/20	0.20	0.00	9.81	10.00	0.21	10.18	N
3/24/2020	0.19	0.00	10.39	10.00	0.01	10.15	N
3/25/2020	0.18	0.00	10.02	10.00	0.02	10.09	N
3/26/2020	0.27	0.00	10.09	10.00	0.09	10.13	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature:

Date: 3/9/2020
3/11/20
3/26/2020

KGS

Field Instrument Calibration Log

Date: 4/4/19 **Weather:** 58F Windy

Project/Site Name: Devens, MA PFAS-RI A2, SPR LTM'19 **Instrument:** YSI 650 MDS

Calibrated By: Melissa Miller **Serial Number:** 01K0893A1

Parameters	Solution Expiration Date	AM Calibration Time 0930		Cal. Temp. (°C)	PM Post Cal. Check Time 1610	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	11/19	1322	1,413	13.61	1410	1383	±10 µS/cm	N
pH (7)	10/20	7.16	7.00	14.18	6.98	14.63	± 0.3 Ph *	N
pH (4)	03/20	4.03	4.00	13.70	4.01	14.10	± 0.3 Ph *	N
pH (10)	02/20	9.79	10.00	13.96	9.97	14.18	± 0.3 Ph *	N
ORP (240 mv)	10/19	263.7	240.00	14.06	238.0	14.39	±10 mv	
Dissolved Oxygen (%)	—	97.2	100.0	15.0	98.3	15.13	-	~~N~~
Dissolved Oxygen (mg/L)	—	9.80	10.08	15.0	10.0	15.13	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	760	—	—	—	—	—	✓	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa M **Date:** 4/4/2019

Devens, MA Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - Spring GM'19 **Instrument:** Lamotte 2020e

Calibrated By: Melissa Miller **Serial Number:** 1116-0719

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
4/4/2019	0.01	0.00	10.03	9.97	0.15	9.73	N
4/5/2019	0.0	0.0	9.60	10.01	0.38	9.70	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: Melissa Miller **Date:** 4/5/2019

KGS

Field Instrument Calibration Log

Date: 5/8/19 **Weather:** Sun.

Project/Site Name: PFAS RI EW **Instrument:** YSI 650XL

Calibrated By: B.A **Serial Number:** 02E0534

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1325	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm[c])	11/19	1414	1413	15.54	1404	16.20	±10 µS/cm	N
pH (7)	10/20	7.00	7.00	15.56	7.00	15.92	± 0.3 Ph *	
pH (4)	07/20	4.01	4.00	15.73	3.99	16.15	± 0.3 Ph *	
pH (10)	02/20	9.80	10.00	15.72	10.04	16.07	± 0.3 Ph *	
ORP (240 mv)	10/19	237.2	240.0	15.34	235.8	16.20	±10 mv	
Dissolved Oxygen (%)	—	43.2	99.8	15.10	96.4	15.92	-	
Dissolved Oxygen (mg/L)	—	4.35	10.04	15.10	9.81	15.92	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	757.4	757.4	15.10	760.1	15.92	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/8/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI EW - AOC 50

Instrument: Lamotte 2020e

Calibrated By: BA

Serial Number: 1116-0719

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/26/19	0.03	0.01	11.0	10.05	0.01	10.07	N
4/30/19	0.05	0.02	12.6	10.2	0.03	10.21	N
5/1/19	0.07	0.06	11.3	10.5	0.05	10.6	N
5/2/19	0.08	0.05	10.9	10.8	0.06	10.9	N
5/3/19	0.12	0.05	11.7	10.9	0.06	11.1	N
5/6/19	0.26	0.10	10.8	10.6	0.13	11.0	N
5/7/19	0.08	0.04	6.27	10.0	0.06	10.2	Y
5/8/19	0.02	0.01	10.07	10.00	0.04	10.07	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 5/8/19

5/8/19
Sun, 70°F
Brett Archuleta
0600 At Devens

Field Instrument Calibration Log

Date: 5/8/19 **Weather:** Partly Cloudy, Sunny, 50's-60's

Project/Site Name: Dorms PFAS RIEW **Instrument:** YSI 556

Calibrated By: CV **Serial Number:** 0602657 A1

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1250	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1,405	1,413	18.61	1,404	18.12	±10 µS/cm	N
pH (7)	10/2020	7.08	7.00	18.44	6.88	18.15	± 0.3 Ph *	N
pH (4)	3/2020	3.96	4.00	18.57	4.06	18.31	± 0.3 Ph *	N
pH (10)	12/31/2019	9.90	10.00	18.38	10.00	18.20	± 0.3 Ph *	N
ORP (240 mv)	10/2019	232.4	~~240~~ 240.0	18.50	240.9	18.18	±10 mv	N
Dissolved Oxygen (%)	—	95.6	100.0	17.21	98.6	18.05	-	—
Dissolved Oxygen (mg/L)	—	9.11	9.55	17.21	9.34	18.05	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/8/19

Turbidity Instrument Calibration Log

Project/Site Name: Dorms PFAS RI EW **Instrument:** LaMotte

Calibrated By: W **Serial Number:** 5708-5814

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
5/6/19	0.19	0.01	6.70	10.00	0.14	9.83	N
5/8/19	0.06	0.00	10.20	10.00	0.08	9.73	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] **Date:** 5/8/19

KGS

Field Instrument Calibration Log

Date: 10/4/19 **Weather:** Partly Cloudy, 60's (°F)

Project/Site Name: ~~ETM - Fall~~ LTM Fall 2019 **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 16100386

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1345	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Variance Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	11/2019	1,405	1,413	22.31	1,419	19.99	±10 µS/cm	N
pH (7)	2/2021	7.10	7.00	22.42	6.98	19.81	± 0.3 Ph *	N
pH (4)	3/2021	4.05	4.00	22.50	4.03	20.30	± 0.3 Ph *	N
pH (10)	2/2021	10.02	10.00	22.55	10.05	20.21	± 0.3 Ph *	N
ORP (240 mv)	12/2019	248.1	240.0	22.70	244.5	20.21	±10 mv	N
Dissolved Oxygen (%)	-	101.5	100.0	21.03	100.0	19.71	-	-
Dissolved Oxygen (mg/L)	-	9.98	9.90	21.03	9.56	19.71	± 0.5 mg/l < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: CV **Date:** 10/4/19

KGS

Field Instrument Calibration Log

Date: 9/30/19

Weather: Partly Cloudy, 60-72°F

ect/Site Name: Devens PFAS RI

Instrument: YSI ProDSS

Calibrated By: Kristen Esser

Serial Number: 18L100145

rameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
ic Conductivity (1.413 µS/cm°)	11/2019	1.593	1.413	16.4	1.427	19.7	±10 µS/cm	N
pH (7)	10/2020	7.67	7.00	17.1	7.02	20.7	± 0.3 Ph *	N
pH (4)	7/2020	4.17	4.00	17.0	4.01	20.2	± 0.3 Ph *	N
pH (10)	2/2020	9.45	10.00	15.7	9.87	20.1	± 0.3 Ph *	N
ORP (240 mv)	1/2023	229.1	240.0	17.6	237.2	20.2	±10 mv	N
ssolved Oxygen (%)	—	129.2	106.7	17.0	97.9	18.0	-	—
ssolved Oxygen (mg/L)	—	9.74	9.74	16.9	9.85	18.0	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
metric Pressure (mmHg)	—	765.7	765.7	17.0	764.2	18.0	-	—

t with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature:

Date: 9/30/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020we

Calibrated By: Kristen Esser

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/26/19	0.01	0.00	10.13	10.06	0.01	9.98	N
9/27/19	0.00	0.00	9.11	9.69	0.00	9.57	N
9/30/19	1.60	0.00	10.96	8.49	0.01	8.67	N

Post Calibration Criteria	
-	±0.5

Notes: Mark Noted Variences on Field Forms

Signature: Kristen Esser

Date:

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devons Fall LTM (AOC 69W)

Instrument: HACH 2100Q

Calibrated By: CV

Serial Number: 17060C59342

	AM Calibration				PM Post Calibration Check				
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**10 NTU**	**20 NTU**	**100 NTU**	**800 NTU**	**Variance Noted**
10/2/19	10.0/10.0	20.2/20	99.8/100	762/800	10.0	19.5	101	825	N
10/3/19	10.4/10.0	19.8/20	97.7/100	806/800	10.3	20.5	104	807	N
10/4/19	10.4/10.0	20.1/20	102/100	811/800	10.1	20.0	94.5	794	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 10/4/19

KGS

Field Instrument Calibration Log

Date: 11/7/15 **Weather:** Cloudy

Project/Site Name: Devens LTM **Instrument:** YSI 556 MPS

Calibrated By: BMS **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1510	1413	18.11	1405	17.55	±10 µS/cm	N
pH (7)	01/21	6.88	7.00	17.95	7.12	17.68	± 0.3 Ph *	
pH (4)	03/21	3.98	4.00	17.93	4.07	17.50	± 0.3 Ph *	
pH (10)	03/20	9.92	10.00	17.85	9.87	17.51	± 0.3 Ph *	
ORP (240 mv)	06/23	248.6	240.0	17.91	222.0	16.97	±10 mv	
Dissolved Oxygen (%)		99.4	100	18.68	99.7	16.99	-	
Dissolved Oxygen (mg/L)		9.28	9.34	18.68	9.35	16.99	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)		760	760	18.68	760	16.99	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BMS **Date:** 11/7/15

KGS

Field Instrument Calibration Log

Date: 11/8/15 **Weather:** Cloudy

Project/Site Name: Devens LTM **Instrument:** YSI 556 MPS

Calibrated By: BMA **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1330	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	03/20	1436	1413	18.55	1417	18.24	±10 µS/cm	N
pH (7)	01/21	6.96	7.00	17.91	6.90	18.51	± 0.3 Ph *	
pH (4)	03/20	3.68	4.00	19.30	3.89	18.80	± 0.3 Ph *	
pH (10)	02/20	9.96	10.00	19.25	9.96	18.70	± 0.3 Ph *	
ORP (240 mv)	06/23	255.4	240	15.18	239.6	17.92	±10 mv	
Dissolved Oxygen (%)	-	100.8	100	19.93	~~90~~ 113	17.80	-	
Dissolved Oxygen (mg/L)	-	9.18	9.11	19.93	9.28	17.80	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	760	760		760	17.80	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BMA **Date:** 11/8/15

Field Instrument Calibration Log

Date: 11/11/19 **Weather:** Overcst, 50's F

Project/Site Name: Devens LTM **Instrument:** YSI 556 MPS

Calibrated By: BrA **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0615		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1439	1413	17.88	1409	17.16	±10 µS/cm	N
pH (7)	01/20 21	7.28	7.00	17.78	6.96	17.78	± 0.3 Ph *	
pH (4)	03/20	3.98	4.00	17.80	3.94	17.92	± 0.3 Ph *	
pH (10)	02/20	9.98	10.00	17.81	10.07	17.90	± 0.3 Ph *	
ORP (240 mv)	06/23	242.8	240.0	17.90	236.1	17.81	±10 mv	
Dissolved Oxygen (%)	-	101.6	100	18.40	96.1	16.10	-	
Dissolved Oxygen (mg/L)	-	9.54	9.39	↓	9.45	16.10	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	760	760	↓	760	16.16	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BAb **Date:** 11/11/19

KGS

Field Instrument Calibration Log

Date: 11/12/19 **Weather:** Rain, 34°F

Project/Site Name: Devens LTM **Instrument:** YSI 556 MPS

Calibrated By: BJA **Serial Number:** 15F105567

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1015	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1454	1413	18.19	1410	16.41	±10 µS/cm	N
pH (7)	01/21	7.01	7.00	18.04	7.08	16.50	± 0.3 Ph *	
pH (4)	03/20	3.91	4.00	18.46	3.96	16.70	± 0.3 Ph *	
pH (10)	03/21	9.96	10.00	18.40	9.85	16.57	± 0.3 Ph *	
ORP (240 mv)	06/23	245.5	240.0	18.41	243.6	16.72	±10 mv	
Dissolved Oxygen (%)	—	110.5	100	18.79	101.7	16.40	-	
Dissolved Oxygen (mg/L)	/	10.29	9.32	↓	9.38	16.40	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	/	760	760	↓	760	16.40	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/12/19

KGS

Field Instrument Calibration Log

Date: 11/13/15 **Weather:** Cold, clear sky, 19°F (2°F wind)

Project/Site Name: Devens LFG **Instrument:** YSI 556 MPS

Calibrated By: BMA **Serial Number:** 15F109567

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1455	1413	16.74	1420	16.90	±10 µS/cm	N
pH (7)	01/21	7.07	7.00	16.04	7.00	15.24	± 0.3 Ph *	
pH (4)	03/20	3.97	4.00	16.28	4.08	17.58	± 0.3 Ph *	
pH (10)	03/21	9.50	10.00	16.34	9.88	16.98	± 0.3 Ph *	
ORP (240 mv)	06/23	228.1	240.	16.40	243.8	17.90	±10 mv	
Dissolved Oxygen (%)	—	120	100	17.49	90	15.80	-	
Dissolved Oxygen (mg/L)	—	11.56	9.57	17.49	9.12	15.80	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	760	760	17.49	760	15.80	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/13/15

Turbidity Instrument Calibration Log

Project/Site Name: Devens 4th

Instrument: Hach 2100Q

Calibrated By: B.A

Serial Number: 160100 47202

Date	AM Calibration				PM Post Calibration Check				Variance Noted
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	
11/1/19	10.3/10	19.8/20	97.8/100	800/800	10/10	20.6/20	102/100	800/800	N
11/5/19	10.4/10	20.8/20	100/100	799/800	10.2/10	20.4/20	101/100	800/800	N
11/6/19	10.6/10	19.7/20	101/100	808/800	10.2/10	19.9/20	104/100	806/800	N
11/7/19	10.2/10	19.3/20	96.7/100	798/800	10.1/10	20.1/20	103/100	804/800	N
11/8/19	10.1/10	19.4/20	97.1/100	796/800	10.0/10	20.0/20	101/100	790/800	N
11/11/19	10.1/10	19.6/20	97.6/100	803/800	10.2/10	19.2/20	103/100	799/800	N
11/12/19	10.1/10	20.5/20	96.9/100	800/800	10.1/10	19.8/20	101/100	796/800	N
11/13/19	10.2/10	20.1/20	97.1/100	801/800	10.1/10	19.9/20	104/100	795/800	N
					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Notes: Mark Noted Variences on Field Forms

Signature:

Date: 11/1 - 11/13/19

KGS

Field Instrument Calibration Log

Date: 11/14/19 **Weather:** AM: Cloudy, 19°F (5°F RF)

Project/Site Name: ~~Best~~ Devers UT **Instrument:** YSI 556 MPS

Calibrated By: BA **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	03/20	1406	1413	17.40	1419	15.38	±10 µS/cm	N
pH (7)	01/21	7.03	7.00	16.20	7.00	15.25	± 0.3 Ph *	
pH (4)	03/20	4.10	4.00	14.53	4.08	15.40	± 0.3 Ph *	
pH (10)	03/21	10.04	10.00	15.64	10.16	16.10	± 0.3 Ph *	
ORP (240 mv)	06/23	257.6	240	15.70	248.1	16.71	±10 mv	
Dissolved Oxygen (%)	-	116.4	100	14.28	103	15.08	-	
Dissolved Oxygen (mg/L)	-	10.41	9.81	↓	9.90	15.08	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	760	760	↓	760	15.08	-	↓

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BAD **Date:** 11/14/19

Field Instrument Calibration Log

Date: 11/15/19 **Weather:** 23°F, Sunny

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 5516 MPS

Calibrated By: BrA **Serial Number:** 15F101567

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	03/20	1413	1413	15.28	1420	14.28	±10 µS/cm	N
pH (7)	01/21	6.69	7.00	15.70	7.01	14.51	± 0.3 Ph *	
pH (4)	03/21	4.08	~~4.00~~	15.50	4.03	14.70	± 0.3 Ph *	
pH (10)	03/21	10.40	10.00	16.01	10.04	14.31	± 0.3 Ph *	
ORP (240 mv)	06/23	232.8	240	16.50	241.6	14.35	±10 mv	
Dissolved Oxygen (%)	-	107	100	16.69	101	13.29	-	
Dissolved Oxygen (mg/L)	-	10.39	9.70	16.69	9.72	13.29	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	760	760	16.69	760	13.29	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BrA **Date:** 11/15/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM

Instrument: Hach 2100Q

Calibrated By: BrA

Serial Number: 16010C047202

	AM Calibration				PM Post Calibration Check				
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**10 NTU**	**20 NTU**	**100 NTU**	**800 NTU**	**Variance Noted**
11/14/19	9.96/10	20.3/20	99.7/100	793/800	10.2/10	20.4/20	103/100	796/800	N
11/15/19	10.4/10	19.7/20	103/100	805/800	10.1/10	20.2/20	101/100	804/800	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 11/14 - 11/15/19

Field Instrument Calibration Log

Date: 11/14/19 **Weather:** 15 °F

Project/Site Name: FORT DODGE'S **Instrument:** YSI 556 MPS

Calibrated By: M. VIDAL **Serial Number:** 15L102308

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1435	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	2/2020	1.312	1.413	17.46	1418 / 1413	14.43	±10 µS/cm	N
pH (7)	2/2021	7.09	7.00	16.20	7.02 / 7.00	15.33	± 0.3 Ph *	N
pH (4)	3/2021	3.90	4.00	14.53	4.04 / 4.00	14.86	± 0.3 Ph *	N
pH (10)	2/2021	9.96	9.99	15.64	9.68 / 10.03	15.29	± 0.3 Ph *	Y
ORP (240 mv)	1/2020	246.9	240.0	15.70	277 / 238.7	15.41	±10 mv	Y
Dissolved Oxygen (%)	N/A	108.1	100.0	14.25	86.8 / 100.0	14.22	-	Y
Dissolved Oxygen (mg/L)	N/A	11.0	10.23	14.25	8.72 / 10.23	14.22	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	760.0	N/A	N/A	14.25			-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: M. Vidal **Date:** 11/14/19

KGS

Field Instrument Calibration Log

Date: 11/15/19 **Weather:** 25°F

Project/Site Name: FORT DEVENS **Instrument:** YSI 650 MDS

Calibrated By: M. VIDAL **Serial Number:** 00M0743 AG

Parameters	Solution Expiration Date	AM Calibration Time 7:00		Cal. Temp. (°C)	PM Post Cal. Check Time 1145	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1368	1,413	13.74	1,417 / 1,413	13.37	±10 µS/cm	N
pH (7)	2/2021	6.96	7.00	14.76	7.04 / 7.02	14.31	± 0.3 Ph *	N
pH (4)	2/2021	3.98	4.00	14.21	4.03 / 3.99	14.35	± 0.3 Ph *	N
pH (10)	2/2021	9.99	10.03	14.71	10.07 / 10.02	14.38	± 0.3 Ph *	N
ORP (240 mv)	5/2020	245.6	239.9	13.99	236.6 / 240.1	14.36	±10 mv	N
Dissolved Oxygen (%)	N/A	101.3	100.0	14.29	134.3 /	13.11	-	Y
Dissolved Oxygen (mg/L)	N/A	10.39	10.05	14.29	14.45 /	13.11	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	N/A	760					-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: M. Vidal **Date:** 11/15/19

Turbidity Instrument Calibration Log

Project/Site Name: FORT DENVER

Instrument: HACH 2100Q

Calibrated By: M. VIDAL

Serial Number: 17060C059342

Date	AM Calibration				PM Post Calibration Check				Variance Noted
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	
11/14/19	9.90/10.0	18.7/20	93.2/100	742/800	10.1/10	22/20	109/100	839/800	Y
11/15/19	9.96/10.0	18.1/20	97.4/100	760/800	10.4/10	20.1/20	102/100	806/800	N
Post Calibration Criteria					± 0.5	± 1	± 5	± 40	

Notes: Mark Noted Variences on Field Forms

Signature: Marlon

Date: 11/15/19

KGS

Field Instrument Calibration Log

Date: 11/4/19 **Weather:** 46-52°F, Clear

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 650 MDS

Calibrated By: Kristen Esser **Serial Number:** ~~11G101154~~ KE 11G100387

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm^c)	3/2020	1.342	1.413	15.67	1.407	17.18	±10 µS/cm	N
pH (7)	2/2021	7.48	7.00	16.88	6.81	16.98	± 0.3 Ph *	N
pH (4)	3/2021	3.40	3.90	16.73	4.15	16.98	± 0.3 Ph *	N
pH (10)	2/2021	9.92	10.04	16.55	9.75	17.84	± 0.3 Ph *	N
ORP (240 mv)	5/2020	227.9	240.1	16.35	241.9	16.98	±10 mv	N
Dissolved Oxygen (%)	—	94.8	100.0	16.18	100.4	16.66	-	—
Dissolved Oxygen (mg/L)	—	9.24	9.81	16.18	10.02	16.66	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	758.0	758.0	16.18	760.0	16.66	-	—

Notes:

*** Ph Unit with Ph 7 Buffer** **(Mark Noted Variences on Field Forms)**

Signature: [signature] **Date:** 11/4/19

KGS

Field Instrument Calibration Log

Date: 11/5/19 **Weather:** 43-54°F, Cloudy AM, Rain PM

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 650 MDS

Calibrated By: Kristen Esser **Serial Number:** 11G100387

Parameters	Solution Expiration Date	AM Calibration Time 0640		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1.455	1.413	17.5	1.407	16.57	±10 µS/cm	N
pH (7)	2/2021	6.86	7.00	17.4	6.94	17.02	± 0.3 Ph *	N
pH (4)	3/2021	4.23	4.03	17.3	4.13	17.06	± 0.3 Ph *	N
pH (10)	2/2021	9.95	10.01	17.3	9.93	17.14	± 0.3 Ph *	N
ORP (240 mv)	5/2020	243.0	240.0	17.3	232.1	17.03	±10 mv	N
Dissolved Oxygen (%)	—	106.0	100.0	18.3	100.0	11.3	-	—
Dissolved Oxygen (mg/L)	—	~~9.38 106.0~~	~~9.56 100.0~~	18.3	~~10.01~~ 10.07	11.3	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	18.3	760.0	11.3	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/5/19

Field Instrument Calibration Log

Date: 11/6/15 **Weather:** 46-50°F Clear

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 650 MDS

Calibrated By: Kristen Esser **Serial Number:** 11G100387

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1.379	1.413	16.90	1.534	16.87	±10 µS/cm	N
pH (7)	2/2021	6.78	7.01	16.85	6.98	16.73	± 0.3 Ph *	N
pH (4)	3/2021	4.21	4.03	16.79	4.14	16.89	± 0.3 Ph *	N
pH (10)	2/2021	9.76	10.03	16.87	10.00	16.92	± 0.3 Ph *	N
ORP (240 mv)	5/2020	240.7	240.1	16.79	235.3	16.80	±10 mv	N
Dissolved Oxygen (%)	—	103.0	100.0	17.36	102.6	15.83	-	—
Dissolved Oxygen (mg/L)	—	9.58	9.56	17.36	10.00	15.78	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	17.37	760.0	760.0	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/6/15

KGS

Field Instrument Calibration Log

Date: 11/7/19

Weather: ~~84~~ 26 - 41 - 54°F, Cloudy Rain PM

Project/Site Name: LTM - Fall 2019

Instrument: YSI 650 MDS

Calibrated By: Kristen Esser

Serial Number: 11G100387

Parameters	Solution Expiration Date	AM Calibration Time 0640		Cal. Temp. (°C)	PM Post Cal. Check Time 1350	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm^c)	3/2020	1.567	1.413	17.35	1.375	16.17	±10 µS/cm	N
pH (7)	2/2021	6.92	7.00	17.28	6.82	16.55	± 0.3 Ph *	N
pH (4)	3/2021	4.32	4.06	17.35	4.25	16.65	± 0.3 Ph *	N
pH (10)	2/2021	9.98	10.04	17.34	9.94	16.62	± 0.3 Ph *	N
ORP (240 mv)	5/2020	232.9	240.1	17.25	246.7	16.57	±10 mv	N
Dissolved Oxygen (%)	—	106.5	100.0	17.64	104.6	12.15	-	—
Dissolved Oxygen (mg/L)	—	9.46	9.56	17.63	9.98	12.15	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	17.64	760.0	12.15	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature]

Date: 11/7/19

KGS

Turbidity Instrument Calibration Log

Hach 2100Q

Project/Site Name: Dairens LTM Fall 2019 **Instrument:** ~~YSI 650MDS~~

Calibrated By: Kristen Esser **Serial Number:** 034948

*LaMotte SN# 2020we 19252

	Date	AM Calibration: Pre-Cal 20 NTU	AM Calibration: Post-Cal 100 NTU	AM Calibration: Pre-Cal ~~800~~ 10 NTU	AM Calibration: ~~Post~~-Cal 10 NTU	PM Post Calibration Check: ~~0 NTU~~ 20 / 100 / 800	PM Post Calibration Check: 10 NTU	Variance Noted
	11/4/19	Pre 19.1 / Post 20.0	Pre 102.0 / Post 100.0	Pre 801.0 / Post 800	Pre 10.1 / Post 10.0	21.7 / 101 / 807	10.0	N
*	11/5/19	~~0 NTU~~ 0.10	~~0 NTU~~ 0.01	~~10 NTU~~ 8.13	~~10 NTU~~ 8.48	~~0 NTU~~ 0.02	~~10 NTU~~ 8.28	N
*	11/6/19	0.02	0.01	9.00	9.62	0.01	9.45	N
*	11/7/19	0.02	0.01	8.82	9.52	0.01	9.80	N
*	11/8/19	0.01	0.02	8.87	9.98	0.00	9.82	N
*	11/11/19	0.02	0.01	6.61	9.41	0.01	9.55	N
*	11/12/19	0.22	0.01	8.73	10.06	0.00	9.94	N
*	11/13/19	0.01	0.00	9.59	9.63	0.01	9.14	N
	Post Calibration Criteria	-				-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: Kristen Esser **Date:** 11/13/19

KGS

Field Instrument Calibration Log

Date: 11/14/19 **Weather:** 23-40°F, Cloudy

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 650MDS

Calibrated By: Kristen Esser **Serial Number:** 16G100387

Parameters	Solution Expiration Date	AM Calibration Time 0650		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1.407	1.413	15.20	1.398	14.13	±10 µS/cm	N
pH (7)	2/2021	6.90	7.00	15.23	6.86	14.48	± 0.3 Ph *	N
pH (4)	3/2021	4.35	4.06	15.22	4.29	14.31	± 0.3 Ph *	N
pH (10)	2/2021	10.16	10.01	15.29	9.91	14.31	± 0.3 Ph *	N
ORP (240 mv)	5/2020	233.1	240.8	15.09	236.2	14.35	±10 mv	N
Dissolved Oxygen (%)	—	103.6	100.0	14.89	100.5	8.24	-	—
Dissolved Oxygen (mg/L)	—	10.08	9.56	14.89	11.81	8.24	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	—	760.0	760.0	14.89	760.0	8.24	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/14/19

Turbidity Instrument Calibration Log

Project/Site Name: Ft Devens Fall LTM **Instrument:** LaMotte 2020we

Calibrated By: Kristen Esner **Serial Number:** 19252

Date	AM Calibration				PM Post Calibration Check				Variance Noted
	Pre/~~Post~~ - Cal 0 ~~10~~ NTU	~~Pre/~~Post - Cal ~~10~~ ~~20~~ NTU	Pre/~~Post - Cal~~ 10 ~~100~~ NTU	~~Pre~~/Post - Cal 10 ~~800~~ NTU	~~10 NTU~~ 0 NTU	~~20 NTU~~ 10 NTU	~~100 NTU~~	~~800 NTU~~	
11/14/19	0.98	0.02	8.68	9.30	0.02	9.60			N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: _____ **Date:** _____

KGS

Field Instrument Calibration Log

Date: 11/4/19 **Weather:** 30° F, sunny

Project/Site Name: Devens LTM **Instrument:** YSI 650 MDS

Calibrated By: A. Cartwright **Serial Number:** 00M0743 AG

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1,427	1,413	18.68	1,385	17.64	±10 µS/cm	Y
pH (7)	2/2021	7.20	7.00	18.57	6.96	18.34	± 0.3 Ph *	N
pH (4)	3/2021	3.68	4.00	18.09	4.20	18.36	± 0.3 Ph *	N
pH (10)	2/2021	9.26	9.88	17.67	10.00	18.29	± 0.3 Ph *	N
ORP (240 mv)	5/2020	238.1	239.8	17.62	239.1	18.29	±10 mv	N
Dissolved Oxygen (%)	–	–	106.0	16.04	~~760.7~~ 112.1	17.51	-	–
Dissolved Oxygen (mg/L)	–	–	10.51	16.04	9.68	17.51	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	–	–	761.8	16.04	760.7	17.51	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Abigail Cartwright **Date:** 11/4/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM

Instrument: HACH 2100Q

Calibrated By: A. Cartwright

Serial Number: 17060C059342

Date	AM Calibration				PM Post Calibration Check				Variance Noted
	Pre/Post - Cal 10 NTU	Pre/Post - Cal 20 NTU	Pre/Post - Cal 100 NTU	Pre/Post - Cal 800 NTU	10 NTU	20 NTU	100 NTU	800 NTU	
10/28/19	10.2/10	19.7/20	89.4/100	815/800	10.0/10	19.9/20	91.2/100	812/800	N
10/29/19	10.3/10	19.9/20	96.8/100	790/800	10.1/10	19.7/20	95.3/100	792/800	N
10/30/19	9.66/10	21.9/20	106/100	815/800	9.27/10	20.7/20	97.9/100	793/800	[redacted] N
10/31/19	10.1/10	18.3/20	101/100	812/800	10.0/10	19.5/20	101/100	792/800	[redacted] N
11/1/19	9.59/10	19.4 [redacted]/20	103 [redacted]/100	793 [redacted]/800	9.68/10	[redacted]0/20	97.4/100	814/800	N
11/4/19	9.69/10	20.3/20	99.7/100	798/800	9.70/10	18.0/20	93.3/100	763/800	Y
11/5/19	9.47/10	23.7/20	110/100	847/800	9.68/10	19.4/20	98.7/100	794/800	N
11/6/19	9.36/10	21.8/20	105/100	816/800	10.2/10	18.0/20	99.1/100	808/800	Y
					Post Calibration Criteria				
					± 0.5	± 1	± 5	± 40	

Notes: Mark Noted Variences on Field Forms

Signature: Abigail Cartwright

Date: 11/6/19

KGS

Field Instrument Calibration Log

Date: 11/7/19 **Weather:** Overcast, ~ 40-50° F

Project/Site Name: Devens LTM **Instrument:** YSI 650 MDS

Calibrated By: A. Cartwright **Serial Number:** 17060C059342

Parameters	Solution Expiration Date	AM Calibration Time 0640		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1,535	1,413	18.41	1,307	16.03	±10 µS/cm	Y
pH (7)	2/2021	6.95	7.00	18.37	6.85	17.32	± 0.3 Ph *	N
pH (4)	3/2021	4.02	4.00	18.29	4.24	17.31	± 0.3 Ph *	N
pH (10)	2/2021	9.48	9.90	18.36	9.70	17.57	± 0.3 Ph *	N
ORP (240 mv)	5/2020	239.3	240.0	18.35	240.9	17.46	±10 mv	N
Dissolved Oxygen (%)	–	–	98.6	17.03	98.4	16.26	-	–
Dissolved Oxygen (mg/L)	–	–	9.56	17.03	9.71	16.26	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	–	758.3	17.03	753.5	16.26	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Abigail Cartwright **Date:** 11/7/19

Field Instrument Calibration Log

Date: 11/8/19 **Weather:** 30-35° F, windy

Project/Site Name: Devens LTM **Instrument:** YSI 650 MDS

Calibrated By: A. Cartwright **Serial Number:** ~~09M0743 AG~~ 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 06 30		Cal. Temp. (°C)	PM Post Cal. Check Time 1330	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	~~1,143 1,494~~	~~1,413 1,413~~	~~19.37 19.42~~	1,354	16.46	±10 µS/cm	Y
pH (7)	2/2021	6.95	7.06	19.14	6.72	18.13	± 0.3 Ph *	N
pH (4)	3/2021	4.01	3.98	19.17	4.30	18.19	± 0.3 Ph *	N
pH (10)	2/2021	9.86	10.00	18.88	9.92	18.34	± 0.3 Ph *	N
ORP (240 mv)	5/2020	230.8	240.0	19.62	209.0	18.58	±10 mv	Y
Dissolved Oxygen (%)	–	–	85.1	17.98	1.2	17.08	-	–
Dissolved Oxygen (mg/L)	–	–	8.03	17.98	0.09	17.08	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	–	–	766.5	17.98	763.4	17.08	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Abigail Cartwright **Date:** 11/8/19

Turbidity Instrument Calibration Log

Project/Site Name: Dover **Instrument:** Lamotte 2020we

Calibrated By: WGA **Serial Number:** 5083- 5014

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
11/7/19	0.47	0.00	10.27	10.00	0.87	9.56	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] **Date:** 11/7/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens LTM

Instrument: HACH 2100Q

Calibrated By: A. Cartwright

Serial Number: 17060C059342

	AM Calibration				PM Post Calibration Check				
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**10 NTU**	**20 NTU**	**100 NTU**	**800 NTU**	**Variance Noted**
11/7/19	used LaMotte 2020we		5083-5014	→ see Kevin's calibration log					-
11/8/19	9.09/10	19.2/20	98.6/100	768/800	10.5/10	22.7/20	107/100	883/800	Y

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria			
± 0.5	± 1	± 5	± 40

Signature: Abigail Cartwright

Date: 11/8/19

KGS

Field Instrument Calibration Log

Date: 11/13/19 **Weather:** 10's

Project/Site Name: LTM - Fall 2019 **Instrument:** YSI 650XL

Calibrated By: CLA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1.398	1.413	19.25	1.419	5.59	±10 µS/cm	N
pH (7)	2/21	~~6.29~~	7.00	19.48	7.29	5.72°	± 0.3 Ph *	N
pH (4)	3/21	4.11	4.00	19.58	4.01	5.62°	± 0.3 Ph *	N
pH (10)	2/21	10.49	10.00	19.63	10.01	5.70°	± 0.3 Ph *	N
ORP (240 mv)	5/20	227.1	240.0	19.79	243.9	6.41°	±10 mv	N
Dissolved Oxygen (%)	N/A	119.7%	100.0%	20.19	101.6%	4.90°	-	N
Dissolved Oxygen (mg/L)	N/A	11.17	10.00	20.23	9.61	4.83°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 11/13/19

KGS

Field Instrument Calibration Log

Date: 5/6/2020 **Weather:** Sun, 35°F

Project/Site Name: Devens Supplemental **Instrument:** YSI 556MPS

Calibrated By: B.A **Serial Number:** 05G19419D

Parameters	Solution Expiration Date	AM Calibration Time 0615		Cal. Temp. (°C)	PM Post Cal. Check Time 1230	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1477	1413	16.77	1420	17.28	±10 µS/cm	N
pH (7)	10/21	7.02	7.00	16.73	7.03	17.50	± 0.3 Ph *	
pH (4)	~~05/20~~ 10/21	3.77	4.00	16.47	3.96	17.18	± 0.3 Ph *	
pH (10)	10/21	10.02	10.00	16.67	9.90	17.36	± 0.3 Ph *	
ORP (240 mv)	~~10/21~~ 05/20	247.7	240.0	16.34	241.8	17.45	±10 mv	
Dissolved Oxygen (%)	-	100.6	98.8	16.87	98.0	17.10	-	
Dissolved Oxygen (mg/L)	-	9.75	9.58	16.87	9.57	17.10	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	751.7	751.7	16.87	750.5	17.10	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/6/2020

KGS

Field Instrument Calibration Log

Date: 5/7/2020 **Weather:** 40°F, Sun.

Project/Site Name: Devens Supplemental Sampling **Instrument:** YSI 556 MPS

Calibrated By: BrA **Serial Number:** 05G1941AD

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1391	1413	16.39	1411	17.28	±10 µS/cm	N
pH (7)	10/21	7.00	7.00	16.32	7.01	17.51	± 0.3 Ph *	
pH (4)	10/21	4.01	4.00	16.39	3.99	17.43	± 0.3 Ph *	
pH (10)	10/21	9.94	10.00	16.42	10.08	17.28	± 0.3 Ph *	
ORP (240 mv)	05/20	241.5	240.0	16.41	239.6	17.50	±10 mv	
Dissolved Oxygen (%)	–	99.3	98.0	16.60	97.1	17.20	-	
Dissolved Oxygen (mg/L)	–	9.68	9.55	16.60	9.49	17.20	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	–	745.1	745.1	16.60	746.5	17.20	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BrA **Date:** 5/7/20

KGS

Field Instrument Calibration Log

Date: 5/8/2020 **Weather:** 45°F, Sun

Project/Site Name: Devers Spng 2020 Supplemental **Instrument:** YSI 556 MPS

Calibrated By: BrA **Serial Number:** 05G1941AD

Parameters	Solution Expiration Date	AM Calibration Time 0615		Cal. Temp. (°C)	PM Post Cal. Check Time 1230	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1415	1413	16.43	1416	17.81	±10 µS/cm	N
pH (7)	10/21	7.02	7.00	16.35	7.01	18.04	± 0.3 Ph *	
pH (4)	10/21	3.95	4.00	16.30	3.97	17.90	± 0.3 Ph *	
pH (10)	10/21	9.98	10.00	16.42	10.08	17.96	± 0.3 Ph *	
ORP (240 mv)	05/20	238.8	240.0	16.12	241.6	18.02	±10 mv	
Dissolved Oxygen (%)	—	98.5	98.5	16	99.9	17.50	-	
Dissolved Oxygen (mg/L)	—	9.72	9.71	16	9.74	17.50	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	747.5	747.5	16	749.6	17.50	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BrA G **Date:** 5/8/20

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens Supplemental

Instrument: Lamotte 2020we

Calibrated By: BrA

Serial Number: 981-2111

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/6/2020	0.15	0.14	8.86	10.00	0.18	9.88	N
5/7/2020	0.19	0.14	9.17	10.00	0.16	9.91	N
5/8/2020	0.16	0.14	9.90	10.00	0.17	9.80	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: Brett Cantor

Date: 5/6/2020
5/7/2020
5/8/2020

KGS

Field Instrument Calibration Log

Date: 5/5/20 **Weather:** 40's

Project/Site Name: Devers **Instrument:** YSI 556 MPS

Calibrated By: VM **Serial Number:** 06C2657 A1

Parameters	Solution Expiration Date	AM Calibration Time 635		Cal. Temp. (°C)	PM Post Cal. Check Time 1215	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1.437	1.413	15.34	1.410	17.01	±10 µS/cm	N
pH (7)	2/21	7.31	7.00	15.60	7.03	16.97	± 0.3 Ph *	N
pH (4)	10/21	4.18	4.00	15.41	4.01	16.93	± 0.3 Ph *	N
pH (10)	10/21	10.09	10.00	15.37	10.10	16.92	± 0.3 Ph *	N
ORP (240 mv)	5/20	231.6	240.0	15.50	241.7	16.91	±10 mv	N
Dissolved Oxygen (%)	N/A	93.1%	100.0%	15.47	96.7%	17.03	-	N
Dissolved Oxygen (mg/L)	N/A	9.90	10.00	15.61	9.90	17.01	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/5/20

KGS

Field Instrument Calibration Log

Date: 5/7/20 **Weather:** 50's

Project/Site Name: Dam **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 06C657A1

Parameters	Solution Expiration Date	AM Calibration Time 640		Cal. Temp. (°C)	PM Post Cal. Check Time 1230	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1.447	1.413	16.94	1.410	17.81	±10 µS/cm	N
pH (7)	2/21	7.09	7.00	16.78	7.11	17.77	± 0.3 Ph *	N
pH (4)	10/21	4.11	4.09	16.81	4.00	17.69	± 0.3 Ph *	N
pH (10)	10/21	9.63	10.00	17.01	10.03	17.83	± 0.3 Ph *	N
ORP (240 mv)	5/20	220.3	240.0	16.90	237.7	17.81	±10 mv	N
Dissolved Oxygen (%)	N/A	91.0%	100.0%	15.11	101.1%	17.80	-	N
Dissolved Oxygen (mg/L)	N/A	9.70	10.00	14.61	10.09	16.87	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/7/20

KGS

Field Instrument Calibration Log

Date: 5/8/20 **Weather:** 50's

Project/Site Name: Devers **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 06C2657A1

Parameters	Solution Expiration Date	AM Calibration Time 650		Cal. Temp. (°C)	PM Post Cal. Check Time 1215	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	10/20	1.478	1.413	16.99	1.410	16.39	±10 µS/cm	N
pH (7)	2/21	7.30	7.00	16.83	7.03	16.47	± 0.3 Ph *	N
pH (4)	10/21	4.18	4.00	17.21	4.01	16.50	± 0.3 Ph *	N
pH (10)	10/21	9.83	10.00	17.09	10.00	16.51	± 0.3 Ph *	N
ORP (240 mv)	5/20	231.0	249.0	16.87	241.1	16.42	±10 mv	N
Dissolved Oxygen (%)	N/A	90.0%	100.0%	16.79	100.0%	16.39	-	N
Dissolved Oxygen (mg/L)	MA	9.47	10.00	16.89	9.81	16.27	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	MA	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/8/20

Turbidity Instrument Calibration Log

Project/Site Name: Davis **Instrument:** LaMotte 2020we

Calibrated By: MA **Serial Number:** 3711-3913

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/5/20	0.09	0.00	10.18	10.00	0.07	10.00	N
5/7/20	0.39	0.00	10.47	10.00	0.02	10.13	N
5/8/20	0.29	0.00	9.73	10.00	0.00	10.18	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: _____ **Date:** 5/8/20

KGS

Field Instrument Calibration Log

Date: 5/18/20 **Weather:** 50's

Project/Site Name: Dennis **Instrument:** YSI 556 MPS

Calibrated By: MA **Serial Number:** 05619411AD

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1245	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	10/20	1.501	1.413	17.0	1.411	16.21	±10 µS/cm	N
pH (7)	2/21	7.46	7.09	17.07	7.06	16.31	± 0.3 Ph *	N
pH (4)	10/21	4.11	4.00	16.89	4.11	16.27	± 0.3 Ph *	N
pH (10)	10/21	9.78	10.00	16.93	9.97	16.39	± 0.3 Ph *	N
ORP (240 mv)	5/20	221.1	240.0	16.99	237.1	16.40	±10 mv	N
Dissolved Oxygen (%)	N/A	98.7%	100.0%	98.7%/16.81	91.6%	16.20	-	N
Dissolved Oxygen (mg/L)	N/A	9.37	9.00	16.70	9.99	16.18	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/18/20

KGS

Field Instrument Calibration Log

Date: 5/19/20 **Weather:** 50's

Project/Site Name: Davis **Instrument:** YSI 556 MPS

Calibrated By: VBA **Serial Number:** 05619414D

Parameters	Solution Expiration Date	AM Calibration Time 620		Cal. Temp. (°C)	PM Post Cal. Check Time 1200	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	10/20	1.389	1.413	16.89	1.410	17.83	±10 µS/cm	N
pH (7)	2/21	7.37	7.00	16.83	7.11	17.79	± 0.3 Ph *	N
pH (4)	10/21	4.06	4.00	16.97	4.06	17.73	± 0.3 Ph *	N
pH (10)	10/21	9.64	10.00	16.72	9.93	17.68	± 0.3 Ph *	N
ORP (240 mv)	5/20	241.9	240.0	16.63	242.6	17.81	±10 mv	N
Dissolved Oxygen (%)	N/A	87.1%	100.0%	16.61	98.1%	17.79	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	16.54	9.83	17.68	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/19/20

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Davis

Instrument: LaMotte 2020we

Calibrated By: MH

Serial Number: 5088-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/18/20	0.07	0.00	10.87	10.00	0.07	10.18	N
5/19/20	0.21	0.00	9.70	10.00	0.12	9.97	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 5/19/20

APPENDIX B SYNOPTIC WATER LEVEL EVENT FIELD SHEETS

KGS

Project/Site Name: Devens - AOC32/43A
Field Team Member: Kurt Haber
Water Level Meter Model: Heron Dipper T

Date : 12/5/19
Weather: 34 °F

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
32M-92-01X							
32M-92-03X							
KH 32M-01-13XBR	1345	13.32	23.50	N	Y	Y	
32M-01-14XBR							
32M-01-14XOB							
KH 32M-01-15XBR	1500	15.53	45.12	N	Y	Y	
32M-01-16XBR	1505	19.23	31.35	N	Y	Y	
32M-01-17XBR	1443	23.19	55.18	N	N	Y	Cap Broken
X 32M-01-18XBR	1503	17.55	24.84	N	Y	Y	
32Z-99-02X (32M-92-02X)							
KH 32Z-01-05XOB	1340	25.65	37.8	N	Y	Y	Tar Covered
32Z-01-06XBR							
32Z-01-07XOB							
KH 32Z-01-08XOB							
32Z-01-09XOB	1350	24.82	65.87	N	N	Y	Concrete Pad Broken 1"Pv
32Z-01-10XBR	1510	13.37	22.60	N	Y	Y	
32Z-01-11XBR	1430	5.99	17.18	N	Y	Y	Tar Covered
32Z-01-12XBR	1430	19.21	38.23	N	N	Y	Tar Covered
43M-01-20XOB	1400	24.59	79.11	N	Y	Y	Tar Covered
43M-01-20XBR	1403	25.91	34.95	N	Y	Y	Tar Covered
43M-01-17XOB	1410	23.90	33.82	N	N	Y	Tar Covered
43M-01-17XBR	1415	23.12	58.55	N	N	Y	Tar Covered
43M-01-16XOB	1425	21.23	34.64	N	Y	Y	Tar Covered
X 43M-01-16XBR	1420	21.23	58.13	N	N	Y	Tar Covered
SHL-12							
SHL-15							
KH SHL-16 Can't Locate							
SHL-17							

KGS

Project/Site Name: Devens - AOC32/43A
Field Team Member: Melissa Miller
Water Level Meter Model: Heron Dipper-T

Date : 12/5/18
Weather: 35°F

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
32M-92-01X	1335	14.70	26.08	Y	NA	Y	Good, Dedicated Tubing
32M-92-03X	1510	23.85	35.60	Y	NA	Y	Good
32M-01-13XBR							
32M-01-14XBR	1450	19.25	46.25	Y	NA	Y	" same as 14XOB "
32M-01-14XOB	1444	22.05	30.00	Y	NA	Y	Dip Tube Broken, Bladder Pump
32M-01-15XBR							
32M-01-16XBR							
32M-01-17XBR							
32M-01-18XBR							
32Z-99-02X (32M-92-02X)	1450	21.00	30.39	Y	NA	Y	Good, Transducer
32Z-01-05XOB							
32Z-01-06XBR	1455	12.90	28.75	Y	NA	Y	Good D. Tubing
32Z-01-07XOB	1500	12.30	24.92	Y	NA	Y	Good D. Tubing
32Z-01-08XOB	1331	15.50	24.40	Y	NA	Y	Good, D Tubing
32Z-01-09XOB							
32Z-01-10XBR							
32Z-01-11XBR							
32Z-01-12XBR							
43M-01-20XOB							
43M-01-20XBR							
43M-01-17XOB							
M-01-17XBR							
01-16XOB							
16XBR							
	1410	12.80	28.75	Y	NA	Y	Good D. Tubing
	1340	15.55	26.52	Y	NA	Y	Good, D. Tubing
	Cannot	Locate	Believe to be D				
	1425	23.86	36.38	Y	NA	Y	Good, D Tubing

Project/Site Name: Devens - AOC32/43A

Field Team Member: Melissa Miller

Water Level Meter Model: Heron DipperT

Date : 12/5/18

Weather: 35°F

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
SHL-~~25~~ 17	1558	3.85	18.54	Y	NA	Y	Transducer
N7-P1	1350	27.98	>31.33	Y	NA	Y	D. Tubing
N7-P2	1353	27.95	37.42	Y	NA	Y	D. Tubing
~~S~~HM-10-11	1345	37.85	62.30	Y	NA	Y	Good, D. Tubing

KGS

Project/Site Name: PFAS RI - Area 2 AOC 76 Synoptic

Date : 5/16/19

Field Team Member: Melissa Miller

Weather: 60°F cool

Water Level Meter Model: Solinist H_2O meet (200 ft

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Pump (P)/ Tubing (T)	Well Condition
AOC 76 -Pizometers								
76PZ-19-01	1426	20.63	30.70	N	Y	Y	NA	Good 1"
76PZ-19-02	1257	4.19	12.57	N	Y	Y	NA	Good 1"
76PZ-19-03	1415	12.22	24.35	N	Y	Y	NA	Good 1"
76PZ-19-04	1310	5.70	14.55	N	Y	Y	NA	Good 1"
76PZ-19-05	1355	19.32	22.85	N	Y	Y	NA	Good 1"
76PZ-19-06	1235	25.94	32.73	N	Y	Y	NA	Good 1"
76PZ-19-07	1327	13.35	21.79	N	Y	Y	NA	Good 1"
76PZ-19-08	0715	12.60	31.68	N	Y	Y	NA	Good 1"
76PZ-19-09	1207	15.00	28.00	N	Y	Y	NA	Good 1"
76PZ-19-10	1337	3.45	16.02	N	Y	Y	NA	Good 1"
76PZ-19-11	1345	5.00	16.63	N	Y	Y	NA	Good 1"
76PZ-19-12	1217	12.10	25.85	N	Y	Y	NA	Good 1"
76PZ-19-13	1320	9.72	24.46	N	Y	Y	NA	Good 1"
76PZ-19-14	1200	16.30	27.63	N	Y	Y	NA	Good 1"
76PZ-19-15	1408	2.65	13.80	N	Y	Y	NA	Good 1"
76PZ-19-16	1249	25.69	38.52	N	Y	Y	NA	Good 1"
acPhearson								
MPPZ-19-01	0800	4.83	14.75	Y	N	Y	NA	Good, 1"
MPPZ-19-03	0947	8.43	16.80	Y	N	Y	NA	Good, 1"
MPP-93-02	0745	9.45	31.94	Y	N	Y	T	Good, 2"
MPP-93-03	0730	9.58	32.25	N	N	Y	T	Needs Lock
MacPhearson Sentinel	0815	8.70	100.0	N	N	Y	T	Need New Well Cap 2"
AOC 69								
ZWM-95-17X	0645	12.95	16.73	N	N	Y	T	Needs Lock, 4"
69WP-13-01	1[illegible]	1.50	12.35	N	N	Y	T	Good 1.5"
ZWM-01-26X	1130	5.95	16.25	N	N	Y	T	Needs lock 2"
ZWP-95-01X	1015	4.20	14.45	N	N	N	NA	Needs Plug 1"

Project/Site Name: Devens - Area 2 **Date :** 6/28/19

Field Team Member: MS / B.A / K.G.A **Weather:** 89° F, Sun

Water Level Meter Model: Heron Dipper-T 005641

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Colocated VP
MPP-93-02	0650	10.69	31.82	Y	-	Y	
MPP-93-03	0640	10.84	32.35	N	-	Y	
MacPherson sentinel well	0700	9.85	99.85	N	-	Y	
MPPZ-19-01	0710	5.43	14.73	Y	-	Y	MPVP-19-03
MPPZ-19-02	1155	16.34	23.93	-	Y	Y	MPVP-19-04
MPPZ-19-03	0658	9.56	16.73	Y	-	Y	MPVP-19-06
76PZ-19-01	1100	22.12	30.77	-	Y	Y	76VP-19-01
76PZ-19-02	0820	4.40	12.75	-	Y	Y	76VP-19-19
76PZ-19-03	1105	13.49	24.40		Y	Y	76VP-19-03
76PZ-19-04	1135	6.26	14.27	-	Y	Y	76VP-19-20
76PZ-19-05	1143	18.50	22.90	-	Y	Y	76VP-19-05
76PZ-19-06	0811	28.50	32.66	-	Y	Y	76VP-19-21
76PZ-19-07	1138	14.40	21.70	-	Y	Y	76VP-19-07
76PZ-19-08	0803	13.15	31.73	-	Y	Y	76VP-19-22
76PZ-19-09	0840	15.73	28.06		Y	Y	76VP-19-25
76PZ-19-10	1120	4.15	16.00	-	Y	Y	76VP-19-10
76PZ-19-11	1116	5.88	16.70	-	Y	Y	76VP-19-11
76PZ-19-12	1150	12.83	25.51	-	Y	Y	76VP-19-26
76PZ-19-13	1140	10.52	24.21	-	Y	Y	76VP-19-13
76PZ-19-14	0846	17.06	27.70	-	Y	Y	76VP-19-27
76PZ-19-15	1111	3.41	13.78	-	Y	Y	76VP-19-15
76PZ-19-16	0815	26.21	38.58	-	Y	Y	76VP-19-16
76PZ-19-17	0835	18.24	25.48	-	Y	Y	76VP-19-28
76PZ-19-18	1045	4.52	14.82	-	Y	Y	76VP-19-30
76PZ-19-19	1150	21.75	28.80	-	Y	Y	76VP-19-32
ZWM-95-17X	0800	13.45	17.14	N	-	Y	AOC 69W
69WP-08-01	0739	2.10	12.30	N	-	N	AOC 69W
ZWM-01-26X	0728	4.37	16.20	N	-	Y	AOC 69W
ZWP-95-01X	0723	2.72	14.37	N	-	N	AOC 69W

Project/Site Name: Devens - Area 2 **Date :** _____

Field Team Member: _____ **Weather:** _____

Water Level Meter Model: _____

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Colocated VP
43GPZ-19-01	0935	18.71	18.47	-	Y	Y	43GVP-19-01
43GPZ-19-02	0950	24.20	28.84	-	Y	Y	43GVP-19-02
43GPZ-19-03	0907	22.98	24.56	-	Y	Y	43GVP-19-03
43GPZ-19-04	1020	7.05	13.61	Y	-	Y	43GVP-19-07
43GPZ-19-05	1026	7.91	15.02	-	Y	Y	43GVP-19-05
43GPZ-19-06	1030	9.67	18.62	-	Y	Y	43GVP-19-06
AAFES-2	0915	22.67	33.41	Y	-	Y	
AAFES-5	0911	22.05	29.94	-	Y	Y	
AAFES-7	0945	8.05	17.25	Y	-	2	
XGM-94-04X	0920	19.44	31.13	Y	-	Y	
XGM-94-06X	0940	21.19	30.08	2	-	Y	
XGM-94-07X	0930	14.72	29.70	Y	-	Y	
XGM-94-08X	0928	26.05	35.98	Y	-	Y	
XGM-94-10X	~~0904~~ 0934	25.18	33.93	Y	Y	Y	
XGM-97-12X	0904	25.15	33.78		Y	Y	

Field Master
B.A

10/22/19

Hydraulic Monitoring Field Record for Fall 2019

Shepley's Hill Landfill - Devens Massachusetts

Location	Well Identification	TOR Elevation (ft)	Time	Fall 2019 Depth to Water (ft bTOR)	Fall 2019 Depth to Bottom (ft bTOR)	Screen Interval (ft TOR)	Depth to Bottom November 2017 (ft bPVC)	Depth to Water November 2017 (ft bTOR)	Form-ation Type	
North Impact Area	SHM-05-39A	221.53	1505	12.45	38.50	36.74 - 38.74	38.66	11.07	M	
North Impact Area	SHM-05-39B	221.51	1510	DM	66.28	65.74 - 67.74	66.33	11.84	D	
North Impact Area	SHM-05-40X	223.34	1500	14.95	33.05	31.93 - 33.93	33.14	13.93	M	
North Impact Area	SHM-07-03	227.90	1452	24.00	33.2	24.94 - 34.94	33.26	19.53	S	T/B
North Impact Area	SHM-07-05X	223.40	1458	15.30	63.9	54.83 - 64.83	64.52	14.33	B	
North Impact Area	SHM-10-01	209.65	1145	4.20	70.46	63.46 - 73.46	70.72	1.91	D	T/L
North Impact Area	SHM-10-02	223.03	0813	18.24	63.90	55.84 - 65.84	64.09	15.71	M	T
North Impact Area	SHM-10-03	232.05	0808	26.87	56.22	60.78 - 70.78	69.63	24.64	M	T/L
North Impact Area	SHM-10-04	212.61	0833	6.69	64.05	57.61 - 67.61	64.49	5.11	M	T/L
North Impact Area	SHM-10-05A	235.09	1231	25.72	59.50	49.68 - 59.68	59.90	24.73	M	
North Impact Area	SHM-10-08	214.36	0818	9.97	56.33	48.50 - 58.50	56.69	7.12	D	T/L
North Impact Area	SHM-10-10R	217.11	1208	~~9.97~~ 11.15	66.30	57.71 - 67.71	66.57	9.19	D	T/L
North Impact Area	SHM-13-01	208.08	1129	3.48	50.68	41.31 - 51.31	50.77	1.8	M	T/M
North Impact Area	SHM-13-02	218.72	1142	13.03	71.88	61.80 - 71.80	72.73	10.79	D	T/L
North Impact Area	SHM-13-03	212.05	1159	5.68	50.96	44.14 - 54.14	51.01	4.31	D	T/M
North Impact Area	SHM-13-04	227.02	1220	19.71	29.46	19.68 - 29.68	29.97	18.33	S	T
North Impact Area	SHM-13-05	225.14	1224	17.15	84.80	74.75 - 84.75	86.06	15.87	D	T
North Impact Area	SHM-13-06	223.89	1139	17.72	44.94	35.66 - 45.66	45.68	15.61	D	T/B
North Impact Area	SHM-13-07	225.64	1155	19.23	34.79	26.53 - 36.53	35.01	R	--	T/B
North Impact Area	SHM-13-08	227.90	1212	20.90	64.05	54.71 - 64.71	54.54	19.36	D	T
North Impact Area	SHM-13-14D	210.68	1315	3.98	56.63	48.20 - 58.20	57.22	2.78	D	T
North Impact Area	SHM-13-14S	211.03	1330	4.12	17.55	8.36 - 18.36	17.13	3.48	S	T
North Impact Area	SHM-13-15	210.58	1345	4.32	61.88	54.60 - 64.60	62.11	3.01	D	
North Impact Area	SHM-99-31A	214.34	1410	3.98	15.83	5.52 - 15.52	15.39	0.68	S	
North Impact Area	SHM-99-31B	214.39	1405	4.89	61.50	51.87 - 61.87	61.47	3.47	M	
North Impact Area	SHM-99-31C	214.60	1400	5.15	78.85	69.96 - 79.96	78.83	3.73	D	
North Impact Area	SHM-99-32X	221.28	0750	10.80	84.10	74.16 - 84.16	84.06	9.32	D	
North Impact Area	SHP-99-34B	224.91	0755	13.80	74.20	76.72 - 81.72	74.14	12.12	D	
North Impact Area	SHP-05-48A	217.31	0815	3.82	5.40	5.22 -6.22	5.49	3.58	S	
North Impact Area	SHP-05-48B	215.96	0820	2.84	5.35	4.93 - 5.93	5.22	2.17	S	
North Impact Area	SHP-05-49A	216.67	0800	5.68	6.02	5.33 - 6.33	6.02	5.65	S	
North Impact Area	SHP-05-49B	215.14	0805	4.18	5.40	4.25 - 6.25	5.35	3.96	S	
Nearfield Area	EPA-PZ-2012-1A	223.79	0925	12.15	27.90	23.88 -28.88	27.97	10.62	S	
Nearfield Area	EPA-PZ-2012-1B	223.53	0930	11.80	77.80	23.72 - 78.72	77.60	10.35	D	
Nearfield Area	EPA-PZ-2012-2A	223.38	0912	11.43	28.40	23.66 - 28.66	28.34	9.96	S	
Nearfield Area	EPA-PZ-2012-2B	223.37	0918	11.44	83.40	78.62 - 83.62	83.49	10.11	D	
Nearfield Area	EPA-PZ-2012-3A	222.65	1125	11.68	27.93	23.45 - 28.45	27.90	10.10	S	
Nearfield Area	EPA-PZ-2012-3B	222.57	1129	11.60	77.05	73.32 - 78.32	76.95	10.11	D	
Nearfield Area	EPA-PZ-2012-4A	226.60	1140	15.92	28.00	23.30 - 28.30	27.98	14.35	S	
Nearfield Area	EPA-PZ-2012-4B	226.39	1144	15.76	77.00	72.88 - 77.88	77.30	14.31	D	
Nearfield Area	EPA-PZ-2012-5A	220.01	1438	8.96	27.43	23.68 - 28.68	27.37	7.19	S	
Nearfield Area	EPA-PZ-2012-5B	219.38	1442	8.24	85.78	83.18 - 88.18	85.70	6.70	D	
Nearfield Area	EPA-PZ-2012-6A	234.25	0739	23.68	33.40	28.54 - 33.54	33.30	22.01	S	
Nearfield Area	EPA-PZ-2012-6B	234.08	0733	23.55	82.00	78.23 - 83.23	82.15	21.92	D	
Nearfield Area	EPA-PZ-2012-7A	234.16	1513	27.79	29.40	24.74 - 29.74	29.33	22.12	S	
Nearfield Area	EPA-PZ-2012-7B	234.03	0759 1513	~~20.17~~ 23.39	~~78.35~~ 64.55	59.75 - 64.75	64.28	21.87	D	
Nearfield Area	SHP-2017-01	229.63	~~0746~~ 0759	~~20.50~~ 20.17	~~94.02~~ 78.35	74.0 - 79.0	79.00	18.55	O	
Nearfield Area	SHP-2017-02	230.05	0746	20.50	94.02	89.5 - 94.5	94.50	19.24	O	
Nearfield Area	EW-1S	226.79	1305	16.38	43.35	35.0 - 45.0	43.17	--	O	
Nearfield Area	EW-4S	227.06	1507	16.30	42.04	40.0 - 50.0	42.05	--	O	
Nearfield Area	SHL-13	220.71	0853	6.59	21.00	6.73 - 21.73	21.40	6.21	S	
Nearfield Area	SHL-22	219.58	1055	8.68	112.95	105.68 - 115.6	113.50	7.15	D/T	
Nearfield Area	SHL-23	241.29	1234	30.21	35.66	24.85 - 34.85	35.70	28.76	O	

Hydraulic Monitoring Field Record for Fall 2019
Shepley's Hill Landfill - Devens Massachusetts

Location	Well Identification	TOR Elevation (ft)	Time	Fall 2019 Depth to Water (ft bTOR)	Fall 2019 Depth to Bottom (ft bTOR)	Screen Interval (ft TOR)	Depth to Bottom November 2017 (ft bPVC)	Depth to Water November 2017 (ft bTOR)	Formation Type	
Nearfield Area	SHL-5	217.60	0938	5.65	13.95	3.70 - 13.70	13.90	2.50	D	
Nearfield Area	SHL-8D	220.78	0906	8.21	69.00	70.95 - 72.95	69.55	7.12	D	
Nearfield Area	SHL-8S	220.97	0902	8.33	56.24	54.14 - 56.14	56.60	7.27	S	
Nearfield Area	SHL-9	221.95	1118	12.18	24.12	16.23 - 26.23	26.37	9.30	S	
Nearfield Area	SHM-10-06	232.91	1457	20.00	81.30	72.38 -82.38	81.70	18.60	D	
Nearfield Area	SHM-10-06A	248.54	1500	35.30	89.23	79.58 - 89.58	89.95	34.02	D	
Nearfield Area	SHM-93-22B	219.39	1049	8.48	92.70	82.55 - 92.55	94.00	6.91	M	
Nearfield Area	SHM-93-22C	220.69	1102	9.85	142.80	126.07 - 136.0	141.10	8.38	D	
Nearfield Area	SHM-96-5B	218.92	0948	7.49	88.75	81.54 - 91.54	91.59	6.08	D/T	
Nearfield Area	SHM-96-5C	218.39	0942	6.97	79.75	51.0 - 61.0	81.00	5.49	M	
Nearfield Area	SHP-05-45A	228.48	0805	17.73	27.30	22.16 - 27.16	27.25	16.08	S	
Nearfield Area	SHP-05-45B	229.11	0810	15.42	75.30	67.39 - 77.39	76.70	16.87	M	
Nearfield Area	SHP-05-46A	228.18	0830	16.95	27.30	21.87 - 26.87	27.25	15.42	M	
Nearfield Area	SHP-05-46B	227.60	0822	16.30	75.80	66.57 - 76.57	76.65	14.74	S	
Nearfield Area	SHP-05-47A	217.39	1450	5.56	6.02	5.04 - 6.04	5.93	3.79	S	
Nearfield Area	SHP-05-47B	215.40	1448	2.43	5.95	5.07 - 6.07	5.91	1.69	S	
Nearfield Area	SHP-2016-06A	241.90	1239	30.17	85.65	82.85 - 87.85	86.05	28.35	B	
Nearfield Area	SHP-2016-06B	241.89	1243	24.05	112.00	103.84 - 113.8	112.55	22.90	B	
Nearfield Area	SHP-2016-06C	241.92	1246	23.75	133.60	124.87 - 134.8	133.95	22.80	B	
Nearfield Area	SHP-2016-1A	227.27	1435	16.85	25.82	15.59 - 25.59	25.64	14.89	S	
Nearfield Area	SHP-2016-1B	227.24	1440	17.75	86.50	77.56 - 87.56	86.48	16.01	D	
Nearfield Area	SHP-2016-2A	225.93	1355	15.41	27.45	22.20 - 27.20	27.39	13.65	S	
Nearfield Area	SHP-2016-2B	225.95	1328	16.29	87.98	82.22 - 87.22	87.90	13.69	D	
Nearfield Area	SHP-2016-3A	223.18	1108	12.50	27.58	22.05 - 27.05	27.50	10.92	S	
Nearfield Area	SHP-2016-3B	223.18	1113	12.37	87.74	82.05 - 87.05	87.90	10.86	D	
Nearfield Area	SHP-2016-4A	229.97	1334	24.83	32.83	27.40 - 32.40	32.74	17.78	S	
Nearfield Area	SHP-2016-4B	229.75	1338	19.10	92.70	87.18 - 92.18	92.85	17.52	D	
Nearfield Area	SHP-2016-5A	227.01	1345	16.10	32.84	27.13 - 32.13	37.75	14.72	S	
Nearfield Area	SHP-2016-5B	226.95	1350	16.28	92.71	87.07 - 92.07	92.90	14.70	D	
Nearfield Area [2]	SHM-05-41A	222.48	1304	11.95	40.75	41.76 - 43.76	40.45	10.42	S	
Nearfield Area [2]	SHM-05-41B	222.33	1256	40.09	64.05	61.83 - 63.83	60.87	10.25	M	
Nearfield Area [2]	SHM-05-41C	222.57	1318	12.15	87.71	97.66 - 92.66	87.82	10.53	D	
Nearfield Area [2]	SHM-05-42A	216.81	1405	8.05	44.19	43.16 - 45.16	44.28	4.43	S	
Nearfield Area [2]	SHM-05-42B	216.80	1400	7.50	73.71	73.15 - 75.15	73.38	4.52	M	
Nearfield Area [2]	SHM-10-16	219.23	1410	8.62	87.48	77.51 - 87.51	87.22	7.13	D	
Landfill Area	N5-P1	242.65	1310	24.0	99.75	97.69 - 99.69	99.76	23.80	B	
Landfill Area	N5-P2	242.69	1315	24.25	32.80	25.23 - 30.23	32.73	24.11	B	
Landfill Area	N6-P1	259.02	0950	36.68	90.78	88.39 - 90.39	91.29	37.25	B	
Landfill Area	N7-P1	255.59	0930	31.15	71.30	68.41 - 70.41	71.32	30.95	B	
Landfill Area	N7-P2	256.04	0935	31.20	37.32	31.86 - 36.86	37.34	31.18	O	
Landfill Area	SHL-1	272.27	1025	7.75	8.13	2.51 - 5.51	8.13	4.83	O	
Landfill Area	SHL-18	237.56	0954	25.12	28.51	7.89 - 27.89	28.77	18.26	O	T/L
Landfill Area	SHM-10-07	246.82	0900	27.08	50.18	41.84 - 51.84	50.42	27.11	M	
Landfill Area	SHM-10-11	263.76	0945	40.23	62.30	52.60 - 62.60	62.57	40.48	D	
Landfill Area	SHM-10-12	255.17	1015	33.75	57.34	47.60 - 57.60	57.29	34.01	M	
Landfill Area	SHM-10-13	244.77	1320	25.95	73.30	63.26 - 73.26	73.26	25.93	D	
Landfill Area	SHM-10-14	237.62	1325	20.48	82.85	62.82 - 82.82	82.85	20.09	D	
Landfill Area	SHM-10-15	243.68	1305	24.40	56.70	46.73 - 56.73	56.66	24.42	M	
Landfill Area	SHP-2016-07A	265.30	1046	Dry	31.80	24.32 - 34.32	31.79	31.44	B	
Landfill Area	SHP-2016-07B	265.33	1050	35.80	79.90	72.35 - 82.35	80.62	32.85	B	
Landfill Area	SHP-95-27X	237.45	0915	14.03	42.72	32.64 - 42.64	42.71	14.27	O	
Landfill Area	SHP-99-01B	273.16	1040	9.85	~~34~~ 10.00	5.40 - 9.40	9.90	9.72	O	
Landfill Area	SHP-99-01C	274.15	1035	24.54	32.05	21.69 - 31.69	32.08	19.80	B	

Hydraulic Monitoring Field Record for Fall 2019
Shepley's Hill Landfill - Devens Massachusetts

Location	Well Identification	TOR Elevation (ft)	Time	Fall 2019 Depth to Water (ft bTOR)	Fall 2019 Depth to Bottom (ft bTOR)	Screen Interval (ft TOR)	Depth to Bottom November 2017 (ft bPVC)	Depth to Water November 2017 (ft bTOR)	Form-ation Type
Landfill Area	SHP-99-29X	243.34	1255	23.95	30.90	20.88 - 30.88	30.92	23.97	S
Landfill Area	SHP-99-35X	258.49	1005	36.35	41.60	31.96 - 41.96	41.81	36.78	S
Shepley's Hill	20-1	278.52	1125	39.90	56.33	40.74 - 56.44	56.50	36.86	B
Shepley's Hill	27-1	270.66	1130	41.12	66.30	60.82 - 65.82	66.28	34.32	B
Shepley's Hill	27-2	275.15	1137	47.45	69.62	60.08 - 70.08	69.35	44.45	B
Shepley's Hill	CAP-2B	250.21	1225	22.80	58.27	53.55 -58.55	58.25	20.66	B
Shepley's Hill	CH-1D	250.59	1210	21.80	97.32	87.13 - 97.13	97.47	19.15	B
Shepley's Hill	CH-1S	250.63	1215	22.00	43.00	38.17 - 43.17	43.06	18.98	B
Shepley's Hill	MW-1	251.84	1220	Dry	11.52	6.58 - 8.58[3]	11.52	11.50	O
Shepley's Hill	MW-11A	258.57	1205	8.90	9.05	4.18 - 6.18[3]	9.00	8.75	O
Shepley's Hill	MW-14	256.61	1155	Dry	9.65	5.14 - 7.14[3]	9.60	Dry	O
Shepley's Hill	MW-16	270.23	1120	9.55	9.56	5.18 - 7.18[3]	9.56	9.55	O
Shepley's Hill	MW-22	267.70	1145	Dry	8.80	4.70 - 6.70[3]	8.80	Dry	O
Shepley's Hill	MW-4-1	247.33	1232	Dry	7.70	3.72 - 5.72[3]	7.68	7.58	O
Shepley's Hill	MW-7	249.10	1240	Dry	12.02	6.98 - 8.98[3]	12.02	11.98	O
Shepley's Hill	MW-9	243.91	1247	Dry	12.20	7.65 - 9.65[3]	12.09	11.88	O
Shepley's Hill	Q4-1	268.38	1112	32.70	42.32	32.18 - 42.18	42.50	30.70	B
Shepley's Hill	Q5-1	260.99	1150	28.53	53.43	50.67 - 53.67	53.39	26.40	B
Shepley's Hill	Well 3-2	268.20	1105	39.53	58.95	55.92 - 59.92	59.00	36.45	B
Barrier Wall	N1-P1	229.92	1109	12.99	73.00	67.14 - 72.14	72.95	13.80	D
Barrier Wall	N1-P2	229.93	1111	13.01	48.25	42.15 - 47.15	48.23	13.75	M
Barrier Wall	N1-P3	230.08	1113	12.97	21.10	14.30 - 19.30	21.09	13.40	S
Barrier Wall	N2-P1	222.01	1129	4.65	41.76	36.46 - 41.46	41.78	5.00	B
Barrier Wall	N2-P2	222.16	1132	4.99	12.73	5.61 - 10.61	12.75	5.21	S
Barrier Wall	N3-P1	220.83	1042	4.15	37.95	35.02 - 37.02	37.98	4.30	S
Barrier Wall	N3-P2	220.84	1037	3.85	12.51	6.03 - 11.03	12.55	3.80	S
Barrier Wall	PZ-12-01	237.55	0942	20.12	35.70	27.70 - 37.70	35.70	20.16	S
Barrier Wall	PZ-12-02	237.79	0939	20.08	34.45	28.04 - 38.04	34.39	20.05	S
Barrier Wall	PZ-12-03	236.40	0928	19.95	36.60	27.55 - 37.55	36.55	19.06	S
Barrier Wall	PZ-12-04	238.20	0926	19.90	37.00	27.15 - 37.15	37.00	19.86	S
Barrier Wall	PZ-12-05	238.73	0905	21.09	34.71	28.65 - 38.65	34.70	21.18	M
Barrier Wall	PZ-12-06	242.18	0901	23.64	33.85	28.76 - 38.76	35.85	23.55	M
Barrier Wall	PZ-12-07	244.59	0824	27.08	33.19	23.79 - 33.79	33.22	26.40	M
Barrier Wall	PZ-12-08	244.83	0827	26.41	32.34	21.09 - 35.09	32.35	25.02	M
Barrier Wall	PZ-12-09	241.93	0742	23.97	33.19	23.50 - 33.50	32.15	21.98	S
Barrier Wall	PZ-12-10	242.28	0735	22.81	32.35	23.30 - 33.30	32.32	21.35	S
Barrier Wall	SHL-10	248.02	0756	30.56	36.60	25.40 - 40.40	38.67	29.94	S
Barrier Wall	SHL-11	235.47	0951	18.05	29.81	13.52 - 28.52	29.85	18.20	S
Barrier Wall	SHL-19	240.50	0803	22.99	32.52	21.91 - 31.91	32.45	20.09	S
Barrier Wall	SHL-20	235.95	0946	10.00	49.45	40.23 - 50.23	50.40	18.00	D
Barrier Wall	SHL-3	246.95	0750	29.35	33.95	25.15 - 35.15	34.15	29.57	M
Barrier Wall	SHL-4	227.48	0809	10.00	14.70	4.40 - 14.40	14.65	10.00	S
Barrier Wall	SHM-11-02	240.73	0857	22.32	68.59	41.07 - 51.07	68.90	22.32	B
Barrier Wall	SHM-11-06	236.17	1053	20.11	35.80	27.84 - 37.84	35.82	19.42	S
Barrier Wall	SHM-11-07	240.83	0914	22.40	48.01	43.61 - 48.61	48.00	22.35	B
Barrier Wall	SHP-01-36X	223.95	1117	6.67	12.80	6.96 - 11.98	12.89	7.15	S
Barrier Wall	SHP-01-37X	222.79	1125	5.85	10.40	5.12 - 10.12	10.44	5.95	S
Barrier Wall	SHP-01-38A	220.86	0956	3.32	9.07	3.59 - 8.59	9.06	3.59	S
Barrier Wall	SHP-01-38B	221.03	1001	3.49	25.53	20.15 - 25.15	25.52	3.72	D
Barrier Wall	SHP-05-43	260.17	1105	45.05	61.18	52.29 - 62.29	61.21	44.60	S
Barrier Wall	SHP-05-44	258.55	1059	42.41	60.70	53.99 - 63.99	60.74	41.55	M
Barrier Wall	RSK-7	222.01	1137	4.63	11.10	5.45 - 10.45	11.15	5.00	S
Barrier Wall	RSK-15	225.54	0813	8.05	14.62	9.85 - 14.85	14.62	8.06	S

Hydraulic Monitoring Field Record for Fall 2019
Shepley's Hill Landfill - Devens Massachusetts

Location	Well Identification	TOR Elevation (ft)	Time	Fall 2019 Depth to Water (ft bTOR)	Fall 2019 Depth to Bottom (ft bTOR)	Screen Interval (ft TOR)	Depth to Bottom November 2017 (ft bPVC)	Depth to Water November 2017 (ft bTOR)	Formation Type	
Barrier Wall	RSK-19	218.76	1005	1.35	9.54	4.98 - 9.98	9.66	1.58	S	
Barrier Wall	RSK-25	239.21	0818	21.69	26.39	20.68 - 25.68	26.36	21.01	S	
Barrier Wall	RSK-27	241.45	0851	22.37	26.11	21.22 - 26.22	26.10	22.70	S	
Barrier Wall	RSK-28	239.24	0911	20.75	25.91	21.40 - 26.40	26.10	20.75	S	
Barrier Wall	RSK-32	236.91	0921	18.61	25.93	21.04 - 26.04	25.95	18.60	S	
MM Barrier Wall	RSK-34	233.16	1525	16.06	23.85	18.61 - 23.61	24.00	15.82	S	
Barrier Wall	RSK-35	233.64	1046	17.01	25.49	22.65 - 26.65	25.51	16.71	S	
Barrier Wall	RSK-37	220.55	1028	3.10	8.78	33.91 - 38.91	8.80	4.47	S	
Upgradient	SHL-12	248.62	0920	22.58	28.23	16.40 - 31.40	28.71	22.10	O	T/L
Upgradient	SHL-15	259.92	0904	20.47	26.16	15.40 - 25.40	26.53	18.38	O	T/L
Upgradient	SHL-17	233.79	0925	8.88	18.17	7.91 - 17.91	18.49	6.86	O	NT
Upgradient	SHL-24	238.75	0938	15.79	120.38	111.96 - 121.9	120.45	14.95	D/B	T/L
Upgradient	SHL-7	236.33	0945	18.14 (steel)	23.50	12.55 - 22.55	23.74	17.19	O	T/L
Upgradient	SHM-93-10D	248.01	1000	30.03	58.41	48.70 - 58.70	58.80	29.99	B	T/L
Upgradient	SHM-93-18B	237.31	0948	18.64	91.17	80.60 - 90.60	91.23	17.91	O	T/L
Upgradient	SHM-93-24A	238.42	0934	16.12	25.02	16.23 - 26.23	25.84	15.20	O	T/L
Upgradient/AOC32	32M-01-14XOB	256.56	0913	26.38	29.49	19.56 -29.56	30.00	25.57	O	P
Upgradient/AOC32	32M-92-01X	260.17	0900	11.35	25.80	15.61 - 25.61	26.03	18.51	O	T/L
Upgradient/AOC32	32Z-01-07XOB	259.48	0908	19.38	24.34	14.50 - 24.50	24.92	16.17	O	T/L
Upgradient/AOC32	SHL-25	258.01	0916	27.68	36.01	25.23 - 35.23	36.32	27.54	O	T/L
Surface Water	PSP-01	218.14	1107	Completely submerged.	2.8	--	--	2.00	SW	
Surface Water	SHSG-13-01G	205.53	0818	1.5	—	--	--	1.60	SW	
Surface Water	SHSG-13-02G	208.25	—	Gress too high to see		--	--	3.30	SW	
Surface Water	SHSG-13-03G	209.99	—	cannot see beyond grasses		--	--	not gauged	SW	
Surface Water	SHSG-14-01G	213.71	1243	2.3	—	--	--	3.10	SW	
AOC 32	32M-01-14XBR	255.26	0911	25.65	42.05	35.81 - 45.81	--	21.63	B	P
AOC 32	32M-01-15XBR	257.70	1050	22.57	43.64	34.16 - 44.16	--	19.18	B	T/B
AOC 32	32M-01-16XBR	257.50	1054	24.54	30.11	20.79 - 30.79	--	20.37	B	T/MB

Notes:

[1] = Groundwater Elevations used to construct 2017 SHL Annual Report Figures 5-2 and 5-3, unless rejected or **bolded**

[2] = wells listed in LTMMP Table 1 as located in NIA but verified to be in Nearfield Area

[3] = screen interval approximated based boring log depth and DTB (no well construction log)

R = rejected gauging measurement

TOR = top of riser (referenced measuring point)

ft bPVC = feet below top of PVC riser

ft bTOR = feet below top of riser

Destroyed wells removed from program (2017): N4-P1, N4-P2, N4-P3, and SHP-99-34A

All coordinates are on the Massachusetts State Plane Coordinate System of NAD 1983 and vertically on NAVD

Control Point S127-S is referenced benchmark per 2017 Survey Report Rev 3 (November 2017)

S = shallow overburden

M = mid overburden

D = deep overburden

O = overburden

T = till

B = bedrock

SW = surface water

"--" = no data

Indicates well clusters

	MM	46
	CV	42
	ES	56
	BrA / EGA	39

micro level
Slurry Diffuser

KGS

Project/Site Name: Devens - AOC32/43A

Date : 4/29/20

Field Team Member: KGA , BrA

Weather: Sun, 50°F

Water Level Meter Model: Heron Dipper -T

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
~~32M-92-01X~~ 32Z-01-08 XBR	1236	16.47	24.37	✓	-	✓	
32M-92-03X	1335	25.91	36.34	✓	-	✓	2" PVC
32M-01-13XBR	1314	14.23	22.83	-	Ø	✓	2" PVC, DT 2 missing bolts
32M-01-14XBR	1002	21.36	46.04	✓	-	✓	DP 2" PVC
32M-01-14XOB	1004	23.18	29.75	✓	-	✓	DP 2" PVC
32M-01-15XBR	1312	18.52	44.13	-	Ø	✓	2" PVC DT, 1 broken bolt 1 missing
32M-01-16XBR	1318	20.15	30.94	-	Ø	✓	2" PVC, DP
32M-01-17XBR	1324	23.21	54.21	✓	-	✓	2" PVC, DT
32M-01-18XBR	1317	14.83	23.79	-	✓	✓	2" PVC, DT
32Z-99-02X (32M-92-02X)	1015 ~~1010~~	21.98	30.28	✓	-	✓	Transducer & 1 1/2" PVC
32Z-01-05XOB	1245	27.92	35.29	-	1/2	✓	2" PVC, 1 rusted bolt in ear
32Z-01-06XBR	0958	13.67	28.52	✓	-	✓	DT, 2" PVC
32Z-01-07XOB	1000	13.08	24.91	✓	-	✓	DT, 2" PVC
~~32Z-01-08XOB~~ 32M-92-01X	1338	15.72	26.04	✓	-	✓	4" PVC, DT
32Z-01-09XOB	1240	24.84	33.14	✓	✓	✓	2" PVC,
32Z-01-10XBR	1320	14.06 ~~[illegible]~~ BA	22.22	-	Ø	✓	2" PVC, DT
32Z-01-11XBR	1308	15.82	16.82	-	1/2	✓	2" PVC ANTS Roadbox damage (broken - needs replace
32Z-01-12XBR	1250	17.88	37.59	-	✓	✓	2" PVC
43M-01-20XOB	1301	24.92	33.18	-	✓	✓	2" PVC
43M-01-20XBR	1303	24.75	77.80	-	1/2	✓	2" PVC, bolt snapped in ~~missing~~ ear
43M-01-17XOB	1257	25.03	33.07	-	✓	✓	2" PVC
43M-01-17XBR	1259	25.72	57.33	-	✓	✓	2" PVC
43M-01-16XOB	1254	23.43	33.79	-	1/2	✓	2" PVC, 1 ear broken
43M-01-16XBR	1252	24.15	56.99	-	✓	✓	well under pressure 2" PVC
SHL-12	1020	20.71	28.62	✓	-	✓	2" PVC, DT
SHL-15	0956	16.11	26.41	✓	-	✓	4" PVC, tubing DT
SHL-17	1230	5.51	18.47	✓	-	✓	4" PVC,

KGS

Project/Site Name: Devens - AOC32/43A **Date :**

Field Team Member: **Weather:**

Water Level Meter Model:

Well ID	Time	DTW (ft bTOR)	DTB (ft bTOR)	Lock Y/N	Bolts Y/N	Cap Y/N	Well Condition
SHL-25	1006	24.75	36.35	✓	–	✓	4", DT
N7-P1	1054	29.43	71.28	✓	–	✓	1" PVC DT
N7-P2	1056	29.54	38.09	✓	–	✓	1" PVC, Transducer
SHM-10-11	1212	38.62	62.84	✓	–	✓	2" PVC, DT
N6-P1	1207	34.93	90.91	✓	–	✓	1" PVC
SHP-99-35X	1202	34.79	41.63	✓	–	✓	2" PVC
SHM-10-12	1204	31.94	57.80	X	–	✓	2" PVC Transducer
32PZ-19-01 (32VP-19-10)	1026	11.04	18.99	✓	–	✓	1" PZ
32PZ-19-02 (32VP-19-12)	1329	22.01	31.31	–	2/2 ✓	✓	1" PVC
SHL-24	1032	14.47	124.17	✓	–	✓	4" PVC, DT
SHM-93-24A	1030	14.85	25.57	✓	–	✓	4" PVC, DT
SHP-95-27X	1047	13.14	42.57	✓	–	✓	1" PVC, DT
SHL-7	1038	17.04	23.53	✓	–	X	① From steel top. not PVC DT 2" PVC
SHM-93-18B	1041	17.90	94.53	✓	–	✓	4" PVC, NT
SHL-18	1043	18.25	29.02	✓	–	✓	4" PVC, DT
SHL-3	1155	29.70	34.13	✓	–	X	From marked TOC (TOR too far down) DT, 2" PVC
SHM-93-01A	1157	20.60	23.81	✓	–	✓	4" PVC

APPENDIX C SURFACE WATER AND SEDIMENT FIELD SHEETS

FIELD SAMPLING LOGS

AOC 32 DETENTION POND

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2, Devens, MA
Sample Location ID: DP-18-01

Date/Time: 12/5/18 1125
Sampler: Kerri Hartberg

Surface Water/Leachate Seep Information — Shoreline

Type of SW: ( ) Stream ( ) River ( ) Seep (X) Pond

Water Depth: 2.5 ft	Dissolved Oxygen (mg/L): 6.82
Velocity of Water: Still/standing/Frozen	ORP (mV): 49.8
Temperature (C): 2.78	Specific Conductance (µS/cm): 1,016
pH (STD): 7.36	Turbidity (NTU): 16.49

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	Lamotte	2020 WE	(5086-5014
	YSI ~~5564~~	~~556~~ MPS	(10H100928)

Sediment/Leachate Seep Sediment Information — Shoreline

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Black
( ) Other

0-3", Sediment to Hagel to reach 6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
DP-SW-18-01-Dec18	DP-18-01	1125	QU	2	none	PFAS
DP-SED-18-01-Dec18	|	1125	S	1	none	PFAS
DP-SED-18-01-Dec18	|	1125	S	1	none	TOC
DP-SED-18-01-Dec18	X	1125	S	1	none	Grain Size

Comments:
* Pond Frozen/Used to Break Ice to Sample.
Surface H2O Collected by Direct D.O
Sediment collected w/a stainless steel Hand corer & Homogenized

S= soil/Sediment, W = water

Sample location GPS Point Collected w/a Trimble Geo Explorer 6000 (3.5G) unit
Northing: ~~630332.30~~ Ft
Easting: ~~3025289.82~~ Ft
Noted wrong
Corrected = 630324.81 3025279.68
Ecological Discription on Back of Page

WILLOW BROOK

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: ~~A2~~, Devens, MA
Sample Location ID: WB-18-01

Date/Time: 12/17/18 1005
Sampler: Chris Vignola

Surface Water/Leachate Seep Information — Main Channel

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 2.5 ft	Dissolved Oxygen (mg/L): 8.32
Velocity of Water: Slow but Steady	ORP (mV): 204.4
Temperature (C): 4.01	Specific Conductance (µS/cm): 750
pH (STD): 7.30	Turbidity (NTU): 1.28

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Lamotte	2020 we	1865-0412
YSI	556 MPS	06C2657A1

Sediment/Leachate Seep Sediment Information — Main Channel

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
WB-SW-18-01-Dec18	WB18-01	1005	W	2	none	PFAS
WB-Sed-18-01-Dec18	"	1025	S	1	none	PFAS
WB-Sed-18-01-Dec18	"	1025	S	1	none	TOC
WB-Sed-18-01-Dec18	"	1025	S	1bg	none	Grain Size

Comments:
Surface water sample collected by Direct Dip.
Sediment collected by Stainless steel hand corer & Homogenized

S=Soil/sediment, W= water

Sample GPS Point Collected via a Trimble GeoExplorer 6000 Unit (3.5 6)
Easting: 627896.70 ft
Northing: 3021608.54 ft

Eco Discretion on Back of Page

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS- RI
Location: Area 2, Devens, MA
Sample Location ID: WB-18-02

Date/Time: 12/17/18 0847
Sampler: Chris Vignola

KGS

Surface Water/Leachate Seep Information

Shore line (west side)

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 1.5 ft	Dissolved Oxygen (mg/L): 8.46
Velocity of Water: Steady Moving	ORP (mV): 238.5
Temperature (C): 3.92	Specific Conductance (µS/cm): 785
pH (STD): 6.18	Turbidity (NTU): 1.26

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Lamotte	2020 WE	[redacted]
YSI	556 MPS	06C2657A1

1865-04/12

Sediment/Leachate Seep Sediment Information

Shore line west side

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
WB-SW-18-02-Dec18	WB-18-02	0847	W	2	None	PFAS
WB-SED-18-02-Dec18		0935	S	1	none	PFAS
WB-SED-18-02-Dec18		0935	S	1	none	TOC
WB-SED-18-02-Dec18		0935	S	1 Bag	none	Grain Size

Comments:
Surface H_2O Sample collected by Direct DIP
Sediment Samples collected by stainless steel Hand Corer & Homogenized

W= Water, S= soil

GPS Point collected ~~via~~ W/A trimble unit Geo Explore 6000 (3.56)
Easting: 627401.73 ft
Northing: 3022437.94 ft
Eco. Discription on Back of Page

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2 Dewens MA
Sample Location ID: WB-18-03
Date/Time: 12/3/18 1320
Sampler: Rene Hulberg

Surface Water/Leachate Seep Information — West shore

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 8"	Dissolved Oxygen (mg/L): 10.60
Velocity of Water: Fast	ORP (mV): 123.5
Temperature (C): 4.15 °C	Specific Conductance (µS/cm): 783
pH (STD): 7.37	Turbidity (NTU): 2.23

Sample Observations:
( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	Lamotte	2020we	1865-0412
	YSI	556MPS	06C2657AI

Sediment/Leachate Seep Sediment Information — west shore

Sediment Type: ( ) Organic (X) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____
Type of Sample Collected: (X) Discrete ( ) Composite
Sample Observations:
( ) Odor none
( ) Color Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
WB-SW-18-03-Dec18	WB-18-03	1320	(W)	2	none	PFAS
WB-Sed-18-03-Dec18	"	1340	S	1	none	PFAS
WB-Sed-18-03-Dec18	"	1340	S	1	none	TOC
WB-Sed-18-03-Dec18	X	1340	S	1 bg	none	Grain Size

Comments:
Surface H_2O collected by Direct DIP
Sediment collected by Stainless Steel Hand Corer & Homogenized

S= Soil/Sediment, W= Water

Sample GPS point collected by Google Maps (Lat/Long) & converted to SPC
42.5437730 → Easting (ft) 627369.96
-71.6068570 → Northing (ft) 3023204.05
ECO Description on Back of Page

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2, Devens MA
Sample Location ID: WB-18-04

Date/Time: 12/13/18 1220
Sampler: Kerk Halberg

Surface Water/Leachate Seep Information — main channel

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 6"	Dissolved Oxygen (mg/L): 12.15
Velocity of Water: Fast	ORP (mV): 136.8
Temperature (C): 4.53	Specific Conductance (µS/cm): 778
pH (STD): 7.45	Turbidity (NTU): 2.12

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	LaMotte	2020 WE	1865-0412
	YSI	556 MPS	06C2657A

Sediment/Leachate Seep Sediment Information — main channel

Sediment Type: (X) Organic (X) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor None
( ) Color Dark Brown
( ) Other
0 - 6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
WB-SW-18-04-Dec18	WB-1804	1220	GW	2	none	PFAS
WB-Sed-18-04-Dec18	↓	1250	S	1	none	PFAS
WB-Sed-18-04-Dec18	↓	1250	S	1	none	TOC
WB-Sed-18-04-Dec18	↓	1250	S	1 bag	none	Grain Size

Comments:
Surface H2O collected by Direct DIP
Sediment collected by Stainless steel Hand corer & Homogenized

S=Soil/Sediment, W=Water

Sample GPS Point collected by Google Maps (Lat/Long) & Converted to SPC
42.548[redacted]7142 Easting (ft) 627080.68
-71.607[redacted]389 Northing (ft) 3025005.20

ECO Discription on Back of Page.

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2, Devens, MA
Sample Location ID: WB-18-05
Date/Time: 12/13/18 1030
Sampler: Kerk Halberg

Surface Water/Leachate Seep Information main channel

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 1 ft	Dissolved Oxygen (mg/L): 10.38
Velocity of Water: Steady fast flow	ORP (mV): 117.3
Temperature (C): 4.68	Specific Conductance (µS/cm): 816
pH (STD): 7.38	Turbidity (NTU): 1.02

Sample Observations:
( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	Lamotte	2020 we	1865-0412
	YSI	556 MPS	06C2657A1

Sediment/Leachate Seep Sediment Information main channel

Sediment Type: ( ) Organic (X) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
WB-SW-1805-Dec18	WB-18-05	1030	W	2	none	PFAS
WB-Sed-1805-Dec18		1145	S	1	none	PFAS
WB-Sed-18-05-Dec18		1145	S	1	none	TOC
WB-Sed-18-05-Dec18		1145	S	1 Bag	none	Gram size
A2-SW-DUP-121318		1030	W	2	none	PFAS
A2-Sed-Dup-121318		1145	S	1	none	PFAS
A2-Sed-Dup-121318		1145	S	1	none	TOC
A2-Sed-DUP-121318	X	1145	S	1	none	Grain size

Comments:
Surface H_2O Collected by Direct DIP
Sediment Collected by Stainless Steel Hand Corer & Homogenized

S= Soil/Sediment, W= Water

Sample GPS Point collected by Google maps (Lat/Long) & converted to SPC
42.5531980 Easting (ft) [redacted] 627077.87
-71.6079570 Northing (ft) 3026639.28

Eco. Discription on Back of Page

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2, Devens MA
Sample Location ID: WB-18-06

Date/Time: 12/13/18 0900
Sampler: Kerri Halberg

Surface Water/Leachate Seep Information — Main channel

Type of SW: (X) Stream/Brook ( ) River ( ) Seep

Water Depth: 6-8"	Dissolved Oxygen (mg/L): 12.91
Velocity of Water: Slow/but steady	ORP (mV): 160.3
Temperature (C): 2.64	Specific Conductance (µS/cm): 866
pH (STD): 7.76	Turbidity (NTU): 1.04

Sample Observations:

( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Yamotte	2020we	1865-0412
YSI	556 MPS	06C2657A1

Sediment/Leachate Seep Sediment Information — Main channel

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
WB-SW-18-06-Dec18	WB-18-06	0900	EW	2	none	PFAS
WB-Sed-18-06-Dec18		0945	S	1	none	PFAS
WB-Sed-18-06-Dec18		0945	S	1	none	TOC
WB-Sed-18-06-Dec18	X	0945	S	1 bg	none	Grain Size

Comments:

Surface H_2O Collected by Direct Dip
Sediment collected by Stainless Steel Hand corer & Homogenized

S= Soil/Sediment, W= Water

Sample GPS Point Collected by Google maps (Lat/Long) & Converted to SPC
42.5573910
-71.6074890
Easting (Ft) 627205.90
Northing (Ft) 3028167.23

Eco. Discription on Back of Page

PLOW SHOP POND

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Devens, MA
Sample Location ID: PS-18-01

Date/Time: 12/14/18 0900
Sampler: Kerri Halberg

Surface Water/Leachate Seep Information Shoreline

Type of SW: ( ) Stream ( ) River ( ) Seep (X) Pond

Water Depth: 6"	Dissolved Oxygen (mg/L): 2.89
Velocity of Water: Standing/Frozen	ORP (mV): 93.8
Temperature (C): 1.16	Specific Conductance (µS/cm): 211
pH (STD): 7.24	Turbidity (NTU): 18.3

Sample Observations:

( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	Lamotte	2020 we	1865-04 IR
	YSI	556 MPS	06[illegible]265TA1

Sediment/Leachate Seep Sediment Information Shoreline

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
PS-SW-18-01-Dec18	PS-18-01	0900	W	2	none	PFAS
PS-Sed-18-01-Dec18	"	0925	S	1	none	PFAS
PS-Sed-18-01-Dec18		0925	S	1	none	TOC
PS-Sed-18-01-Dec18	X	0925	S	1 bg	none	Grain size

Comments:

Surface H_2O collected by Direct Dip
Sediment collected by Stainless steel Hand corer & Homogenized

S = Soil/Sediment, W. = Water

Sample GPS point collected using a Trimble Geo Explorer 6000 (3.5G) w/T
Easting: ~~631735.62 ft~~ m 631730.5 ft
Northing: ~~3027479.06 FT~~ MP 3027208.23 m

Eco Discription on Back of Page

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS-RI
Location: A2- Devens, MA
Sample Location ID: PS-18-02

Date/Time: 12/17/18 1105
Sampler: Chris Vignola

KGS

Surface Water/Leachate Seep Information Shoreline

Type of SW: ( ) Stream ( ) River ( ) Seep (X) Pond

Water Depth: 6"	Dissolved Oxygen (mg/L): 10.20
Velocity of Water: Frozen/Standing	ORP (mV): 181.0
Temperature (C): 1.41	Specific Conductance (µS/cm): 191
pH (STD): 7.73	Turbidity (NTU): 1.87

Sample Observations:
( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Lamotte	2020 we	1865-0412
YSI	556 MPS	06C2657A1

Sediment/Leachate Seep Sediment Information Shore line

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
PS-SW-18-02-Dec18	PS1802	1105	W	2	none	PFAS
PS-Sed-18-02-Dec18	↓	1125	S	1	none	PFAS
PS-Sed-18-02-Dec18	↓	1125	S	1	none	TOC
PS-Sed-18-02-Dec18	↓	1125	S	1 bag	none	Grain Size

Comments:
Surface H_2O Collected by Direct DIP
Sediment Sample collected via Stainless Steel Hand cover & Homogenized

S= Soil/Sediment, W= Water

Sample GPS Point Collected with a Trimble Geo Explorer 6000 (3.5ft) under
Easting: 630576.06 ft
Northing: 3027218.50 ft
Eco Discription on Back of Page

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: A2 Devens MA
Sample Location ID: PS-18-03

Date/Time: 12/14/18
Sampler: Mark Haberey 0950

Surface Water/Leachate Seep Information — Shore line

Type of SW: ( ) Stream ( ) River ( ) Seep (X) Pond

Water Depth: 3"	Dissolved Oxygen (mg/L): 2.58
Velocity of Water: Standing / Frozen	ORP (mV): 39.0
Temperature (C): 4.65	Specific Conductance (µS/cm): 80
pH (STD): 6.23	Turbidity (NTU): 17.5

Sample Observations:

( ) Odor none
( ) Color
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	Lamotte	2020 we	1865-04 IR
	YSI	556 MPS	06C2651A

Sediment/Leachate Seep Sediment Information — Shore line

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
PS-SW-18-03-Dec18	PS-18-03	0950	W	2	none	PFAS
PS-sed-18-03-Dec18	"	1010	S	1	none	PFAS
PS-sed-18-03-Dec18	"	1010	S	1	none	TOC
PS-sed-18-03-Dec18	"	1010	S	1 kg	none	Grain Size

Comments:

Surface H_2O collected by Direct Dip
Sediment collected by stainless steel hand corer & Homogenized

S= Soil/Sediment, W= Water

Sample GPS point collected using a Trimble Geo Explorer 6000 (7.5G) unit
Easting: 631854.17 Ft
Northing: 3027937.15 Ft

Eco. Discription on Back of Page

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: AR Devens, MA
Sample Location ID: PS-18-04

Date/Time: 12/14/18 1045
Sampler: Herb Halberg

KGS

Surface Water/Leachate Seep Information — Shore line

Type of SW: ( ) Stream ( ) River ( ) Seep (X) Pond

Water Depth: 1 ft	Dissolved Oxygen (mg/L): 3.89
Velocity of Water: Frozen/Standing	ORP (mV): 80.7
Temperature (C): 1.23	Specific Conductance (µS/cm): 282
pH (STD): 6.63	Turbidity (NTU): 7.59

Sample Observations:

( ) Odor None
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Lamotte	2020 we	1865-0412
YSI	556 MPS	06C2651A1

Sediment/Leachate Seep Sediment Information — Shore line

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor None
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
PS-SW-18-04-Dec18	PS-18-04	1045	W	2	none	PFAS
PS-sed-18-04-Dec18	|	1000	S	1	none	PFAS
PS-sed-18-04-Dec18	|	1000	S	1	None	TOC
PS-sed-18-04-Dec18	*	1100	S	1 bg	None	Grain Size

Comments:

Surface H_2O Collected by Direct Dip
Sediment Collected by Stainless Steel hand Corer & Homoginized

S = Soil/Sediment, W = Water

Sample GPS Point Collected using a Trimble Geo Explorer 6000 (3.56) unit
Easting 631507.35 ft
Northing: 3028302.26 ft
ECO = Discription on Back of Page

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFA-RI
Location: A2 Devens, MA
Sample Location ID: PS-18-05

Date/Time: 12/17/18 1155
Sampler: Chris Vignola

Surface Water/Leachate Seep Information Shore line

Type of SW: ( ) Stream ( ) River ( ) Seep (x) Pond

Water Depth: 8"	Dissolved Oxygen (mg/L): 8.42
Velocity of Water: Frozen / Standing	ORP (mV): 204.3
Temperature (C): 3.39	Specific Conductance (µS/cm): 229
pH (STD): 7.17	Turbidity (NTU): 2.74

Sample Observations:
( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Lamotte	2020 we	1865-0412
YSI	556 MPS	06C2657A1

Sediment/Leachate Seep Sediment Information Shoreline

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Dark Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
PS-SW-18-05-Dec18	PS-18-05	1155	W	2	none	PFAS
PS-sed-18-05-Dec18	"	1205	S	1	none	PFAS
PS-sed-18-05-Dec18	"	1205	S	1	none	TOC
PS-sed-18-05-Dec18	"	1205	S	1 bag	none	Grain size

Comments:
Surface H_2O collected by Direct Dip
Sediment collected by Stainless Steel hand cover & Homogenized

S= Soil/Sediment, W= Water

Sample GPS point collected via a Trimble Geo Explorer 6000 (3.56) unit
Easting: 630750.49 ft
Northing 3027700.00 ft

Eco Description on Back of Page.

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS-RI
Location: A2-Devens, MA
Sample Location ID: PS-18-06

Date/Time: 12/17/18 1240
Sampler: Chris Vignola

Surface Water/Leachate Seep Information

Shoreline

Type of SW: ( ) Stream ( ) River ( ) Seep (X) Pond

Water Depth: 8"	Dissolved Oxygen (mg/L): 4.35
Velocity of Water: Standing	ORP (mV): 68.7
Temperature (C): 6.70	Specific Conductance (µS/cm): 132
pH (STD): 6.72	Turbidity (NTU): 1.86

Sample Observations:
( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Lamotte	2020we	1865-0412
YSI	556MPS	06C2657A1

Sediment/Leachate Seep Sediment Information

Shoreline

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor none
( ) Color Dark Brown
( ) Other
Depth: 0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
PS-SW-18-06-Dec18	PS-18-06	1240	W	2	none	PFAS
PS-Sed-18-06-Dec18	"	1255	S	1	none	PFAS
PS-Sed-18-06-Dec18	"	1255	S	1	none	TOC
PS-Sed-18-06-Dec18	"	1255	S	1 bag	none	Grain Size

Comments:
Surface H2O collected by Direct Dip
Sediment collected with a Stainless Steel Hand corer & Homogenized

S=Soil/sediment W=Water

Sample GPS Point collected with a Trimble GeoExplorer 6000 unit (3.56)
Easting: 630976.44 Ft
Northing: 3026815.58 Ft

Eco Discription on Back of Page.

NONACOICUS BROOK

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2 Devens, MA
Sample Location ID: NB-18-01

Date/Time: 12/11/18 1355
Sampler: Brett Anchukaitis

Surface Water/Leachate Seep Information Main channel

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 2.75 FT	Dissolved Oxygen (mg/L): 11.20
Velocity of Water: fast moving	ORP (mV): 27.7
Temperature (C): 2.56	Specific Conductance (µS/cm): 281
pH (STD): 6.80	Turbidity (NTU): 3.39

Sample Observations:

( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	HACH	2100Q	13110C0 24663
	YSI	556 MPS	14A100102

Sediment/Leachate Seep Sediment Information Main Channel

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Brown
( ) Other
0-6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NB-SW-18-01-Dec18	NB-18-01	1355	W	2	none	PFAS
NB-SED-18-01-Dec18	"	1355	S	1	none	PFAS
NB-SED-18-01-Dec18	"	1355	S	1	none	TOC
NB-SED-18-01-Dec18	X	1355	S	1 Bag	none	Grain Size

Comments:

Surface H_2O Collected by Direct Dip
Sediment Collected by Stainless Steel Hand Corer & Homogenized

S = Soil / Sediment, W = Water

Sample GPS Point Collect with a Trimble Geo Explorer 6000 (3.5G) unit
Easting: 630554.77 Ft
Northing: 3028207.11 Ft

Ecological Discription on Back of Page

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS - RT
Location: Area 2. Devens, MA
Sample Location ID: NB-18-02

Date/Time: 12/11/18 0900
Sampler: Brett AnchuKaitis

Surface Water/Leachate Seep Information

Shore line

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 2.0 FT	Dissolved Oxygen (mg/L): 10.76
Velocity of Water: Frozen / Standing	ORP (mV): 223.2
Temperature (C): 0.09	Specific Conductance (µS/cm): 320
pH (STD): 7.59	Turbidity (NTU): 4.26

Sample Observations:

( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Hach	2100Q	13110C029663
YSI	556 MPS	14A100102

Sediment/Leachate Seep Sediment Information

Shoreline

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand (X) Other Pebbles

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Dark Brown
( ) Other
0 - 6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NB-SW-18-02-Dec18	NB-18-02	0900	GW	2	none	PFAS
NB-SED-18-02-Dec18	"	0900	S	1	none	PFAS
NB-SED-18-02-Dec18	"	0900	S	1	none	TOC
NB-SED-1802-Dec18	X	0900	S	1 bag	none	Grain Size

Comments:

Surface Water collected by Direct Dip
Sediment collect by Stainless Steel Hand corer & Homogenized
Frozen stream/High cover
S=Soil/sediment, W=water

Sample GPS Point collected with a Trimble GeoExplorer 6000 (3.5G) unit

Northing: 3029041.41 FT
Easting: 629192.11 FT

Ecological Discription on Back of page.

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2, Devens MA
Sample Location ID: NB-18-03

Date/Time: 12/6/18 1300
Sampler: Kevin Halberg

Surface Water/Leachate Seep Information

Shore line South side of Brook

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 2.5"	Dissolved Oxygen (mg/L): 9.43
Velocity of Water: Slow/standing	ORP (mV): -91.1
Temperature (C): 3.83	Specific Conductance (µS/cm): 284
pH (STD): 6.81	Turbidity (NTU): 6.28

Sample Observations:

( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
Lamotte	2020we	5086-5014
YSI	556 MPS	10H100928

Sediment/Leachate Seep Sediment Information

Shore line South side of Brook

Sediment Type: ( ) Organic ( ) Gravel ( ) Clay ( ) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor
( ) Color
( ) Other
0-3"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis	
NB-SW-18-03-Dec18	NB-18-03	1300	W	6	none	PFAS	- MS/MSD
NB-Sed-18-03-Dec18	"	1300	S	3	None	PFAS	- MS/MSD
NB-Sed-18-03-Dec18	"	1300	S	3	none	TOC	- MS/MSD
NB-Sed-18-03-Dec18	X	1300	S	1 bag	None	Grain size	

Comments: Surface H_2O collected by Direct Dip
Sediment Collected by Stainless Steel Hand Cover & Homogenized

High Water

S=Soil/Sediment, W=Water

Sample GPS Point Collected With a Trimble GeoExplorer 6000 (3.5G) unit
Easting: 628652.44 ft
Northing: 3028764.48 ft

Ecological Discription of the Area on Back of Page

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2, Devens MA
Sample Location ID: NB-18-04

Date/Time: 12/6/18 1155
Sampler: Kerri Halbery

Surface Water/Leachate Seep Information

As close to the main channel as possible

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 2.5"	Dissolved Oxygen (mg/L): 8.07
Velocity of Water: Slow/standing	ORP (mV): 100.2
Temperature (C): 3.36	Specific Conductance (µS/cm): 288
pH (STD): 6.93	Turbidity (NTU): 3.46

Sample Observations:

( ) Odor ~~Clear~~ none
( ) Color Clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	Lamotte	2020we	5086-5014
	YSI	556 MPS	16H1CO928

Sediment/Leachate Seep Sediment Information

As close to the main channel as possible

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt ( ) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Dark Brown/Grey
( ) Other
0-3"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NB-SW-18-04-Dec18	NB-18-04	1155	W	2	none	PFAS
NB-Sed-18-04-Dec18	"	1155	S	1	none	PFAS
NB-Sed-18-04-Dec18	"	1155	S	1	none	TOC
NB-Sed-18-04-Dec18	*	1155	S	1	none	Grain Size

Comments: Surface H_2O Collected by Direct DIP High water. Sediment Samples Collected by stainless steel Hand corer & Homogenized

S = Soil/Sediment, W = Water

Sample GPS Point Collected with a Trimble GeoExplorer 6,000 (3.5 G) unit
Easting: 628246.48 ft
Northing: 3028197.80 ft
Ecological Discription on Back of Page

KOMAN Government Solutions, LLC
Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2, Devens MA
Sample Location ID: NB-12-05

Date/Time: 12/6/18 0935
Sampler: Nick Halberg

Surface Water/Leachate Seep Information

as close to the main channel as possible

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 2.5 ft	Dissolved Oxygen (mg/L): 7.91
Velocity of Water: slow/standing	ORP (mV): 188.8
Temperature (C): 2.30	Specific Conductance (µS/cm): 475
pH (STD): 7.21	Turbidity (NTU): 1.95

Sample Observations:
( ) Odor none
( ) Color clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	Lamotte	2020we	5086-5014
	YSI	556 MPS	16H100928

Sediment/Leachate Seep Sediment Information

as close to the middle channel as possible

Sediment Type: (X) Organic (/) Gravel ( ) Clay ( ) Silt ( ) Sand ( ) Other _____
Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:
( ) Odor Mole
( ) Color Black
( ) Other
0-3"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NB-SW-18-05-Dec18	NB-12-05	0935	SW	2	none	PFAS
NB-Sed-18-05-Dec18		0935	S	1	none	PFAS
NB-Sed-18-05-Dec18		0935	S	1	none	TOC
NB-Sed-18-05-Dec18	X	0935	S	1 bg	none	Grain size

Comments: Surface water collected by Direct DIP
Sediment samples collected by Stainless Steel Hand Cover & Homogenized
High water in stream
S = Soil/Sediment W = Water

Sample GPS Point Collected with a Trimble GeoExplorer 6000 (3.56) unit
Northing: 3028990.99 ft
Easting: 626503.75 ft
Ecological Discription on Back of Page

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS - RI
Location: Area 2 Devens, MA
Sample Location ID: NB-18-06

Date/Time: 12/11/18 1050
Sampler: Brett Anchukaitus

Surface Water/Leachate Seep Information

Main channel

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 1.25 ft	Dissolved Oxygen (mg/L): 12.18
Velocity of Water: Fast moving	ORP (mV): 194.8
Temperature (C): 1.44	Specific Conductance (µS/cm): 268
pH (STD): 7.21	Turbidity (NTU): 5.31

Sample Observations:

( ) Odor none
( ) Color Clear
( ) Other

Field Testing Equipment:

Make	Model	Serial #
HACH	2100Q	13110C029663
YSI	556 MPS	14A100102

Sediment/Leachate Seep Sediment Information

Main channel

Sediment Type: (X) Organic (X) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor none
( ) Color Dark Brown
( ) Other

0-3"- To hard packed to reach 6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NB-SW-18-06-Dec18	NB-18-06	1050	W	2	none	PFAS
NB-SED-18-06-Dec18	"	1050	S	1	none	PFAS
NB-SED-18-06-Dec18	"	1050	S	1	none	[redacted] TOC
NB-SED-18-06-Dec18	X	1050	S	1 bag	none	[redacted] Grain Size

Comments:

Surface H_2O collected by Direct Dip
Sediment collected by Stainless Steel Hand corer & Homogenized

S = Soil/Sediment, W = Water

Sample GPS Point collected with a Trimble GeoExplorer 6000 (3.56) unit
Easting: 630045.95 ft
Northing: 3029253.57 ft

Ecological Description on Back of Page

KOMAN Government Solutions, LLC

Surface Water and Sediment Sampling Log

Project: PFAS RI
Location: Area 2 Devens, MA
Sample Location ID: NB-18-07

Date/Time: 12/11/18 1230
Sampler: Brett Anchutaitis

Surface Water/Leachate Seep Information — Main channel

Type of SW: (X) Stream ( ) River ( ) Seep

Water Depth: 2 ft	Dissolved Oxygen (mg/L): 3.91
Velocity of Water: Standing / Frozen	ORP (mV): 6.10
Temperature (C): 1.90	Specific Conductance (µS/cm): 788
pH (STD): 6.81	Turbidity (NTU): 82.6

Sample Observations:

( ) Odor None
( ) Color Clear
( ) Other

Field Testing Equipment:

	Make	Model	Serial #
	HACH	2100Q	13110C029663
	YSI	556 MPS	14A100102

Sediment/Leachate Seep Sediment Information — Main channel

Sediment Type: (X) Organic ( ) Gravel ( ) Clay ( ) Silt (X) Sand ( ) Other _____

Type of Sample Collected: (X) Discrete ( ) Composite

Sample Observations:

( ) Odor None
( ) Color Dark Brown
( ) Other
0-3" to Hard Packed to Hit 6"

Samples Collected

Sample ID	Sample Location	Time	Matrix	# of Bottles	Preservative	Analysis
NB-SW-18-07-Dec18	NB-1807	1230	SW	2	none	PFAS
NB-SED-18-07-Dec18	"	1230	S	1	none	PFAS
NB-SED-18-07-Dec18	"	1230	S	1	none	TOC
NB-SED-18-07-Dec18	X	1230	S	1 Bag	none	Grain size

Comments:

Surface H2O collected by Direct DIP
Sediment Collected by stainless steel Hand corer & Homogenized

S = Soil/Sediment ; W = Water

Sample GPS Point collected with a Trimble Geo Explorer 6000 (3.56) unit
Easting: 630455.87 FT
Northing: 3029491.82 FT

Ecological Description on Back of page

CALIBRATION SHEETS

Field Instrument Calibration Log

Date: 12/5/18 **Weather:** 20°F cold

Project/Site Name: PFAS RI - Area 2, Dexter, MI **Instrument:** YSI 556 MPS

Calibrated By: Melissa Miller **Serial Number:** 16H100928

Post cal check

Parameters	Solution Expiration Date	Morning Calibration Time 0745		Cal. Temperature °C	~~Afternoon~~ Calibration Time 1340		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1,408	1,413	11.11	1,407	—	10.89	±10 µS/cm
pH (7)	3/2020	7.01	7.00	13.11	6.98	—	11.92	± 0.3 Ph *
pH (4)	3/2020	3.95	4.00	12.13	3.89	—	11.86	± 0.3 Ph *
pH (10)	12/31/19	9.94	9.99	11.12	9.97	—	10.97	± 0.3 Ph *
ORP (240 mv)	3/0/23	238.8	240.0	12.09	239.7	—	11.88	±10 mv
Dissolved Oxygen (%)	—	97.0	100.0	12.24	99.8	—	12.07	-
Dissolved Oxygen (mg/L)	—	10.31	10.95	12.24	10.55	—	12.07	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	768.1	—	—	—	⌣		-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: no

Signature: Melissa Miller **Date:** 12/5/18

KGS

Field Instrument Calibration Log

Date: 12/6/18 **Weather:** 30°F cold

Project/Site Name: PFAS RI - Area 2 Dennis MA **Instrument:** YSI 556 MPS

Calibrated By: Melissa Miller **Serial Number:** 16H100925

Post Cal check

Parameters	Solution Expiration Date	Morning Calibration Time 0750		Cal. Temperature °C	Afternoon Calibration Time 1530		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1369	1413	1.47	1410	—	8.13	±10 µS/cm
pH (7)	3/2020	7.07	7.00	1.43°C	6.97	—	7.93	± 0.3 Ph *
pH (4)	3/2020	3.97	4.00	1.88°C	3.98	—	8.03	± 0.3 Ph *
pH (10)	12/21/19	9.88	9.96	1.78	9.85	—	8.21	± 0.3 Ph *
ORP (240 mv)	3/2020	247.8	240.0	1.19	237.1	—	7.99	±10 mv
Dissolved Oxygen (%)	—	94.8	100.0	10.42	98.2	—	13.51	-
Dissolved Oxygen (mg/L)	—	10.59	10.87	10.42	10.62	—	13.51	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	770.1	—	—	—	—	—	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: no

Signature: Melissa Miller **Date:** 12/6/18

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - Area 2

Instrument: Lamotte 2020 we

Calibrated By: Melissa Miller

Serial Number: 5086-5014

Post cal check

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
12/3/18	0.0	0.0	9.90	10.04	0.2	-	9.98	
12/4/18	0.07	0.1	9.87	9.94	0.3		9.93	
12/5/18	0.3	0.0	9:53	9.89	0.4		9.87	
12/6/18	0.1	0.0	10.21	10.04	0.3		9.91	

Post Calibration Criteria			
-	-	± 0.5	Variance Noted: NO

Signature: [signature]

Date: 12/6/18

Field Instrument Calibration Log

Date: 12/6/18 **Weather:** 30° Sunny

Project/Site Name: Devens PFAS Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0730		Cal. Temperature °C	Afternoon Calibration Time 1450		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	3/2019	1,386	1,413	16.37	1,402	1,413	10.49	±10 µS/cm
pH (7)	3/2020	7.16	7.00	17.67	6.90	7.00	10.35	± 0.3 Ph *
pH (4)	3/2020	3.70	4.00	16.49	3.97	4.00	10.22	± 0.3 Ph *
pH (10)	2/2020	9.45	10.00	16.16	9.78	10.00	10.48	± 0.3 Ph *
ORP (240 mv)	3/2023	236.0	240.0	16.44	230.1	240.6	10.24	±10 mv
Dissolved Oxygen (%)	-	134.0	100.0	11.33	81.1	100.0	8.23	-
Dissolved Oxygen (mg/L)	-	14.63	10.94	11.33	9.55	11.77	8.23	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: [illegible], DO, SPC

Signature: [signature] **Date:** 12/6/18

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS Fall 2018

Instrument: HACH 2100Q

Calibrated By: Owen Jackson

Serial Number: 16120C05

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/6/18	9.84	19.8	103	799	Would Not Cal Properly			

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12/6/18

Field Instrument Calibration Log

Date: 12/11/18 **Weather:** 25° sunny

Project/Site Name: PFAS RI Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0720		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1413 µS/cm°)	3/2019	1417	1413	14.49	1390	1413	10.10	±10 µS/cm
pH (7)	3/2020	7.20	7.00	14.74	6.92	7.00	9.13	± 0.3 Ph *
pH (4)	3/2020	3.87	4.00	14.36	3.98	4.00	9.86	± 0.3 Ph *
pH (10)	2/2020	9.93	10.00	14.21	9.94	10.00	10.16	± 0.3 Ph *
ORP (240 mv)	3/2023	233.2	240.0	14.88	239.7	240.0	10.29	±10 mv
Dissolved Oxygen (%)	-	102.1	100.0	10.59	95.3	100.0	8.95	-
Dissolved Oxygen (mg/L)	-	11.38	11.14	10.59	11.04	11.57	8.95	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC,

Signature: _____ **Date:** 12/11/18

Field Instrument Calibration Log

Date: 12-13-18 **Weather:** Sunny -20's

Project/Site Name: Devens MA **Instrument:** YSI 556

Calibrated By: Kea Halberg **Serial Number:** 06C2657

Post cal check

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon ~~Calibration~~ Time 1430		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	~~1417~~ 1413	1413	19.72	1412		19.83	±10 µS/cm
pH (7)	10/20	7.02	7.01	19.78	7.01		19.86	± 0.3 Ph *
pH (4)	03/20	4.03	4.00	19.63	4.02		19.78	± 0.3 Ph *
pH (10)	12/19	10.02	10.00	19.80	10.0		19.82	± 0.3 Ph *
ORP (240 mv)	01/23	246	240	19.65	242		19.81	±10 mv
Dissolved Oxygen (%)	—			19.68	100.3		19.80	-
Dissolved Oxygen (mg/L)	—	8.32	8.27	↓	8.67		19.80	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	↓	760		19.80	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: NO

Signature: Kea Halb **Date:** 12-13-18

Field Instrument Calibration Log

Date: 12-14-18 **Weather:** Sunny - 30's

Project/Site Name: Owens MA **Instrument:** YSI 556

Calibrated By: Kerk Halberg **Serial Number:** 06C2657

Post Cal check

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon ~~Calibration~~ Time 1145		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1418	1413	19.83	1411		8.98	±10 µS/cm
pH (7)	10/20	7.05	7.00	19.72	6.98		8.12	± 0.3 Ph *
pH (4)	03/20	4.02	4.00	19.81	4.01		8.07	± 0.3 Ph *
pH (10)	12/19	10.03	10.01	19.92	10.03		8.28	± 0.3 Ph *
ORP (240 mv)	01/23	241.6	240.2	19.85	242.3		7.98	±10 mv
Dissolved Oxygen (%)	—	—	—	19.91	—		—	-
Dissolved Oxygen (mg/L)	—	12.82	10.17	19.91	10.32		8.11	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	19.91	760		8.51	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: NO

Signature: Kerk Halls **Date:** 12-14-18

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devem

Instrument: Lamotte 2020WE

Calibrated By: Kerk Halls

Serial Number: 1865-0412

PM POST Cal check

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
12-13-18	0.9	0.2	10.10	10.0	0.3		10.2	
12-14-18	0.3	0.1	10.03	10.0	0.2		10.1	

Post Calibration Criteria			
-	-	± 0.5	Variance Noted: NO

Signature: Kerk Halls

Date: # 12-14-18

KGS

Field Instrument Calibration Log

Date: 12/13/18 **Weather:** 22° sunny

Project/Site Name: Devens PFAS RI Fall 2018 **Instrument:** YSI 556

Calibrated By: Owen Jackson **Serial Number:** 06H2823AL

Parameters	Solution Expiration Date	Morning Calibration Time 0720		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1391	1413	17.12	1404	1413	12.73	±10 µS/cm
pH (7)	3/2020	7.17	7.00	16.95	6.91	7.00	12.60	± 0.3 Ph *
pH (4)	3/2020	3.97	4.00	17.71	4.00	4.00	12.77	± 0.3 Ph *
pH (10)	2/2020	9.99	10.00	17.55	9.98	10.00	13.27	± 0.3 Ph *
ORP (240 mv)	3/2023	224.4	240.0	17.36	234.1	240.0	13.22	±10 mv
Dissolved Oxygen (%)	-	99.6	100.0	13.70	98.3	100.0	9.40	-
Dissolved Oxygen (mg/L)	-	10.34	10.37	13.70	11.25	11.46	9.40	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature:  **Date:** 12/13/18

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI Fall 2018

Instrument: Hach 2100Q

Calibrated By: Owen Jackson

Serial Number: 16120C059715

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/10/18	9.76	19.9	101	789	10.2	21.6	107	836
12/11/18	9.70	18.9	96	783	9.25	21.2	98.8	787
12/13/18	10.1	18.3	98.9	809	Would Not Cal Properly			

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12/13/18

Field Instrument Calibration Log

Date: 12/17/18 **Weather:** Cloudy, 34°F, Flurries

Project/Site Name: Devens PFAS EW Sampling **Instrument:** YSI 556 MPS

Calibrated By: BrA **Serial Number:** 14A100102

Parameters	Solution Expiration Date	Morning Calibration Time 0700		Cal. Temperature °C	Afternoon Calibration Time 1700		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	03/2019	1569	1413	18.79	1417	1413	17.58	±10 µS/cm
pH (7)	03/2020	7.02	7.00	18.62	7.01	7.00	17.56	± 0.3 Ph *
pH (4)	03/2020	4.10	4.00	18.89	4.05	4.00	17.63	± 0.3 Ph *
pH (10)	02/2020	10.27	10.00	18.41	9.96	10.00	17.64	± 0.3 Ph *
ORP (240 mv)	10/31/22	229.0	240.0	18.51	238.7	240.0	17.51	±10 mv
Dissolved Oxygen (%)	—	89.5	100.1	16.76	~~99.8~~	100.0 ~~99.8~~	16.98	-
Dissolved Oxygen (mg/L)	—	8.70	9.72	16.76	~~9.68~~	9.74	16.8	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	760	760	16.76	760	760	16.98	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 12/17/18

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI - EXISTING WELL

Instrument: Hach 2100Q

Calibrated By: BrA

Serial Number: 13110C029663

	AM				PM			
Date	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**	**Pre/Post - Cal 10 NTU**	**Pre/Post - Cal 20 NTU**	**Pre/Post - Cal 100 NTU**	**Pre/Post - Cal 800 NTU**
12/10/18	9.97/10.0	19.8/20.0	99.2/100	785/800	10.1/10.0	20.0/20.0	101/100	799/800
12/17/18	10.6/10.0	21.7/20.0	111/100	835/800	9.90/10.0	19.6/20.0	102/100	800/800
12/18/18	10.1/10.0	18.7/20.0	90.8/100	800/800	10.0/10.0	20.7/20.0	99/100	796/800
12/19/18	9.95/10.0	19.5/20.0	100/100	~~800~~ 805/800	10.1/10.0	~~19.8~~ 20.0/20.0	~~99~~ 102/100	800/800

	Post Calibration Criteria			
Variance Noted:	± 0.5	± 1	± 5	± 40

Signature: [signature]

Date: 12/19/18

Field Instrument Calibration Log

Date: 12/17/18 **Weather:** Overcast, 34° F

Project/Site Name: Soil Sampling (PITS) **Instrument:** YSI 556 MPS

Calibrated By: CV **Serial Number:** 06C2657 A1

Parameters	Solution Expiration Date	Morning Calibration Time 0730		Cal. Temperature °C	Afternoon Calibration Time 1320		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)		1,473	1,413	15.57	1,469	1,413	9.21	±10 µS/cm D
pH (7)		6.96	7.00	17.21	7.11	7.00	9.45	± 0.3 Ph *
pH (4)		3.92	4.00	17.12	3.94	4.00	10:10	± 0.3 Ph *
pH (10)		10.06	10.00	17.90	10.05	10.00	9.95	± 0.3 Ph *
ORP (240 mv)		250.3	240.0	16.12	245.5	240.0	9.62	±10 mv
Dissolved Oxygen (%)	—	—	—	—	—	—	—	-
Dissolved Oxygen (mg/L)	—	9.24	8.84	12.10	9.33	8.84	8.74	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	—	—	—	—	—	—	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: YES Sp. Con

Signature: [signature] **Date:** 12/17/18

Turbidity Instrument Calibration Log

Project/Site Name: Soil Sampling

Instrument: LaMotte

Calibrated By: CV

Serial Number: 7865-0422

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
12/07/18	0.70	1.31	7.31	10.00	0.70	1.29	7.40	10.00

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: [signature]

Date: 12/07/18

APPENDIX D VERTICAL PROFILING FIELD SHEETS

Vertical Profile Field Sheets

AOC 32/43A

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 32VP-19-01 Date: 5/14/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 32	Driller: Jay Jumonville Depth to Water: 17.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 64 ft. bgs (refusal)	Drilling Equip: Geoprobe 6712DT Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
17-21	0.12	0.50	10.49	6.08	448	8.50	139.8	12.7	950	32VP-19-01-17-21	
27-31	0.42	1.00	11.36	6.15	538	7.02	111.2	29.0	1117	32VP-19-01-27-31	
37-41	0.72	1.25	12.17	6.29	359	5.60	115.3	1097	1240	32VP-19-01-37-41	
47-51	1.02	1.50	12.16	5.98	443	4.82	86.5	2153	1415	32VP-19-01-47-51	
57-61	1.32	1.75	12.91	7.04	337	6.77	98.5	60.0	910	32VP-19-01-57-61	
Post Cal. Check Varience Observed (Y/N):				N/Y	Y/N	N/N	N/N	N/N			

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 32VP-19-02
Project No.: Devens	Drilling Co.: TDS
Address: Area 2	Driller: Alfred Allen
Logger: VHA	Drilling Method: DPT
Total Boring Depth: 70.5'	Drilling Equip: Geoprobe 7822 (SP16)
Turbidimeter (model/serial number): Hydrolab 2020-L 5083-5014	YSI (model/serial number):

Date: 6/18/19
Depth to Water: 13'
Pump type: geotech / intg
Tubing: HDPE

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
6/18 12-16	0.09	0.5	11.18	5.99	271	2.62	-6.8	21.7	1430	32VP-19-02-12-16	geotech
22-26	0.39	1.0	10.53	6.08	1103	3.29	35.9	739	825	32VP-19-02-22-26	geotech
6/19 32-36	0.69	1.0	10.69	6.17	1163	3.87	46.1	>4,000	955	32VP-19-02-32-36	geotech
42-46	0.99	1.5	11.07	6.18	1193	3.21	56.3	74,000	1050/1055	32VP-19-02-42-46 / AZ-VP-DUP-R1-61919	geotech
52-56	1.29	1.5	11.20	6.26	1230	3.39	60.4	>4,000	1230	32VP-19-02-52-56	geotech
62-66	1.59	2.0	11.47	6.13	1287	3.47	79.7	>4,000	1345	32VP-19-02-62-66	geotech
6/20 66.5-70.5	1.89	2.5	11.29	6.09	299	3.01	77.7	>4,000	830	32VP-19-02-66.5-70.5	geotech

| Post Cal. Check Varience Observed (Y/N): | | | | | | | | | | |

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Vertical Groundwater Profiling Log

Project: PFAS RI WP A2	Boring No.: 32VP-19-03 Date: 3/15/19
Project No.: 1082-0011-521	Drilling Co.: TDS
Address: Devens Recycling Center	Driller: Jay Depth to Water: 28 ft bgs
Logger: BMA	Drilling Method: DPT Pump type: Peristaltic
Total Boring Depth: 54 ft bgs	Drilling Equip: Geoprobe 6712DT Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 1828-0412	YSI (model/serial number): 9516500XL 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
27-31	0.09	0.25	11.54	6.04	187	7.81	117.1	7.8	0915	32VP-19-03-27-31	
37-41	0.39	0.50	11.98	6.26	152	6.07	84.1	1871	1020	32VP-19-03-37-41	
47-51	0.69	1.0	12.78	6.21	201	8.91	68.4	>4,000	1130	32VP-19-03-47-51	

Post Cal. Check Varience Observed (Y/N): N

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: 54 ft bgs Refusal

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 32VP-19-04	Date: 2/5/19	
Project No.: 1082	Drilling Co.: TDS		
Address: AOC 32	Driller: Jay Jumonville	Depth to Water: ~18.75 bgs	
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: peristaltic / waterra	
Total Boring Depth: 101'	Drilling Equip: Geoprobe 6712DT / SP16	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
17-21	0.068	0.50	13.17	6.82	543	8.65	200.4	19.0	850	32VP-19-04-17-21	
27-31	0.36	0.75	14.37	6.21	277	8.52	141.9	1129	940	32VP-19-04-27-31	DUP ID: AECOM-DUP-R2-020519
37-41	0.66	1.00	14.62	5.82	316	7.78	126.5	1003	1050	32VP-19-04-37-41	@945 MS/MSD
47-51	0.96	1.25	15.08	5.45	100	9.41	153.2	742	1141	32VP-19-04-47-51	
57-61	1.26	1.50	15.07	5.52	112	8.36	163.1	~~125~~ DR 125	1251	32VP-19-04-57-61	
67-71	1.56	1.75	15.77	5.10	92	7.37	149.9	29.8	1427	32VP-19-04-67-71	
77-81	1.86	2.00	11.98	6.87	157	8.85	118.0	2070	812	32VP-19-04-77-81	waterra
87-91	2.16	2.50	13.80	6.76	92	8.60	127.6	>4000	922	32VP-19-04-87-91	↓
97-101	2.46	2.75	13.32	6.38	126	7.88	108.5	>4000	1050	32VP-19-04-97-101	↓

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Stopped @ 101' in fear of ~~bend~~ bending rods

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Vertical Groundwater Profiling Log

Project: Davis	Boring No.: 32VP-19-05	Date: 2/5/19
Project No.: PFAS RI	Drilling Co.: TDS	
Address:	Driller: Alfad Allen	Depth to Water: ~18' bgs
Logger: VBA	Drilling Method: DPT	Pump type: Waterra
Total Boring Depth: 106'	Drilling Equip: Geoprobe 7822 (SP16)	Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 5083-5014	YSI (model/serial number): YSI 650XL 11B101986	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
22-26	0.24	0.5	13.51	6.69	169	2.16	-47.9	74,000	850	32VP-19-05-22-26	waterra
32-36	0.54	1.0	14.68	6.90	128	3.00	-22.9	>4,000	945	32VP-19-05-32-36	waterra
42-46	0.84	1.5	14.77	6.95	113	3.21	-19.7	74,000	1035	32VP-19-05-42-46	waterra
52-56	1.14	2.0	16.57	6.93	140	3.41	-3.0	74,000	1150/1158	32VP-19-05-52-56/A2-VP-DUP-2519	R1-2579 waterra
62-66	1.44	3.0	16.49	7.01	156	3.29	-1.0	74,000	1320	32VP-19-05-62-66	waterra
72-76	1.74	3.5	15.97	6.30	143	3.84	13.1	74,000	1425	32VP-19-05-72-76	waterra
82-86	2.04	3.5	12.43	6.66	121	3.99	15.9	74,000	820	32VP-19-05-82-86	waterra
92-96	2.34	3.5	11.69	6.78	140	2.69	21.7	74,000	940	32VP-19-05-92-96	waterra
102-106'	2.64	4.0	11.59	6.87	156	2.39	31.7	74,000	1050	32VP-19-05-102-106	waterra

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (SP21) SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

* 106' not reached

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Vertical Groundwater Profiling Log

Project: Devens Drilling Probing	Boring No.: 32VP-19-06 — Date: 2/26/19 - 2/27
Project No.: Devens PFAS RI	Drilling Co.: TDS
Address: SHL	Driller: Jay Jumonville — Depth to Water: 14' BGS
Logger: Chris Vignola / BrA	Drilling Method: DPT — Pump type: Geotech/Waterra
Total Boring Depth: 91.5	Drilling Equip: Geoprobe 7822 (SP16) — Tubing: HDPT
Turbidimeter (model/serial number): LaMotte 2020WE 1828-0412	YSI (model/serial number): YSI 650 MDS 4268

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
2/26/19 CV	17-21	0.23 gal	0.25 gal	6.04	5.98	568	7.91	6.1	27.3	0945	32VP-19-06-17-21	mostly clear / geopump
	27-31	0.53 gal	1 gal	9.61	6.05	841	8.45	-33.5	++++	1045	32VP-19-06-27-31	brown / geopump
	37-41	0.83 gal	1.25 gal	8.91	6.10	718	7.65	-29.9	++++	1245	32VP-19-06-37-41	brown / geopump
	47-51	1.13	1.50 gal	9.97	5.73	565	6.66	69.7	28	1405	32VP-19-06-47-51	light brown / geopump
2/27	57-61	1.43	1.50	8.60	6.09	395	6.15	123.1	1374	0805	32VP-19-06-57-61	FD
	67-71	1.73	2.00	9.21	5.77	629	8.23	87.4	708	0930	32VP-19-06-67-71	
	77-81	2.03	2.50	10.10	5.70	812	8.61	81.8	32.0	1050	32VP-19-06-77-81	MS/MSD
	87-91	2.33	2.53	9.53	6.41	285	3.80	40.7	45.6	1230	32VP-19-06-87-91	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot

SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: ~~Ref~~ Refusal at 91.5 ft bgs.

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Vertical Groundwater Profiling Log

Project: Devens PFAS	Boring No.: 32VP-19-07 Date: 2/26/19
Project No.: PFAS RI (Area 2)	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: ~28'
Logger: UGA	Drilling Method: DPT Pump type: Waterra
Total Boring Depth: 99'	Drilling Equip: 6610 probe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
2/26 32-36	0.24	1.5	9.08	5.99	139	0.57	1.6	74,000	1000	32VP-19-07-32-36	waterra
42-46	0.54	2.0	9.17	6.37	182	0.56	-16.7	74,000	1115	32VP-19-07-42-46	waterra
52-56	0.84	2.0	9.20	6.31	196	0.49	-29.7	74,000	1255	32VP-19-07-52-56	waterra
62-66	1.14	2.0	9.18	6.47	209	0.37	-41.6	74,000	1445	32VP-19-07-62-66	waterra
72-76	1.44	2.5	9.21	6.56	231	0.49	-60.0	74,000	1030	32VP-19-07-72-76	waterra
82-86	1.74	2.5	9.36	6.49	247	0.46	-69.7	74,000	1200	32VP-19-07-82-86 / A2-VP-DUP-R1-22719	waterra (waterra)
92-96	2.04	3.0	9.47	6.39	269	0.52	-73.1	74,000	1415	32VP-19-07-92-96 ☆MS/MSD	waterra

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (VP) SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

☆ Refusal @ 99'

Bentonite chipped to grade due to extreme cold/high winds

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Vertical Groundwater Profiling Log

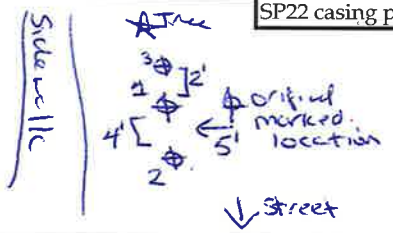
Project: PFAS RI WP Area 2	Boring No.: 32VP-19-08	Date: 3/25/19	
Project No.:	Drilling Co.: TDS		
Address: O'Riley Auto	Driller: Jay	Depth to Water: NA	
Logger: BNA	Drilling Method: DPT	Pump type: NA	
Total Boring Depth: 15 ft bgs	Drilling Equip: Geoprobe 6712DT	Tubing: NA	
Turbidimeter (model/serial number): Lamotte 2020we	YSI (model/serial number): NA		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
Refusal @ 15 ft bgs (1st attempt)
12 ft bgs (2nd/3rd attempt)

Screens exposed - dry
No samples collected.



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12-16

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: ~~32VP-19-10~~ KE 32VP-19-09
Project No.: 1082	Drilling Co.: TDS
Address: AOC 32	Driller: Jay Jumonville
Logger: Kristen Esser	Drilling Method: DPT
Total Boring Depth: 87.5' bgs	Drilling Equip: Geoprobe 7822DT/SP22 tooling
Turbidimeter (model/serial number): Lamotte 2020 WC 1828-0412	YSI (model/serial number): Pro DSS/18L100145

Date: 9/19/19 + 9/20/19 + 9/23/19 + 9/24/19

Depth to Water: KE ~~[illegible] bgs~~ 13.5' bgs

Pump type: Peristaltic Waterra

Tubing: HDPE

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
KE	~~9-13~~	~~0.14~~									~~32VP-19-09-09-13~~	KE
	19-23	0.3	0.45	17.2	5.49	0.736	2.31	132.8	2162	1315	32VP-19-09-19-23	H2O table @ 13.5' bgs will offset @ end of boring
	29-33	0.46	0.50	19.0	8.37	0.594	1.59	-17.8	overrange >4000	1430	32VP-19-09-29-33	
9/20	39-43	0.62	0.70	11.3	6.04	1.202	3.84	160.7	1938	0840	32VP-19-09-39-43	
	49-53	0.78	0.80	15.1	6.30	0.362	4.04	63.7	969	1110	32VP-19-09-49-53	
	59-63	0.94	1.0	20.4	6.40	0.564	3.16	116.7	overrange >4000	1415	32VP-19-09-59-63	Waterra, had to cut tubing for sample
9/23	69-73	1.09	1.20	18.2	6.48	0.441	2.14	125.8	overrange >4000	0935	32VP-19-09-69-73	Peristaltic
	79-83	1.25	1.30	21.6	7.15	0.316	3.12	116.4	854	1156	32VP-19-09-79-83	
	83.5-87.5	1.33	1.40	19.6	7.65	0.310	2.74	122.7	1559	1425	32VP-19-09-83.5-87.5	Refusal @ 87.5
9/24	12-16	0.19	0.25	17.4	6.24	1.140	2.95	145.4	1211	1005	32VP-19-09-12-16	offset from original boring

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot KE

~~SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot~~

Notes: Water table @ 13.5' bgs - Will offset after refusal to capture.

Refusal @ 87.5' bgs

SP22 inner casing purge vol. = SP16 casing purge vol.

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 32VP-19-10	Date: 9/16/19 + 9/17/19 + 9/18/19	
Project No.: 1082	Drilling Co.: TDS		
Address: AOC 32	Driller: Jay Jumonville	Depth to Water: 9.5' bgs	
Logger: Kristen Esner	Drilling Method: DPT	Pump type: peristaltic	
Total Boring Depth: 105' bgs	Drilling Equip: Geoprobe ~~6712~~ 7822 DT/SP22 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): Pro DSS / 18L100145		

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
	9-13	0.14	0.25	19.6	6.01	1.523	2.80	-60.6	1212	11:45	32VP-19-10-09-13	
	19-23	0.44	0.55	19.9	6.63	1.188	2.01	-10.6	2138	1320	32VP-19-10-19-23	
	29-33	0.74	0.80	20.7	5.80	0.245	2.93	87.2	1087	1430	32VP-19-10-29-33	
9/17 ↓	39-43	1.04	1.08	15.7	6.77	0.784	2.76	-61.2	overrange >4000	0910	32VP-19-10-39-43	
	49-53	1.34	1.40	16.5	6.68	0.868	3.45	-5.7	19.9	1035	32VP-19-10-49-53	
	59-63	1.64	1.70	17.8	6.42	1.217	3.16	-26.3	675	1210	32VP-19-10-59-63	
	69-73	1.94	2.00	17.6	6.43	1.241	2.75	-49.6	2216	1355	32VP-19-10-69-73	
9/18 ↓	79-83	2.24	2.30	14.2	6.00	0.751	2.68	62.4	overrange >4000	0945	32VP-19-10-79-83	
	89-93	2.54	2.60	17.6	6.73	0.348	2.55	-16.8	overrange >4000	1130	32VP-19-10-89-93	
	99-103	2.84	3.00	20.9	6.37	1.102	1.57	-75.2	overrange >4000	1420	32VP-19-10-99-103	field dup taken · A3-VP · DUP-R2-[illegible]
	Post Cal. Check Varience Observed (Y/N):				N/N	Y/Y	N/N	N/N				

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot × 2

SP22 ~~casing~~ inner casing purge volume = ~~0.0918 gal/ft or 347.5 ml per foot~~ SP16 casing vol.

Notes: Hit refusal at 105' bgs

Piezometer constructed ID: 32PZ-19-01

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 32VP-19-11 Date: 9/24/19 - 9/26/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 32	Driller: Jay Jumonville + Matt Kelley Depth to Water: 28' bgs
Logger: Kristen Esser	Drilling Method: DPT Pump type: peristaltic Waterra
Total Boring Depth: 108' bgs	Drilling Equip: Geoprobe 7822DT/SP22 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): Pro DSS/18L 100145

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
39-43	0.62	0.75	22.8	6.32	0.670	4.40	142.8	1472	1255	32VP-19-11-39-43	Field Dup taken AZ-VP-DUP-R2-092419
49-53	0.78	0.90	23.1	7.85	0.917	4.37	153.1	610	1415	32VP-19-11-49-53	
59-63	0.94	1.00	14.5	7.45	0.337	4.07	137.5	795	0930	32VP-19-11-59-63	MS/MSD
69-73	1.09	1.20	18.8	7.88	0.280	2.69	124.7	overrange >4000	1050	32VP-19-11-69-73	
79-83	1.25	1.30	21.0	8.52	0.293	4.79	103.10	688	1300	32VP-19-11-79-83	
89-93	1.41	1.50	14.3	7.97	0.133	2.05	-71.2	overrange >4000	0650	32VP-19-11-89-93	Waterra
99-103	1.57	1.105	17.6	8.30	0.307	4.52	80.5	overrange >4000	1000	32VP-19-11-99-103	waterra
29-33	0.46	0.50	26.8	8.94	0.893	5.22	140.4	overrange >4000	1255	32VP-19-11-29-33	peristaltic

9/25 9/26

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = ~~0.0918 gal/ft or 347.5 ml per foot~~ SP16 purge vol.

Notes: Field Dup. taken @ 39-43' bgs: AZ-VP-DUP-R2-092419
MS/MSD taken @ 59-63' bgs
Refusal @ 108' bgs

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 32VP-19-12-29-33	Date: 9/27/19	
Project No.: 1082	Drilling Co.: TOS	10/1/19 - 10/3/19	
Address: AOC 32	Driller: Matt Kelley + Jay Turmonville	Depth to Water: 24' bgs	
Logger: Kristen Esmer	Drilling Method: DPT	Pump type: Peristaltic	
Total Boring Depth: 132' bgs	Drilling Equip: Geoprobe 7822DT/SPZ2 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 1888-0412	YSI (model/serial number): YSI ProDSS/18L100145		

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
	29-33	0.46	0.50	14.9	6.54	0.788	9.51	113.1	Overrange >4000	0750	32VP-19-12-29-33	
	39-43	0.62	0.70	15.9	6.99	0.813	10.59	116.9	3730	0845	32VP-19-12-39-43	
	49-53	0.78	0.90	17.2	7.37	0.772	10.50	132.4	1139	1020	32VP-19-12-49-53	
10/1	59-63	0.93	1.00	13.9	7.88	0.855	2.96	-10.7	785	0750	32VP-19-12-59-63	
	69-73	1.09	1.20	14.6	8.22	0.696	6.10	124.1	Overrange >4000	0930	32VP-19-12-69-73	Field dup AZ-VP-DUP-RZ-100119 taken
	79-83	1.25	1.30	15.9	8.37	0.554	3.96	116.3	1058	1140	32VP-19-12-79-83	
	89-93	1.41	1.50	17.7	8.08	0.400	4.94	94.2	704	1410	32VP-19-12-89-93	
10/2	99-103	1.57	1.60	22.4	7.80	0.193	2.24	124.3	Overrange >4000	0910	32VP-19-12-99-103	
	109-113	1.73	1.75	22.3	8.57	0.205	1.34	-72.1	Overrange >4000	1235	32VP-19-12-109-113	Very silty, peri. could barely pump
10/3	119-123	1.89	1.95	12.7	6.84	0.220	1.07	116.0	Overrange >4000	1050	32VP-19-12-119-123	Very slow pumping
	Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = ~~0.0918 gal/ft or 347.5 ml per foot~~ SP16 casing purge vol.

Notes:
Field Dup @ 69-73' bgs: AZ-VP-DUP-RZ-100119

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 32VP-19-12 Date: 10/8/19
Project No.: 1082	Drilling Co.: TOS
Address: AOC 32	Driller: Jay Jumonville Depth to Water: 24' bgs
Logger: Kristen Elsser	Drilling Method: DPT Pump type: Peristaltic
Total Boring Depth: 132' bgs	Drilling Equip: Geoprobe 7822DT; SP22 tooling Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 1828-0412	YSI (model/serial number): ProDSS/18L100145

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
128-132	2.03	2.10	14.4	9.38	0.256	4.65	171.9	11.76	0835	32VP-19-12-128-132	Refusal @ 132' bgs
22-26	0.35	0.45	15.0	7.88	0.409	8.00	180.4	7.45	0950	32VP-19-12-22-26	offset boring

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Hit refusal @ 132 ft bgs
offset boring to capture water table @ 24' bgs

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 43AVP-~~01~~19-01
Project No.: Devens PFAS RI	Date: 4/22/19
Address:	Drilling Co.: TDS
Logger: WGA	Driller: Alfred Allen
Total Boring Depth: 79'	Drilling Method: DPT
Turbidimeter (model/serial number): Lamotte 2020WE 5083-5014	Drilling Equip: Geoprobe 7822 (SP16)
	YSI (model/serial number): YSI 659XL 11B100186
	Depth to Water: 29'
	Pump type: geotech/watery
	Tubing: HDPE

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
	32-36	— unable to get sample / insufficient recharge ; will drill 5' deeper,										
4/23	37-41	0.36	1.0	11.86	7.13	871	9.60	6.3	74,000	845	43AVP-01-37-41	watery
	47-51	0.66	1.5	11.63	6.53	1424	9.41	26.4	74,000	1005	43AVP-01-47-51	watery
	57-61	0.96	1.5	11.58	6.66	1569	8.77	39.4	74,000	1205	43AVP-01-57-61	watery
	67-71	1.26	2.0	11.39	6.63	1678	8.20	46.7	74,000	1335	43AVP-01-67-71 MS/MSD ☆	watery
4/24	75-79'	1.56	2.5	11.27	6.49	1789	7.99	61.7	74,000	915	43AVP-01-75-79'	watery
										☆	correction 43AVP-19-01-(-) ☆	

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Refusal @ 79' ☆

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KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 43AVP-19-02 Date: 5/10/19
Project No.: Devens	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: ~~28~~ 30'
Logger: WA	Drilling Method: DPT Pump type: geotech/waterra
Total Boring Depth: 82'	Drilling Equip: geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): Emorfe 2020 S: 5083-5914	YSI (model/serial number): YSI 650 XL 11B100186

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
32-36	0.18	0.5	13.74	7.15	310	9.15	-0.3	26.6	1000	43AVP-19-02-32-36	geotech
42-46	0.48	1.0	13.44	6.03	501	8.78	22.1	3012	1120	43AVP-19-02-42-46	geotech
52-56	0.78	1.5	13.40	6.12	603	8.63	36.7	>4,000	1235	43AVP-19-02-52-56	waterra
62-66	1.08	2.0	13.30	6.15	618	7.99	42.2	>4,000	1425	43AVP-19-02-62-66	waterra
72-76	1.38	2.0	13.12	6.20	638	6.21	51.9	>4,000	915	43AVP-19-02-72-76 ☆MS/MSD	waterra
78-82	0.6	1.0	☆ minimal water recharge / direct sample						1215	43AVP-19-02-78-82	waterra
		→ 20' water									

5/10

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

☆ Refusal @ 82'

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 43AVP-19-03 Date: 3/29/19
Project No.: PFAS RI (Area 2)	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: 28'
Logger: LGA	Drilling Method: DPT Pump type: geotech/waterra
Total Boring Depth: 66.5'	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 5083-5014	YSI (model/serial number): YSI 650XL 18100186

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
27-31	0.09	1-0	12.10	7.90	420	9.72	18.6	314	900	43AVP-19-03-27-31	geotech
37-41	0.39	1.0	12.02	7.39	490	9.01	29.6	296	1030	43AVP-19-03-37-41	waterra
47-51	0.69	1.5	13.11	6.57	281	3.62	9.4	>4,000	1220	43AVP-19-03-47-51	waterra
—	—	—	—	—	—	—	—	—	1225	A2-VP-DVP-RI-32919	—
57-61	0.99	1.5	13.31	6.66	269	3.07	3.6	>4,000	1405	43AVP-19-03-57-61	waterra
62.5-66.5	1.16	2.5	13.18	6.36	287	3.01	2.6	>4,000	1005	43AVP-19-03-62.5-66.5	waterra

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
Retrieval @ 66.5'

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 43AVP-19-04 Date: 3/28/19-3/29/19
Project No.:	Drilling Co.: TDS
Address: AOC 43A	Driller: Jay Jumonville Depth to Water: 28.0' bgs
Logger: Dave Kortjohn / BrA	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 70 ft bgs	Drilling Equip: Geoprobe 7712DT / SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): YSI 650 MDS / 4268

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
	27-31	0.09	0.25	11.11	6.70	693	9.58	168.6	11.5	1140	43AVP-19-04-27-31	
3/28	37-41	0.39	0.75	11.61	6.78	347	8.52	138.0	3240	1245	43AVP-19-04-37-41	
OK	47-51	0.69	1.00	12.77	7.11	276	8.41	66.4	>4000	1425	43AVP-19-04-47-51	
3/29	57-61	0.99	1.25	9.75	7.51	397	0.41	-109.4	>4,000	0930	43AVP-19-04-57-61	switch to peristaltic / (FD)
BrA	66-~~70~~	1.29	2.0	10.35	7.18	596	3.80	-49.1	>4,000	1200	43AVP-19-04-66-70	

Post Cal. Check Varience Observed (Y/N): Y - 10 NTU Turbidity

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal at 70 ft.

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI VP	Boring No.: 76VP-19-01 Date: 3/1/19
Project No.: 1052-0011-521	Drilling Co.: TDS
Address: Devens Fire Dept	Driller: Jay Depth to Water: 24 ft bgs
Logger: B.A	Drilling Method: GeoDPT Pump type: Peristaltic
Total Boring Depth: 44 ft bgs	Drilling Equip: Geoprobe 7712DT Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 18258-0412	YSI (model/serial number): YSI 650XL 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
27-31	0.18	0.50	12.34	6.69	1695	7.38	109.2	1488	1000	76VP-19-01-27-31	
37-41	0.48	1.00	12.58	6.62	2002	7.15	46.1	>4,000	1105	76VP-19-01-37-41	FD

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal at 44 ft bgs.

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-02 Date: 3/15/19
Project No.: PFAS RI (Area 2)	Drilling Co.: YDS
Address:	Driller: Alfred Allen Depth to Water: 27'
Logger: LGA	Drilling Method: DPT Pump type: geotech/Grundfos
Total Boring Depth: 46'	Drilling Equip: Geoprobe 7822 (5216) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020WE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
27-31	0.12	1.0	12.55	7.34	559	1.99	80.1	239	840	76VP-19-02-27-31	geotech
37-41	0.42	1.0	12.31	7.29	689	2.06	77.3	897	935	76VP-19-02-37-41	geotech
42-46	0.72	1.5	12.21	7.13	629	2.41	68.1	1203	1045	76VP-19-02-42-46	geotech
Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
Refusal @ 46'

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-03 Date: 2/6/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville Depth to Water: ~17 bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 65'	Drilling Equip: Geoprobe 6712DT / SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): La Motte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
17-21	0.12	0.25	13.02	6.25	1127	8.67	194.3	>4000 ~~+++~~ DL	1417	76VP-19-03-17-21	
27-31	0.42	0.75	12.27	6.31	1881	9.76	83.0	1635	809	76VP-19-03-27-31	
37-41	0.72	1.00	12.28	6.36	2128	9.89	91.4	668	903	76VP-19-03-37-41	
47-51	1.02	1.50	11.92	6.53	2519	9.85	66.0	911	1020	76VP-19-03-47-51	
57-61	1.32	1.60	11.86	6.64	2411	9.45	65.1	63.0	1122	76VP-19-03-57-61	
61-65	1.44	2.00	11.74	6.78	2426	10.05	52.7	152	1232	76VP-19-03-61-65	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal @ 65'

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KOMAN ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI VP-A2	Boring No.: 76VP-19-04 Date: 3/12/19 - 3/13/19
Project No.: 1082-D01521	Drilling Co.: TDS
Address: Devens Fire Dept.	Driller: Jay Depth to Water (ft bgs): 16
Logger: B.A	Drilling Method: DPT Pump type: Peri
Total Boring Depth: 52 ft bgs	Drilling Equip: Geoprobe 6712DT Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 1828-0412	YSI (model/serial number): YSI 650XL 4268

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
3/12	17-21	0.15	1.0	10.87	7.13	874	7.38	175.6	952	1130	76VP-19-04-17-21	
	27-31	0.45	0.75	10.92	6.47	1864	4.58	92.7	2631	1245	76VP-19-04-27-31	
	37-41	0.75	1.0	11.45	6.59	2310	3.40	72.0	2308	1345	76VP-19-04-37-41	
3/13	47-51	1.05	1.25	9.68	6.81	2219	5.26	41.2	2179	0830	76VP-19-04-47-51	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal at 52 ft bgs

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-05	Date: 1/30/19	
Project No.: 1082	Drilling Co.: TDS		
Address: AOC 76	Driller: Jay Jumonville	Depth to Water: ~15 bgs	
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: Waterra	
Total Boring Depth: 77'	Drilling Equip: Geoprobe 7712DT / SP16 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we (1828-0412)	YSI (model/serial number): 650 MDS / 4268		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
27-31	0.48	0.60	12.55	6.19	2938	10.62	138.7	3885	1058	76VP-19-05-27-31	
37-41	0.78	1.00	12.54	6.14	2871	10.60	116.2	>4000	1218	76VP-19-05-37-41	
47-51	1.08	1.25	11.60	6.34	2554	8.13	69.2	>4000	1322	76VP-19-05-47-51	
57-61	1.38	1.50	12.41	6.16	2568	5.79	69.5	>4000	1429	76VP-19-05-57-61	
67-71	1.68	2.00	11.99	5.92	2337	8.94	109.5	1799	848	76VP-19-05-67-71	
73-77	1.86	2.25	13.58	6.56	2124	7.72	124.6	>4000	1103	76VP-19-05-73-77	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal @ 77'

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Vertical Groundwater Profiling Log

Project: Pease PFAS RI		Boring No.: 76VP-19-06	Date: 3/13/19
Project No.: PFAS RI (Area 2)		Drilling Co.: TPS	
Address:		Driller: Alfred Allen	Depth to Water: ~11.5'
Logger: WBA		Drilling Method: DPT	Pump type: geotech
Total Boring Depth: 82'		Drilling Equip: Geoprobe 7822 (SP16)	Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020wi 5083-5014		YSI (model/serial number): YSI 650XL 11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
12-16	0.14	1.0	9.34	5.64	84	5.24	102.7	5.98	920	76VP-19-06-12-16	geotech
22-26	0.44	1.5	10.97	6.11	459	4.91	94.7	461	1035	76VP-19-06-22-26 A MS/MSD	geotech
32-36	0.74	1.5	11.21	6.21	1450	6.70	91.4	1336	1210	76VP-19-06-32-36	geotech
42-46	1.04	1.5	11.19	6.37	1539	6.01	87.1	1421	1415/dup	76VP-19-06-42-46/AZ-VP-DUP-01-3/13/19	geotech
52-56	1.34	2.0	11.70	6.54	1488	2.39	86.5	946	820	76VP-19-06-52-56	geotech
62-66	1.64	2.0	11.54	6.90	1032	2.67	80.2	1803	935	76VP-19-06-62-66	geotech
72-76	1.94	2.5	11.53	6.79	1239	2.40	77.7	987	1055	76VP-19-06-72-76	geotech
78-82	2.08	3.0	11.60	6.63	1249	2.29	73.1	1301	1245	76VP-19-06-78-82	geotech

3/13
3/14

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (v2) SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
A Refusal @ 82'

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KOMAN Gove ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-07 Date: 4/18/19
Project No.: 1682	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville Depth to Water: 14.0' bgs
Logger: Dave Kartjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 75' (refusal)	Drilling Equip: Geoprobe 6712DT/SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020 we 1828-0412	YSI (model/serial number): YSI 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
12-16	0.06	0.25	11.42	6.10	216	9.68	198.5	17.7	1407	76VP-19-07-12-16	
22-26	0.36	0.50	12.06	5.89	2247	3.97	230.1	1309	1455	76VP-19-07-22-26	
32-36	0.66	1.00	13.47	6.77	1911	5.77	163.1	1136	830	76VP-19-07-32-36	
42-46	0.96	1.25	13.97	6.32	1883	5.63	49.4	963	1015	76VP-19-07-42-46	
52-56	1.26	1.50	14.19	6.31	2165	4.99	28.6	667	1135	76VP-19-07-52-56	
62-66	1.56	2.00	15.72	6.40	2173	1.02	127.3	80.0	1420	76VP-19-07-62-66	
71-75	1.86	2.50	12.97	6.33	1982	7.27	170.1	58.0	900	76VP-19-07-71-75	
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N			

Notes:

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

KGS

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI VP Area 2	Boring No.: 76VP-19-08 Date: 3/6/19 - 3/7/19
Project No.: 0052-0011-521	Drilling Co.: TDS
Address: Devens Fire Dept.	Driller: Jay Depth to Water (ft bgs): 7.0
Logger: BrA	Drilling Method: DPT Pump type: Peristaltic
Total Boring Depth: 56 ft bgs	Drilling Equip: Geoprobe 6712DT Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 15828-04R	YSI (model/serial number): YSI 650XL #4268

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
3/6	07-11	0.12	0.25	4.51	6.34	5536	2.67	160.0	896	1245	76VP-19-08-07-11	
	17-21	0.42	0.75	8.28	6.33	3704	2.52	115.0	1057	1335	76VP-19-08-17-21	
	27-31	0.72	1.25	10.11	6.58	2536	2.49	77.4	17.0	1430	76VP-19-08-27-31	
3/7	37-41	1.02	1.25	8.08	6.59	2476	5.34	76.8	1215	0840	76VP-19-08-37-41	
	47-51	1.32	1.50	9.26	6.60	2568	4.27	44.2	28.3	0950	76VP-19-08-47-51	
	52-56	1.62	2.0	8.81	6.58	2347	4.62	51.7	17.9	1100	76VP-19-08-52-56	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal at 56 ft bgs

KGS

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-09 Date: 3/11/19
Project No.: PFAS RI (Area 2)	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: 8' (est)
Logger: MA	Drilling Method: DPT Pump type: geotech / waterra
Total Boring Depth: 64.5'	Drilling Equip: geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020WE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
3/11 8-12	0.12	1.0	9.69	7.27	100	9.67	45.8	11.69	1245	76VP-19-09-8-12	geotech
18-22	0.42	1.5	9.94	6.11	1010	6.06	45.0	[illegible]	1420/1425	76VP-19-09-18-22 / A2-VP-DUP-RI-3119	
3/5 28-32	0.72	1.5	9.87	7.01	1013	5.21	49.7	1515 1421	910	76VP-19-09-28-32	geotech
38-42	1.02	1.5	9.80	6.31	1039	5.07	53.7	>4,000	955	76VP-19-09-38-42	geotech
48-52	1.32	2.0	9.77	6.17	1169	5.01	58.9	74,000	1155	76VP-19-09-48-52 (MS/MSD)	geotech
58-62	1.62	2.25	9.80	6.10	1178	4.78	61.3	2,034	1300	76VP-19-09-58-62	geotech

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X2) SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Refusal @ 64.5'

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens (Area 2)	Boring No.: 76VP-19-10 Date: 12/2/19
Project No.: PFAS RI	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: ~8'
Logger: WBA	Drilling Method: DPT Pump type: geotech / Luba
Total Boring Depth: 79'	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020WE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
12-16	0.24	0.75	12.87	8.09	1439	4.74	11.0	1397	855	76VP-19-10-12-16	geotech
22-26	0.54	1.0	10.77	6.88	356	4.21	3.0	74,000	935	76VP-19-10-22-26	geotech
32-36	0.84	1.0	10.77	6.68	604	6.09	7.5	74,000	1025/1030	76VP-19-10-32-36/AZ-VP-RVP-RI-10219	geotech ☆
42-46	1.14	1.5	11.09	6.72	677	5.12	23.5	2220	1125	76VP-19-10-42-46	geotech
52-56	1.44	2.0	10.96	6.66	613	2.60	26.2	1251	1235	76VP-19-10-52-56	geotech
62-66	1.74	3.5	11.24	6.82	842	2.26	18.4	71.5	1355	76VP-19-10-62-66	geotech
72-76	2.04	2.5	11.39	7.39	942	3.31	8.4	2207	835	76VP-19-10-72-76	geotech

1/2

1/3

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (X2) SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

☆ Refusal @ 79'

KGS

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KOMAN C…ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-11 Date: 3/11/19
Project No.: PFAS RI (Area2)	Drilling Co.: TPS
Address:	Driller: Alfred Allen / Kyle Rivoal (3/11/19) Depth to Water: 8'
Logger: LCBA	Drilling Method: DPT Pump type: geotech
Total Boring Depth: 94'	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 5983-5014	YSI (model/serial number): YSI 650XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
3/11	12-16	0.24	1.0	9.88	6.77	368	3.24	55.9	691	820	76VP-19-11-12-16	geotech
	22-26	0.54	1.0	9.99	6.88	379	3.47	61.7	937	910	76VP-19-11-22-26	geotech
	32-36	0.84	1.5	9.97	7.01	389	3.29	71.6	1200	1020	76VP-19-11-32-36	geotech
	42-46	1.14	2.0	11.11	6.31	1159	6.00	6.0	1421	1130	76VP-19-11-42-46	geotech
	52-56	1.44	2.0	11.03	6.45	1177	4.79	3.7	2160	1245	76VP-19-11-52-56	geotech
	62-66	1.74	2.0	10.70	6.49	1203	4.31	1.2	1161	1345	76VP-19-11-62-66	geotech
3/12	72-76	2.04	2.5	10.54	6.87	1300	4.17	-2.9	1873	855	76VP-19-11-72-76	geotech
	82-86	2.34	3.0	10.39	6.73	1321	4.09	-4.1	2930	1030/1035	76VP-19-11-82-86/AZ-VP-DUP-R1-31219	geotech
	90-94	2.58	3.0	10.46	6.63	1349	3.78	-6.0	2860	1240	76VP-19-11-90-94	geotech

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
☆ Refusal @ 94'

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: 76VP-19-12 Date: 2/7/19
Project No.: PFAS RI	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: ~ 20' bgs
Logger: VHA	Drilling Method: DPT Pump type: geotech / whale
Total Boring Depth: 88'	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 5083-5014	YSI (model/serial number): YSI 650 XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
2/7	22-26	0.18	1.0	10.57	5.78	206	1.24	-31.9	74,000	910	76VP-19-12-22-26	geotech
	32-36	0.48	1.0	10.45	6.09	311	2.11	-31.0	74,000	1030	76VP-19-12-32-36	geotech
	—	—	—	—	—	—	—	—	—	1035	A2-VP-DUP-01-2719	—
	42-46	0.78	2.0	10.39	6.16	370	1.87	-36.1	74,000	1140	76VP-19-12-42-46 MS/MSD	geotech
	52-56	1.08	2.0	10.69	6.31	287	2.06	-41.0	1,083	1305	76VP-19-12-52-56	geotech
	62-66	1.38	2.0	10.49	6.27	291	1.90	-39.7	1,274	1435	76VP-19-12-62-66	geotech
2/8	72-76	1.68	2.5	10.61	6.47	300	1.92	-46.7	74,000	900	76VP-19-12-72-76	geotech
	82-86	1.98	2.5	10.54	6.56	369	2.07	-51.1	74,000	1030	76VP-19-12-8286	geotech

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (1/2") SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Refusal @ 88'

KGS

KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-13	Date: 4/11/19	
Project No.: 1082	Drilling Co.: TDS		
Address: ACC 76	Driller: Jay Jumonville	Depth to Water: 17.0 'bgs	
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: peristaltic/waterra	
Total Boring Depth: 80' (refusal)	Drilling Equip: Geoprobe 6712DT / SP16 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we	YSI (model/serial number): 650 MDS / 4268		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
17-21	0.12	0.50	10.84	5.62	249	5.33	108.0	40.8	1207	76VP-19-13-17-21	A2-VP-DUP-A2-041121 @1212
27-31	0.42	0.75	11.98	5.63	274	6.54	-0.5	2031	1320	76VP-19-13-27-31	
37-41	0.72	1.00	12.86	5.84	216	8.12	-28.9	1847	1426	76VP-19-13-37-41	
47-51	1.02	1.25	10.39	6.63	444	8.97	137.8	2480	850	76VP-19-13-47-51	
57-61	1.32	1.50	10.48	6.26	333	6.21	-35.0	1616	1020	76VP-19-13-57-61	
67-71	1.62	2.00	11.09	6.16	496	5.49	-17.1	1292	1200	76VP-19-13-67-71	
76-80	1.84	2.25	11.05	6.55	602	5.71	-98.1	1693	1420	76VP-19-13-76-80	used waterra

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI VP Area 2	Boring No.: 76VP-19-13 Date: 3/11/19
Project No.: 1082-0011-521	Drilling Co.: TDS
Address: Devens Fire Dept.	Driller: Jay Depth to Water (ft bgs): 5.0
Logger: BrA	Drilling Method: DPT Pump type: Peristaltic
Total Boring Depth: 31	Drilling Equip: Geoprobe 6712DT Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 1828-0412	YSI (model/serial number): YSI 650 XL 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
07-11	0.18	0.50	10.32	6.67	517	2.05	45.0	1231	1320	76VP-19-13-07-11	
17-21	0.38	0.90	11.12	6.23	500	5.14	54.6	74.000	1410	76VP-19-13-17-21	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
Abandon borehole per KT via RM (KGS)
move to different location
Grouted 24 ft.
31 (drove 27-31, did not expose screen to sample)

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Vertical Groundwater Profiling Log

Project: Devens-PFAS RI	Boring No.: 76VP-19-14 Date: 12/19
Project No.: PFAS RI	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville Depth to Water: ~10
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 77'	Drilling Equip: Geoprobe ~~7GT~~ 6712DT / SP16 Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 556 MPS / 10H100928

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
12-16	0.18	0.30	9.08	6.10	417	2.58	125.7	978	840	76VP-19-14-12-16	
22-26	0.48	0.60	10.85	6.06	395	1.38	-5.9	>4000	915	76VP-19-14-22-26	
32-36	0.78	0.90	10.50	6.15	544	1.15	-4.1	1086	1000	76VP-19-14-32-36	
42-46	1.08	1.25	10.79	6.30	805	1.37	10.5	41	1053	76VP-19-14-42-46	
52-56	1.38	1.50	10.78	6.39	888	3.30	18.3	39.4	1155	76VP-19-14-52-56	DUP ID: A2-VP-DUP-R2-01021
62-66	1.68	1.80	10.53	6.26	1039	2.85	25.7	215	1303	76VP-19-14-62-66	@ 1200 MS/MSD
72-76	1.98	2.10	9.58	6.91	755	3.52	14.1	20.4	1415	76VP-19-14-72-76	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
Refusal @ 77'

KGS

KOMAN Gover ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI VP Area 2	Boring No.: 76VP-19-15 Date: 3/13/19
Project No.: 1082-0011-521	Drilling Co.: TPS
Address: Devens Fire Dept.	Driller: Jay Depth to Water (ft bgs): 5.0
Logger: BrA	Drilling Method: DPT Pump type: Peristaltic
Total Boring Depth:	Drilling Equip: Geoprobe 6712DT Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 18288-0412	YSI (model/serial number): YSI 650XL 42608

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
3/13	07-11	0.18	1.0	8.26	6.54	1151	2.30	51.3	9.0	1300	76VP-19-15-07-11	FD
	17-21	0.48	1.0	11.61	6.31	491	1.97	0.4	74,000	1400	76VP-19-15-17.21	
3/14	27-31	0.78	1.0	10.63	5.90	412	5.95	91.2	638	0815	76VP-19-15-27-31	
	37-41	1.08	1.25	10.79	6.04	765	4.55	32.0	23.6	0925	76VP-19-15-37-41	
	47-51	1.38	1.50	10.62	6.25	831	2.48	56.6	16.1	1030	76VP-19-15-47-51	
	55-59	1.62	1.75	10.51	6.83	788	1.16	39.1	9.7	1145	76VP-19-15-55-59	

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
Refusal at 59.0 ft bgs

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-16	Date: 4/25/19	
Project No.: 1082	Drilling Co.: TDS		
Address: AOC 76	Driller: Jay Jumonville	Depth to Water: 31.0 ft. bgs	
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: waterra	
Total Boring Depth: 71' bgs (refusal)	Drilling Equip: Geoprobe 6712DT / SP16 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
32-36	0.15	~~0.75~~ ~~0.50~~ 0.50 (5x)	14.28	6.59	438	4.21	152.1	>4000	1127	76VP-19-16-32-36	
42-46	0.45	1.25	14.10	5.97	428	1.55	62.4	>4000	1253	76VP-19-1642-46	
52-56	0.75	1.50	14.29	5.86	497	2.59	14.9	>4000	1422	76VP-19-16-52-56	
62-66	1.05	1.75	11.24	6.31	437	1.27	94.8	>4000	920	76VP-19-16-62-66	
67-71	1.20	2.00	11.55	6.48	436	1.90	-5.8	>4000	1130	76VP-19-16-67-71	
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N			

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS R1 VP A2	Boring No.: 76VP-19-17 Date: 3/8/19 - 3/11/19
Project No.: 1052-0011-521	Drilling Co.: TDS
Address: Devens Fire Dept	Driller: Jay Depth to Water (ft bgs): 6.0
Logger: BrA	Drilling Method: DPT Pump type: Peristaltic
Total Boring Depth: 84 ft bgs	Drilling Equip: Geoprobe 6712DT Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 1828-0412	YSI (model/serial number): 451 650 XL 4968

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged (gal)	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
	07-11	0.15	1.0	4.51	7.75	603	4.81	28.1	900	0820	76VP-19-17-07-11	
	17-21	0.45	1.0	7.72	6.63	660	4.67	18.0	652	0910	76VP-19-17-17-21	
3/8	27-31	0.75	1.5	10.08	6.50	819	2.67	-6.2	21.0	1015	76VP-19-17-27-31	
	37-41	1.05	1.5	10.12	6.35	613	1.32	-28.6	41.4	1110	76VP-19-17-37-41	MS/MSD
	47-51	1.35	1.75	10.82	6.24	714	1.51	44.5	12.7	1215	76VP-19-17-47-51	FD
	57-61	1.65	2.0	10.56	6.34	849	2.22	62.8	8.46	1345	76VP-19-17-57-61	
3/11	67-71	1.95	2.10	9.58	6.58	1096	3.17	33.5	74,000	0840	76VP-19-17-67-71	
	77-81	2.25	2.50	10.36	6.67	633	2.34	-0.4	18.2	0945	76VP-19-17-77-81	

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal at 84 ft bgs

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Vertical Groundwater Profiling Log

Project: Devens (Area 2)	Boring No.: 76VP-19-18 Date: 1/3/19
Project No.: PFAS RI	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: 9'
Logger: MA	Drilling Method: DPT Pump type: geotech / waterra
Total Boring Depth: 85.5'	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020WE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
Y3	12-16	0.2 l	0.5	10.23	7.49	813	3.24	21.9	120	1215	76VP-19-18-12-16	geotech
Y3	22-26	0.5 l	1.0	10.97	6.70	388	2.93	150.4	74,000	1310	76VP-19-18-22-26	geotech
Y3	32-36	0.81	1.5	11.02	6.32	434	5.12	62.1	74,000	1345	76VP-19-18-32-36	geotech
Y3	42-46	1.11	1.5	10.63	6.36	534	2.87	45.1	74,000	1445	76VP-19-18-42-46	geotech
Y4	52-56	1.41	1.75	10.76	6.97	709	3.91	129.7	74,000	830	76VP-19-18-52-56	geotech
Y4	62-66	1.71	2.0	10.85	6.58	497	5.00	121.7	74,000	1010	76VP-19-18-62-66 MS/MSD ☆	geotech
Y4	72-76	2.01	2.5	11.47	6.70	574	4.52	151.7	2480	1150	76VP-19-18-72-76	geotech
Y4	81.5→85.5	2.31	3.0	11.21	6.10	679	3.99	161.7	74,000	1355	76VP-19-18-81.5-85.5	waterra

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2) SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

☆ Refusal @ 85.5'

KGS

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293 Boston Post Road, Marlborough, MA

KOMAN Gover ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-19 Date: 4/8/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville Depth to Water: ~~8' bgs~~ 5' bgs (OK)
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic & waterra
Total Boring Depth: 90' bgs (refusal)	Drilling Equip: Geoprobe 6712DT/SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): YSI 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7-11	0.09	0.50	8.42	6.80	676	4.14	-43.0	1931	1338	76VP-19-19-7-11	
17-21	0.39	0.75	9.34	6.68	1018	3.88	169.3	991	806	76VP-19-19-17-21	
27-31	0.69	1.00	9.79	6.09	523	2.82	-1.7	1484	910	76VP-19-19-27-31	
37-41	0.96	2.00	10.49	6.52	570	5.46	-48.0	845	1051	76VP-19-19-37-41	
47-51	1.26	2.00	8.89	6.88	659	5.63	-61.2	644	1220	76VP-19-19-47-51	
57-61	1.56	2.25	10.27	7.10	675	3.52	-80.8	1129	1335	76VP-19-19-57-61	
67-71	1.86	2.50	10.26	7.17	652	9.85	100.2	97	810	76VP-19-19-67-71	
77-81	2.16	2.75	9.97	7.60	570	7.09	-135.3	39	922	76VP-19-19-77-81	
86-90	2.46	3.00	9.46	7.69	714	4.33	-135.0	3412	1125	76VP-19-19-86-90	MS/MSD used Waterra

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-20	Date: 4/16/19 - 4/18/19	
Project No.: 1082	Drilling Co.: TDS		
Address: AOC 76	Driller: Jay Jumonville	Depth to Water: ~~14.0 bgs~~ 7.0' bgs (EK)	
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: peristaltic	
Total Boring Depth: 81' bgs (rods bent after 81')	Drilling Equip: Geoprobe 6712DT / SP16 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
17-21	0.42	0.50	11.51	6.38	165	6.71	178.1	>4000	1232	76VP-19-20-17-21	
27-31	~~0.57~~ 0.72 (OK)	0.75	12.95	5.73	268	5.39	33.3	>4000	1340	76VP-19-20-27-31	
37-41	~~0.81~~ 1.02 (EK)	1.25	13.11	5.63	147	1.97	-19.1	20.8	1420	76VP-19-20-37-41	
47-51	~~1.11~~ 1.32 (OK)	2.00	12.95	6.25	275	4.39	50.8	70.0	900	76VP-19-20-47-51	
57-61	~~1.11~~ 1.62 (OK)	2.50	12.75	5.68	115	4.44	19.1	22.6	1030	76VP-19-20-57-61	A2-VP-DUP-R2-04[illegible]19 @ 1035
67-71	~~1.11~~ 1.92 (OK)	3.00	12.56	5.80	224	5.79	78.2	63.9	1150	76VP-19-20-67-71	
77-81	~~2.07~~ 2.22 (OK)	3.25	12.82	5.98	308	5.30	91.6	32.4	1340	76VP-19-20-77-81	
7-11	0.12	1.25	9.83	6.90	121	9.95	200.5	1218	950	76VP-19-20-7-11	
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	—			

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Drilling rods bent ~~when drill~~ (DF) during attempt to reach 87-91' (no sample collected)

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-21	Date: 4/22/19	
Project No.: 1082	Drilling Co.: TPS		
Address: AOC 76	Driller: Jay Jumonville	Depth to Water: ≈ 26.0' bgs	
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: peristaltic/ waterra	
Total Boring Depth: 77' bgs (refusal)	Drilling Equip: Geoprobe 6712DT / SP16 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020 we 1828-0412	YSI (model/serial number): 650 MDS / 4268		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
27-31	0.15	0.50	15.97	6.49	671	10.21	60.3	32.4	1120	76VP-19-21-27-31	MS/MSD
37-41	0.45	~~1.25~~ 0.90	14.62	5.83	967	9.80	87.1	1561	1300	76VP-19-21-37-41	A2-VP-DUP-R2-042219@1305
47-51	0.75	1.50	13.67	6.01	1289	9.62	66.3	2596	1420	76VP-19-21-47-51	
57-61	1.05	1.75	11.88	6.51	1605	7.93	166.2	>4000	835	76VP-19-21-57-61	used waterra
67-71	1.35	2.00	11.45	6.98	869	7.76	113.7	>4000	1020	76VP-19-21-67-71	
73-77	1.65	2.25	12.21	7.31	1468	4.95	105.6	>4000	1203	76VP-19-21-73-77	
Post Cal. Check Varience Observed (Y/N):				N	N	N	N	N			

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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KOMAN Governn[illegible]t Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI WP	Boring No.: 76VP-19-22 Date: 4/18/19
Project No.:	Drilling Co.: TDS
Address: Area 2	Driller: Alfred Allen Depth to Water (ft bgs): ~4.5
Logger: BrA / MbA	Drilling Method: DPT Pump type: Geotech
Total Boring Depth: 83.5	Drilling Equip: Geoprobe 7822DT / SP16 Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020we 3711-3913	YSI (model/serial number): YSI 650 XL 15IC100983

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
4/18 BrA	22-26	0.05	0.25	13.14	6.78	1055	5.31	-17.2	45	1300	76VP-19-22-22-26	Geotech
	32-36	0.35	1.25	12.20	6.54	1086	6.66	2.7	1224	1410	76VP-19-22-32-36	Geotech
	42-46	0.65	1.0	12.68	6.23	1129	6.03	29.3	1259	815	76VP-19-22-42-46	geotech
4/19 MbA	52-56	0.95	1.5	12.79	6.30	1181	6.15	31.7	>4,000	955	76VP-19-22-52-56	geotech
	62-66	1.25	1.5	13.01	6.27	1196	6.00	39.7	1294	1110	76VP-19-22-62-66 * MS/MSD	geotech
	72-76	1.55	2.0	13.21	6.15	1273	5.89	42.6	1280	1250	76VP-19-22-72-76	geotech
	79.5-83.5	1.85	2.0	13.07	6.09	1280	5.90	43.1	2200	1430	76VP-19-22-79.5-83.5	geotech

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Refusal @ 83.5

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-23	Date: 4/5/19	
Project No.: 1082	Drilling Co.: TDS		
Address: AOC 76	Driller: Jay Jumonville	Depth to Water: 9' bgs	
Logger: Dave Kortjohn	Drilling Method: DPT	Pump type: peristaltic	
Total Boring Depth: 43' (refusal)	Drilling Equip: Geoprobe 6712DT/SP16 tooling	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
12-16	0.21	0.75	10.06	5.31	1520	4.95	171.1	753	1327	76VP-19-23-12-16	
22-26	0.51	1.00	11.16	5.84	1380	4.62	84.2	1847	1420	76VP-19-23-22-26	
32-36	0.81	1.25	9.62	6.52	911	2.27	77.6	928	908	76VP-19-23-32-36	A2-VP-DUP-R2-040819 @ 913
39-43	1.02	1.50	9.91	6.76	882	3.25	-83.6	2862	1048	76VP-19-23-39-43	
Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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Vertical Groundwater Profiling Log

Project: Dems PFAS RI	Boring No.: 76VP-19-24 Date: 5/16/19 - 5/17/19
Project No.: 1082-0011-521	Drilling Co.: TDS <s 5/[illegible]0/19
Address: 270 Jackson Road (32-12-100 on Map)	Driller: Jay Jumonville Depth to Water: 6 (6.0) Ft BGS
Logger: Chris Vigneau / BrA	Drilling Method: DPT Pump type: Peristaltic Pumps
Total Boring Depth: 96 ft bgs	Drilling Equip: Geoprobe 6712 DT Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 1888-0412	YSI (model/serial number): YSI 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7-11	0.36	0.50	12.23	7.85	614	2.81	134.2	31.2	0855	76VP-19-24-7-11	very light brown/ clear
17-21	0.67	0.75	13.70	6.98	1,007	1.34	72.2	overrange	1000	76VP-19-24-17-21	brown/cloudy
27-31	0.99	1.00	15.27	6.60	630	2.16	9.9	2303	1115	76VP-19-24-27-31	brown/cloudy
37-41	1.31	1.50	15.29	6.88	434	2.47	14.3	2836	1235	76VP-19-24-37-41	brown/cloudy
47-51	1.63	1.75	15.25	6.94	547	2.86	77.4	1961	1355	76VP-19-24-47-51	brown/cloudy
57-61	1.95	2.00	14.89	6.81	1,009	3.54	86.3	2054	0845	76VP-19-24-57-61	brown/cloudy
67-71	2.27	2.50	14.72	6.91	1,995	4.98	101.8	77.0	1025	76VP-19-24-67-71	light brown/cloudy
77-81	2.59	2.75	12.26	5.99	10,868	2.99	125.2	1985	1225	76VP-19-24-77-81	gray/cloudy
87-91	2.91	3.00	13.18	6.39	12,141	1.42	60.5	overrange	1415	76VP-19-24-87-91	gray/cloudy
92-96	3.23	3.50	14.17	6.31	10581	1.52	219.2	648	0910	76VP-19-24-92-96	
Post Cal. Check Varience Observed (Y/N):				N/N	N/Y	N/N	N/Y	N/N			

5/16 (w)

5/17/19 (w)

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

0.32 gal/10.0 ft (for 2 well volumes)

Notes: Purged 2 well volumes per interval

(5/17/19) Variance in DO/SPC on 5/17/19; YSI had difficult time calibrating; even after cleaning it and changing solutions

Refusal at 96 ft bgs

5/17/19

KGS

EB 900

KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI Devens	Boring No.: 76VP-19-25	Date: 4/9/11	
Project No.: PFAS RI	Drilling Co.: TDS		
Address:	Driller: Alfred Allen	Depth to Water: ~20'	
Logger: VGA	Drilling Method: DPT	Pump type: geotech / water-9	
Total Boring Depth: 85.5'	Drilling Equip: GeoProbe 7822 (SP16)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020VE 5083 - 5014	YSI (model/serial number): YSI 650XL 11B100186		

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
4/9 22-26	0.18	1.0	11.37	6.46	741	8.70	13.5	846	1215	76VP-19-25-22-26	geotech
32-36	0.48	1.0	10.89	6.13	861	7.21	2.9	781	1315	76VP-19-25-32-36	geotech
42-46	0.78	1.5	10.46	6.33	750	7.00	-0.8	74,000	1410	76VP-19-25-42-46	geotech
52-56	1.08	2.0	10.87	6.46	731	7.09	-1.6	74,000	830	76VP-19-25-52-56	geotech
62-66	1.38	2.0	10.97	6.21	783	6.29	-2.6	74,000	945	76VP-19-25-62-66	geotech
72-76	1.68	2.0	10.79	6.03	749	6.34	-3.8	74,000	1120	76VP-19-25-72-76	geotech
81.5-85.5	1.98	2.5	10.87	6.00	732	6.40	-4.1	74,000	1330	76VP-19-25-81.5-85.5	geotech

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

☆ Refusal @ 85.5'

KGS

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KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: PFAS RI Devens	Boring No.: 76VP-19-26 — Date: 4/11/19
Project No.: PFAS RI	Drilling Co.: TDS
Address:	Driller: Alfred Allen — Depth to Water: ~18'
Logger: KGA	Drilling Method: DPT — Pump type: geotech/water
Total Boring Depth: 52'	Drilling Equip: beoprobe 7822 (SP16) — Tubing: HDPE
Turbidimeter (model/serial number): Lamotte 2020VE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
4/11	22-26	0.24	2.0	13.27	6.89	216	9.21	12.6	28.6	1100	76VP-19-26-22-26	geotech
	32-36	0.54	2.0	13.22	5.77	759	5.29	21.1	1246	1240	76VP-19-26-32-36	geotech
	42-46	0.84	2.0	13.72	5.79	702	5.62	20.4	896	1345	76VP-19-26-42-46	geotech
	—	—	—	—	—	—	—	—	—	1350	A2-VP-DVP-R1-41119	—
4/12	48-52		2.0	13.59	6.00	732	5.87	25.1	1275	840	76VP-19-26-48-52	geotech
	—	—	—	—	—	—	—	—	—	845	A2-VP-DVP-R1-41219	

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (SP2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Refusal @ 52'

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Vertical Groundwater Profiling Log

Project: PFAS RI Devens	Boring No.: 76VP-19-27 Date: 4/8/19
Project No.: PFAS RI	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: ~20'
Logger: KGA	Drilling Method: DPT Pump type: geotech / watery
Total Boring Depth: 52'	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020LE 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
4/8	22-26	0.18	1.0	10.17	6.00	1218	9.87	3.9	693	1145	76VP-19-27-22-26	geotech
	32-36	0.48	1.0	11.00	6.19	1190	8.16	-11.6	760	1245	76VP-19-27-32-36	geotech
	42-46	0.78	1.0	11.03	6.17	1178	4.69	-16.9	689	1410/1415	76VP-19-27-42-46 / A2-VP-DVP-R1-4819	geotech
4/9	48-52'	0.96	2.0	11.13	6.09	1231	4.21	-18.6	831	845	76VP-19-27-48-52 MS/MSD	geotech

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

52' Refusal

KGS

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-28 Date: 6/13/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Depth to Water: 19.0 ft. bgs
Total Boring Depth: 62 ft. bgs (refusal)	Drilling Method: DPT Pump type: peristaltic
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	Drilling Equip: Geoprobe 7712DT / SP16 tooling Tubing: HDPE
	YSI (model/serial number): 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
17-21	0.06	0.50	12.08	6.76	418	9.25	116.5	10.49	910	76VP-19-28-17-21	
27-31	0.36	1.00	11.43	5.89	975	8.34	127.4	1123	1020	76VP-19-28-27-31	
37-41	0.66	1.50	11.72	6.00	1067	8.72	104.7	1761	1140	76VP-19-28-37-41	
47-51	0.96	1.75	12.52	6.27	986	7.92	120.3	1109	1256	76VP-19-28-47-51	
57-61	1.26	2.00	12.34	6.35	989	8.55	101.7	1009	1430	76VP-19-28-57-61	MS/MSD

Post Cal. Check Varience Observed (Y/N):

Notes:

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-29 Date: 6/6/19
Project No.: 1082	Drilling Co.: TOS
Address: AOC 76	Driller: Jay Jumonville Depth to Water: 9.0' bgs
Logger: Dave Korfjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 66 feet bgs (refusal)	Drilling Equip: Geoprobe 6712DT/SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS/4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7-11	0.06	0.75	14.48	5.65	94	2.76	156.0	952	1425	76VP-19-29-7-11	A2-VP-DUP03-R2-060619@1
17-21	0.36	1.25	12.52	6.40	160	7.38	163.8	1548	845	76VP-19-29-17-21	
27-31	0.66	1.50	13.51	6.05	520	4.85	102.2	1465	957	76VP-19-29-27-31	A2-VP-DUP-R2-060719@1002
37-41	0.96	1.75	14.19	5.81	845	5.02	80.0	1204	1132	76VP-19-29-37-41	
47-51	~~1.26~~ 1.26 (P4)	2.00	14.60	6.20	199	2.99	36.7	1640	1330	76VP-19-29-47-51	
57-61	1.56	2.25	13.17	6.75	743	4.38	175.7	43.0	853	76VP-19-29-57-61	A2-VP-DUP-R2-061019@857
62-66	1.71	2.50	14.08	5.90	1535	5.54	114.8	29.0	1058	76VP-19-29-62-66	

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-30- Date: 6/13/19
Project No.: Devens	Drilling Co.: TDS
Address: Area 2	Driller: Alfred Allen Depth to Water: 8'
Logger: WGA	Drilling Method: DPT Pump type: geotech/water
Total Boring Depth:	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): Lamotte Lozone 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
6/13	7-11	0.09	0.25	12.51	7.46	154	9.70	18.4	1230	1230	76VP-19-30-7-11	geotech
	17-21	0.39	1.0	12.39	6.59	361	6.49	36.7	74,000	1325	76VP-19-30-17-21	geotech
	27-31	0.69	1.5	12.36	6.37	409	6.21	54.1	74,000	1425/1430	76VP-19-30-27-31 / A2-VP-DVP-R1-61319	geotech
6/14	37-41	0.99	1.5	12.67	6.43	421	6.30	69.9	74,000	740	76VP-19-30-37-41	geotech
	47-51	1.29	1.5	12.70	6.39	419	6.31	61.6	74,000	950	76VP-19-30-47-51	geotech
	57-61	1.59	2.0	12.49	6.50	439	6.50	56.1	74,000	1120	76VP-19-30-57-61 ☆ MS/MSD	geotech
	67-71	1.89	2.0	12.30	6.41	463	6.37	69.7	74,000	1295	76VP-19-30-67-71	geotech
	77-81	2.19	3.0	12.47	6.21	418	6.67	32.7	74,000	1420	76VP-19-30-77-81	geotech
6/17	87-91	2.49	3.5	12.61	6.37	526	6.31	52.7	74,000	930	76VP-19-30-87-91	geotech
	97-101	2.79	3.5	12.57	6.63	501	6.66	49.7	74,000	1150	76VP-19-30-97-101	geotech
	Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

☆ Mat refusal @ 101'

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-31 Date: 6/6/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville Depth to Water: 10.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 39ft. bgs (refusal)	Drilling Equip: Geoprobe 6712DT/SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS/4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7-11	0.03	0.50	14.84	6.60	119	8.85	188.1	9.33	835	76VP-19-31-7-11	
17-21	0.33	0.75	11.88	6.14	114	8.02	160.2	33.0	937	76VP-19-31-17-21	
27-31	0.63	1.00	13.56	6.39	76	8.06	112.3	953	1039	76VP-19-31-27-31	A2-VP-DUP02-R2-060619@1043
35-39	0.87	1.75	13.88	5.59	67	8.80	121.6	68.0	1220	76VP-19-31-35-39	A2-VP-DUP02-R2-060619@1225
Post Cal. Check Varience Observed (Y/N):											

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: 76VP-19-32 (Third attempt) Date: 6/12/19
Project No.: Devens	Drilling Co.: TDS
Address: Area 2	Driller: Alfred Allen Depth to Water: 21'
Logger: VGA	Drilling Method: DPT Pump type: geotech/bladder
Total Boring Depth: 32.5'	Drilling Equip: Geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
6/13	22-26	~~0.50~~ 0.15	1.5	11.57	7.93	868	9.59	6.7	12.7	805	76VP-19-32-22-26	geotech
	28.5-32.5	0.45	1.5	11.94	6.99	54.8	8.53	54.8	231	945	76VP-19-32-28.5-32.5	geotech

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (62)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

First attempt (Rig 2) refusal @ 18' (dry)
Second attempt (Rig 1) refusal @ 16' (dry) offset ~15' NW of attempt 1
Third attempt (Rig 1) offset ~ 115' NE of first attempt (refusal @ 32.5')

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KOMAN Gove[illegible]nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: ~~76VP-19-33~~ (DK) 76VP-19-33 Date: 6/10/19
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville Depth to Water: 47.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: waterra
Total Boring Depth: 74 ft. bgs (refusal)	Drilling Equip: Geoprobe 6712DT / SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
47-51	0.12	1.00	15.33	6.65	1441	8.06	167.5	2109	1130	76VP-19-33-47-51	
57-61	0.42	1.50	16.28	6.49	1379	8.39	168.6	2217	1300	76VP-19-33-57-61	
67-71	0.72	1.75	16.64	6.61	1233	8.85	187.6	1788	1428	76VP-19-33-67-71	

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

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KOMAN Government Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: ~~MVP-19-01~~ MPVP-19-01 (B&A)
Project No.: Area 2	Drilling Co.: TDS
Address: MacPherson	Driller: Jay Jumonville
Logger: Dave Kortjohn / B&A	Drilling Method: DPT
Total Boring Depth: 100 ft bgs	Drilling Equip: Geoprobe 6712
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268
	Date: 3/26/19 3/27/19
	Depth to Water: ~3
	Pump type: peristaltic
	Tubing: HDPE

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7-11	0.24	0.40	6.21	6.65	347	12.24	117.3	10.23	920	MVP-19-01-7-11	
17-21	0.54	0.75	9.27	5.66	445	6.37	95.0	2919	1010	MVP-19-01-17-21	
27-31	0.84	1.00	10.97	5.77	492	6.06	92.9	1431	~~1143~~ 1108 OK	MVP-19-01-27-31	
37-41	1.14	1.50	10.60	6.03	593	8.92	85.6	52.7	1202	MVP-19-01-37-41	DUP: A2-VP-DUP-R2-032619 @ 1205
47-51	1.44	1.75	11.38	6.31	757	6.58	75.5	68.5	1255	MVP-19-01-47-51	MS/MSD
57-61	1.74	2.00	12.03	6.55	769	5.20	78.7	44.9	1430	MVP-19-01-57-61	
67-71	2.04	2.25	9.91	6.87	777	4.77	125.9	12.2	0955	MPVP-19-01-67-71	
77-81	2.34	2.50	9.34	6.57	908	3.96	66.4	22.4	1130	MPVP-19-01-77-81	~~MS/MSD~~ CAN 3/28/19
87-91	2.64	2.75	10.58	6.72	2381	4.16	44.6	11.3	1310	MPVP-19-01-87-91	
96-100	2.90	3.0	10.82	7.02	2675	5.47	-30.1	47.9	1420	MPVP-19-01-96-100	Refusal Sample

3/26 DK — 3/27 B&A

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes: Refusal at 100ft bgs

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KOMAN Gove[illegible]ent Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens	Boring No.: MPVP-19-02 Date: 4/16/19
Project No.: Devens PFAS RI	Drilling Co.: TDS
Address:	Driller: Alfred Allen Depth to Water: 8'
Logger: WH / B.A	Drilling Method: DPT Pump type: geotech/grundfos
Total Boring Depth:	Drilling Equip: geoprobe 7822 (SP16) Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 5083-5014	YSI (model/serial number): YSI 650XL 11B100186

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
4/16 KGA	7-11	0.09	1.5	9.56	6.41	289	8.39	14.3	20.5	845	MPVP-19-02-7-11	geotech
	17-21	0.39	1.5	9.89	6.39	296	8.14	18.7	5.70	935	MPVP-19-02-17-21	geotech
	27-31	0.69	1.5	10.28	6.44	570	8.09	8.8	2014	1050/1055	MPVP-19-02-27-31/A2-VP-DUP-R1-41619	
	37-41	0.99	1.25	10.95	6.61	772	8.17	5.6	74,000	1125	MPVP-19-02-37-41	geotech
	47-51	1.29	2.0	10.99	6.59	815	7.67	5.3	74,000	1345	MPVP-19-02-47-51	geotech
4/17 BA	57-61	1.59	1.75	10.69	7.17	763	5.60	-7.5	748	0900	MPVP-19-02-57-61	geotech
	67-71	1.89	2.5	11.55	6.56	6737	5.89	21.3	2991	1045	MPVP-19-02-67-71	geotech
	77-81	2.19	2.5	1.96	6.54	724	6.89	35.7	1674	1230	MPVP-19-02-77-81	Geotech
	87-91	2.49	2.75	12.60	7.13	1203	1.89	-80.8	1197	1345	MPVP-19-02-87-91 A2-VP-DUP-R1-041719 @1355	geotech (FD)
4/18 BA	93-97	2.79	3.0	10.34	6.94	1054	2.06	7.9	37	0906	MPVP-19-02-93-97	geotech

Post Cal. Check Varience Observed (Y/N):

Notes:
Refusal at 97 ft bgs

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (2")
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

KG

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: ~~MVP-19-03~~ DK MPVP-19-03 Date: 4/1/19
Project No.:	Drilling Co.: TOS
Address:	Driller: Jay Jamonville Depth to Water: 5'
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic/ waterra
Total Boring Depth: 76'	Drilling Equip: Geoprobe 6712 DT / SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): La Motte 2020we 1828-0412	YSI (model/serial number): YSI 650 MDS/ 4260

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7-11	0.18	0.50	8.34	5.48	755	5.96	135.3	822	1014	MPVP-19-03-7-11	
17-21	0.48	0.75	7.28	5.83	803	4.04	73.9	3023	1116	MPVP-19-03-17-21	
27-31	0.78	1.25	8.75	5.25	832	5.41	45.2	2228	1212	MPVP-19-03-27-31	
37-41	1.08	1.50	10.22	5.31	863	5.51	40.1	1954	1345	MPVP-19-03-37-41	
47-51	1.38	2.00	8.05	6.37	857	5.37	143.0	650	850	MPVP-19-03-47-51	
57-61	1.68	2.25	8.84	5.96	701	7.32	36.4	43.0	1008	MPVP-19-03-57-61	DUP: A2-VP-DUP-R2-040219
67-71	1.98	2.50	10.94	6.10	732	7.44	39.7	>4000	1206	MPVP-19-03-67-71	MS/MSD @1012
72-76	2.13	3.00	9.25	6.35	709	5.28	87.5	>4000	840	MPVP-19-03-72-76	
Post Cal. Check Varience Observed (Y/N):				N	N	Y	N	N			

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
- 67-71' bgs used waterra
- 72-76' bgs used waterra

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KOMAN Gove nt Solutions, LLC
Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: MPVP-19-04 Date: 6/4/19
Project No.: 1082	Drilling Co.: TDS
Address: ~~MPWP~~ West Main St. 32-14	Driller: Jay Jumonville Depth to Water: 17.0' bgs
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: peristaltic
Total Boring Depth: 60' bgs (refusal)	Drilling Equip: Geoprobe 6712 DT Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 556 MPS / 10H100928

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
17-21	0.12	0.75	14.46	5.20	312	6.74	98.3	9.98	1100	MPVP-19-04-17-21	MS/MSD
27-31	0.42	1.00	14.32	5.21	666	5.63	69.7	1003	1220	MPVP-19-04-27-31	
37-41	0.72	1.25	14.90	5.12	597	6.88	76.2	753	1335	MPVP-19-04-37-41	
47-51	1.02	1.50	14.87	4.87	492	6.59	93.5	656	1437	MPVP-19-04-47-51	
56-60	1.29	2.00	16.24	5.80	1501	1.57	124.8	33.0	840	MPVP-19-04-56-60	

Post Cal. Check Varience Observed (Y/N):

Notes:

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

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Vertical Groundwater Profiling Log

Project: Devens	Boring No.: MPVP-19-06	Date: 4/24/19	
Project No.: PFASRI	Drilling Co.: TDS		
Address:	Driller: Alfred Allen	Depth to Water: ~5'	
Logger: WGL	Drilling Method: DPT	Pump type: geotech/bladder	
Total Boring Depth: 89.5'	Drilling Equip: Geoprobe 7822 (SP16)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 5083-5014	YSI (model/serial number): YSI 650XL 11B100186		

	Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm°)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
4/24	7-11	0.18	1.0	8.77	7.97	215	9.86	8.8	769	1305	MPVP-19-06-7-11	geotech
4/24	17-21	0.48	1.5	9.58	6.04	580	8.90	40.0	1294	1405/1419	MPVP-19-06-17-21 /AZ-VP-DUP-RI-4/24/19	
4/25	27-31	0.78	1.5	10.03	6.79	793	8.17	-3.2	1321	815	MPVP-19-06-27-31	geotech
4/25	37-41	1.08	1.5	10.10	6.47	480	8.05	13.4	1721	850	MPVP-19-06-37-41	geotech
4/25	47-51	1.38	2.0	10.75	6.63	428	7.61	-0.9	74,000	1015	MPVP-19-06-47-51	geotech
4/25	57-61	1.68	2.0	10.87	6.70	463	7.45	4.7	74,000	1145	MPVP-19-06-57-61	geotech
4/25	67-71	1.98	2.5	10.99	6.66	501	7.21	5.6	74,000	1255	MPVP-19-06-67-71	geotech
4/25	77-81	2.28	3.0	11.16	6.70	527	7.18	6.9	74,000	1415	MPVP-19-06-77-81	geotech
4/25	85.5-89.5	2.58	3.0	11.27	6.64	547	7.09	8.3	74,000	1000	MPVP-19-06-85.5-89.5	geotech

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:
☆ 89.5' refusal

KGS

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Vertical Groundwater Profiling Log

Project: PFAS RI	Boring No.: MPVP-19-07	Date: 9/4/19	
Project No.: PFAS RI	Drilling Co.: TDS		
Address:	Driller: Alfred Allen	Depth to Water: 7'	
Logger: WA	Drilling Method: DPT	Pump type: geotech/ultra	
Total Boring Depth: 97.5'	Drilling Equip: geoprobe 7822 (5916)	Tubing: HDPE	
Turbidimeter (model/serial number): LaMotte 2020we 5083-5014	YSI (model/serial number): YSI 650xL	11B100186	

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
7-11	0.12	1.0	8.99°	7.46	66	7.09	-30.5	697	930	MPVP-19-07-7-11	geotech
17-21	0.42	1.0	8.67°	6.08	259	8.00	2.7	1126	1025	MPVP-19-17-21	geotech
27-31	0.72	1.0	9.22	6.37	596	5.89	12.3	1203	1115	~~MPVP-19-27-31~~ MPVP-19-07-27-31	geotech
37-41	1.02	1.5	9.39°	6.41	621	5.99	14.7	1380	1220	~~MPVP-19-37~~ MPVP-19-07-37-41	geotech
47-51	1.32	1.5	9.48	6.03	709	3.61	13.6	>4,000	1345	MPVP-19-07-47-51	geotech
57-61	1.62	2.0	9.59	6.17	731	3.78	12.6	74,000	1445	MPVP-19-07-57-61	geotech
67-71	1.92	2.0	9.68	6.26	760	3.89	14.6	74,000	930	MPVP-19-07-67-71	geotech
77-81	2.22	2.5	9.90	6.39	726	4.21	15.9	74,000	1125	MPVP-19-07-77-81	geotech
87-91	2.52	3.0	9.96	6.37	769	4.01	16.8	74,000	1300	MPVP-19-07-87-91	geotech
93.5-97.5	2.72	3.5	9.99	6.21	789	5.06	21.6	74,000	1450	MPVP-19-07-93.5-97.5	geotech

4/4

4/5

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot (x2)
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

Refusal @ 97.5'

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Vertical Groundwater Profiling Log

Project: Devens PFAS RI	Boring No.: MPVP-19-08 Date: 4/3/19
Project No.: 1082	Drilling Co.: TDS
Address:	Driller: Jay Sumonville Depth to Water: 35'
Logger: Dave Kortjohn	Drilling Method: DPT Pump type: waterra
Total Boring Depth: 89' refusal	Drilling Equip: Geoprobe 6712DT/SP16 tooling Tubing: HDPE
Turbidimeter (model/serial number): LaMotte 2020we 1828-0412	YSI (model/serial number): 650 MDS / 4268

Sample Interval (ft bgs)	Minimum Purge Volume	Total Volume Purged	Temp (°C)	pH (STD)	SPC (µS/cm)	DO (mg/L)	ORP (mv)	Turbidity (NTU)	Sample Time	Sample Identifier	Remarks
37-41	0.18	0.50	12.92	5.66	427	5.19	74.0	>4000	1237	MPVP-19-08-37-41	
47-51	0.48	0.75	12.77	5.9	366	3.77	-39.8	74000	14:10	MPVP-19-08-47-51	
57-61	0.78	1.00	7.51	6.39	75	10.28	132.7	>4000	910	MPVP-19-08-57-61	
67-71	1.08	1.25	9.95	6.40	59	10.25	62.6	>4000	1040	MPVP-19-08-67-71	
77-81	1.38	1.75	10.90	5.70	101	10.12	137.2	1600	1220	MPVP-19-08-77-81	
85-89	1.62	2.25	10.61	5.69	179	9.74	143.0	>4000	1422	MPVP-19-08-85-89	

Post Cal. Check Varience Observed (Y/N):

SP16 casing purge volume = 0.0159 gal/ft or 60.3 ml per foot
SP22 casing purge volume = 0.0918 gal/ft or 347.5 ml per foot

Notes:

KGS

KOMAN Government Solutions, LLC
293 Boston Post Road, Marlborough, MA

Calibration Field Sheets

KGS

Field Instrument Calibration Log

Date: 1/2/19 **Weather:** 20's

Project/Site Name: Derby **Instrument:** YSI 650xL

Calibrated By: MM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 715		Cal. Temperature °C	Afternoon Calibration Time 1430		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	5/19	1.420	1.413	16.09°	1.410	1.413	14.97°	±10 µS/cm
pH (7)	5/19	7.27	7.00	16.03°	7.07	7.00	14.87°	± 0.3 Ph *
pH (4)	5/19	4.31	4.00	15.97°	4.01	4.00	14.69°	± 0.3 Ph *
pH (10)	8/19	10.41	10.00	15.87°	9.97	10.00	14.73°	± 0.3 Ph *
ORP (240 mv)	3/20	227.6	240.0	15.92°	237.1	240.0	14.90°	±10 mv
Dissolved Oxygen (%)	N/A	91.1%	100.0%	16.00°	96.1%	100.0%	14.77°	-
Dissolved Oxygen (mg/L)	N/A	10.40	10.00	16.11°	9.92	10.00	14.80°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: N/A

Signature: [signature] **Date:** 1/2/19

KGS

Field Instrument Calibration Log

Date: 1/3/19 **Weather:** 30's

Project/Site Name: Deens **Instrument:** YSI 650XL

Calibrated By: KVA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 620		Cal. Temperature °C	Afternoon Calibration Time 1530		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	5/19	1.413	1.413	18.79	1.409	1.413	17.21°	±10 µS/cm
pH (7)	5/19	7.11	7.00	18.53	7.03	7.00	17.11°	± 0.3 Ph *
pH (4)	5/19	4.20	4.00	18.61	4.00	4.00	17.23°	± 0.3 Ph *
pH (10)	12/19	10.07	10.00	18.73	9.90	10.00	17.46°	± 0.3 Ph *
ORP (240 mv)	3/20	236.2	240.0	18.91	246.6	240.0	17.56°	±10 mv
Dissolved Oxygen (%)	N/A	106.9%	100.0%	18.66	92.4%	100.0%	17.49°	-
Dissolved Oxygen (mg/L)	N/A	9.71	10.00	18.43	10.07	10.00	17.66°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: N/A

Signature: [signature] **Date:** 1/3/19

KGS

Field Instrument Calibration Log

Date: 1/4/19 **Weather:** 30's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 0645		Cal. Temperature °C	Afternoon Calibration Time 1430		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	5/19	1.430	1.413	18.21°	1.420	1.413	17.20°	±10 µS/cm
pH (7)	5/19	7.10	7.00	18.37°	7.00	7.00	17.14°	± 0.3 Ph *
pH (4)	5/19	3.89	4.00	18.40°	4.03	4.00	17.30°	± 0.3 Ph *
pH (10)	12/19	9.80	10.00	18.56°	10.01	10.00	17.21°	± 0.3 Ph *
ORP (240 mv)	3/20	231.1	240.0	18.30°	242.2	240.0	17.07°	±10 mv
Dissolved Oxygen (%)	N/A	109.7%	100.0%	18.19°	96.6%	100.0%	17.20°	-
Dissolved Oxygen (mg/L)	N/A	9.64	10.00	18.65°	9.90	10.00	17.01°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 1/4/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Downs

Instrument: LaMotte 2020e

Calibrated By: MM

Serial Number: 5083-5014

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
1/2/19	0.09	0.00	9.76	10.00	0.06	0.00	10.01	10.00
1/3/19	0.41	0.00	9.56	10.00	0.00	0.00	9.90	10.00
1/4/19	0.13	0.00	9.81	10.00	0.01	0.00	10.03	10.00

Post Calibration Criteria			
-	-	± 0.5	Variance Noted: N/A

Signature: [signature]

Date: 1/4/19

KGS

Field Instrument Calibration Log

Date: 1/2/19 **Weather:** 30°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 556 MPS

Calibrated By: Dave Kortjohn **Serial Number:** 10H100928

Parameters	Solution Expiration Date	Morning Calibration Time 795		Cal. Temperature °C	Afternoon Calibration Time 1445		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2020	1.442	1.413	13.87	1.410	-	12.56	±10 µS/cm
pH (7)	3/2020	6.98	7.00	13.16	7.02	-	12.53	± 0.3 Ph *
pH (4)	3/2020	4.16	4.03	14.25	4.01	-	12.49	± 0.3 Ph *
pH (10)	12/31/19	10.06	10.00	14.14	10.07	-	12.52	± 0.3 Ph *
ORP (240 mv)	3/2023	235.2	240.0	13.13	240.8	-	12.59	±10 mv
Dissolved Oxygen (%)	-	97.5	100.0	10.13	101.3	-	10.28	-
Dissolved Oxygen (mg/L)	-	11.23	11.09	10.13	11.41	-	10.28	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solutic no negative value
Barometric Pressure (mmHg)	-	775.0	-	-	774.3	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: Dave Kortjohn **Date:** 1/2/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020we

Calibrated By: Dave Korbjohn

Serial Number: 1828 - 0112

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
1/2/19	0.00	0.00	8.39	10.00	0.00	0.00	8.59	10.00
1/8/19	0.03	0.02	7.49	10.00	0.02	0.01	8.08	10.00
1/9/19	0.03	0.02	8.15	10.00	0.03	0.02	8.38	10.00
1/10/19	0.01	0.00	7.13	10.00	0.01	0.00	7.69	10.00
1/11/19	0.01	0.00	8.54	10.00	0.02	0.01	8.94	10.00
1/14/19	0.01	0.00	8.37	10.00	0.02	0.01	8.96	10.00
1/15/19	0.02	0.02	8.27	10.00	0.02	0.02	9.13	10.00
1/16/19	0.01	0.01	8.59	10.00	0.01	0.01	8.95	10.00
					Post Calibration Criteria			
					-	-	± 0.5	Variance Noted: JN

Signature: Dave Korbjohn

Date: 1/16/19

KGS

Field Instrument Calibration Log

Date: 1/30/19 **Weather:** 20°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 740		Cal. Temperature °C	Afternoon Calibration Time 1445		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1.437	1.413	18.92	1.412	—	11.58	±10 µS/cm
pH (7)	10/2020	7.31	7.00	18.68	7.02	—	11.27	± 0.3 Ph *
pH (4)	3/2020	4.04	4.00	18.93	4.04	—	11.63	± 0.3 Ph *
pH (10)	2/2020	9.89	10.00	19.06	10.02	—	11.79	± 0.3 Ph *
ORP (240 mv)	1/2023	232.3	240.0	18.23	241.3	—	11.49	±10 mv
Dissolved Oxygen (%)	—	97.1	100.0	18.36	103.7	—	7.24	-
Dissolved Oxygen (mg/L)	—	9.12	9.40	18.36	10.12	—	7.24	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solu no negative value
Barometric Pressure (mmHg)	—	760	—	—	760	—	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: DO

Signature: Dave Kortjohn **Date:** 1/30/19

KGS

Field Instrument Calibration Log

Date: 2/4/19 **Weather:** 50°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 740		Cal. Temperature °C	Afternoon Calibration Time 1430		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1.453	1.413	14.35	1.420	-	15.37	±10 µS/cm
pH (7)	10/2020	6.77	7.00	16.41	7.03	-	15.48	± 0.3 Ph *
pH (4)	2/2020	4.08	4.00	15.56	4.11	-	15.67	± 0.3 Ph *
pH (10)	2/2020	10.07	10.00	16.18	10.12	-	15.93	± 0.3 Ph *
ORP (240 mv)	1/2023	242.1	240.0	15.01	240.3	-	15.65	±10 mv
Dissolved Oxygen (%)	-	97.0	100.00	12.86	103.2	-	18.52	-
Dissolved Oxygen (mg/L)	-	10.25	10.57	12.86	11.27	-	18.52	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solu no negative value
Barometric Pressure (mmHg)	-	760	-	-	760	-	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: Dave Kortjohn **Date:** 2/4/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI ~~Area 1 Field Sampling~~

Calibrated By: Dave Kortjohn

Instrument: La Motte 2020we

Serial Number: 1828 - 0412

Date	AM Pre 0 NTU ~~Pre/Post - Cal 10 NTU~~ 0 NTU	AM Post 0 NTU ~~Pre/Post - Cal 20 NTU~~ 0 NTU	AM Pre 10 NTU ~~Pre/Post - Cal 100 NTU~~ 10 NTU	AM Post 10 NTU ~~Pre/Post - Cal 800 NTU~~ 10 NTU	PM Pre 0 NTU ~~Pre/Post - Cal 10 NTU~~	PM Post 0 NTU ~~Pre/Post - Cal 20 NTU~~	PM Pre 10 NTU ~~Pre/Post - Cal 100 NTU~~	PM Post 10 NTU ~~Pre/Post - Cal 800 NTU~~
~~[illegible]~~ 1/17/19	0.02	0.01	8.73	10.00	0.02	0.01	8.89	10.00
1/18/19	0.02	0.01	8.95	10.00	0.01	0.00	9.13	10.00
1/22/19	0.02	0.02	8.14	8.50	0.02	0.02	9.53	9.53
1/23/19	0.02	0.01	9.34	10.00	0.01	0.00	9.52	10.00
1/24/19	0.02	0.02	9.59	9.89	0.02	0.02	9.57	10.00
1/25/19	0.02	0.02	9.34	10.00	0.02	0.02	9.59	10.00
1/30/19	0.00	0.00	9.05	10.00	0.00	0.00	9.27	10.00
2/4/19	0.00	0.00	9.68	10.00	0.00	0.00	9.83	10.00

Signature: [signature]

Date: 2/4/19

KGS

Field Instrument Calibration Log

Date: 2/7/19 **Weather:** 30's rain

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 615		Cal. Temperature °C	Afternoon Calibration Time 1510		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1.407	1.413	14.78°	1.410	1.413	15-17	±10 µS/cm
pH (7)	10/20	6.87	7.00	14.81°	7.00	7.00	15.03	± 0.3 Ph *
pH (4)	3/20	3.90	4.00	14.90°	4.11	4.00	14.99	± 0.3 Ph *
pH (10)	2/20	10.06	10.00	14.96°	9.87	10.00	15.35	± 0.3 Ph *
ORP (240 mv)	10/22	237.1	240.0	15.01°	231.6	240.0	15.16	±10 mv
Dissolved Oxygen (%)	N/A	112.2%	100.0%	15.14°	101.1%	100.0%	15.13	-
Dissolved Oxygen (mg/L)	N/A	10.16	10.00	15.02°	9.79	10.00	15.18	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	769	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: X

Signature: [signature] **Date:** 2/7/19

KGS

Field Instrument Calibration Log

Date: 2/8/19 **Weather:** light rain 30's

Project/Site Name: Devils **Instrument:** YSI 650XL

Calibrated By: LGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 605		Cal. Temperature °C	Afternoon Calibration Time 1230		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/29	1.411	1.413	15.69°	1.411	1.413	15.70°	±10 µS/cm
pH (7)	10/20	6.90	7.09	15.54°	7.01	7.00	15.69°	± 0.3 Ph *
pH (4)	3/20	4.09	4.00	15.49°	4.11	4.00	15.50°	± 0.3 Ph *
pH (10)	2/20	9.80	10.00	15.60°	10.00	10.00	15.47°	± 0.3 Ph *
ORP (240 mv)	10/22	229.6	240.0	15.58°	241.0	240.0	15.39°	±10 mv
Dissolved Oxygen (%)	N/A	92.2%	100.0%	15.67°	100.9%	100.0%	15.21°	-
Dissolved Oxygen (mg/L)	N/A	10.00	10.00	15.41°	10.21	10.00	15.07°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solu no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 2/8/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devons

Instrument: Hs Lamotte 2020we

Calibrated By: MA

Serial Number: 5083-514

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
2/4/19	0.09	0.00	10.15	10.00	0.00	0.00	10.16	10.00
2/5/19	0.05	0.00	10.09	10.00	0.01	0.00	9.80	10.00
2/6/19	0.14	0.00	10.31	10.00	0.09	0.00	9.97	10.00
2/7/19	0.06	0.00	10.11	10.00	0.01	0.00	10.13	10.00
2/8/19	0.03	0.00	9.90	10.00	0.06	0.00	10.20	10.00

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: [signature]

Date: 2/8/19

KGS

Field Instrument Calibration Log

Date: 2/5/19 **Weather:** 50°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 750		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1.399	1.413	12.06	1.409	–	12.58	±10 µS/cm
pH (7)	10/2020	6.91	7.00	10.36	7.03	–	12.67	± 0.3 Ph *
pH (4)	3/2020	4.21	4.00	10.97	4.09	–	12.88	± 0.3 Ph *
pH (10)	2/2020	9.96	10.00	11.02	10.02	–	13.03	± 0.3 Ph *
ORP (240 mv)	1/2023	250.7	240.0	11.66	240.9	–	12.66	±10 mv
Dissolved Oxygen (%)	–	99.2	100.0	10.25	100.4	–	12.24	-
Dissolved Oxygen (mg/L)	–	11.13	11.22	10.25	11.28	–	12.24	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solu no negative value
Barometric Pressure (mmHg)	–	760	–	–	760	–	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: Paul Kortjohn **Date:** 2/5/19

KGS

Field Instrument Calibration Log

Date: 2/6/19 **Weather:** 30°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 720		Cal. Temperature °C	Afternoon Calibration Time 1445		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1.405	1.413	7.88	1.409	–	10.32	±10 µS/cm
pH (7)	10/2020	6.68	7.00	7.55	7.02	–	10.21	± 0.3 Ph *
pH (4)	3/2020	4.10	4.00	7.43	4.03	–	10.25	± 0.3 Ph *
pH (10)	2/2020	9.91	10.00	7.51	10.13	–	10.28	± 0.3 Ph *
ORP (240 mv)	1/2023	244.6	240.0	7.45	240.9	–	10.32	±10 mv
Dissolved Oxygen (%)	–	98.6	100.0	6.11	100.8	–	8.45	-
Dissolved Oxygen (mg/L)	–	12.29	12.43	6.11	12.50	–	8.45	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solu no negative value
Barometric Pressure (mmHg)	–	760	–	–	760	–	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: [signature] **Date:** 2/6/19

KGS

Field Instrument Calibration Log

Date: 2/7/19 **Weather:** 35°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 730		Cal. Temperature °C	Afternoon Calibration Time 1330		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm^c)	3/2019	1.381	1.413	11.45	1.410	–	10.53	±10 µS/cm
pH (7)	10/2020	6.99	7.00	12.78	7.03	–	10.42	± 0.3 Ph *
pH (4)	3/2020	3.85	4.00	9.35	4.01	–	10.51	± 0.3 Ph *
pH (10)	2/2020	10.11	10.00	12.07	10.03	–	10.49	± 0.3 Ph *
ORP (240 mv)	1/2023	235.1	240.0	11.83	240.2	–	10.71	±10 mv
Dissolved Oxygen (%)	–	102.4	100.0	7.50	101.1	–	7.73	-
Dissolved Oxygen (mg/L)	–	12.30	12.01	7.50	12.23	–	7.73	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solu no negative value
Barometric Pressure (mmHg)	–	760	–	–	760	–	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: [signature] **Date:** 2/7/19

Turbidity Instrument Calibration Log

Project/Site Name: ~~Area 1 Field Sampling~~ Devens PFAS RI

Calibrated By: Dave Kortjohn

Instrument: La Motte 2020we

Serial Number: 1828-0412

Date	~~Pre/Post-Cal 10 NTU~~ Pre 0 NTU	~~Pre/Post-Cal 20 NTU~~ Post 0 NTU	~~Pre/Post-Cal 100 NTU~~ AM Pre 10 NTU	~~Pre/Post-Cal 800 NTU~~ Post 10 NTU	~~Pre/Post-Cal 10 NTU~~ Pre 0 NTU	~~Pre/Post-Cal 20 NTU~~ Post 0 NTU	~~Pre/Post-Cal 100 NTU~~ PM Pre 10 NTU	~~Pre/Post-Cal 800 NTU~~ Post 10 NTU
2/5/19	0.02	0.02	7.94	10.00	0.02	0.02	8.59	10.00
2/6/19	0.02	0.02	8.93	10.00	0.02	0.02	9.12	10.00
2/7/19	0.01	0.01	8.14	10.00	0.01	0.01	8.12	10.00

Signature: Dave Kortjohn

Date: 2/7/19

KGS

Field Instrument Calibration Log

Date: 2/26/19 **Weather:** 20's, windy, sunny

Project/Site Name: Devons PFAS Drilling Probability **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal Criteria
Specific Conductivity (1.413 µS/cm°)	3/2019	1,418	1,413	15.91	1,421	1,413	16.49	±10 µS/cı
pH (7)	10/2020	7.13	7.00	15.60	7.00	7.00	17.05	± 0.3 Ph
pH (4)	3/2020	4.02	4.00	16.15	4.23	4.00	16.43	± 0.3 Ph
pH (10)	10/31/2019	9.76	10.00	16.21	9.84	10.00	16.57	± 0.3 Ph
ORP (240 mv)	01/2023	231.1	240.0	15.51	237.4	240.0	17.10	±10 mv
Dissolved Oxygen (%)	—	93.8	100.0	16.43	107.4	100.6	19.11	-
Dissolved Oxygen (mg/L)	—	9.18	9.79	16.43	10.82	10.22	19.11	± 0.5 mg/L < 0.5 mg/L for 0 mg/l no negative va
Barometric Pressure (mmHg)	—	760	-	—	760	-	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: —

Signature: [signature] **Date:** 02/26/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Downs PFAS Drilling Profile

Instrument: LaMotte 2020WE

Calibrated By: CV

Serial Number: 1828-0412

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
2/26/19	1.81	0.91	9.72	10.0	1.91	1.41	9.90	9.95

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: [signature]

Date: 2/26/19

KGS

Field Instrument Calibration Log

Date: 2/26/19 **Weather:** 20's

Project/Site Name: Dews **Instrument:** YSI 650x2

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 610		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1.426	1.413	18.09	1.410	1.413	16.21°	±10 µS/cm
pH (7)	10/20	6.97	7.00	18.07	7.00	7.00	16.17°	± 0.3 Ph *
pH (4)	3/20	3.92	4.00	18.39	3.90	4.00	16.37°	± 0.3 Ph *
pH (10)	2/20	10.07	10.00	18.40	10.09	10.00	16.18°	± 0.3 Ph *
ORP (240 mv)	10/22	238.7	240.0	18.37	241.7	240.0	16.07°	±10 mv
Dissolved Oxygen (%)	N/A	109.9%	100.0%	18.21°	101.1%	100.0%	16.12°	-
Dissolved Oxygen (mg/L)	N/A	10.67	10.00	17.89	10.11	10.00	16.19°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 2/26/19

KGS

Field Instrument Calibration Log

Date: 2/27/19 **Weather:** 20's

Project/Site Name: Devers **Instrument:** YSI 650

Calibrated By: WR **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 705		Cal. Temperature °C	Afternoon Calibration Time 1520		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	1/19	1.407	1.413	15.21°	1.413	1.413	16.21°	±10 µS/cm
pH (7)	10/20	7.13	7.00	15.38°	7.16	7.00	16.17°	± 0.3 Ph *
pH (4)	3/20	4.16	4.00	15.31°	3.87	4.00	16.12°	± 0.3 Ph *
pH (10)	2/20	10.17	10.00	15.29°	10.11	10.00	16.07°	± 0.3 Ph *
ORP (240 mv)	10/22	249.7	240.0	15.19°	241.1	240.0	15.99°	±10 mv
Dissolved Oxygen (%)	N/A	96.1%	100.0%	15.16°	101.9%	100.0%	15.89°	-
Dissolved Oxygen (mg/L)	N/A	9.81	10.00	15.27°	10.90	10.00	15.97°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	—	760	~	~	760	~	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 2/27/19

KGS

Field Instrument Calibration Log

Date: 2/28/19 **Weather:** 20's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: RJA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 745		Cal. Temperature °C	Afternoon Calibration Time 1500		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	N/A	1.400	1.413	18.16°	1.410	1.413	16.18°	±10 µS/cm
pH (7)	10/20	7.11	7.00	18.23°	7.11	7.00	16.23°	± 0.3 Ph *
pH (4)	3/20	4.16	4.00	18.17°	4.02	4.00	16.19°	± 0.3 Ph *
pH (10)	2/20	10.30	10.00	18.19°	10.11	10.00	16.31°	± 0.3 Ph *
ORP (240 mv)	10/22	240.0	240.0	18.31°	238.8	240.0	16.40°	±10 mv
Dissolved Oxygen (%)	N/A	106.6%	100.0%	18.27°	102.9%	100.0%	16.37°	-
Dissolved Oxygen (mg/L)	N/A	9.89	10.00	18.30°	10.11	10.00	16.41°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 2/28/19

KGS

Field Instrument Calibration Log

Date: 3/1/19 **Weather:** 20's

Project/Site Name: Dams **Instrument:** YSI 650XL

Calibrated By: MM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 645		Cal. Temperature °C	Afternoon Calibration Time 1445		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1.410	1.413	17.60°	1.411	1.413	15.29°	±10 µS/cm
pH (7)	10/20	7.30	7.00	17.69°	7.00	7.00	15.69°	± 0.3 Ph *
pH (4)	3/20	4.11	4.00	17.81°	4.03	4.00	15.45°	± 0.3 Ph *
pH (10)	2/20	9.97	10.00	17.93°	10.03	10.00	15.21°	± 0.3 Ph *
ORP (240 mv)	10/22	230.9	240.0	17.89°	239.7	240.0	15.23°	±10 mv
Dissolved Oxygen (%)	N/A	121.1%	100.0%	17.62°	91.1%	100.0%	15.19°	-
Dissolved Oxygen (mg/L)	N/A	10.13	10.00	17.77°	10.20	10.09	15.10°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 3/1/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: ~~LaMotte~~ 2020we

Calibrated By: MK

Serial Number: 5083-5014

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
2/26/19	0.07	0.00	10.09	10.00	0.03	0.00	10.15	10.00
2/27/19	0.08	0.00	10.01	10.00	0.06	0.00	10.10	10.00
2/28/19	0.07	0.00	10.20	10.00	0.02	0.00	10.03	10.00
3/1/19	0.02	0.00	10.03	10.00	0.00	0.00	9.89	10.00

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: _____

Date: 3/1/19

KGS

Field Instrument Calibration Log

Date: 7/27/19 **Weather:** Clr Sky, 10°F

Project/Site Name: PFAS RI WP **Instrument:** YSI 650XL

Calibrated By: BA **Serial Number:** 4068

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal Criteria
Specific Conductivity (1.413 µS/cm°)		1392	1413	17.80	1362	1413	13.71	±10 µS/cı
pH (7)		7.09	7.00	17.87	7.12	7.00	12.96	± 0.3 Ph
pH (4)		3.78	4.00	17.11	3.91	4.00	11.75	± 0.3 Ph
pH (10)		9.79	9.57	17.76	9.87	9.97	12.03	± 0.3 Ph
ORP (240 mv)		237.6		18.42	245.6	240.0	12.36	±10 mv
Dissolved Oxygen (%)		110.2	100.0	19.07	98.1	100.5	10.41	-
Dissolved Oxygen (mg/L)		10.22	9.27	19.07	9.15	9.28	10.41	± 0.5 mg/L < 0.5 mg/L for 0 mg/l no negative va
Barometric Pressure (mmHg)		760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: _____ **Date:** _____

KGS

Field Instrument Calibration Log

Date: 2/28/19 **Weather:** Sun/Snow, 15°F

Project/Site Name: PFAS RI WP **Instrument:** YSI 650XL

Calibrated By: BA **Serial Number:** 4968

Parameters	Solution Expiration Date	Morning Calibration Time 0630		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post Cal Criteria
Specific Conductivity (1.413 µS/cm°)		1395	1413	16.42	1412	1413	21.36	±10 µS/cı
pH (7)		6.98	7.00	16.38	6.96	7.00	21.71	± 0.3 Ph
pH (4)		4.02	4.00	15.98	3.96	4.01	21.64	± 0.3 Ph
pH (10)		9.82	10.00	15.50	10.02	10.00	21.58	± 0.3 Ph
ORP (240 mv)		238.5	240.0	15.75	241.0	240.0	22.06	±10 mv
Dissolved Oxygen (%)		121.1	100.0	22.02	98.7	101.0	22.17	-
Dissolved Oxygen (mg/L)		10.59	8.74	22.02	8.63	8.79	22.17	± 0.5 mg/L < 0.5 mg/L for 0 mg/l no negative va
Barometric Pressure (mmHg)		760	760	—	760	760	22.17	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 2/28/19

KGS

Field Instrument Calibration Log

Date: 3/1/19 **Weather:** Overcast, 140F

Project/Site Name: PFAS RI WP A2 **Instrument:** YSI 650 XL

Calibrated By: BrA **Serial Number:** 42608

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1415		Cal. Temperature °C	Post Cal Criteria
Specific Conductivity (1.413 µS/cm°)		1469	1413	14.86	1414	1413	15.10	±10 µS/cı
pH (7)		7.20	7.00	15.78	7.21	7.00	15.31	± 0.3 Ph
pH (4)		3.88	3.99	16.34	4.01	4.00	15.26	± 0.3 Ph
pH (10)		9.60	10.00	16.13	10.13	10.01	15.19	± 0.3 Ph
ORP (240 mv)		234.0	240.0	17.17	239.7	240.0	16.10	±10 mv
Dissolved Oxygen (%)	—	100.7	99.9	17.74	96.1	100.2	15.37	-
Dissolved Oxygen (mg/L)	—	9.58	9.51	17.74	9.45	9.53	15.37	± 0.5 mg/L < 0.5 mg/L for 0 mg/l no negative va
Barometric Pressure (mmHg)	—	760	760	—	760	760	15.37	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 3/1/19

KGS

Field Instrument Calibration Log

Date: 3/5/19 **Weather:** Sun, 15°F

Project/Site Name: PFAS R1 VP **Instrument:** YSI 650XL

Calibrated By: BwA **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1330		Cal. Temperature °C	Post Cal Criteria
Specific Conductivity (1.413 µS/cm°)		1499	1413	15.06	1409	1413	13.81	±10 µS/cı
pH (7)		7.21	7.00	14.81	7.14	7.00	14.07	± 0.3 Ph
pH (4)		3.85	4.00	14.95	4.08	3.99	13.96	± 0.3 Ph
pH (10)		9.92	10.00	15.73	10.08	10.00	13.84	± 0.3 Ph
ORP (240 mv)		237.5	240.1	15.25	239.1	240.0	14.10	±10 mv
Dissolved Oxygen (%)	—	87.4	99.9	32.32	96.4	99.9	10.15	-
Dissolved Oxygen (mg/L)	—	5.89	7.25	32.37	7.13	7.20	10.15	± 0.5 mg/L < 0.5 mg/L for 0 mg/l no negative va
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: BwA **Date:** 3/5/19

KGS

Field Instrument Calibration Log

Date: 3/6/19 **Weather:** Sun, 10°F

Project/Site Name: PFAS RI VP-A1 **Instrument:** YSI 650 XL

Calibrated By: BnA **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1445		Cal. Temperature °C	Post C: Criter
Specific Conductivity (1.413 µS/cm°)		1351	1413	17.09	1410	1413	17.24	±10 µS/
pH (7)		7.08	7.00	16.28	6.99	7.00	16.53	± 0.3 Ph
pH (4)		4.01	3.99	16.87	3.94	4.01	16.37	± 0.3 Ph
pH (10)		9.93	10.00	17.01	10.13	10.00	17.04	± 0.3 Ph
ORP (240 mv)		235.2	240.1	17.06	241.7	240.0	16.73	±10 m
Dissolved Oxygen (%)	—	153.0	99.9	31.35	105.7	100.1	25.01	-
Dissolved Oxygen (mg/L)	—	11.28	7.37	31.35	7.51	7.42	25.01	± 0.5 mg/ < 0.5 mg/L for 0 mg no negative v
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: BnA **Date:** 3/6/19

KGS

Field Instrument Calibration Log

Date: 3/7/19 **Weather:** Sun, 5°F

Project/Site Name: PFAS RI VP **Instrument:** YSI 650 xL

Calibrated By: BMA **Serial Number:** 4208

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1445		Cal. Temperature °C	Post C: Criter
Specific Conductivity 1413 (~~1.413~~ µS/cm°)		1359	1413	14.02	1409	1411	12.75	±10 µS/
pH (7)		7.04	7.00	14.39	7.01	7.00	12.03	± 0.3 Ph
pH (4)		4.14	4.00	15.12	3.96	4.01	12.15	± 0.3 Ph
pH (10)		9.88	10.00	15.53	10.08	10.01	13.02	± 0.3 Ph
ORP (240 mv)		25.2	240.0	15.14	246.8	240.0	13.16	±10 m
Dissolved Oxygen (%)	—	142.6	100.0	20.61	98.7	101.0	11.62	-
Dissolved Oxygen (mg/L)	—	10.71	7.38	20.61	7.21	7.40	11.62	± 0.5 mg/ < 0.5 mg/L for 0 mg no negative v
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: BMA **Date:** 3/7/19

KGS

Field Instrument Calibration Log

Date: 3/8/19 **Weather:** Sun, 90°F

Project/Site Name: PFAS RI WP A2 **Instrument:** YSI 650 XL

Calibrated By: BrA **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1400		Cal. Temperature °C	Post C: Criter
Specific Conductivity 1413 ~~(1.413~~ µS/cm°)		1547	1413	15.43	1420	1413	9.81	±10 µS/
pH (7)		7.03	7.00	18.68	6.99	7.00	10.62	± 0.3 Ph
pH (4)		3.83	4.00	19.17	4.08	3.99	10.27	± 0.3 Ph
pH (10)		9.91	10.00	18.84	9.94	10.00	9.96	± 0.3 Ph
ORP (240 mv)		237.4	240.0	18.67	238.6	240.0	10.71	±10 m
Dissolved Oxygen (%)	—	90.4	100	25.7	97.6	100.4	14.38	-
Dissolved Oxygen (mg/L)	—	5.73	6.34	25.78	6.26	6.31	14.38	± 0.5 mg/ < 0.5 mg/L for 0 mg no negative v
Barometric Pressure (mmHg)	—	760	760	—	760	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: BrA **Date:** 3/8/19

KGS

Field Instrument Calibration Log

Date: 3/11/19 **Weather:**

Project/Site Name: PFAS R1 VP **Instrument:** YSI 650XL

Calibrated By: BrA **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1430		Cal. Temperature °C	Post C Criter
Specific Conductivity 1413 ~~(1.413~~ µS/cm°)		1365	1413	19.00	1336	1413	16.21	±10 µS/
pH (7)		7.45	7.02	18.97	6.87	7.01	15.86	± 0.3 Ph
pH (4)		3.97	4.00	18.61	4.05	4.00	15.93	± 0.3 Ph
pH (10)		10.20	10.00	19.09	9.81	10.00	15.72	± 0.3 Ph
ORP (240 mv)		234.4	240.0	19.04	237.1	240.2	16.08	±10 m
Dissolved Oxygen (%)	–	87.1	100.1	21.62	108.6	100.0	14.97	-
Dissolved Oxygen (mg/L)	–	7.42	8.64	21.62	8.77	8.65	14.97	± 0.5 mg/ < 0.5 mg/L for 0 mg no negative v
Barometric Pressure (mmHg)	–	760	760	–	760	760	–	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: SPC

Signature: [signature] **Date:** 3/11/19

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI WP

Instrument: Lamotte 2020we

Calibrated By: BnA

Serial Number: 1828-0412

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
2/27/19	0.87	0.63	9.13	9.97	0.38	0.34	9.61	9.96
2/28/19	1.03	0.52	10.9	10.3	0.49	0.36	10.9	10.4
3/1/19	0.62	0.31	11.7	10.4	0.27	0.21	10.7	10.1
3/5/19	0.98	0.43	13.1	11.6	0.51	0.38	12.1	10.9
3/6/19	0.34	0.16	12.4	10.1	0.12	0.03	10.2	9.99
3/7/19	0.28	0.09	11.2	10.4	0.13	0.11	10.6	10.0
3/8/19	0.17	0.12	10.9	10.2	0.23	0.14	10.7	10.3
3/11/19	0.27	0.19	13.8	11.4	0.31	0.17	11.6	10.9

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: [signature]

Date: 3/11/19

KGS

Field Instrument Calibration Log

Date: 3/5/19 **Weather:** 10's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: [illegible] **Serial Number:** ~~[illegible]~~ 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 555		Cal. Temperature °C	Afternoon Calibration Time 1420		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1.420	1.413	18.45°	1.410	1.413	16.21°	±10 µS/cm
pH (7)	10/20	7.03	7.00	18.37°	7.03	7.00	16.03°	± 0.3 Ph *
pH (4)	3/20	4.09	4.00	18.60°	4.06	4.00	15.87°	± 0.3 Ph *
pH (10)	2/20	10.11	10.00	18.54°	9.93	10.00	15.93°	± 0.3 Ph *
ORP (240 mv)	10/22	237.1	240.0	18.39°	237.7	240.0	15.97°	±10 mv
Dissolved Oxygen (%)	N/A	92.1%	100.0%	18.21°	106.1%	100.0%	15.89°	-
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	18.60°	9.80	10.00	16.02°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 3/5/19

KGS

Field Instrument Calibration Log

Date: 3/11/19 **Weather:** 3/11/19

Project/Site Name: Devons **Instrument:** YSI EXO2

Calibrated By: KGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 725		Cal. Temperature °C	Afternoon Calibration Time 1420		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1.402	1.413	18.67°	1.420	1.413	15.61°	±10 µS/cm
pH (7)	10/20	7.11	7.00	16.30°	7.03	7.00	15.70°	± 0.3 Ph *
pH (4)	3/20	3.91	4.00	16.17°	4.08	4.00	15.33°	± 0.3 Ph *
pH (10)	2/20	10.11	10.00	16.07°	9.87	10.00	15.29°	± 0.3 Ph *
ORP (240 mv)	10/22	241.7	240.0	16.21°	241.7	240.0	15.30°	±10 mv
Dissolved Oxygen (%)	N/A	101.7%	100.0%	16.27°	101.1%	100.0%	15.41°	-
Dissolved Oxygen (mg/L)	N/A	10.31	10.00	16.19°	9.81	10.00	15.31°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	-	760	-	-	760	-	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: _____ **Date:** 3/11/19

KGS

Field Instrument Calibration Log

Date: 3/12/19 **Weather:** ~~3/12/19~~ 30's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: VMA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	Morning Calibration Time 630		Cal. Temperature °C	Afternoon Calibration Time 1430		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1.431	1.413	17.86°	1.410	1.413	15.97°	±10 µS/cm
pH (7)	10/20	6.78	7.00	17.89°	6.93	7.00	15.91°	± 0.3 Ph *
pH (4)	3/20	4.39	4.00	17.69°	4.10	4.00	15.88°	± 0.3 Ph *
pH (10)	2/20	10.28	10.00	18.73°	9.90	10.00	15.78°	± 0.3 Ph *
ORP (240 mv)	10/22	241.7	240.0	17.89°	236.5	240.0	15.77°	±10 mv
Dissolved Oxygen (%)	N/A	106.9%	100.0%	17.93°	96.2%	100.0%	15.71°	-
Dissolved Oxygen (mg/L)	N/A	10.28	10.00	18.58°	9.77	10.00	15.66°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L s no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 3/12/19

KGS

Field Instrument Calibration Log

Date: 3/13/19 **Weather:** 30's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: IG/A **Serial Number:** 16B100186

Parameters	Solution Expiration Date	Morning Calibration Time 635		Cal. Temperature °C	Afternoon Calibration Time 1525		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	11/19	1.407	1.413	17.93°	1.409	1.413	16.60°	±10 µS/cm
pH (7)	10/20	6.87	7.00	17.81°	7.07	7.00	16.87°	± 0.3 Ph *
pH (4)	3/20	3.90	4.00	17.69°	4.03	4.00	16.79°	± 0.3 Ph *
pH (10)	2/20	9.80	10.00	17.86°	9.99	10.00	16.87°	± 0.3 Ph *
ORP (240 mv)	10/22	241.7	240.0	17.77°	241.2	240.0	16.60°	±10 mv
Dissolved Oxygen (%)	N/A	96.1%	100.0%	17.68°	101.1%	100.0%	16.58°	-
Dissolved Oxygen (mg/L)	N/A	9.87	10.00	17.91°	10.11	10.00	16.49°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L st no negative value
Barometric Pressure (mmHg)	N/A	—	760	—	—	760	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: [signature] **Date:** 3/13/19

KGS

Field Instrument Calibration Log

Date: 3/14/19 **Weather:** 30's

Project/Site Name: Devens **Instrument:** YSI 650xL

Calibrated By: LCGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 705		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	11/19	1.426	1.413	16.87°	1.410	16.39°	±10 µS/cm	N
pH (7)	10/20	7.10	7.00	16.69°	7.03	16.47°	± 0.3 Ph *	N
pH (4)	3/20	3.97	4.00	16.57°	4.06	16.29°	± 0.3 Ph *	N
pH (10)	2/20	10.06	10.00	16.63°	10.00	16.22°	± 0.3 Ph *	N
ORP (240 mv)	10/22	241.7	240.0	16.18°	239.4	16.19°	±10 mv	N
Dissolved Oxygen (%)	N/A	92.1%	100.0%	16.23°	101.0%	16.31°	-	N
Dissolved Oxygen (mg/L)	N/A	9.81	10.00	16.38°	9.91	16.22°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/14/19

KGS

Field Instrument Calibration Log

Date: 3/15/19 **Weather:** 40's

Project/Site Name: Derby **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.441	1.413	16.87°	1.420	15.97°	±10 µS/cm	N
pH (7)	10/20	6.87	7.00	16.89°	7.02	15.61°	± 0.3 Ph *	N
pH (4)	3/20	4.30	4.00	16.47°	4.00	15.71°	± 0.3 Ph *	N
pH (10)	2/20	9.78	10.00	16.59°	9.97	16.21°	± 0.3 Ph *	N
ORP (240 mv)	10/22	232.1	240.0	16.68°	239.1	16.13°	±10 mv	N
Dissolved Oxygen (%)	N/A	102.7%	100.0%	16.73°	100.6%	16.20°	-	N
Dissolved Oxygen (mg/L)	N/A	9.86	10.00	16.21°	10.07	16.18°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/15/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: Lamotte 2020we

Calibrated By: WH

Serial Number: 5083-5014

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
3/5/19	0.06	0.00	9.96	10.00	0.02	0.00	9.90	10.00
3/11/19	0.07	0.00	9.97	10.00	0.06	0.00	9.93	10.00
3/12/19	0.02	0.00	10.10	10.00	0.02	0.00	9.97	10.00
3/13/19	0.05	0.00	9.99	10.00	0.00	0.00	9.92	10.00
3/14/19	0.06	0.00	10.07	10.00	0.06	0.00	9.97	10.00
3/15/19	0.13	0.00	10.24	10.00	0.09	0.00	10.01	10.00

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: [signature]

Date: 3/15/19

KGS

Field Instrument Calibration Log

Date: 3/12/19 **Weather:** Overcast, 34°F

Project/Site Name: PFAS RI VP A2 **Instrument:** YSI 650 XL

Calibrated By: BMA **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 0600		Cal. Temperature °C	Afternoon Calibration Time 1430		Cal. Temperature °C	Post C: Criter
Specific Conductivity 1413 ~~(1.413~~ µS/cm°)		1549	1413	17.25	1416	1413	12.62	±10 µS/
pH (7)		7.08	7.00	17.96	7.21	7.00	12.06	± 0.3 Ph
pH (4)		3.87	4.00	17.87	4.24	4.01	11.57	± 0.3 Ph
pH (10)		9.83	10.00	17.81	9.86	10.02	11.78	± 0.3 Ph
ORP (240 mv)		247.7	240.0	18.01	245.6	240.0	11.72	±10 m
Dissolved Oxygen (%)	—	109.7	99.9	11.06	102.6	100.1	10.96	-
Dissolved Oxygen (mg/L)	—	12.08	11.00	11.06	11.32	11.13	10.96	± 0.5 mg/ < 0.5 mg/L for 0 mg no negative v
Barometric Pressure (mmHg)	✓	760	760	—	760	760		-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted:

Signature: Beth Ann **Date:** 3/12/19

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI WP A2 **Instrument:** Lamotte 2020we

Calibrated By: B/A **Serial Number:** 1535-0412

Date	Pre-Cal 0 NTU AM	Post-Cal 0 NTU AM	Pre-Cal 10 NTU AM	Post-Cal 10 NTU AM	Pre-Cal 0 NTU PM	Post-Cal 0 NTU PM	Pre-Cal 10 NTU PM	Post-Cal 10 NTU PM
3/12/19	0.62	0.28	13.7	11.4	0.34	0.25	12.6	11.0

Post Calibration Criteria			
-	-	± 0.5	Variance Noted:

Signature: _____ **Date:** _____

Field Instrument Calibration Log

Date: 3/13/19 **Weather:** Overcast, 19°F

Project/Site Name: PFAS RI WP **Instrument:** YSI 1650XL

Calibrated By: BrA **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity 1413 ~~(1.413 µS/cm^c)~~		1383	1413	18.08	1393	12.71	±10 µS/cm	
pH (7)		7.17	7.00	19.06	7.05	12.03	± 0.3 Ph *	
pH (4)		3.95	4.00	18.35	3.96	12.52	± 0.3 Ph *	
pH (10)		9.73	9.95	19.00	10.13	12.14	± 0.3 Ph *	
ORP (240 mv)		237.3	240.0	19.08	241.7	13.10	±10 mv	
Dissolved Oxygen (%)	—	97.9	100.0	24.33	103.6	11.51	-	
Dissolved Oxygen (mg/L)	—	8.18	8.34	24.33	8.47	11.51	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	760	760	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/13/19

Field Instrument Calibration Log

Date: 3/18/19 **Weather:** Overcast, 36°F

Project/Site Name: PFAS RI VP -A2 **Instrument:** YSI 650XL

Calibrated By: BrA **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])		1353	1413	18.63	1409	16.52	±10 µS/cm	
pH (7)		7013	7.00	18.96	7.21	16.03	± 0.3 Ph *	
pH (4)		3.91	4.00	18.85	3.81	16.27	± 0.3 Ph *	
pH (10)		9.75	9.96	18.88	10.06	15.93	± 0.3 Ph *	
ORP (240 mv)		237.9	240.0	19.13	243.7	15.97	±10 mv	
Dissolved Oxygen (%)	—	129.8	100.1	21.72	97.5	12.11	-	
Dissolved Oxygen (mg/L)	—	11.04	8.36	21.72	8.21	12.11	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	760	761	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/19/19

Field Instrument Calibration Log

Date: 3/15/19 **Weather:** Overcast, 40°F

Project/Site Name: PFAS RI VP **Instrument:** YSI 650 XL

Calibrated By: B.A **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm^c)		1413	1413	19.08	1410	17.96	±10 µS/cm	N
pH (7)		7.15	7.00	19.48	7.05	17.26	± 0.3 Ph *	N
pH (4)		4.03	4.00	19.35	4.01	18.03	± 0.3 Ph *	N
pH (10)		9.75	9.96	19.46	9.98	18.14	± 0.3 Ph *	N
ORP (240 mv)		238.1	240.0	19.31	241.7	17.10	±10 mv	N
Dissolved Oxygen (%)	—	128.6	100.1	23.41	96.7	16.50	-	N
Dissolved Oxygen (mg/L)	—	13.15	9.62	23.41	9.51	16.50	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	760	23.41	760		-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: B.A **Date:** 3/15/19

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI VP A2 **Instrument:** Lamotte 2020we

Calibrated By: B+A **Serial Number:** 1828-0412

	AM Calibration				PM Post Calibration Check		
Date	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	Variance Noted
3/13/19	0.06	0.05	7.62	8.94	0.02	9.71	10NTU
3/14/19	0.12	0.03	8.76	9.37	0.08	9.60	N
3/15/19	0.05	0.02	9.21	9.80	0.03	9.75	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 3/15/19

Field Instrument Calibration Log

Date: 3/26/19 **Weather:** 30°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/2019	1.356	1.413	5.58	1.410	8.34	±10 µS/cm	N
pH (7)	10/2020	7.31	7.00	6.99	7.03	8.28	± 0.3 Ph *	N
pH (4)	3/2020	3.51	3.99	5.33	3.83	8.10	± 0.3 Ph *	N
pH (10)	10/31/19	9.88	10.00	6.74	10.03	8.97	± 0.3 Ph *	N
ORP (240 mv)	01/2023	247.6	240.3	5.82	241.3	8.03	±10 mv	N
Dissolved Oxygen (%)	—	97.8	100.0	4.32	101.2	6.32	-	N
Dissolved Oxygen (mg/L)	—	12.80	13.02	4.32	12.82	6.32	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 3/26/19

Field Instrument Calibration Log

Date: 3/28/19 **Weather:** 40°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 800		Cal. Temp. (°C)	PM Post Cal. Check Time 1515	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	3/2019	1.436	1.413	15.27	1.410	15.35	±10 µS/cm	N
pH (7)	10/2020	7.01	7.00	15.86	7.02	15.39	± 0.3 Ph *	N
pH (4)	3/2020	4.10	4.00	14.84	4.02	15.22	± 0.3 Ph *	N
pH (10)	10/31/19	9.83	10.00	14.71	10.09	15.38	± 0.3 Ph *	N
ORP (240 mv)	1/2023	228.4	240.1	16.20	240.9	15,97	±10 mv	N
Dissolved Oxygen (%)	—	106.0	100.0	14.13	102.3	14.93	-	N
Dissolved Oxygen (mg/L)	—	10.94	10.30	14.13	10.61	14.93	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	-	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 3/28/19

KGS

Field Instrument Calibration Log

Date: 4/1/19 **Weather:** 35°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	Morning Calibration Time 800		Cal. Temperature °C	Afternoon Calibration Time 1440		Cal. Temperature °C	Post Cal. Criteria
Specific Conductivity (1.413 µS/cm°)	4/2021	1.339	1.413	8.45	1.406	—	9.59	±10 µS/cm
pH (7)	10/2020	7.52	7.00	9.16	7.09	—	9.52	± 0.3 Ph *
pH (4)	3/2020	3.88	4.01	8.14	4.04	—	9.83	± 0.3 Ph *
pH (10)	10/31/19	9.69	10.01	9.34	10.09	—	9.87	± 0.3 Ph *
ORP (240 mv)	1/2023	241.5	240.0	8.93	240.3	—	9.85	±10 mv
Dissolved Oxygen (%)	—	80.8	100.0	5.46	99.3	—	7.38	-
Dissolved Oxygen (mg/L)	—	10.47	12.96	5.46	12.54	—	7.38	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solutic no negative value
Barometric Pressure (mmHg)	—	760	—	—	760	—	—	-

Notes:

*** Ph Unit with Ph 7 Buffer**

Variance Noted: No

Signature: Dave Kortjohn **Date:** 4/1/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI **Instrument:** LaMotte 2020we

Calibrated By: Dave Kortjohn **Serial Number:** 1828-0412

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
3/18/19	0.06	0.06	7.83	10.00	0.05	9.46	
3/19/19	0.04	0.04	8.12	10.00	0.04	8.97	
3/20/19	0.01	0.01	8.48	10.00	0.02	9.13	
3/22/19	0.02	0.02	8.52	10.00	0.02	7.53	
3/26/19	0.01	0.01	8.34	10.00	0.01	9.53	
3/28/19	0.00	0.00	10.11	10.00	0.00	10.05	
4/1/19	0.01	0.01	10.09	10.00	0.01	10.12	

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: Dave Kortjohn **Date:** 4/1/19

Field Instrument Calibration Log

Date: 3/25/19 **Weather:** Overcast, 35°F

Project/Site Name: PFAS RI WP A1 **Instrument:** YSI EXO 650XL

Calibrated By: BrA **Serial Number:** 14268

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm^c)		1426	1413	16.75	1410	1413	±10 µS/cm	N
pH (7)		7.01	7.00	14.97	7.00	7.00	± 0.3 Ph *	N
pH (4)		4.00	4.00	14.96	3.95	4.00	± 0.3 Ph *	N
pH (10)		9.81	10.00	14.81	10.03	10.01	± 0.3 Ph *	N
ORP (240 mv)		238.4	240.1	15.72	240.9	240.0	±10 mv	
Dissolved Oxygen (%)		96.3	100.1	13.04	99.6	100.1	-	
Dissolved Oxygen (mg/L)		10.17	10.55	13.04	10.49	10.54	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)		760	760	—	760	760	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BrA **Date:** 3/25/19

KGS

Field Instrument Calibration Log

Date: 3/26/19 **Weather:** 21°F, Clr Sky

Project/Site Name: PFAS RI WP A1 **Instrument:** YSI 650 XL

Calibrated By: B.A **Serial Number:** 11B100156

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	5/19	1068	1413	9.74	1417	12.36	±10 µS/cm	N
pH (7)	5/19	7.51	7.00	9.63	7.03	13.01	± 0.3 Ph *	N
pH (4)	5/19	3.95	4.00	9.57	4.01	12.15	± 0.3 Ph *	N
pH (10)	5/19	10.26	10.04	8.65	10.03	12.71	± 0.3 Ph *	N
ORP (240 mv)	10/22	256.0	240.1	9.50	241.7	12.23	±10 mv	N
Dissolved Oxygen (%)	—	121.0	99.5	8.14	101.7	12.52	-	N
Dissolved Oxygen (mg/L)	—	14.25	11.74	8.14	11.81	12.52	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	756.7	756.7	-	760	12.52	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/26/19

Field Instrument Calibration Log

Date: 3/27/19 **Weather:** Clear, 19°F

Project/Site Name: PFAS RI WP A2 **Instrument:** YSI 650 XL

Calibrated By: BrA **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)		1455	1413	13.42	1410	15.20	±10 µS/cm	N
pH (7)		7.24	7.00	13.96	7.03	15.72	± 0.3 Ph *	
pH (4)		3.98	4.00	14.36	4.00	14.96	± 0.3 Ph *	
pH (10)		9.81	10.01	14.29	9.96	15.51	± 0.3 Ph *	
ORP (240 mv)		227.5	239.8	14.61	239.8	15.79	±10 mv	
Dissolved Oxygen (%)		129.8	100	13.02	103.7	15.01	-	
Dissolved Oxygen (mg/L)		13.69	10.52	13.02	10.61	15.01	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)		760	760	-	760	-	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/27/19

Field Instrument Calibration Log

Date: 3/29/19 **Weather:** Overcast, 43°F

Project/Site Name: PFAS RI @ WP A2 **Instrument:** YSI 650XL

Calibrated By: B.A **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)		1375	1413	14.41	1409	12.81	±10 µS/cm	N
pH (7)		7.26	7.00	14.58	7.04	12.74	± 0.3 Ph *	
pH (4)		3.82	4.00	14.98	3.98	12.92	± 0.3 Ph *	
pH (10)		10.37	10.04	14.32	10.01	13.10	± 0.3 Ph *	
ORP (240 mv)		230.7	240.0	14.90	240.8	12.70	±10 mv	
Dissolved Oxygen (%)		118.6	100.1	13.20	103.6	13.60	-	
Dissolved Oxygen (mg/L)		10.84	10.53	13.20	10.58	13.60	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)		760	760	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/29/19

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI WP

Instrument: ~~[illegible]~~ Lamotte 2020we

Calibrated By: BM

Serial Number: ~~[illegible]~~ 1828-042

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
3/25/19	0.08	0.03	10.7	10.4	0.04	10.1	N
3/26/19	0.03	0.01	11.7	10.5	0.04	10.3	N
3/27/19	0.04	0.03	10.9	10.8	0.05	10.4	N
3/29/19	0.09	0.04	9.88	10.0	0.03	10.6	Y (10)

SN 5083-5047

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 3/29/19

KGS

Field Instrument Calibration Log

Date: 3/18/19 **Weather:** 20's

Project/Site Name: Devens **Instrument:** YSI 6.50XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1505	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.429	1413	17.91°	1420	17.45°	±10 µS/cm	N
pH (7)	10/20	7.06	7.00	17.87°	7.06	17.61°	± 0.3 Ph *	N
pH (4)	3/20	3.97	4.00	17.96°	4.11	17.77°	± 0.3 Ph *	N
pH (10)	2/20	9.86	10.00	17.93°	9.93	17.68°	± 0.3 Ph *	N
ORP (240 mv)	10/22	246.3	240.0	17.89°	238.7	17.65°	±10 mv	N
Dissolved Oxygen (%)	N/A	106.2%	100.0%	17.79°	111.1%	17.41°	-	N
Dissolved Oxygen (mg/L)	N/A	10.03	10.00	17.82°	9.86	17.32°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/18/19

Field Instrument Calibration Log

Date: 3/19/19 **Weather:** 20's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 610		Cal. Temp. (°C)	PM Post Cal. Check Time 1505	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/19	1.403	1.413	17.63°	1.410	17.21°	±10 µS/cm	N
pH (7)	10/20	7.11	7.00	17.58°	7.03	17.31°	± 0.3 Ph *	N
pH (4)	3/20	4.09	4.00	17.69°	4.02	17.46°	± 0.3 Ph *	N
pH (10)	2/20	10.13	10.00	17.78°	10.11	17.01°	± 0.3 Ph *	N
ORP (240 mv)	10/22	237.1	240.0	17.96°	239.7	17.20°	±10 mv	N
Dissolved Oxygen (%)	N/A	102.9%	100.0%	17.99°	101.6%	17.03°	-	N
Dissolved Oxygen (mg/L)	N/A	9.62	10.00	18.03°	9.92	17.09°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: MA **Date:** 3/19/19

KGS

Field Instrument Calibration Log

Date: 3/22/19 **Weather:** 30's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: UbA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.426	1.413	18.71°	1.420	17.38°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	17.43°	7.03	17.26°	± 0.3 Ph *	N
pH (4)	3/20	3.86	4.00	17.68°	4.01	17.49°	± 0.3 Ph *	N
pH (10)	2/20	10.29	10.00	17.32°	10.03	17.68°	± 0.3 Ph *	N
ORP (240 mv)	10/22	238.7	240.0	17.61°	239.7	17.53°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	17.40°	106.1%	17.36°	-	N
Dissolved Oxygen (mg/L)	N/A	9.86	10.00	17.38°	9.93	17.42°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/22/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020WE

Calibrated By: [illegible]

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
3/18/19	0.00	0.00	10.31	10.00	0.04	9.86	N
3/19/19	0.07	0.00	10.21	10.00	0.06	9.93	N
3/22/19	0.11	0.00	10.11	10.00	0.03	9.99	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 3/22/19

KGS

Field Instrument Calibration Log

Date: 3/25/19 **Weather:** 30's

Project/Site Name: Devers **Instrument:** YSI 650xL

Calibrated By: VHL **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.439	1.413	18.11	1.410	17.69°	±10 µS/cm	N
pH (7)	10/20	7.03	7.00	18.38	7.03	17.37°	± 0.3 Ph *	N
pH (4)	3/20	3.89	4.00	18.21	4.00	16.42°	± 0.3 Ph *	N
pH (10)	2/20	9.67	10.00	18.07	10.03	16.89°	± 0.3 Ph *	N
ORP (240 mv)	10/22	237.1	240.0	18.06	242.6	17.01°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	17.97	103.0%	16.89°	-	N
Dissolved Oxygen (mg/L)	N/A	9.71	10.00	18.21	10.03	16.77°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/25/19

KGS

Field Instrument Calibration Log

Date: 3/29/19 **Weather:** 40's

Project/Site Name: Devens **Instrument:** YSI 650xL

Calibrated By: VBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.401	1.413	17.87°	1.410	16.97°	±10 µS/cm	N
pH (7)	10/20	7.03	7.00	17.68°	7.10	16.86°	± 0.3 Ph *	N
pH (4)	3/20	4.21	4.00	17.58°	4.06	17.03°	± 0.3 Ph *	N
pH (10)	2/20	9.69	10.00	17.79°	9.89	17.11°	± 0.3 Ph *	N
ORP (240 mv)	10/22	238.7	240.0	17.54°	241.1	17.16°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	17.38°	92.1%	17.15°	-	N
Dissolved Oxygen (mg/L)	N/A	9.86	10.00	17.29°	9.70	17.14°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 3/29/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: Lamotte 2020we

Calibrated By: VHA

Serial Number: 5083-5014

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
3/25/19	0.06	0.00	10.30	10.00	0.02	9.90	X
3/29/19	0.04	0.00	9.98	10.00	0.00	9.87	X

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 3/29/19

KGS

Field Instrument Calibration Log

Date: 4/1/19 **Weather:** 30's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 635		Cal. Temp. (°C)	PM Post Cal. Check Time 1505	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.399	1.413	17.81°	1.410	16.21°	±10 µS/cm	N
pH (7)	10/20	7.26	7.00	17.78°	703	16.14°	± 0.3 Ph *	N
pH (4)	3/20	4.18	4.00	17.69°	4.00	16.10°	± 0.3 Ph *	N
pH (10)	2/20	9.71	10.00	17.62°	9.86	16.38°	± 0.3 Ph *	N
ORP (240 mv)	10/22	241.1	240.0	17.58°	240.7	16.47°	±10 mv	N
Dissolved Oxygen (%)	N/A	106.6%	100.0%	17.49°	91.9%	16.39°	-	N
Dissolved Oxygen (mg/L)	N/A	10.16	10.00	17.30°	9.86	16.56°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/1/19

KGS

Field Instrument Calibration Log

Date: 4/2/19 **Weather:** 30's

Project/Site Name: Downs **Instrument:** YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 615		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.400	1.413	16.89°	1.410	16.66°	±10 µS/cm	N
pH (7)	10/20	7.07	7.00	17.21°	7.03	16.78°	± 0.3 Ph *	N
pH (4)	3/20	3.80	4.00	17.30°	3.97	16.93°	± 0.3 Ph *	N
pH (10)	2/20	9.65	10.00	17.36°	10.11	16.77°	± 0.3 Ph *	N
ORP (240 mv)	10/22	232.1	240.0	17.41°	238.7	16.81°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	17.31°	100.6%	16.93°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	17.21°	10.03	16.89°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/2/19

KGS

Field Instrument Calibration Log

Date: 4/3/19 **Weather:** 40's

Project/Site Name: Dams **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 635		Cal. Temp. (°C)	PM Post Cal. Check Time 1505	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	10/19	1.399	1.413	17.16°	1.410	16.91°	±10 µS/cm	N
pH (7)	10/20	7.06	7.00	17.23°	7.11	17.03°	± 0.3 Ph *	N
pH (4)	3/20	3.97	4.00	17.64°	4.06	17.21°	± 0.3 Ph *	N
pH (10)	2/20	9.86	10.00	17.78°	10.30	17.16°	± 0.3 Ph *	N
ORP (240 mv)	10/22	221.7	240.0	17.69°	241.1	17.18°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	17.81°	101.9%	17.21°	-	N
Dissolved Oxygen (mg/L)	N/A	9.81	10.00	17.32°	9.89	17.16°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/3/19

KGS

Field Instrument Calibration Log

Date: 4/4/19 **Weather:** 30's

Project/Site Name: Devens **Instrument:** YSI 650xL

Calibrated By: WBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.410	1.413	17.61°	1.420	16.97°	±10 µS/cm	N
pH (7)	10/20	7.11	7.00	17.29°	7.02	16.93°	± 0.3 Ph *	N
pH (4)	3/20	3.96	4.00	17.30°	3.97	16.90°	± 0.3 Ph *	N
pH (10)	2/20	9.88	10.00	17.20°	10.06	16.45°	± 0.3 Ph *	N
ORP (240 mv)	10/22	242.6	240.0	17.31°	241.1	16.39°	±10 mv	N
Dissolved Oxygen (%)	N/A	90.0%	100.0%	17.15°	101.6%	16.30°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	17.09°	10.10	16.29°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/4/19

KGS

Field Instrument Calibration Log

Date: 4/5/19 **Weather:** 40's

Project/Site Name: Demars **Instrument:** YSI 650XL

Calibrated By: K/A **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1509	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.426	1.413	16.21°	1.407	17.17°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	16.71°	6.96	16.98°	± 0.3 Ph *	N
pH (4)	3/20	4.23	4.00	16.38°	4.10	16.70°	± 0.3 Ph *	N
pH (10)	2/20	10.06	10.00	16.41°	9.80	16.45°	± 0.3 Ph *	N
ORP (240 mv)	10/22	249.7	240.0	16.56°	241.7	16.53°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.6%	100.0%	16.83°	101.6%	16.66°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	16.41°	9.99	16.70°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/5/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020we

Calibrated By: WA

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/1/19	0.06	0.00	9.87	10.00	0.02	9.87	N
4/2/19	0.23	0.00	10.03	10.00	0.09	10.15	N
4/3/19	0.09	0.00	10.10	10.00	0.21	9.86	N
4/4/19	0.13	0.00	10.16	10.00	0.12	9.91	N
4/5/19	0.26	0.00	9.58	10.00	0.07	10.10	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 4/5/19

KGS

Field Instrument Calibration Log

Date: 4/2/19 **Weather:** 30°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1440	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	4/2021	1.545	1.413	13.97	1.403	14.92	±10 µS/cm	N
pH (7)	10/2020	6.50	7.00	14.26	6.80	14.87	± 0.3 Ph *	N
pH (4)	3/2020	3.37	3.90	14.51	4.12	14.40	± 0.3 Ph *	N
pH (10)	10/31/19	10.27	10.00	14.41	9.78	14.60	± 0.3 Ph *	N
ORP (240 mv)	1/2023	241.5	240.0	14.66	241.3	14.65	±10 mv	N
Dissolved Oxygen (%)	—	135.6	100.0	14.52	93.4	11.38	-	N
Dissolved Oxygen (mg/L)	—	13.81	10.17	14.52	9.09	11.38	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Dave Kortjohn 4/2/19

Field Instrument Calibration Log

Date: 4/3/19 **Weather:** 40°F, rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.401	1.413	14.99	1.410	15.23	±10 µS/cm	N
pH (7)	3/2020	7.03	7.00	15.41	7.08	15.45	± 0.3 Ph *	N
pH (4)	3/2020	4.12	4.02	15.35	4.03	15.39	± 0.3 Ph *	N
pH (10)	2/2020	10.73	10.00	15.53	10.12	15.41	± 0.3 Ph *	N
ORP (240 mv)	01/2023	243.6	240.0	14.20	240.9	15.37	±10 mv	N
Dissolved Oxygen (%)	–	77.5	100.0	14.54	93.4	14.59	-	N
Dissolved Oxygen (mg/L)	–	7.60	10.19	14.54	9.82	14.59	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: **Date:** 4/3/19

Field Instrument Calibration Log

Date: 4/4/19 **Weather:** 40°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 740		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.456	1.413	11.79	1.416	11.89	±10 µS/cm	N
pH (7)	3/2020	6.98	7.00	12.81	7.01	11.72	± 0.3 Ph *	N
pH (4)	3/2020	4.43	4.02	11.20	4.12	11.59	± 0.3 Ph *	N
pH (10)	2/2020	10.01	10.00	11.31	10.10	12.12	± 0.3 Ph *	N
ORP (240 mv)	01/2023	242.1	240.0	9.44	240.8	10.83	±10 mv	N
Dissolved Oxygen (%)	—	104.8	100.0	4.82	99.1	11.03	-	N
Dissolved Oxygen (mg/L)	—	13.42	12.83	4.82	12.41	11.03	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/4/19

KGS

Field Instrument Calibration Log

Date: 4/5/19 **Weather:** 41°F, cloudy

Project/Site Name: Devens PFAS R1 **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 800		Cal. Temp. (°C)	PM Post Cal. Check Time 1440	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	4/2021	1.415	1.413	14.16	1.417	13.89	±10 µS/cm	N
pH (7)	3/2020	6.91	7.00	13.79	7.07	13.82	± 0.3 Ph *	N
pH (4)	3/2020	4.23	4.00	13.28	4.12	13.93	± 0.3 Ph *	N
pH (10)	3/2020	9.86	10.00	12.96	10.07	13.77	± 0.3 Ph *	N
ORP (240 mv)	01/2023	242.3	240.0	12.82	241.3	13.80	±10 mv	N
Dissolved Oxygen (%)	—	82.9	100.1	11.46	90.1	11.72	-	N
Dissolved Oxygen (mg/L)	—	9.34 ~~9.36~~ DK	11.06	11.46	9.93	11.72	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: ~~4/5/19~~ David Kortjohn **Date:** 4/5/19

Field Instrument Calibration Log

Date: 4/8/19 **Weather:** 40°F, rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.407	1.413	17.02	1.407	16.82	±10 µS/cm	N
pH (7)	3/2020	6.78	7.00	16.60	7.07	16.72	± 0.3 Ph *	N
pH (4)	3/2020	4.28	4.00	16.66	4.03	16.79	± 0.3 Ph *	N
pH (10)	3/2020	10.33	10.00	16.69	10.21	16.75	± 0.3 Ph *	N
ORP (240 mv)	1/2023	241.6	240.0	16.48	240.9	16.78	±10 mv	N
Dissolved Oxygen (%)	—	98.7	100.0	14.66	98.3	14.69	-	N
Dissolved Oxygen (mg/L)	—	10.00	10.18	14.66	9.89	14.69	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/8/19

Field Instrument Calibration Log

Date: 4/9/19 **Weather:** 35°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 720		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.428	1.413	15.28	1.410	12.82	±10 µS/cm	N
pH (7)	3/2020	6.69	7.00	16.18	7.07	12.78	± 0.3 Ph *	N
pH (4)	3/2020	4.37	4.02	14.19	4.09	12.80	± 0.3 Ph *	N
pH (10)	3/2020	10.33	10.00	14.78	10.21	12.77	± 0.3 Ph *	N
ORP (240 mv)	1/2023	250.9	240.1	15.27	242.3	12.91	±10 mv	N
Dissolved Oxygen (%)	—	118.7	100.0	10.69	102.3	9.91	-	N
Dissolved Oxygen (mg/L)	—	13.22	11.11	10.69	11.52	9.91	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/9/19

Field Instrument Calibration Log

Date: 4/10/19 **Weather:** 40°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 720		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm^{c})	4/2021	1.385	1.413	12.11	1.411	10.59	±10 µS/cm	N
pH (7)	3/2020	6.96	7.00	12.10	7.03	10.63	± 0.3 Ph *	N
pH (4)	3/2020	4.25	4.02	10.97	4.07	10.69	± 0.3 Ph *	N
pH (10)	3/2020	9.97	10.00	11.72	10.02	10.58	± 0.3 Ph *	N
ORP (240 mv)	1/2023	237.2	240.0	11.50	241.3	10.61	±10 mv	N
Dissolved Oxygen (%)	–	107.9	100.0	9.59	101.3	9.34	-	N
Dissolved Oxygen (mg/L)	–	12.33	11.40	9.59	11.59	9.34	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/10/19

Field Instrument Calibration Log

Date: 4/11/19 **Weather:** 45°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Koetjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 720		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.369	1.413	13.18	1.410	13.92	±10 µS/cm	N
pH (7)	3/2020	6.92	7.00	13.43	7.04	13.95	± 0.3 Ph *	N
pH (4)	3/2020	4.08	4.01	13.15	4.09	13.24	± 0.3 Ph *	N
pH (10)	3/2020	9.93	10.00	12.83	10.10	13.58	± 0.3 Ph *	N
ORP (240 mv)	1/2023	233.0	240.0	12.21	241.3	13.51	±10 mv	N
Dissolved Oxygen (%)	—	134.6	100.0	10.84	102.3	11.21	-	N
Dissolved Oxygen (mg/L)	—	14.90	11.06	10.84	11.51	11.21	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/11/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: ~~YSI 6~~ LaMotte 2020we

Calibrated By: Dave Kortjohn

Serial Number: 1228-0412

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
4/2/19	0.02	0.01	8.23	10.00	0.07	8.81	
4/3/19	0.00	0.00	9.33	10.00	0.00	9.56	
4/4/19	0.01	0.00	9.25	10.00	0.01	9.76	
4/5/19	0.01	0.00	9.12	10.00	0.01	8.93	
4/8/19	0.01	0.01	8.10	10.00	0.01	8.98	
4/9/19	0.01	0.01	11.00	10.00	0.01	10.13	
4/10/19	0.01	0.01	10.34	10.00	0.01	10.22	
4/11/19	0.00	0.00	8.85	10.00	0.0	9.59	

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: Dave Kortjohn

Date: 4/11/19

KGS

Field Instrument Calibration Log

Date: 4/8/19 **Weather:** 30's Heavy Rain

Project/Site Name: Dennis **Instrument:** YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/19	1.403	1.413	15.96°	1.420	15.93°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	15.86°	7.11	15.90°	± 0.3 Ph *	N
pH (4)	3/20	3.82	4.00	15.80°	4.11	14.96°	± 0.3 Ph *	N
pH (10)	2/20	9.62	10.00	15.83°	10.09	15.26°	± 0.3 Ph *	N
ORP (240 mv)	10/22	252.1	240.0	15.73°	236.1	15.20°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	15.59°	111.1%	15.32°	-	N
Dissolved Oxygen (mg/L)	N/A	9.66	10.00	15.63°	10.01	15.40°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/8/19

KGS

Field Instrument Calibration Log

Date: 4/9/19 **Weather:** 30's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 705		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/19	1.390	1.413	15.89°	1.410	15.39°	±10 µS/cm	N
pH (7)	10/20	7.07	7.00	15.80°	7.11	15.26°	± 0.3 Ph *	N
pH (4)	3/20	4.20	4.00	15.70°	4.00	15.18°	± 0.3 Ph *	N
pH (10)	2/20	9.70	10.00	15.63°	9.87 ~~9.87~~	15.33°	± 0.3 Ph *	N
ORP (240 mv)	10/22	241.9	240.0	15.46°	242.2	15.00°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	15.31°	106.9%	~~14.97°~~	-	N
Dissolved Oxygen (mg/L)	N/A	10.11	10.00	15.60°	~~9.88~~ 9.88	15.26°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: JK **Date:** 4/9/19

KGS

Field Instrument Calibration Log

Date: 4/10/19 **Weather:** 30's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: VBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/19	1.402	1.413	15.03°	1.410	16.03°	±10 µS/cm	N
pH (7)	10/20	7.27	7.00	14.87°	7.03	15.97°	± 0.3 Ph *	N
pH (4)	3/20	4.18	4.00	14.66°	4.11	15.93°	± 0.3 Ph *	N
pH (10)	2/20	10.00	10.00	14.77°	9.97	15.78°	± 0.3 Ph *	N
ORP (240 mv)	10/22	242.2	240.0	15.21°	241.1	15.37°	±10 mv	N
Dissolved Oxygen (%)	N/A	118.7%	100.0%	15.03°	106.7%	15.20°	-	N
Dissolved Oxygen (mg/L)	N/A	9.53	10.00	15.61°	10.06	15.21	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/10/19

KGS

Field Instrument Calibration Log

Date: 4/11/19 **Weather:** 30s

Project/Site Name: Downs **Instrument:** YSI 650XL

Calibrated By: W/A **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.432	1413	15.21°	1.411	16.78°	±10 µS/cm	N
pH (7)	10/20	7.36	7.00	15.49°	7.03	16.89°	± 0.3 Ph *	N
pH (4)	3/20	4.09	4.00	15.63°	4.03	16.99°	± 0.3 Ph *	N
pH (10)	2/20	9.76	10.00	15.27°	9.99	16.92°	± 0.3 Ph *	N
ORP (240 mv)	10/22	242.1	240.0	15.18°	241.1	17.26°	±10 mv	N
Dissolved Oxygen (%)	N/A	89.7%	100.0%	15.29°	96.7%	17.13°	-	N
Dissolved Oxygen (mg/L)	N/A	10.15	10.00	15.36°	10.30	17.07°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/11/19

KGS

Field Instrument Calibration Log

Date: 4/12/19 **Weather:** 80's

Project/Site Name: Devons **Instrument:** YSI 650x2

Calibrated By: V&A **Serial Number:** 17B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1409	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.410	1.413	15.69°	1.410	15.27°	±10 µS/cm	N
pH (7)	10/20	6.66	7.00	15.72°	7.03	15.45°	± 0.3 Ph *	N
pH (4)	3/20	4.11	4.00	15.89°	4.00	15.39°	± 0.3 Ph *	N
pH (10)	2/20	9.88	10.00	15.99°	10.00	15.21°	± 0.3 Ph *	N
ORP (240 mv)	10/22	230.1	240.0	15.97°	238.7	15.40°	±10 mv	N
Dissolved Oxygen (%)	N/A	101.6%	100.0%	15.96°	100.9%	15.46°	-	N
Dissolved Oxygen (mg/L)	N/A	9.51	10.00	15.78°	10.02	15.63°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/12/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Downs

Instrument: LaMotte 2020we

Calibrated By: VGA

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/8/19	0.06	0.00	9.99	10.00	0.08	10.13	N
4/9/19	0.09	0.00	10.03	10.00	0.06	9.96	N
4/10/19	0.20	0.00	9.37	10.00	0.02	9.97	N
4/11/19	0.18	0.00	10.01	10.00	0.00	10.03	N
4/12/19	0.03	0.00	10.16	10.00	0.06	10.11	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 4/12/19

KGS

Field Instrument Calibration Log

Date: 4/12/19 **Weather:** 45°F ~~39°F~~, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.434	1.413	14.20	1.403	14.51	±10 µS/cm	N
pH (7)	3/2020	6.96	7.00	14.14	7.04	14.42	± 0.3 Ph *	N
pH (4)	3/2020	4.34	4.02	13.07	4.05	14.47	± 0.3 Ph *	N
pH (10)	3/2020	10.38	10.00	13.88	10.18	14.45	± 0.3 Ph *	N
ORP (240 mv)	1/2023	242.2	240.2	13.41	241.3	14.53	±10 mv	N
Dissolved Oxygen (%)	—	79.6	100.0	10.27	92.9	10.93	-	N
Dissolved Oxygen (mg/L)	—	8.92	11.21	10.27	10.92	10.93	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/12/19

KGS

Field Instrument Calibration Log

Date: 4/16/19 **Weather:** 45°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 725		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.363	1.413	14.94	1.412	14.89	±10 µS/cm	N
pH (7)	3/2020	7.01	7.00	14.43	7.03	14.85	± 0.3 Ph *	N
pH (4)	3/2020	3.86	3.99	14.26	4.02	14.87	± 0.3 Ph *	N
pH (10)	3/2020	9.95	10.00	14.08	10.10	14.83	± 0.3 Ph *	N
ORP (240 mv)	1/2023	245.8	240.0	13.97	241.3	14.89	±10 mv	N
Dissolved Oxygen (%)	–	122.3	100.0	13.18	106.3	13.49	-	N
Dissolved Oxygen (mg/L)	–	13.12	10.47	13.18	10.91	13.49	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/16/19

Field Instrument Calibration Log

Date: 4/17/19 **Weather:** 47°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	4/2021	1.493	1.413	14.00	1.413	14.99	±10 µS/cm	N
pH (7)	3/2020	6.91	7.00	13.99	7.03	15.66	± 0.3 Ph *	N
pH (4)	3/2020	4.33	4.02	12.75	4.12	15.52	± 0.3 Ph *	N
pH (10)	3/2020	10.11	10.00	13.73	10.13	15.62	± 0.3 Ph *	N
ORP (240 mv)	5/2023	210.4	240.0	14.47	241.3	15.37	±10 mv	N
Dissolved Oxygen (%)	—	92.0	100.0	11.43	95.2	14.23	-	N
Dissolved Oxygen (mg/L)	—	9.94	10.87	11.43	10.52	14.23	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/17/19

Field Instrument Calibration Log

Date: 4/18/19 **Weather:** 40°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 800		Cal. Temp. (°C)	PM Post Cal. Check Time 1505	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.370	1.413	14.10	1.411	14.23	±10 µS/cm	N
pH (7)	3/2020	6.98	7.00	14.62	7.02	14.27	± 0.3 Ph *	N
pH (4)	3/2020	4.31	4.04	13.63	4.06	14.91	± 0.3 Ph *	N
pH (10)	3/2020	10.23	10.00	13.71	10.03	14.52	± 0.3 Ph *	N
ORP (240 mv)	1/2023	220.5	240.0	13.41	234.5	14.38	±10 mv	N
Dissolved Oxygen (%)	—	95.6	100.0	10.91	98.3	11.91	-	N
Dissolved Oxygen (mg/L)	—	10.52	11.04	10.91	10.72	11.91	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/18/19

KGS

Field Instrument Calibration Log

Date: 4/19/19 **Weather:** 55°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.450	1.413	15.73	1.413	15.84	±10 µS/cm	N
pH (7)	3/2020	6.85	7.00	15.52	7.03	15.92	± 0.3 Ph *	N
pH (4)	3/2020	4.34	4.02	15.61	4.07	15.90	± 0.3 Ph *	N
pH (10)	3/2020	10.02	10.00	15.34	10.11	15.82	± 0.3 Ph *	N
ORP (240 mv)	1/2023	284.5	240.0	15.62	248.3	15.91	±10 mv	N
Dissolved Oxygen (%)	—	98.6	100.0	16.16	103.6	17.39	-	N
Dissolved Oxygen (mg/L)	—	9.59	9.79	16.16	10.03	17.39	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/19/19

KGS

Field Instrument Calibration Log

Date: 4/22/19 **Weather:** 50°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1440	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.556	1.413	16.23	1.412	16.34	±10 µS/cm	N
pH (7)	3/2020	6.96	7.00	16.59	7.02	16.38	± 0.3 Ph *	N
pH (4)	3/2020	4.16	4.00	16.24	4.04	16.22	± 0.3 Ph *	N
pH (10)	3/2020	10.19	10.00	16.51	10.18	16.23	± 0.3 Ph *	N
ORP (240 mv)	1/2023	221.2	240.0	15.83	245.3	16.20	±10 mv	N
Dissolved Oxygen (%)	—	95.4	100.0	15.81	97.8	16.92	-	N
Dissolved Oxygen (mg/L)	—	9.63	10.25	15.81	10.12	16.92	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/22/19

KGS

Field Instrument Calibration Log

Date: 4/23/19 **Weather:** 45°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	4/2021	1,383	1413	15.50	1.411	16.12	±10 µS/cm	N
pH (7)	3/2020	6.58	7.00	15.74	7.05	16.03	± 0.3 Ph *	N
pH (4)	3/2020	4.35	4.02	15.06	4.05	16.13	± 0.3 Ph *	N
pH (10)	3/2020	10.03	10.00	15.30	10.01	16.09	± 0.3 Ph *	N
ORP (240 mv)	1/2023	256.4	240.0	15.09	232.3	16.19	±10 mv	N
Dissolved Oxygen (%)	—	151.8	100.0	11.69	104.3	15.81	-	N
Dissolved Oxygen (mg/L)	—	16.43	10.96	11.69	11.21	15.81	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Dave Kortjohn 4/23/19

Field Instrument Calibration Log

Date: 4/25/19 **Weather:** 48°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	4/2021	1.400	1.413	14.75	1.411	14.98	±10 µS/cm	N
pH (7)	3/2020	7.18	7.00	14.55	7.03	14.90	± 0.3 Ph *	N
pH (4)	3/2020	4.18	4.00	14.47	4.03	14.93	± 0.3 Ph *	N
pH (10)	3/2020	10.12	10.00	14.21	10.04	14.91	± 0.3 Ph *	N
ORP (240 mv)	1/2023	210.4	240.0	14.59	232.3	14.87	±10 mv	N
Dissolved Oxygen (%)	—	108.9	100.0	13.53	103.2	14.57	-	N
Dissolved Oxygen (mg/L)	—	11.38	10.43	13.53	10.83	14.57	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 4/25/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: La Motte 2020 we

Calibrated By: Dave Kortjohn

Serial Number: 1828-0412

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
4/12/19	0.00	0.00	9.34	10.00	0.01	9.91	
4/16/19	0.00	0.00	9.18	10.00	0.00	9.93	
4/17/19	0.02	0.01	8.57	10.00	0.01	9.13	
4/18/19	0.01	0.01	8.96	10.00	0.01	9.03	
4/19/19	0.01	0.01	9.70	10.00	0.01	9.75	
4/22/19	0.01	0.01	9.52	10.00	0.01	9.59	
4/23/19	0.00	0.00	9.24	10.00	0.00	9.92	
4/25/19	0.00	0.00	9.83	10.00	0.00	9.97	
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: Dave Kortjohn

Date: 4/25/19

KGS

Field Instrument Calibration Log

Date: 4/17/19 **Weather:** Overcast, 37°F

Project/Site Name: PFAS RI VP **Instrument:** YSI 650 XL

Calibrated By: BM **Serial Number:** 15K100983

Parameters	Solution Expiration Date	AM Calibration Time 0900		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	10/19	1420	1413	15.66	1415	17.21	±10 µS/cm	N
pH (7)	10/20	6.98	7.00	15.76	6.99	17.52	± 0.3 Ph *	
pH (4)	03/20	4.01	4.00	16.09	4.00	18.01	± 0.3 Ph *	
pH (10)	02/20	10.03	10.00	15.88	9.98	17.30	± 0.3 Ph *	
ORP (240 mv)	10/19	240.1	240.0	15.89	239.6	17.49	±10 mv	
Dissolved Oxygen (%)	—	97.2	100	15.25	98.9	16.58	-	
Dissolved Oxygen (mg/L)	—	9.75	10.03	15.25	9.92	16.58	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	-	760	760	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BM BA **Date:** 4/17/19

KGS

Field Instrument Calibration Log

Date: 4/18/19 **Weather:** Overcast, rainy, 39° F

Project/Site Name: PFAS RI WP **Instrument:** YSI 650XL

Calibrated By: BA **Serial Number:** 15K100983

Parameters	Solution Expiration Date	AM Calibration Time 0640		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	10/19	1316	1413	17.91	1424	14.28	±10 µS/cm	Y
pH (7)	10/20	7.02	7.00	18.09	7.13	14.70	± 0.3 Ph *	N
pH (4)	03/20	4.04	4.00	17.96	4.03	15.10	± 0.3 Ph *	N
pH (10)	02/20	10.03	10.00	17.83	10.10	14.53	± 0.3 Ph *	N
ORP (240 mv)	10/19	237.0	240.0	17.34	239.6	14.72	±10 mv	N
Dissolved Oxygen (%)	—	90.4	100	16.92	101.7	15.00	-	N
Dissolved Oxygen (mg/L)	—	8.89	9.97	16.9	9.99	15.00	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	760		760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

4/18/19

(Mark Noted Variences on Field Forms)

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PFAS #21 WP A2

Instrument: Lamotte 2020we

Calibrated By: BA

Serial Number: 3711-3513

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/17/19	0.02	0.01	10.5	10.01	0.01	10.1	N
4/18/19	0.05	0.02	11.3	10.05	0.02	10.07	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: BTD

Date: 4/22/19

Field Instrument Calibration Log

Date: 4/16/19 **Weather:** 40's

Project/Site Name: Dams **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 705		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	10/19	1.426	1.413	15.73°	1.410	16.21°	±10 µS/cm	N
pH (7)	10/20	6.89	7.00	15.62°	7.03	16.14°	± 0.3 Ph *	N
pH (4)	3/20	4.13	4.00	15.58°	4.06	16.03°	± 0.3 Ph *	N
pH (10)	2/20	10.07	10.00	15.63°	9.90	16.19°	± 0.3 Ph *	N
ORP (240 mv)	10/22	241.7	240.0	15.41°	238.7	16.23°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.2%	100.0%	15.73°	100.6%	16.19°	-	N
Dissolved Oxygen (mg/L)	N/A	9.87	10.00	15.69°	9.79	16.20°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 4/16/19

KGS

Field Instrument Calibration Log

Date: 4/19/19 **Weather:** 60's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: WBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.430	1.413	16.78°	1.420	16.47°	±10 µS/cm	N
pH (7)	10/20	7.22	7.00	16.63°	7.03	16.50°	± 0.3 Ph *	N
pH (4)	3/20	3.82	4.00	16.81°	4.00	16.39°	± 0.3 Ph *	N
pH (10)	2/20	9.60	10.00	16.77°	10.01	16.47°	± 0.3 Ph *	N
ORP (240 mv)	10/22	231.1	240.0	16.73°	238.7	16.59°	±10 mv	N
Dissolved Oxygen (%)	N/A	101.7%	100.0%	16.80°	101.1%	16.66	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	16.41°	9.87	16.52°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760		760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/19/19

KGS

Field Instrument Calibration Log

Date: ~~4/23/19~~ 4/23/19 **Weather:** 50's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: N/A **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	11/19	1.420	1.413	16.69°	1.410	16.02°	±10 µS/cm	
pH (7)	10/20	7.11	7.00	16.52°	7.11	16.48°	± 0.3 Ph *	
pH (4)	3/20	4.06	4.00	16.39°	4.01	16.23°	± 0.3 Ph *	
pH (10)	2/20	9.87	10.00	16.60°	10.00	16.03°	± 0.3 Ph *	
ORP (240 mv)	10/22	232.1	240.0	16.45°	241.1	16.00°	±10 mv	
Dissolved Oxygen (%)	N/A	121.6%	100.0%	16.37°	101.1%	16.03°	-	
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	16.24°	10.03	15.99°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	N/A	—	769	—	769	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/23/19

KGS

Field Instrument Calibration Log

Date: 4/24/19 **Weather:** 50's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: N/A **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	1.413	16.21°	1.410	17.03°	±10 µS/cm	N
pH (7)	10/20	7.11	7.00	16.47°	7.03	16.97°	± 0.3 Ph *	N
pH (4)	3/20	3.87	4.00	16.59°	4.11	16.86°	± 0.3 Ph *	N
pH (10)	2/20	9.46	10.00	16.66°	10.16	16.99°	± 0.3 Ph *	N
ORP (240 mv)	10/22	247.7	240.0	16.80°	242.6	17.20°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	16.73°	109.7%	16.89°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	16.20°	9.80	16.13°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	~~760~~ —	769	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 4/24/19

KGS

Field Instrument Calibration Log

Date: 4/25/19 **Weather:** 50's

Project/Site Name: Dennis **Instrument:** YSI 650 XL

Calibrated By: MBL **Serial Number:** 11B1001 86

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.401	1.413	16.45°	1.412	16.27°	±10 µS/cm	N
pH (7)	10/20	7.15	7.00	16.31°	7.03	16.59°	± 0.3 Ph *	N
pH (4)	3/20	4.21	4.00	16.18°	4.11	16.40°	± 0.3 Ph *	N
pH (10)	2/20	10.11	10.00	16.14°	10.13	16.57°	± 0.3 Ph *	N
ORP (240 mv)	10/22	237.6	240.0	16.07°	241.1	16.38°	±10 mv	N
Dissolved Oxygen (%)	N/A	102.7%	100.0%	16.31°	101.6%	16.31°	-	N
Dissolved Oxygen (mg/L)	N/A	9.69	10.00	16.21°	9.93	16.27°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/25/19

KGS

Field Instrument Calibration Log

Date: 4/26/19 **Weather:** 40's Heavy Rain

Project/Site Name: Devers **Instrument:** YSI 650 XL ~~11B100186~~

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.426	1.413	16.38°	1.420	16.41°	±10 µS/cm	N
pH (7)	10/20	7.26	7.00	16.41°	7.03	16.41°	± 0.3 Ph *	N
pH (4)	3/20	3.77	4.00	16.66°	4.00	16.20°	± 0.3 Ph *	N
pH (10)	2/20	9.61	10.00	16.73°	9.90	16.09°	± 0.3 Ph *	N
ORP (240 mv)	10/22	243.7	240.0	16.69°	241.1	16.13°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	16.51°	101.6%	16.20°	-	N
Dissolved Oxygen (mg/L)	N/A	10.06	10.00	16.39°	9.97	16.21°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/26/19

Turbidity Instrument Calibration Log

Project/Site Name: Devers **Instrument:** LaMotte 2020we

Calibrated By: KBA **Serial Number:** 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/16/19	0.03	0.00	9.90	10.00	0.06	9.97	N
4/19/19	0.05	0.00	10.16	10.00	0.03	10.01	N
4/22/19	0.07	0.00	10.16	10.00	0.01	10.00	N (not 4/23)
4/23/19	0.37	0.00	9.73	10.00	0.04	9.97	N
4/24/19	0.20	0.00	9.88	10.00	0.11	10.11	N
4/25/19	0.19	0.00	9.70	10.00	0.03	10.01	N
4/26/19	0.03	0.00	10.00	10.00	0.07	10.10	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature] **Date:** 4/19/19

KGS

Field Instrument Calibration Log

Date: 4/26/19 **Weather:** 45°F, rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Korfjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	4/2021	1.416	1.413	14.50	1,412	14.61	±10 µS/cm	N
pH (7)	3/2020	6.83	7.00	14.78	7.01	14.72	± 0.3 Ph *	N
pH (4)	3/2020	4.27	4.02	14.58	4.12	14.65	± 0.3 Ph *	N
pH (10)	3/2020	10.12	10.00	14.79	10.03	14.69	± 0.3 Ph *	N
ORP (240 mv)	1/2023	229.4	240.0	14.42	238.4	14.60	±10 mv	N
Dissolved Oxygen (%)	—	106.2	100.0	12.82	101.3	13.07	-	N
Dissolved Oxygen (mg/L)	—	11.39	10.74	12.82	10.92	13.07	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Dave Korfjohn 4/26/19

KGS

Field Instrument Calibration Log

Date: 4/30/19 **Weather:** ~~50°F~~ 45°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 750		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.416	1.413	13.63	1.412	13.85	±10 µS/cm	N
pH (7)	3/2020	7.08	7.00	13.29	7.03	13.79	± 0.3 Ph *	N
pH (4)	3/2020	4.30	4.03	13.07	4.05	13.82	± 0.3 Ph *	N
pH (10)	3/2020	10.14	10.00	13.24	10.16	13.72	± 0.3 Ph *	N
ORP (240 mv)	1/2023	245.5	239.9	13.02	242.3	13.51	±10 mv	N
Dissolved Oxygen (%)	—	119.5	99.9	10.82	102.8	11.19	-	N
Dissolved Oxygen (mg/L)	—	13.20	11.06	10.82	11.39	11.19	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: David K Kortjohn **Date:** 4/30/19

KGS

Field Instrument Calibration Log

Date: 5/1/19 **Weather:** 45°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 755		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.399	1.413	13.44	1.420	13.93	±10 µS/cm	N
pH (7)	3/2020	6.68	7.00	13.84	7.07	13.89	± 0.3 Ph *	N
pH (4)	3/2020	4.30	4.03	13.05	4.05	13.97	± 0.3 Ph *	N
pH (10)	3/2020	10.25	10.01	13.81	10.12	13.85	± 0.3 Ph *	N
ORP (240 mv)	1/2023	270.3	240.2	13.13	248.3	13.95	±10 mv	N
Dissolved Oxygen (%)	—	101.0	100.0	10.67	100.7	11.92	-	N
Dissolved Oxygen (mg/L)	—	11.22	11.11	10.67	11.19	11.92	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/1/19

KGS

Field Instrument Calibration Log

Date: 5/2/19 **Weather:** 43°F, rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 900		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.401	1.413	14.27	1.411	14.23	±10 µS/cm	N
pH (7)	3/2020	7.14	7.00	13.49	7.09	14.07	± 0.3 Ph *	N
pH (4)	3/2020	4.25	4.02	13.19	4.04	14.12	± 0.3 Ph *	N
pH (10)	3/2020	10.09	10.00	13.59	10.05	14.09	± 0.3 Ph *	N
ORP (240 mv)	1/2023	218.2	240.0	13.34	232.3	13.95	±10 mv	N
Dissolved Oxygen (%)	—	93.2	100.0	10.78	97.8	10.92	-	N
Dissolved Oxygen (mg/L)	—	10.40	11.09	10.78	10.81	10.92	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/2/19

KGS

Field Instrument Calibration Log

Date: 5/3/2019 **Weather:** ~~YSI 650 MDS~~ 46°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.379	1.413	13.94	1.412	14.09	±10 µS/cm	N
pH (7)	3/2020	6.89	7.00	13.54	7.03	14.12	± 0.3 Ph *	N
pH (4)	3/2020	4.29	4.01	13.18	4.12	14.08	± 0.3 Ph *	N
pH (10)	3/2020	10.09	10.00	13.61	10.09	14.21	± 0.3 Ph *	N
ORP (240 mv)	1/2023	249.9	240.1	13.72	245.3	14.17	±10 mv	N
Dissolved Oxygen (%)	—	98.2	100.0	10.28	101.3	10.93	-	N
Dissolved Oxygen (mg/L)	—	11.01	11.22	10.28	11.42	10.93	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/3/19

KGS

Field Instrument Calibration Log

Date: 5/6/19 **Weather:** 50°F, partly cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 815		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.433	1.413	16.19	1.412	17.32	±10 µS/cm	N
pH (7)	10/2020	6.72	7.00	15.65	7.03	17.28	± 0.3 Ph *	N
pH (4)	3/2020	4.62	4.06	16.09	4.04	17.19	± 0.3 Ph *	N
pH (10)	2/2020	10.54	10.00	15.97	10.12	17.12	± 0.3 Ph *	N
ORP (240 mv)	1/2023	255.1	240.0	16.13	246.3	17.32	±10 mv	N
Dissolved Oxygen (%)	–	83.5	100.0	16.45	98.6	18.45	-	N
Dissolved Oxygen (mg/L)	–	7.79	9.32	16.45	9.07	18.45	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/6/19

KGS

Field Instrument Calibration Log

Date: 5/7/19 **Weather:** 55°F, partly cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	4/2021	1.408	1.413	17.02	1.410	18.93	±10 µS/cm	N
pH (7)	10/2020	6.80	7.00	17.89	7.03	18.89	± 0.3 Ph *	N
pH (4)	3/2020	4.52	4.06	17.18	4.21	18.85	± 0.3 Ph *	N
pH (10)	2/2020	10.42	10.01	17.15	10.12	18.87	± 0.3 Ph *	N
ORP (240 mv)	1/2023	218.8	239.9	17.16	231.3	18.91	±10 mv	N
Dissolved Oxygen (%)	–	90.7	100.0	14.91	99.5	18.45	-	N
Dissolved Oxygen (mg/L)	–	9.18	10.10	14.91	10.01	18.45	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/7/19

KGS

Field Instrument Calibration Log

Date: 5/8/19 **Weather:** 60°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.413	1.413	16.92	1.409	18.34	±10 µS/cm	N
pH (7)	10/2020	6.94	7.00	17.80	7.03	18.29	± 0.3 Ph *	N
pH (4)	3/2020	4.28	4.01	15.98	4.12	18.25	± 0.3 Ph *	N
pH (10)	2/2020	10.03	10.00	17.43	10.09	18.31	± 0.3 Ph *	N
ORP (240 mv)	1/2023	225.0	240.0	17.13	235.3	18.28	±10 mv	N
Dissolved Oxygen (%)	—	112.5	100.0	13.26	101.3	17.82	-	N
Dissolved Oxygen (mg/L)	—	11.81	10.49	13.26	12.03	17.82	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/8/19

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020 we ~~[illegible]~~ DK

Calibrated By: Dave Kortjohn

Serial Number: ~~[illegible]~~ 1828-0412 DK

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/26/19	0.01	0.01	9.52	10.00	0.01	9.86	
4/30/19	0.01	0.01	10.59	10.00	0.01	10.13	
5/1/19	0.02	0.01	9.87	10.00	0.01	10.05	
5/2/19	0.02	0.01	8.04	10.00	0.01	9.27	Y
5/3/19	0.01	0.01	9.24	10.00	0.01	9.92	
5/6/19	0.04	0.03	8.79	10.00	0.03	DK 9.23	
5/7/19	0.01	0.01	11.1	10.00	0.01	10.12	
5/8/19	0.01	0.01	10.34	10.00	0.01	10.11	

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: _____ **Date:** _____

KGS

Field Instrument Calibration Log

Date: 4/30/19 **Weather:** 40's

Project/Site Name: Davis **Instrument:** Y.I 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.431	1.413	16.91°	1.409	16.73°	±10 µS/cm	N
pH (7)	10/20	7.18	7.00	16.47°	7.03	16.46°	± 0.3 Ph *	N
pH (4)	3/20	4.31	4.00	16.38°	3.97	16.50°	± 0.3 Ph *	N
pH (10)	2/20	9.87	10.00	16.66°	10.07	16.60°	± 0.3 Ph *	N
ORP (240 mv)	10/22	241.6	240.0	16.72°	238.7	16.70°	±10 mv	N
Dissolved Oxygen (%)	N/A	98.1%	100.0%	16.39°	101.1%	16.40°	-	N
Dissolved Oxygen (mg/L)	N/A	9.81	10.00	16.45°	9.88	16.50°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 4/30/19

KGS

Field Instrument Calibration Log

Date: 7/1/19 **Weather:** 40's

Project/Site Name: Dennis **Instrument:** YSI 650XL

Calibrated By: N/A **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.437	1.413	16.27°	1.410	16.78°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	16.15°	7.01	16.80°	± 0.3 Ph *	N
pH (4)	3/20	4.19	4.00	16.21°	4.07	16.77°	± 0.3 Ph *	N
pH (10)	2/20	10.27	10.00	16.17°	10.03	16.80°	± 0.3 Ph *	N
ORP (240 mv)	10/22	249.7	240.0	16.34°	238.7	16.70°	±10 mv	N
Dissolved Oxygen (%)	N/A	109.2%	100.0%	16.28°	101.1%	16.91°	-	N
Dissolved Oxygen (mg/L)	N/A	10.18	10.00	16.15°	9.90	16.70°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	-	760	—	-	✓

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/1/19

Field Instrument Calibration Log

Date: 5/2/19 **Weather:** 40's Rain

Project/Site Name: Devons **Instrument:** YSI 650 XL

Calibrated By: ICBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	1.413	16.21°	1.420	16.03°	±10 µS/cm	N
pH (7)	10/20	7.29	7.00	16.32°	7.11	16.11°	± 0.3 Ph *	N
pH (4)	3/20	4.16	4.00	16.19°	4.03	16.20°	± 0.3 Ph *	N
pH (10)	2/20	9.73	10.00	16.30°	10.00	16.09°	± 0.3 Ph *	N
ORP (240 mv)	10/22	231.7	240.0	16.21°	242.2	16.11°	±10 mv	N
Dissolved Oxygen (%)	N/A	111.1%	100.0%	16.03°	106.9%	16.27°	-	N
Dissolved Oxygen (mg/L)	N/A	10.21	10.00	16.09°	9.78	16.31°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/2/19

Field Instrument Calibration Log

Date: 5/3/19 **Weather:** 40's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: KBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	10/19	1.398	1.413	16.54°	1.421	16.31°	±10 µS/cm	N
pH (7)	10/20	6.87	7.00	16.38°	6.96	16.21°	± 0.3 Ph *	N
pH (4)	3/20	3.90	4.00	16.27°	4.07	16.16°	± 0.3 Ph *	N
pH (10)	2/20	9.69	10.00	16.14°	10.11	16.23°	± 0.3 Ph *	N
ORP (240 mv)	10/22	227.1	240.0	16.45°	242.2	16.07°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	16.59°	96.2%	16.00°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	16.66°	10.03	15.99°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	16.02	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/3/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: LaMotte 2020we

Calibrated By: MA

Serial Number: 3083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
4/30/19	0.07	0.00	9.64	10.00	0.03	10.11	N
5/1/19	0.09	0.00	10.16	10.00	0.07	10.02	N
5/2/19	0.03	0.00	10.03	10.00	0.02	9.87	N
5/3/19	0.11	0.00	9.77	10.00	0.06	10.01	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 5/3/19

Field Instrument Calibration Log

Date: 5/16/19 **Weather:** SOS

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: MR **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.402	1.413	16.59°	1.420	17.03°	±10 µS/cm	N
pH (7)	10/20	7.11	7.00	16.89°	7.02	16.99°	± 0.3 Ph *	N
pH (4)	3/20	3.72	4.00	16.96°	3.99	17.13°	± 0.3 Ph *	N
pH (10)	2/20	10.24	10.00	17.02°	10.00	17.18°	± 0.3 Ph *	N
ORP (240 mv)	10/22	238.1	240.0	17.11°	236.9	17.20°	±10 mv	N
Dissolved Oxygen (%)	N/A	120.0%	100.0%	17.15°	101.7%	17.13°	-	N
Dissolved Oxygen (mg/L)	N/A	10.11	10.00	17.21°	9.87	17.40°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/16/19

KGS

Field Instrument Calibration Log

Date: 5/7/19 **Weather:** 50's

Project/Site Name: Devons **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.401	1.413	17.03°	1.420	17.01°	±10 µS/cm	N
pH (7)	10/20	7.26	7.00	17.17°	7.00	17.21°	± 0.3 Ph *	N
pH (4)	3/20	4.09	4.00	17.20°	4.00	17.39°	± 0.3 Ph *	N
pH (10)	2/20	9.70	10.00	17.03°	10.07	17.37°	± 0.3 Ph *	N
ORP (240 mv)	10/22	256.1	240.0	17.00°	240.6	17.20°	±10 mv	N
Dissolved Oxygen (%)	N/A	102.1	100.0%	16.97°	107.3%	17.09°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	17.00°	9.77	17.02°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: MA **Date:** 5/7/19

KGS

Field Instrument Calibration Log

Date: 5/8/19 **Weather:** 50's

Project/Site Name: Davis **Instrument:** YSI 650XL

Calibrated By: [illegible] **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.497	1.413	19.50°	1.412	18.70°	±10 µS/cm	N
pH (7)	10/20	6.56	7.00	19.21°	6.97	18.30°	± 0.3 Ph *	N
pH (4)	3/20	4.70	4.00	19.53°	4.11	18.39°	± 0.3 Ph *	N
pH (10)	2/20	9.64	10.00	19.51°	10.07	18.50°	± 0.3 Ph *	N
ORP (240 mv)	10/22	246.7	240.0	19.40°	237.7	18.46°	±10 mv	N
Dissolved Oxygen (%)	N/A	100.9%	100.0%	16.97°	101.0%	18.66°	-	N
Dissolved Oxygen (mg/L)	N/A	9.62	10.00	16.77°	10.11	18.70°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	–	760	–	769	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/8/19

KGS

Field Instrument Calibration Log

Date: 5/9/19 **Weather:** 50's

Project/Site Name: Devons **Instrument:** YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.420	1.413	19.20°	1.420	18.40°	±10 µS/cm	N
pH (7)	10/20	7.11	7.00	19.18°	6.98	18.31°	± 0.3 Ph *	N
pH (4)	3/20	3.97	4.00	19.17°	3.97	18.19°	± 0.3 Ph *	N
pH (10)	2/20	10.15	10.00	19.45°	9.90	18.31°	± 0.3 Ph *	N
ORP (240 mv)	10/22	250.6	249.0	19.38°	242.6	18.21°	±10 mv	N
Dissolved Oxygen (%)	N/A	98.1%	100.0%	19.41°	101.1%	18.10°	-	N
Dissolved Oxygen (mg/L)	N/A	9.72	10.00	19.21°	9.88	18.04°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/9/19

KGS

Field Instrument Calibration Log

Date: 5/10/19 **Weather:** 50's

Project/Site Name: Devons **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	1.413	19.01°	1.404	19.00°	±10 µS/cm	N
pH (7)	10/20	7.20	7.00	18.87°	7.03	18.77°	± 0.3 Ph *	N
pH (4)	3/20	4.01	4.00	18.69°	4.11	18.50°	± 0.3 Ph *	N
pH (10)	2/20	10.15	10.00	18.70°	10.06	18.39°	± 0.3 Ph *	N
ORP (240 mv)	10/22	246.6	240.9	18.63°	237.6	18.45°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.9%	100.0%	18.70°	106.2%	18.01°	-	N
Dissolved Oxygen (mg/L)	N/A	9.62	10.00	18.74°	9.99	17.20°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/10/19

Turbidity Instrument Calibration Log

Project/Site Name: Davis

Instrument: ~~YSI~~ LaMotte 2020e

Calibrated By: VBA

Serial Number: 5083 - 5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/6/19	0.01	0.00	9.77	10.00	0.03	9.90	N
5/7/19	0.01	0.00	9.69	10.00	0.09	10.11	N
5/8/19	0.13	0.00	9.60	10.00	0.20	9.88	N
5/9/19	0.09	0.00	9.77	10.00	0.04	10.11	N
5/10/19	0.12	0.00	10.16	10.00	0.00	10.03	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 5/10/19

KGS

Field Instrument Calibration Log

Date: 5/9/19 **Weather:** 50°F, partly cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/2021	1.386	1.413	15.98	1.412	16.99	±10 µS/cm	N
pH (7)	10/2020	6.77	7.00	16.84	7.01	17.13	± 0.3 Ph *	N
pH (4)	3/2020	4.42	4.03	15.54	4.12	17.23	± 0.3 Ph *	N
pH (10)	2/2020	10.20	10.01	16.15	10.10	17.21	± 0.3 Ph *	N
ORP (240 mv)	1/2023	244.5	240.0	14.62	243.2	16.82	±10 mv	N
Dissolved Oxygen (%)	—	78.5	100.0	10.37	95.2	13.45	-	N
Dissolved Oxygen (mg/L)	—	8.80	11.20	10.37	10.92	13.45	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/9/19

KGS

Field Instrument Calibration Log

Date: 5/10/19 **Weather:** 50°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1300	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	4/2021	1.424	1.413	16.09	1.412	16.81	±10 µS/cm	N
pH (7)	10/2020	6.77	7.00	16.32	7.01	16.52	± 0.3 Ph *	N
pH (4)	3/2020	4.39	4.03	15.92	4.11	16.59	± 0.3 Ph *	N
pH (10)	2/2020	10.14	10.00	16.28	10.09	16.56	± 0.3 Ph *	N
ORP (240 mv)	1/2023	251.3	240.0	16.35	245.3	16.63	±10 mv	N
Dissolved Oxygen (%)	—	109.7	100.0	11.34	102.3	13.37	-	N
Dissolved Oxygen (mg/L)	—	11.88	10.84	11.34	11.13	13.37	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/10/19

Field Instrument Calibration Log

Date: 5/14/19 **Weather:** 43°F, cloudy/rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 710		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm^c)	~~4/2021~~ 11/2019 ~~4/2021~~ OK	1.367	1.413	14.77	1.403	14.52	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	6.98	7.00	15.40	7.03	14.92	± 0.3 Ph *	N
pH (4)	3/2020	3.52	4.00	14.94	3.97	14.89	± 0.3 Ph *	N
pH (10)	2/2020	10.34	10.00	15.16	10.10	14.91	± 0.3 Ph *	N
ORP (240 mv)	1/2023	259.9	240.0	15.07	245.8	14.69	±10 mv	N
Dissolved Oxygen (%)	—	88.82	100.0	10.99	97.3	11.03	-	N
Dissolved Oxygen (mg/L)	—	9.73	11.03	10.99	10.81	11.03	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/14/19

KGS

Field Instrument Calibration Log

Date: 5/15/19 **Weather:** 48°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 810		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.395	1.413	13.40	1.412	14.82	±10 µS/cm	N
pH (7)	10/2020	6.86	7.00	13.89	7.09	14.73	± 0.3 Ph *	N
pH (4)	3/2020	4.43	4.04	12.15	4.13	14.77	± 0.3 Ph *	N
pH (10)	2/2020	10.10	10.00	13.77	10.09	14.80	± 0.3 Ph *	N
ORP (240 mv)	1/2023	233.7	240.0	13.36	237.3	14.71	±10 mv	N
Dissolved Oxygen (%)	—	104.3	100.0	12.05	102.3	13.52	-	N
Dissolved Oxygen (mg/L)	—	11.22	10.76	12.05	11.01	13.52	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/15/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020 we

Calibrated By: Dave Kortjohn

Serial Number: ~~0412 1828~~ (DK) 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/9/19	0.03	0.03	8.38	10.00	0.02	9.52	N
5/10/19	0.01	0.01	8.39	10.00	0.01	9.81	N
5/14/19	0.00	0.00	9.33	10.00	0.00	9.89	N
5/15/19	0.01	0.01	9.59	10.00	0.01	10.12	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: Dave Kortjohn

Date: 5/15/19

Field Instrument Calibration Log

Date: 5/16/19 **Weather:** Partly Cloudy 50's

Project/Site Name: Orvons PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0730		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1,405	1,413	16.31	1,408	23.21	±10 µS/cm	N
pH (7)	10/2020	6.95	7.00	16.45	6.90	24.84	± 0.3 Ph *	N
pH (4)	3/2020	4.06	4.00	16.43	4.28	23.88	± 0.3 Ph *	N
pH (10)	~~10/2020~~ 12/31/19	9.97	10.00	16.47	9.89	23.12	± 0.3 Ph *	N
ORP (240 mv)	1/2023	240.4	240.0	16.19	231.2	22.99	±10 mv	N
Dissolved Oxygen (%)	–	102.3	100.0	15.95	100.4	22.10	-	–
Dissolved Oxygen (mg/L)	–	10.99	10.65	15.95	10.21	22.10	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/16/19

Field Instrument Calibration Log

Date: 5/17/19 **Weather:** Overcast, light rain 40's - 50's

Project/Site Name: Dems PFAS RI **Instrument:** YSI

Calibrated By: CV **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0705		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/2019	1,329	1,413	16.57	1,391	15.31	±10 µS/cm	
pH (7)	10/2026	7.23	7.00	16.60	6.92	15.21	± 0.3 Ph *	N
pH (4)	3/2020	3.94	4.00	16.70	4.28	15.29	± 0.3 Ph *	
pH (10)	12/31/19	10.02	10.00	16.60	10.05	15.31	± 0.3 Ph *	
ORP (240 mv)	01/2023	213.6	240.0	16.33	225.6	15.33	±10 mv	
Dissolved Oxygen (%)	–	110.1	100.0	16.54	101.4	14.68	-	—
Dissolved Oxygen (mg/L)	–	10.81	9.74	16.54	10.16	14.68	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/17/19

Turbidity Instrument Calibration Log

Project/Site Name: Downs PFAS RI **Instrument:** LaMotte

Calibrated By: CV **Serial Number:** 1828-0412

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
5/16/19	0.01	0.01	9.49	10.00	0.41	9.87	N
5/17/19	0.02	0.02	9.05	10.07	0.08	9.74	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 5/17/19

KGS

Field Instrument Calibration Log

Date: 5/20/15 **Weather:** Sun, 70°F

Project/Site Name: PFAS RI VP A2 **Instrument:** YSI 650 XL

Calibrated By: BJA **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0550		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/15	1315	1413	21.56	1420	25.14	±10 µS/cm	N
pH (7)	10/20	6.99	7.00	21.66	7.04	24.80	± 0.3 Ph *	
pH (4)	03/20	4.04	4.00	21.64	3.96	24.72	± 0.3 Ph *	
pH (10)	10/31/19	10.33	10.05	21.33	10.03	24.76	± 0.3 Ph *	
ORP (240 mv)	01/23	258.4	240.0	21.63	242.6	24.39	±10 mv	
Dissolved Oxygen (%)	—	89.6	100	21.38	93.8	24.30	-	
Dissolved Oxygen (mg/L)	/	7.93	8.85	21.38	8.62	24.30	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	/	760	760	21.38	760	~	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: BJA **Date:** 5/20/15

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PEAS RI WP A2 **Instrument:** Lamotte 2020we

Calibrated By: BnA **Serial Number:** 1808-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/20/19	1.07	0.62	11.9	10.0	0.58	10.2	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 5/20/19

KGS

Field Instrument Calibration Log

Date: 5/21/19 **Weather:** Sunny 50's - 60's

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: CW **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1415	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,507	1,413	18.93	1360	19.05	±10 µS/cm	Y
pH (7)	10/2020	6.94	7.00	20.12	6.95	18.92	± 0.3 Ph *	N
pH (4)	3/2020	4.16	4.00	18.55	4.17	19.01	± 0.3 Ph *	N
pH (10)	10/31/19	10.02	10.00	19.11	10.05	19.03	± 0.3 Ph *	N
ORP (240 mv)	1/2023	205.0	240.0	18.22	231.7 (CW)	18.95	±10 mv	
Dissolved Oxygen (%)	—	86.6	100.0	18.97	100.4	18.01	-	—
Dissolved Oxygen (mg/L)	—	8.05	9.29	18.97	9.64	18.01	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/21/19

KGS

Field Instrument Calibration Log

Date: 5/22/19 **Weather:** Sunny

Project/Site Name: Dennis PFAS RT **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0630		Cal. Temp. (°C)	PM Post Cal. Check Time 1320	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,462	1,413	15.79	1,421	19.05	±10 µS/cm	N
pH (7)	10/2020	7.16	7.00	16.81	7.14	18.91	± 0.3 Ph *	N
pH (4)	3/2020	3.97	4.00	16.62	4.10	18.93	± 0.3 Ph *	N
pH (10)	10/31/19	10.00	10.00	16.35	10.02	18.95	± 0.3 Ph *	N
ORP (240 mv)	01/2023	258.5	240.0	16.29	249.2	19.12	±10 mv	N
Dissolved Oxygen (%)	–	109.3	~~16~~ 100.0	16.66	101.4	18.03	-	–
Dissolved Oxygen (mg/L)	–	10.62	9.71	16.66	9.72	18.03	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: CV **Date:** 5/22/19

KGS

Field Instrument Calibration Log

Date: 5/23/19 **Weather:** Partly Cloudy 50's - 60's

Project/Site Name: Norms PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: CV **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0730		Cal. Temp. (°C)	PM Post Cal. Check Time 1115	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1,382	1,413	16.77	1,422	18.11	±10 µS/cm	N
pH (7)	10/2020	6.97	7.00	17.78	6.89	18.21	± 0.3 Ph *	N
pH (4)	3/2020	3.91	4.00	17.81	4.14	18.22	± 0.3 Ph *	N
pH (10)	10/31/19	9.92	10.00	17.69	9.97	18.22	± 0.3 Ph *	N
ORP (240 mv)	1/2023	248.8	240.0	16.90	249.4	18.17	±10 mv	N
Dissolved Oxygen (%)	—	100.0	~~17.81~~ 100.0	17.81	98.4	21.08	-	—
Dissolved Oxygen (mg/L)	—	9.64	9.80	17.81	9.05	21.08	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/23/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Downs PFAS RI **Instrument:** LaMotte

Calibrated By: CV **Serial Number:** 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/21/19	0.01	0.01	9.04	10.27	0.03	10.56	N
5/22/19	0.01	0.01	9.52	9.78	0.01	9.72	N
5/23/19	0.01	0.02	9.49	9.72	0.00	9.36	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 5/23/19

KGS

Field Instrument Calibration Log

Date: 5/13/19 **Weather:** 40's

Project/Site Name: Devens **Instrument:** YSI 650 XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.432	1.413	18.73°	1.420	17.21°	±10 µS/cm	N
pH (7)	10/20	7.21	7.00	18.69°	7.11	17.30°	± 0.3 Ph *	N
pH (4)	3/20	4.18	4.00	18.50°	4.20	17.13°	± 0.3 Ph *	N
pH (10)	2/20	10.17	10.00	18.88°	9.70	17.4°	± 0.3 Ph *	N
ORP (240 mv)	10/22	230.1	240.0	18.60°	232.2	17.63°	±10 mv	N
Dissolved Oxygen (%)	N/A	126.7%	100.0%	18.50°	109.6 %	16.87°	-	N
Dissolved Oxygen (mg/L)	N/A	9.62	10.00	18.21°	9.86	16.59°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/13/19

KGS

Field Instrument Calibration Log

Date: 5/14/19 **Weather:** 40s (rain)

Project/Site Name: Devens **Instrument:** YSI 650XL ~~[illegible]~~

Calibrated By: VBA **Serial Number:** 18B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.400	1.413	18.76°	1.417	17.21°	±10 µS/cm	N
pH (7)	10/20	6.63	7.00	18.64°	6.93	17.13°	± 0.3 Ph *	N
pH (4)	3/20	4.21	4.00	18.70°	3.94	17.13°	± 0.3 Ph *	N
pH (10)	2/20	9.63	10.00	18.54°	9.90	17.26°	± 0.3 Ph *	N
ORP (240 mv)	10/22	250.2	240.0	18.30°	239.7	17.09°	±10 mv	N
Dissolved Oxygen (%)	N/A	120.3%	100.0%	17.97	106.2%	17.01°	-	N
Dissolved Oxygen (mg/L)	N/A	9.63	10.00	17.83°	10.13	16.21°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/14/19

KGS

Field Instrument Calibration Log

Date: 5/16/19 **Weather:** 50's

Project/Site Name: Devers **Instrument:** YSI 650XL 11B100186

Calibrated By: VGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1200	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.420	1.413	18.69°	1.407	18.90°	±10 µS/cm	N
pH (7)	10/20	6.83	7.00	18.50°	7.02	18.93°	± 0.3 Ph *	N
pH (4)	3/20	4.20	4.00	18.32°	4.06	18.99°	± 0.3 Ph *	N
pH (10)	2/20	10.11	10.00	18.90°	9.84	18.72°	± 0.3 Ph *	N
ORP (240 mv)	10/22	229.7	240.0	18.63°	246.6	18.42°	±10 mv	N
Dissolved Oxygen (%)	N/A	102.7%	100.0%	~~17.21°~~	92.9%	18.60°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	17.46°	9.92	18.50°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/16/19

KGS

Field Instrument Calibration Log

Date: 5/17/19 **Weather:** 40's

Project/Site Name: Devens **Instrument:** YSI 650XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.432	1.413	18.74°	1.417	18.63°	±10 µS/cm	N
pH (7)	10/20	7.17	7.00	18.31°	6.93	18.50°	± 0.3 Ph *	N
pH (4)	3/20	4.06	4.00	18.47°	4.02	18.40°	± 0.3 Ph *	N
pH (10)	2/20	9.63	10.00	18.20°	10.02	18.30°	± 0.3 Ph *	N
ORP (240 mv)	10/22	251.6	240.0	18.09°	236.6	18.47°	±10 mv	N
Dissolved Oxygen (%)	N/A	101.7%	100.0%	17.69°	96.7%	17.96°	-	N
Dissolved Oxygen (mg/L)	N/A	9.88	10.00	17.50°	9.70	18.40°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/17/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020we

Calibrated By: WBA

Serial Number: 3083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/13/19	0.07	0.00	9.60	10.00	0.09	10.30	N
5/14/19	0.13	0.00	10.11	10.00	0.13	10.14	N
5/16/19	0.04	0.00	9.70	10.00	0.18	10.20	N
5/17/19	0.27	0.00	10.13	10.00	0.20	10.31	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 5/17/19

KGS

Field Instrument Calibration Log

Date: 5/20/19 **Weather:** 70's

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.451	1.413	18.79°	1.409	18.47°	±10 µS/cm	N
pH (7)	10/20	7.20	7.00	18.69°	7.11	18.56°	± 0.3 Ph *	N
pH (4)	3/20	3.72	4.00	18.52°	4.11	18.47°	± 0.3 Ph *	N
pH (10)	2/20	9.63	10.00	18.46°	9.80	18.32°	± 0.3 Ph *	N
ORP (240 mv)	10/22	256.2	240.0	18.63°	236.2	18.79°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	18.07°	101.6%	18.20°	-	N
Dissolved Oxygen (mg/L)	N/A	9.52	10.00	18.90°	10.11	17.97°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/20/19

KGS

Field Instrument Calibration Log

Date: 5/21/19 **Weather:** 70's

Project/Site Name: Dove **Instrument:** YSI 650XL

Calibrated By: MM **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.400	1.413	17.39	1.421	18.39°	±10 µS/cm	N
pH (7)	10/20	7.36	7.00	17.40	7.03	18.42°	± 0.3 Ph *	N
pH (4)	3/20	4.21	4.00	17.26	4.11	18.37°	± 0.3 Ph *	N
pH (10)	2/20	10.07	10.00	17.30	9.86	18.49°	± 0.3 Ph *	N
ORP (240 mv)	10/22	230.6	240.9	17.21	236.1	18.91°	±10 mv	N
Dissolved Oxygen (%)	N/A	92.1%	~~100.9%~~	17.18	106.6%	18.7°	-	N
Dissolved Oxygen (mg/L)	N/A	9.66	10.00	17.91	9.99	18.01°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/21/19

KGS

Field Instrument Calibration Log

Date: 5/22/19 **Weather:** Sos

Project/Site Name: Dennis **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	1.413	16.78°	1.421	18.0°	±10 µS/cm	N
pH (7)	10/20	6.86	7.00	17.4°	7.01	18.31°	± 0.3 Ph *	N
pH (4)	3/20	3.77	4.00	17.09°	4.00	18.15°	± 0.3 Ph *	N
pH (10)	2/20	9.50	10.00	17.17°	9.79	18.24°	± 0.3 Ph *	N
ORP (240 mv)	10/22	251.1	240.0	17.69°	242.6	18.19°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.9%	100.0%	16.91°	96.1%	18.00°	-	N
Dissolved Oxygen (mg/L)	N/A	10.47	10.00	16.72°	10.15	17.86°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/22/19

KGS

Field Instrument Calibration Log

Date: 5/23/19 **Weather:** 50s

Project/Site Name: Devens, MA PFAS RI A2 **Instrument:** YSI 650 MDS

Calibrated By: Melissa Miller **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0800		Cal. Temp. (°C)	PM Post Cal. Check Time 1435	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/19	1,412	1,413	17.51	1410	18.13	±10 µS/cm	N
pH (7)	10/20	6.82	7.00	17.69	6.96	18.19	± 0.3 Ph *	N
pH (4)	3/20	4.11	4.00	17.63	3.97	18.27	± 0.3 Ph *	N
pH (10)	2/20	9.99	10.00	17.83	9.89	18.35	± 0.3 Ph *	N
ORP (240 mv)	10/20	236.7	240.0	17.49	231.9	18.00	±10 mv	N
Dissolved Oxygen (%)	NA	100.5	100.0	17.06	98.7	18.05	-	N
Dissolved Oxygen (mg/L)	NA	9.63	9.58	17.06	9.29	18.05	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	7543	~		NA	754.1	~	-	NA

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller **Date:** 5/23/19

Field Instrument Calibration Log

Date: 5/24/19 **Weather:** 50's

Project/Site Name: Devens, MA PFAS RI A2 **Instrument:** YSI 650 MDS

Calibrated By: Melissa Miller **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0735		Cal. Temp. (°C)	PM Post Cal. Check Time 1330	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1413 µS/cm°)	11/19	1555	1413	17.52	1420	19.48	±10 µS/cm	N
pH (7)	10/20	6.85	7.00	17.75	6.73	19.51	± 0.3 Ph *	N
pH (4)	3/20	4.08	4.00	17.72	3.89	19.43	± 0.3 Ph *	N
pH (10)	2/20	10.10	10.00	18.02	9.92	19.57	± 0.3 Ph *	N
ORP (240 mv)	10/20	237.1	240.0	17.53	255.0	20.01	±10 mv	Y
Dissolved Oxygen (%)	NA	98.8	97.5	16.07	100.1	25.82	-	N
Dissolved Oxygen (mg/L)	NA	9.19	9.61	16.07	8.67	25.92	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	741.0	—	—	—	762.8	—	-	NA

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller **Date:** 5/24/19

Turbidity Instrument Calibration Log

Project/Site Name: Devons

Instrument: LaMotte Lotowq

Calibrated By: MBA

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/20/19	0.31	0.00	10.36	10.00	0.06	9.80	N
5/21/19	0.07	0.00	9.78	10.00	0.26	9.99	N
5/22/19	0.11	0.00	10.18	10.00	0.19	10.18	N
5/23/19	0.11	0.00	9.08	9.78	0.11	9.32	N
5/24/19	0.5	0.00	9.86	9.71	0.25	9.51	N
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 5/22/19
5/24/19

KGS

Field Instrument Calibration Log

Date: 5/24/19 **Weather:** Sun, 50°F

Project/Site Name: PFAS RI VP A2 **Instrument:** YSI 650 XL

Calibrated By: B&A **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 0600		Cal. Temp. (°C)	PM Post Cal. Check Time 1230	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1375	1413	19.03	1410	19.62	±10 µS/cm	N
pH (7)	10/20	7.10	7.00	18.88	7.04	19.78	± 0.3 Ph *	
pH (4)	03/20	3.98	4.00	19.04	4.10	19.73	± 0.3 Ph *	
pH (10)	02/20	9.91	10.00	19.00	9.98	19.84	± 0.3 Ph *	
ORP (240 mv)	01/23	249.5	240.0	18.64	240.8	20.03	±10 mv	
Dissolved Oxygen (%)	—	104.6	100	18.30	98.9	19.30	-	
Dissolved Oxygen (mg/L)	—	9.84	9.41	18.30	9.37	19.30	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	—	760	760	18.30	760	19.30	-	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: B&A **Date:** 5/24/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI VP A2 **Instrument:** Lamotte 2020we

Calibrated By: B.A **Serial Number:** 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/24/18	0.87	0.36	11.9	10.04	0.30	10.08	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: B.A **Date:** 5/24/18

KGS

Field Instrument Calibration Log

Date: 5/28/19 **Weather:** 70's / Rain

Project/Site Name: Devers **Instrument:** YSI 650XL

Calibrated By: WBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.397	~~15.17°~~ 1.413	18.17°	1.409	18.20°	±10 µS/cm	N
pH (7)	10/20	7.26	7.00	18.47°	7.06	18.09°	± 0.3 Ph *	N
pH (4)	9/20	3.99	4.00	18.56°	4.11	17.99°	± 0.3 Ph *	N
pH (10)	2/20	9.80	10.00	18.69°	9.90	18.11°	± 0.3 Ph *	N
ORP (240 mv)	10/22	256.1	240.0	18.21°	246.6	18.03°	±10 mv	N
Dissolved Oxygen (%)	N/A	92.1%	100.0%	18.69°	96.1%	17.63°	-	N
Dissolved Oxygen (mg/L)	N/A	10.67	10.00	18.77°	9.76	17.56°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/28/19

KGS

Field Instrument Calibration Log

Date: 5/29/19 **Weather:** 50's

Project/Site Name: Dams **Instrument:** YSI 6920V2

Calibrated By: VBA **Serial Number:** 11B60186

Parameters	Solution Expiration Date	AM Calibration Time 609		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.431	1.413	18.61°	1.420	18.50°	±10 µS/cm	N
pH (7)	10/20	7.40	7.00	18.86°	7.11	18.43°	± 0.3 Ph *	N
pH (4)	3/20	4.21	4.00	18.37°	4.06	18.29°	± 0.3 Ph *	N
pH (10)	2/20	10.06	10.00	18.49°	10.00	18.11°	± 0.3 Ph *	N
ORP (240 mv)	10/22	229.7	240.0	18.66°	236.7	18.31°	±10 mv	N
Dissolved Oxygen (%)	N/A	89.6%	100.0%	18.07°	102.6%	18.30°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	17.77°	9.80	18.09°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	18.20	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 5/29/19

KGS

Field Instrument Calibration Log

Date: 5/30/19 **Weather:** Sos

Project/Site Name: Derry **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B601816

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1520	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.436	1.413	17.89°	1.409	17.90°	±10 µS/cm	N
pH (7)	10/20	7.27	7.00	17.78°	7.11	17.45°	± 0.3 Ph *	N
pH (4)	3/20	3.82	4.00	17.69°	4.00	17.29°	± 0.3 Ph *	N
pH (10)	2/20	10.18	10.00	17.52°	10.00	17.36°	± 0.3 Ph *	N
ORP (240 mv)	10/22	221.6	240.0	17.41°	233.3	17.21°	±10 mv	N
Dissolved Oxygen (%)	N/A	82.7%	100.0%	17.20°	96.6%	17.01°	-	N
Dissolved Oxygen (mg/L)	N/A	9.70	10.00	17.01°	9.86	16.92°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/30/19

KGS

Field Instrument Calibration Log

Date: 5/31/19 **Weather:** 60's

Project/Site Name: Devers **Instrument:** YSI 650x2

Calibrated By: VGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1210	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.433	1.413	18.01°	1.409	17.39°	±10 µS/cm	N
pH (7)	10/20	7.20	7.00	18.21°	7.17	18.20°	± 0.3 Ph *	N
pH (4)	3/20	3.80	4.00	18.15°	~~3.86~~ 3.86	17.92°	± 0.3 Ph *	N
pH (10)	2/20	9.69	10.00	18.23°	9.80	17.90°	± 0.3 Ph *	N
ORP (240 mv)	10/22	251.1	240.0	18.19°	242.6	17.86°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.6%	100.0%	18.00°	97.1%	17.70°	-	N
Dissolved Oxygen (mg/L)	N/A	9.59	10.00	17.86°	9.90	17.50°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 5/31/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: ~~YSI~~ Lamotte 2020we

Calibrated By: VG/A

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/28/19	0.47	0.00	9.60	10.00	0.00	10.11	N
5/29/19	0.30	0.00	10.11	10.09	0.09	10.21	N
5/30/19	0.21	0.00	10.16	10.00	0.02	10.03	N
5/31/19	0.17	0.00	9.97	10.00	0.11	10.06	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 5/31/19

KGS

Field Instrument Calibration Log

Date: 6/3/19 **Weather:** 60's

Project/Site Name: Davis **Instrument:** YSI 650 XL

Calibrated By: VBL **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 600		Cal. Temp. (°C)	PM Post Cal. Check Time 1200	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.420	1.413	18.47°	1.411	18.91°	±10 µS/cm	N
pH (7)	10/20	7.19	7.00	18.19°	7.01	18.97°	± 0.3 Ph *	N
pH (4)	3/20	4.06	4.00	18.47°	4.20	18.91°	± 0.3 Ph *	N
pH (10)	2/20	9.73	10.00	18.69°	10.20	18.77°	± 0.3 Ph *	N
ORP (240 mv)	10/22	252.6	240.0	18.77°	238.7	18.69°	±10 mv	N
Dissolved Oxygen (%)	N/A	101.7%	100.0%	18.41°	101.6%	18.20°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80	10.00	18.90°	9.92	18.70°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	~~7~~ —	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 6/3/19

KGS

Field Instrument Calibration Log

Date: 6/4/19 **Weather:** 60's

Project/Site Name: Devens, MA PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Melissa Miller **Serial Number:** [redacted] 4268

Parameters	Solution Expiration Date	AM Calibration Time 0735		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	11/19	1,420	1,413	17.17	1410	25.4	±10 µS/cm	N
pH (7)	10/20	6.97	7.00	17.25	6.89	25.26	± 0.3 Ph *	N
pH (4)	3/20	4.13	4.00	16.42	3.98	24.33	± 0.3 Ph *	N
pH (10)	2/20	9.93	10.00	16.63	9.91	24.40	± 0.3 Ph *	N
ORP (240 mv)	10/22	238	240	17.31	232	25.27	±10 mv	N
Dissolved Oxygen (%)	NA	103.4	103.3	17.18	98.7	38.69	-	Y
Dissolved Oxygen (mg/L)	NA	9.97	9.99	17.18	9.43	38.69	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	NA	760	—	NA	NA	NA	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Miller **Date:** 6/4/19

KGS

Field Instrument Calibration Log

Date: 6/5/19 **Weather:** 60'

Project/Site Name: Devens, MA **Instrument:** YSI 650 MDS

Calibrated By: Melissa Miller **Serial Number:** 4262

Parameters	Solution Expiration Date	AM Calibration Time 0620		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1,410	1,413	18.40	1,408	24.52	±10 µS/cm	N
pH (7)	10/20	7.01	7.00	18.44	6.80	24.64	± 0.3 Ph *	N
pH (4)	3/20	4.03	4.00	18.47	3.91	24.37	± 0.3 Ph *	N
pH (10)	2/20	9.81	10.00	18.53	9.85	25.11	± 0.3 Ph *	N
ORP (240 mv)	10/22	231	240	18.43	236	25.0	±10 mv	
Dissolved Oxygen (%)	NA	105.3	99.9	18.50	93.7	24.10	-	
Dissolved Oxygen (mg/L)	NA	9.85	9.35	18.50	8.82	24.10	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	NA	760	—	18.50	NA	NA	NA	

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 6/5/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devons

Instrument: [illegible] 2020WE

Calibrated By: [illegible]

Serial Number: 5083-5014

	Date	AM Calibration Pre-Cal 0 NTU	AM Calibration Post-Cal 0 NTU	AM Calibration Pre-Cal 10 NTU	AM Calibration Post-Cal 10 NTU	PM Post Calibration Check 0 NTU	PM Post Calibration Check 10 NTU	Variance Noted
KGA	6/3/19	0.18	0.00	10.40	10.00	0.03	10.15	N
	6/4/19	0.14	0.06	9.61	9.67	0.04	9.69	N
MM	6/5/19	0.10	0.00	9.86	9.90	0.10	10.5	Y
KGA	6/6/19	0.20	0.00	9.97	10.00	0.02	9.91	N
KGA	6/7/19	0.18	0.00	10.01	10.00	0.00	9.92	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 6/7/19

6/4-5/19 [signature]

Field Instrument Calibration Log

Date: 6/13/19 **Weather:** 50's Rain

Project/Site Name: Dams **Instrument:** YSI 650 XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.392	1.413	18.67°	1.403	18.01°	±10 µS/cm	N
pH (7)	10/20	7.26	7.00	18.59°	7.03	18.11°	± 0.3 Ph *	N
pH (4)	3/20	4.26	4.00	18.77°	4.12	18.37°	± 0.3 Ph *	N
pH (10)	2/20	9.70	10.00	18.80°	10.21	18.26°	± 0.3 Ph *	N
ORP (240 mv)	10/22	256.3	240.0	18.69°	236.4	18.19°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	18.61°	101.6%	18.03°	-	N
Dissolved Oxygen (mg/L)	N/A	9.56	10.00	18.39°	10.15	18.19°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 6/13/19

KGS

Field Instrument Calibration Log

Date: 6/14/19 **Weather:** 60's

Project/Site Name: Devons **Instrument:** YSI 650 XL

Calibrated By: WBA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 605		Cal. Temp. (°C)	PM Post Cal. Check Time 1515	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.379	1.413	19.16°	1.407	18.79°	±10 µS/cm	N
pH (7)	10/20	7.27	7.00	19.09°	7.21	18.63°	± 0.3 Ph *	N
pH (4)	3/20	4.09	4.00	19.06°	4.11	18.50°	± 0.3 Ph *	N
pH (10)	2/20	10.03	10.00	19.23°	10.11	18.33°	± 0.3 Ph *	N
ORP (240 mv)	10/22	234.1	240.0	19.18°	236.9	18.07°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	19.01°	106.9%	18.29°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	19.00°	9.93	18.09°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	-	760	-	760	-	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 6/14/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Dewey **Instrument:** LaMotte 2020we

Calibrated By: VLA **Serial Number:** 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
6/10/19	0.19	0.00	9.80	10.00	0.07	10.10	N
6/11/19	0.13	0.00	9.90	10.00	0.03	9.90	N
6/12/19	0.27	0.00	10.18	10.00	0.09	9.94	N
6/13/19	0.19	0.00	10.07	10.00	0.04	10.03	N
6/14/19	0.06	0.00	10.03	10.00	0.13	9.79	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 6/14/19

KGS

Field Instrument Calibration Log

Date: 6/17/19 **Weather:** 60's

Project/Site Name: Dams **Instrument:** Y.I 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 625		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1.392	1.413	19.97°	1.420	18.78°	±10 µS/cm	N
pH (7)	10/20	7.16	7.00	19.07°	7.00	18.77°	± 0.3 Ph *	N
pH (4)	3/20	4.03	4.00	19.06°	3.92	18.71°	± 0.3 Ph *	N
pH (10)	2/20	9.70	10.00	19.01°	9.80	18.70°	± 0.3 Ph *	N
ORP (240 mv)	10/22	246.7	240.0	19.30°	237.6	18.40°	±10 mv	N
Dissolved Oxygen (%)	N/A	119.9%	100.0%	19.00°	101.1%	18.54°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	18.93°	9.87	18.71°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 6/17/19

KGS

Field Instrument Calibration Log

Date: 6/18/19 **Weather:** 60's rain

Project/Site Name: Davis **Instrument:** YSI 650 XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 635		Cal. Temp. (°C)	PM Post Cal. Check Time 1515	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/19	1.461	1.413	19.21°	1.409	17.21°	±10 µS/cm	N
pH (7)	10/20	7.38	7.00	19.30°	6.94	17.20°	± 0.3 Ph *	N
pH (4)	3/20	3.69	4.00	19.40°	4.15	17.31°	± 0.3 Ph *	N
pH (10)	2/20	10.15	10.00	19.21°	10.07	17.29°	± 0.3 Ph *	N
ORP (240 mv)	6/22	229.7	240.0	19.17°	241.1	17.39°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.1%	100.0%	19.03°	100.6%	17.06°	-	N
Dissolved Oxygen (mg/L)	N/A	9.49	10.00	18.77°	9.97	17.11°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	769	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 6/18/19

KGS

Field Instrument Calibration Log

Date: 6/19/19 **Weather:** 70's

Project/Site Name: Davis **Instrument:** YSI 650 XL

Calibrated By: WA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 630		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	4/19	1.403	1.413	18.77°	1.420	20.17°	±10 µS/cm	N
pH (7)	10/20	6.90	7.00	19.26°	7.11	20.39°	± 0.3 Ph *	N
pH (4)	3/20	4.30	4.00	19.18°	3.87	20.46°	± 0.3 Ph *	N
pH (10)	2/20	10.47	10.00	19.27°	10.11	20.37°	± 0.3 Ph *	N
ORP (240 mv)	10/22	227.1	240.0	19.30°	246.6	20.60°	±10 mv	N
Dissolved Oxygen (%)	N/A	91.1%	100.0%	19.91°	91.1%	20.30°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	18.78°	9.66	20.27°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 6/19/19

KGS

Field Instrument Calibration Log

Date: 6/20/19 **Weather:** 60's Rain

Project/Site Name: Downs **Instrument:** YSI 650XL

Calibrated By: PLA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 610		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	6/1/19	1.389	1.413	18.78°	1.413	17.69°	±10 µS/cm	N
pH (7)	10/20	6.70	7.00	18.69°	7.03	17.52°	± 0.3 Ph *	N
pH (4)	3/20	3.64	4.00	18.71°	4.01	17.50°	± 0.3 Ph *	N
pH (10)	2/20	9.97	10.00	18.69°	10.11	17.69°	± 0.3 Ph *	N
ORP (240 mv)	10/22	238.1	240	18.70°	236.2	17.54°	±10 mv	N
Dissolved Oxygen (%)	N/A	96.1%	100.0%	18.40°	106.1%	17.09°	-	N
Dissolved Oxygen (mg/L)	N/A	9.87	10.09	18.21°	9.97	17.07°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 6/20/19

KGS

Field Instrument Calibration Log

Date: 6/21/19 **Weather:** 60's Rain

Project/Site Name: PFAS RI-A2 Devens **Instrument:** YSI 650XL

Calibrated By: Melissa Molles **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0710		Cal. Temp. (°C)	PM Post Cal. Check Time 1350	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/19	1,418	1,413	22.27	1410	23.03	±10 µS/cm	N
pH (7)	10/20	6.97	7.00	22.32	6.98	22.63	± 0.3 Ph *	N
pH (4)	3/20	4.15	4.00	22.09	3.90	22.79	± 0.3 Ph *	N
pH (10)	2/20	9.98	10.00	22.13	9.85	22.91	± 0.3 Ph *	N
ORP (240 mv)	10/22	237.8	240.0	22.22	238.9	23.10	±10 mv	N
Dissolved Oxygen (%)	NA	6802	97.3	22.40	95.7	23.35	-	N
Dissolved Oxygen (mg/L)	NA	5.88	8.47	22.40	8.13	23.35	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	—	766	—	—	—	—	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Melissa Molles **Date:** 6/21/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens

Instrument: LaMotte 2020WE

Calibrated By: MGA

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
6/17/19	0.39	0.00	9.58	10.00	0.09	10.23	N
6/18/19	0.30	0.09	9.67	10.00	0.18	10.07	N
6/19/19	0.07	0.00	9.79	10.00	0.06	10.09	N
6/20/19	0.21	0.09	9.87	10.00	0.13	10.29	N
6/21/19	0.04	0.02	9.85	10.00	0.10	9.55	N

MGA

MM

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 6/20/19
6/21/19

KGS

Field Instrument Calibration Log

Date: 5/29/19 **Weather:** 50°F, cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	5/2019	1.413	1.413	15.85	1.410	16.19	±10 µS/cm	N
pH (7)	10/2020	7.07	7.00	16.86	6.96	16.22	± 0.3 Ph *	N
pH (4)	3/2020	4.08	4.00	15.39	4.12	15.83	± 0.3 Ph *	N
pH (10)	2/2020	10.06	10.00	16.12	10.22	16.07	± 0.3 Ph *	N
ORP (240 mv)	1/2023	233.6	240.0	15.93	239.6	16.15	±10 mv	N
Dissolved Oxygen (%)	–	137.2	100.0	11.75	101.3	12.10	-	N
Dissolved Oxygen (mg/L)	–	14.85	10.84	11.75	10.97	12.10	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 5/29/19

KGS

Field Instrument Calibration Log

Date: 6/3/19 **Weather:** 60°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 426B

Parameters	Solution Expiration Date	AM Calibration Time 740		Cal. Temp. (°C)	PM Post Cal. Check Time 1250	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	~~3/2020~~ OK 4/2021	1.459	1.413	17.40	1.412	18.53	±10 µS/cm	N
pH (7)	10/2020	7.35	7.00	17.71	7.12	18.48	± 0.3 Ph *	N
pH (4)	3/2020	4.04	4.01	17.89	4.07	18.25	± 0.3 Ph *	N
pH (10)	2/2020	9.85	10.01	17.83	9.98	18.43	± 0.3 Ph *	N
ORP (240 mv)	1/2023	220.4	240.0	17.20	243.2	18.62	±10 mv	N
Dissolved Oxygen (%)	–	114.1	100.0	15.55	100.9	17.81	-	N
Dissolved Oxygen (mg/L)	–	11.39	9.97	15.55	9.99	17.81	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/3/19

KGS

Field Instrument Calibration Log

Date: 6/4/19 **Weather:** 65°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 556 MPS

Calibrated By: Dave Kortjohn **Serial Number:** 10H100928

Parameters	Solution Expiration Date	AM Calibration Time 900		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.432	1.413	19.09	1.409	20.53	±10 µS/cm	N
pH (7)	10/2020	7.15	~~8.59~~ OK 7.00	18.89	7.11	20.25	± 0.3 Ph *	N
pH (4)	3/2020	4.44	4.03	14.12	4.33	20.42	± 0.3 Ph *	N
pH (10)	2/2020	10.68	10.00	18.83	10.25	20.46	± 0.3 Ph *	N
ORP (240 mv)	10/2019	236.7	240.0	19.17	238.9	20.28	±10 mv	N
Dissolved Oxygen (%)	—	107.2	100.0	18.49	103.4	18.97	-	N
Dissolved Oxygen (mg/L)	—	9.89	9.25	18.49	9.52	18.97	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	764.8	—	—	762.4	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/4/19

KGS

Field Instrument Calibration Log

Date: 6/5/19 **Weather:** 70°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 556 MPS

Calibrated By: Dave Kortjohn **Serial Number:** 10H100928

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.427	1.413	20.28	1.411	20.82	±10 µS/cm	N
pH (7)	10/2020	6.46	7.00	19.86	7.03	21.12	± 0.3 Ph *	N
pH (4)	3/2020	4.56	4.11	20.18	4.21	21.09	± 0.3 Ph *	N
pH (10)	2/2020	10.00	10.00	19.95	10.05	21.13	± 0.3 Ph *	N
ORP (240 mv)	10/2019	238.8	240.0	20.33	238.4	21.32	±10 mv	N
Dissolved Oxygen (%)	—	93.1	100.0	19.75	96.3	20.31	-	N
Dissolved Oxygen (mg/L)	—	8.18	9.02	19.75	8.62	20.31	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.9	—	—	760.3	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/5/19

KGS

Field Instrument Calibration Log

Date: 6/6/19 **Weather:** 70°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	~~1.386~~ 1.5	1.413	22.00	1.410	22.59	±10 µS/cm	N
pH (7)	10/2020	7.02	7.00	21.98	7.04	22.52	± 0.3 Ph *	N
pH (4)	3/2020	3.76	4.00	22.06	4.04	22.56	± 0.3 Ph *	N
pH (10)	2/2020	9.88	10.01	22.09	10.02	22.63	± 0.3 Ph *	N
ORP (240 mv)	1/2023	235.2	240.0	22.34	239.6	22.45	±10 mv	N
Dissolved Oxygen (%)	—	99.0	100.0	21.17	101.2	21.68	-	N
Dissolved Oxygen (mg/L)	—	8.80	8.88	21.17	9.07	21.68	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/6/19

KGS

Field Instrument Calibration Log

Date: 6/7/19 **Weather:** 70°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.403	1.413	20.63	1.419	21.98	±10 µS/cm	N
pH (7)	10/2020	6.90	7.00	20.64	7.01	22.13	± 0.3 Ph *	N
pH (4)	3/2020	4.35	4.03	20.32	4.06	22.19	± 0.3 Ph *	N
pH (10)	2/2020	10.17	10.00	20.82	10.10	22.09	± 0.3 Ph *	N
ORP (240 mv)	1/2023	233.5	240.0	20.68	237.8	22.80	±10 mv	N
Dissolved Oxygen (%)	—	112.4	100.0	18.45	103.2	20.23	-	N
Dissolved Oxygen (mg/L)	—	10.87	9.66	18.45	9.98	20.23	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760	—	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/7/19

KGS

Field Instrument Calibration Log

Date: 6/10/19 **Weather:** 60°F, sonny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm[c])	11/2019	1.374	1.413	20.28	1.408	21.53	±10 µS/cm	N
pH (7)	10/2020	6.97	~~7.00~~ 7.00 (CF)	20.57	7.01	21.48	± 0.3 Ph *	N
pH (4)	3/2020	4.30	4.02	19.81	4.03	21.29	± 0.3 Ph *	N
pH (10)	2/2020	10.17	10.00	20.32	10.10	21.13	± 0.3 Ph *	N
ORP (240 mv)	1/2023	249.6	239.9	20.09	238.7	21.20	±10 mv	N
Dissolved Oxygen (%)	–	85.3	100.0	18.19	98.3	19.02	-	N
Dissolved Oxygen (mg/L)	–	8.02	9.41	18.19	9.21	19.02	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/10/19

KGS

Field Instrument Calibration Log

Date: 6/11/19 **Weather:** 65°F, rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 9268

Parameters	Solution Expiration Date	AM Calibration Time 745		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.459	1.413	24.27	1.420	24.92	±10 µS/cm	N
pH (7)	10/2020	6.83	7.00	24.32	6.98	24.86	± 0.3 Ph *	N
pH (4)	3/2020	4.05	4.01	24.21	4.04	24.79	± 0.3 Ph *	N
pH (10)	2/2020	9.83	10.01	24.03	10.03	24.81	± 0.3 Ph *	N
ORP (240 mv)	1/2023	229.0	240.0	24.54	236.7	24.92	±10 mv	N
Dissolved Oxygen (%)	–	93.8	100.0	22.18	108.3	23.42	-	Y
Dissolved Oxygen (mg/L)	–	8.15	8.72	22.18	9.80	23.42	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	Y
Barometric Pressure (mmHg)	–	760	-	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/11/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020 we ~~YSI 650 MDS~~

Calibrated By: Dave Kortjohn

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
5/29/19	0.01	0.01	10.33	10.00	0.01	10.12	
6/3/19	0.01	0.01	8.59	10.00	0.01	9.59	
6/4/19	0.02	0.01	10.88	10.00	0.01	10.21	
6/5/19	0.01	0.01	10.13	10.00	0.01	10.07	
6/6/19	0.01	0.01	10.15	10.00	0.01	9.87	
6/7/19	0.00	0.00	9.63	10.00	0.00	9.93	
6/10/19	0.01	0.01	9.89	10.00	0.01	9.92	
6/11/19	0.03	0.03	9.09	10.00	0.02	9.52	

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: Dave Kortjohn

Date: 6/11/19

KGS

Field Instrument Calibration Log

Date: 6/12/19 **Weather:** 70°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Korfjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.385	1.413	19.29	1.409	20.52	±10 µS/cm	N
pH (7)	10/2020	7.01	7.00	19.57	7.03	20.63	± 0.3 Ph *	N
pH (4)	3/2020	4.36	4.03	19.25	4.08	20.49	± 0.3 Ph *	N
pH (10)	2/2020	10.37	10.00	19.21	10.12	20.25	± 0.3 Ph *	N
ORP (240 mv)	1/2023	229.5	240.0	18.98	238.6	20.15	±10 mv	N
Dissolved Oxygen (%)	–	84.4	100.0	17.62	98.6	18.43	-	N
Dissolved Oxygen (mg/L)	–	8.04	9.51	17.62	9.32	18.43	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: David Korfjohn **Date:** 6/12/19

KGS

Field Instrument Calibration Log

Date: 6/13/19 **Weather:** 55°F, rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.396	1.413	19.45	1.410	19.32	±10 µS/cm	N
pH (7)	10/2020	7.05	7.00	19.38	7.04	19.37	± 0.3 Ph *	N
pH (4)	3/2020	4.33	4.02	19.49	4.12	19.29	± 0.3 Ph *	N
pH (10)	2/2020	10.09	10.00	19.29	10.06	19.39	± 0.3 Ph *	N
ORP (240 mv)	1/2023	231.3	240.0	19.31	234.6	19.45	±10 mv	N
Dissolved Oxygen (%)	–	98.6	100.0	17.09	101.3	17.49	-	N
Dissolved Oxygen (mg/L)	–	10.01	10.15	17.09	10.24	17.49	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/13/19

KGS

Field Instrument Calibration Log

Date: 6/14/19 **Weather:** 60°F, sunny

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Dave Kortjohn **Serial Number:** 4268

Parameters	Solution Expiration Date	AM Calibration Time 730		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.456	1.413	17.59	1,408	18.39	±10 µS/cm	N
pH (7)	10/2020	6.77	7.00	18.26	7.08	18.26	± 0.3 Ph *	N
pH (4)	3/2020	4.52	4.05	17.24	4.12	18.32	± 0.3 Ph *	N
pH (10)	2/2020	10.30	10.00	18.47	10.12	18.48	± 0.3 Ph *	N
ORP (240 mv)	1/2023	256.4	239.9	17.86	242.3	18.39	±10 mv	N
Dissolved Oxygen (%)	–	103.0	100.0	16.39	101.6	16.92	-	N
Dissolved Oxygen (mg/L)	–	10.09	9.79	16.39	9.89 ~~10.2~~ 9.89	16.92	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	760	–	–	760	–	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: Dave Kortjohn **Date:** 6/14/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: La Motte 2020we

Calibrated By: Dave Kortjohn

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
6/12/19	0.02	0.01	8.97	10.00	0.01	9.83	N
6/13/19	0.03	0.03	9.38	10.00	0.02	9.91	N
6/14/19	0.02	0.02	9.59	10.00	0.02	9.88	N
6/20/19	0.02	0.02	9.70	9.89	0.02	9.70	N
6/21/19	0.02	0.02	10.17	10.00	0.02	10.11	N
6/24/19	0.02	0.02	10.46	10.00	0.02	10.25	N
6/25/19	0.01	0.01	10.32	10.00	0.02	10.12	N
6/26/19	0.00	0.00	9.60	10.00	0.00	9.95	N
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: Dave Kortjohn

Date: 6/26/19

KGS

Field Instrument Calibration Log

Date: 9/16/19 **Weather:** Clear, Sunny, 64-72 °F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Eschner **Serial Number:** 18610O145

Parameters	Solution Expiration Date	AM Calibration Time 1050		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.379	1.413	20.5	1.517	23.7	±10 µS/cm	N
pH (7)	10/2020	7.30	7.00	19.6	7.02	21.6	± 0.3 Ph *	N
pH (4)	3/2021	4.47	4.00	20.0	4.00	22.1	± 0.3 Ph *	N
pH (10)	2/2020	10.35	10.00	20.0	10.03	22.3	± 0.3 Ph *	N
ORP (240 mv)	10/2019	233.8	240.1	21.2	233.8	22.8	±10 mv	N
Dissolved Oxygen (%)	—	100.1	100.1	20.4	99.4	20.7	-	—
Dissolved Oxygen (mg/L)	—	8.91	8.91	20.2	8.85	20.7	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	757.2	757.2	20.4	755.5	20.7	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/16/19

KGS

Field Instrument Calibration Log

Date: 9/17/19 **Weather:** Clear, Partly Cloudy PM 57-70°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Esser **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0735		Cal. Temp. (°C)	PM Post Cal. Check Time 1432	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.454	1.423	17.0	1.505	21.1	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	6.47	7.00	17.2	7.02	21.1	± 0.3 Ph *	N
pH (4)	3/2021	3.92	4.00	17.1	4.30	21.4	± 0.3 Ph *	~~N~~ Y
pH (10)	2/2020	9.63	10.00	17.1	10.05	20.9	± 0.3 Ph *	N
ORP (240 mv)	10/2019	241.3	240.0	17.0	234.8	20.8	±10 mv	N
Dissolved Oxygen (%)	—	99.2	99.8	15.9	98.8	19.2	-	—
Dissolved Oxygen (mg/L)	—	9.83	9.83	16.2	9.85	19.2	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	758.8	758.8	15.9	758.6	19.2	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/17/19

KGS

Field Instrument Calibration Log

Date: 9/18/19 **Weather:** Partly Cloudy AM, Clear PM 49-63°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Esher **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0715		Cal. Temp. (°C)	PM Post Cal. Check Time 1437	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.444	1.413	17.2	1.388	17.1	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	6.87	7.00	18.1	7.04	16.9	± 0.3 Ph *	N
pH (4)	3/2020	4.28	4.00	17.0	4.01	16.8	± 0.3 Ph *	N
pH (10)	2/2020	10.04	10.00	17.8	10.10	17.1	± 0.3 Ph *	N
ORP (240 mv)	1/2023	234.5	240.0	17.1	241.6	16.8	±10 mv	N
Dissolved Oxygen (%)	—	99.3	100.4	14.5	100.4	14.9	-	N
Dissolved Oxygen (mg/L)	—	10.16	10.13	14.5	9.86	14.9	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	762.7	762.7	14.5	763.1	14.9	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/18/19

KGS

Field Instrument Calibration Log

Date: 9/19/19 **Weather:** Clear, 35-70 °F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Esser **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0715		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.410	1.413	13.7	1.484	21.4	±10 µS/cm	Y/N
pH (7)	10/2020	6.78	7.00	12.8	7.01	24.7	± 0.3 Ph *	N
pH (4)	2/2020	4.16	4.00	12.0	4.00	20.3	± 0.3 Ph *	N
pH (10)	2/2020	9.81	10.00	12.4	10.04	22.1	± 0.3 Ph *	N
ORP (240 mv)	1/2023	246.8	241.0	12.2	238.4	19.5	±10 mv	N
Dissolved Oxygen (%)	—	97.6	100.4	11.3	100.4	20.2	-	—
Dissolved Oxygen (mg/L)	—	10.88	10.87	11.3	10.47	21.0	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	~~761.8~~	764.8	764.8	11.3	763.0	20.2	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/19/19

KGS

Field Instrument Calibration Log

Date: 9/20/19 **Weather:** clear, 54–79°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Esker **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0710		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.404	1.413	14.6	1.384	24.2	±10 µS/cm	Y N
pH (7)	10/2020	6.84	7.00	14.9	7.07	21.4	± 0.3 Ph *	N
pH (4)	2/2020	4.31	4.00	14.7	4.05	22.1	± 0.3 Ph *	N
pH (10)	2/2020	9.91	10.00	15.0	10.12	21.6	± 0.3 Ph *	N
ORP (240 mv)	1/2023	241.1	240.0	14.0	242.4	23.5	±10 mv	N
Dissolved Oxygen (%)	—	98.7	100.0	14.9	99.8	26.6	-	—
Dissolved Oxygen (mg/L)	—	10.12	10.12	14.9	9.58	26.2	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N Y
Barometric Pressure (mmHg)	—	760.9	760.9	14.9	758.3	26.6	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/20/19

KGS

Field Instrument Calibration Log

Date: 9/23/19 **Weather:** Partly Cloudy, 67-87°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Ecker **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0737		Cal. Temp. (°C)	PM Post Cal. Check Time 1440	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.419	1.413	23.7	1.441	32.2	±10 µS/cm	~~Y~~ N
pH (7)	10/2020	6.76	7.00	23.3	6.99	30.9	± 0.3 Ph *	N
pH (4)	2/2020	4.25	4.00	23.4	4.01	31.6	± 0.3 Ph *	N
pH (10)	2/2020	9.87	10.02	23.5	9.94	30.4	± 0.3 Ph *	N
ORP (240 mv)	1/2023	236.3	240.0	23.3	235.7	30.7	±10 mv	N
Dissolved Oxygen (%)	—	98.9	98.9	22.1	98.8	30.1	-	N
Dissolved Oxygen (mg/L)	—	8.62	8.61	22.4	8.24	30.4	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	752.0	752.0	22.1	749.0	30.1	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 9/23/19

KGS

Field Instrument Calibration Log

Date: 9/24/19 **Weather:** Partly Cloudy, 59–74°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Esser **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0723		Cal. Temp. (°C)	PM Post Cal. Check Time 1440	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.405	1.413	24.1	1.406	28.5	±10 µS/cm	N
pH (7)	10/2020	6.88	7.00	24.3	7.01	27.8	± 0.3 Ph *	N
pH (4)	2/2020	4.22	4.00	23.8	4.02	26.3	± 0.3 Ph *	N
pH (10)	2/2020	9.72	10.00	24.1	9.99	25.8	± 0.3 Ph *	N
ORP (240 mv)	1/2023	224.4	240.0	23.4	241.8	28.4	±10 mv	N
Dissolved Oxygen (%)	—	97.1	98.4	22.6	98.3	26.8	-	—
Dissolved Oxygen (mg/L)	—	8.54	8.18	20.6	7.74	27.6	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	748.1	748.1	22.6	747.3	26.8	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/24/19

KGS

Field Instrument Calibration Log

Date: 9/25/19 **Weather:** Clear, 51-72°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI PRO DSS

Calibrated By: Kristen Eshler **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0714		Cal. Temp. (°C)	PM Post Cal. Check Time 1450	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.413	1.413	18.1	1.479	23.6	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	6.81	~~7.00~~ RE	18.1	7.01	26.6	± 0.3 Ph *	N
pH (4)	7/2020	4.72	4.00	17.1	4.00	23.1	± 0.3 Ph *	N
pH (10)	2/2020	9.61	10.00	18.2	10.01	23.9	± 0.3 Ph *	N
ORP (240 mv)	1/2023	237.8	240.0	17.2	249.4	26.6	±10 mv	N
Dissolved Oxygen (%)	—	93.2	98.9	17.3	98.7	20.7	-	—
Dissolved Oxygen (mg/L)	—	9.51	9.50	17.2	9.84	20.7	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	751.7	751.7	17.3	750.1	20.7	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/25/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: PFAS RI Devens

Instrument: LaMotte 2020 we

Calibrated By: Kristen Egger

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/16/19	0.05	0.00	8.92	9.03	0.15	9.26	N
9/17/19	0.00	0.00	10.13	10.00	0.00	9.58	N
9/18/19	0.02	0.00	8.67	9.10	0.4	8.98	N
9/19/19	0.02	0.01	9.93	9.75	0.04	9.63	N
9/20/19	0.00	0.01	8.41	9.33	0.01	9.06	N
9/23/19	1.02	0.01	8.58	9.53	0.02	9.72	N
9/24/19	0.00	0.00	9.70	9.76	0.02	9.49	N
9/25/19	0.98	0.01	7.22	9.60	0.03	9.27	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature:

Date: 9/25/19

KGS

Field Instrument Calibration Log

Date: 9/26/19 **Weather:** Clear, PM showers 57-79°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI ProDSS

Calibrated By: Kristen Ecker **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0730		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.524	1.413	17.7	1.241	28.5	±10 µS/cm	Y
pH (7)	10/2020	7.30	7.00	17.5	6.99	28.0	± 0.3 Ph *	N
pH (4)	7/2020	4.32	4.00	17.8	4.01	29.2	± 0.3 Ph *	N
pH (10)	2/2020	9.08	10.00	18.0	9.97	27.2	± 0.3 Ph *	N
ORP (240 mv)	1/2023	244.4	240.0	17.8	238.2	29.7	±10 mv	N
Dissolved Oxygen (%)	—	98.0	98.8	17.0	98.5	30.3	-	—
Dissolved Oxygen (mg/L)	—	9.54	9.55	17.0	9.62	30.3	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	750.5	750.5	17.0	748.6	30.3	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/26/19

KGS

Field Instrument Calibration Log

Date: 9/27/19 **Weather:** Clear 48–73°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Eaker **Serial Number:** 19L100145

Parameters	Solution Expiration Date	AM Calibration Time 0705		Cal. Temp. (°C)	PM Post Cal. Check Time 1130	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	~~1.00~~ 1.412	1.413	17.4	1.107	20.8	±10 µS/cm	Y ~~N~~
pH (7)	10/2020	6.94	7.03	17.8	7.02	19.4	± 0.3 Ph *	N
pH (4)	7/2020	4.16	4.00	17.4	4.00	20.1	± 0.3 Ph *	N
pH (10)	2/2020	9.25	10.00	17.3	10.06	19.9	± 0.3 Ph *	N
ORP (240 mv)	1/2023	229.3	241.3	17.1	237.9	19.7	±10 mv	N
Dissolved Oxygen (%)	—	100.3	99.6	17.1	99.7	26.5	-	—
Dissolved Oxygen (mg/L)	—	9.61	9.60	17.1	10.07	26.5	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	756.6	756.10	17.1	757.9	26.5	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 9/27/19

KGS

Field Instrument Calibration Log

Date: 9/30/19 **Weather:** Partly Cloudy, 60-72°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI ProDSS

Calibrated By: Kristen Esser **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0700		Cal. Temp. (°C)	PM Post Cal. Check Time 1455	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.593	1.413	16.4	1.427	19.7	±10 µS/cm	N
pH (7)	10/2020	7.67	7.00	17.1	7.02	20.7	± 0.3 Ph *	N
pH (4)	7/2020	4.17	4.00	17.0	4.01	20.2	± 0.3 Ph *	N
pH (10)	2/2020	9.45	10.00	15.7	9.87	20.1	± 0.3 Ph *	N
ORP (240 mv)	1/2023	229.1	240.0	17.6	237.2	20.2	±10 mv	N
Dissolved Oxygen (%)	—	129.2	106.7	17.0	97.9	18.0	-	—
Dissolved Oxygen (mg/L)	—	9.74	9.74	16.9	9.85	18.0	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	765.7	765.7	17.0	764.2	18.0	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 9/30/19

KGS

Field Instrument Calibration Log

Date: 10/1/19 **Weather:** Cloudy, occasional showers,

Project/Site Name: Devens PFAS RI **Instrument:** YSI ProDSS

Calibrated By: Kristen Escher **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0705		Cal. Temp. (°C)	PM Post Cal. Check Time 1425	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.446	1.413	17.3	2.079	20.8	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	9.21	7.00	17.2	6.88	19.9	± 0.3 Ph *	N
pH (4)	7/2020	5.57	4.00	17.1	4.23	19.7	± 0.3 Ph *	N
pH (10)	2/2020	10.86	10.00	17.1	10.02	19.6	± 0.3 Ph *	N
ORP (240 mv)	1/2023	254.7	240.0	17.3	238.3	20.0	±10 mv	N
Dissolved Oxygen (%)	—	101.5	99.7	17.0	100.9	19.3	-	—
Dissolved Oxygen (mg/L)	—	9.63	9.63	17.0	9.28	19.7	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	758.0	758.0	17.0	754.3	19.3	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms

Signature: Kristen Escher **Date:** 10/1/19

KGS

Field Instrument Calibration Log

Date: 10/2/19

Weather: Cloudy, PM Showers 71 – 76°F

Project/Site Name: Deerens PFAS RI

Instrument: YSI ProDSS

Calibrated By: Kristen Esser

Serial Number: 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0710		Cal. Temp. (°C)	PM Post Cal. Check Time 1430	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	2.185	1.413	21.1	1.582	26.2	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	6.82	7.02	21.0	7.04	25.7	± 0.3 Ph *	N
pH (4)	7/2020	4.18	4.00	21.1	4.01	26.1	± 0.3 Ph *	N
pH (10)	2/2020	9.70	10.00	21.0	10.04	26.2	± 0.3 Ph *	N
ORP (240 mv)	1/2023	258.6	240.0	21.2	256.3	26.4	±10 mv	~~N~~ Y
Dissolved Oxygen (%)	–	100.2	98.6	21.2	100.9	23.3	-	–
Dissolved Oxygen (mg/L)	–	8.75	8.77	21.2	9.13	23.3	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	–	749.5	749.5	21.2	750.5	23.3	-	–

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature]

Date: 10/2/19

KGS

Field Instrument Calibration Log

Date: 10/3/19 **Weather:** Cloudy, 46-54°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI ProDSS

Calibrated By: Kristen Esser **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0650		Cal. Temp. (°C)	PM Post Cal. Check Time _____	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	11/2019	1.363	1.413	22.3	1.282	16.3	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	6.94	7.00	22.1	7.30	16.4	± 0.3 Ph *	~~N~~ Y
pH (4)	7/2020	4.04	4.00	20.9	4.00	15.8	± 0.3 Ph *	N
pH (10)	2/2020	9.93	10.00	21.8	10.14	15.9	± 0.3 Ph *	N
ORP (240 mv)	1/2023	230.3	240.0	21.0	238.6	16.2	±10 mv	N
Dissolved Oxygen (%)	—	99.4	100	23.5	100.1	16.1	-	—
Dissolved Oxygen (mg/L)	—	8.53	8.53	23.5	8.98	16.1	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.3	760.3	23.5	759.7	16.1	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 10/3/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI

Instrument: LaMotte 2020we

Calibrated By: Kristen Esser

Serial Number: 1828-0412

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
9/26/19	0.01	0.00	10.13	10.06	0.01	9.98	N
9/27/19	0.00	0.00	9.11	9.69	0.00	9.57	N
9/30/19	1.60	0.00	10.96	8.49	0.01	8.67	N
10/1/19	1.56	0.01	10.90	8.55	0.01	8.25	N
10/2/19	1.49	0.00	8.88	9.37	0.00	9.85	N
10/3/19	1.38	0.00	8.75	9.67	0.00	9.86	N
10/4/19	1.47	0.02	9.18	9.53	0.02	9.32	N
10/8/19	1.38	0.01	9.57	9.71	0.01	9.38	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 10/7/19

KGS

Field Instrument Calibration Log

Date: 10/9/19 _____ **Weather:** AM clear, PM showers 49-55°F

Project/Site Name: Devens PFAS RI **Instrument:** YSI Pro DSS

Calibrated By: Kristen Eisler **Serial Number:** 18L100145

Parameters	Solution Expiration Date	AM Calibration Time 0710		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	11/2019	1.179	1.413	17.2	1.272	13.5	±10 µS/cm	~~N~~ Y
pH (7)	10/2020	6.12	7.00	17.9	6.92	13.6	± 0.3 Ph *	N
pH (4)	7/2020	4.15	4.00	17.5	4.08	13.5	± 0.3 Ph *	N
pH (10)	2/2020	10.06	10.00	18.0	10.21	13.7	± 0.3 Ph *	N
ORP (240 mv)	1/2023	256.3	240.0	18.0	238.7	13.6	±10 mv	N
Dissolved Oxygen (%)	—	108.4	100.6	19.0	99	13.6	-	—
Dissolved Oxygen (mg/L)	—	9.33	9.33	19.0	9.31	13.6	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	764.3	764.3	19.0	764.3	13.6	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 10/9/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI **Instrument:** LaMotte 2020we

Calibrated By: Kristen Escher **Serial Number:** R628-0412

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
10/9/19	1.53	0.00	11.13	9.47	0.05	9.64	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: _____ **Date:** _____

KGS

Field Instrument Calibration Log

Date: 10/25/19

Weather: 50's

Project/Site Name: Devens

Instrument: YSI 650XL

Calibrated By: VWA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 645		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.429	1.413	18.97°	1.409	18.45°	±10 µS/cm	N
pH (7)	2/21	7.33	7.00	18.77°	6.92	18.40°	± 0.3 Ph *	N
pH (4)	3/21	4.07	4.00	18.92°	4.00	18.37°	± 0.3 Ph *	N
pH (10)	2/21	10.21	10.00	19.15°	10.27	18.39°	± 0.3 Ph *	N
ORP (240 mv)	5/20	226.1	240.0	19.10°	236.1	18.50°	±10 mv	N
Dissolved Oxygen (%)	N/A	87.1%	100.0%	19.02°	111.1%	18.21°	-	N
Dissolved Oxygen (mg/L)	N/A	9.60	10.00	18.70°	9.80	18.09°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [signature]

Date: 10/25/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devas

Instrument: ~~AS~~ Lamotte 2020WE

Calibrated By: VM

Serial Number: 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
10/21/19	0.27	0.00	9.72	10.00	0.30	10.20	N
10/23/19	0.20	0.00	9.80	10.00	0.19	10.03	N
10/24/19	0.11	0.00	10.39	10.00	0.07	10.15	N
10/25/19	0.03	0.00	10.11	10.00	0.11	10.03	N

Notes: Mark Noted Variences on Field Forms

Post Calibration Criteria	
-	± 0.5

Signature: [signature]

Date: 10/25/19

KGS

Field Instrument Calibration Log

Date: 10/29/19 **Weather:** 50's light rain

Project/Site Name: Dam 5 **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 7:00		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.459	1.413	19.23°	1.410	18.47°	±10 µS/cm	N
pH (7)	2/21	7.02	7.00	19.19°	7.11	18.36°	± 0.3 Ph *	N
pH (4)	3/21	4.06	4.00	19.17°	4.00	18.34°	± 0.3 Ph *	N
pH (10)	2/21	9.70	10.00	19.23°	10.03	18.46°	± 0.3 Ph *	N
ORP (240 mv)	5/20	256.9	240.0	19.07°	246.6	18.21°	±10 mv	N
Dissolved Oxygen (%)	N/A	129.3%	100.0%	18.82°	89.7%	18.03°	-	N
Dissolved Oxygen (mg/L)	N/A	9.80°	10.00	18.70°	9.60	18.00°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/29/19

KGS

Field Instrument Calibration Log

Date: 10/30/19 **Weather:** 50's light rain

Project/Site Name: Dams **Instrument:** YSI 650XL

Calibrated By: MA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 705		Cal. Temp. (°C)	PM Post Cal. Check Time 1500	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.489	1.413	19.17°	1.413	17.24°	±10 µS/cm	N
pH (7)	2/21	7.47	7.00	19.09°	7.02	17.40°	± 0.3 Ph *	N
pH (4)	3/21	4.20	4.00	19.37°	3.91	17.30°	± 0.3 Ph *	N
pH (10)	2/21	10.31	10.00	19.40°	10.20	~~17.34°~~ 17.34°	± 0.3 Ph *	N
ORP (240 mv)	5/20	237.9	240.0	19.42°	232.9	17.40°	±10 mv	N
Dissolved Oxygen (%)	N/A	82.1%	100.0%	19.00°	90.0%	16.50°	-	N
Dissolved Oxygen (mg/L)	N/A	9.47	10.00	18.79°	9.69	16.38°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: A **Date:** 10/30/19

KGS

Field Instrument Calibration Log

Date: 10/31/10 **Weather:** 60°F Scattered Rain

Project/Site Name: Devens, MA **Instrument:** YSI 650 XL

Calibrated By: Melissa Miller **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 0720		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/20	1,410	1413	19.35	1409	18.98	±10 µS/cm	
pH (7)	2/21	6.90	7.0	19.47	6.98	18.79	± 0.3 Ph *	
pH (4)	3/21	3.92	4.0	19.40	3.89	18.83	± 0.3 Ph *	
pH (10)	2/21	9.79	10.0	19.51	10.20	18.72	± 0.3 Ph *	
ORP (240 mv)	5/20	232.7	240.0	19.38	235.3	18.80	±10 mv	
Dissolved Oxygen (%)	NA	98%	100.0	19.37	98.4	19.50	-	
Dissolved Oxygen (mg/L)	NA	9.71	9.98	19.37	9.47	19.50	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	
Barometric Pressure (mmHg)	NA	—	760	—	760	—	-	

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 10/31/10

KGS

Field Instrument Calibration Log

Date: 11/1/19 **Weather:** 60°F Windy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 XL

Calibrated By: _____ **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1330	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/26	1419	1413	18.79	1410	17.10	±10 µS/cm	N
pH (7)	2/21	7.03	7.00	18.25	6.91	17.16	± 0.3 Ph *	N
pH (4)	3/21	3.98	4.00	18.83	3.98	17.20	± 0.3 Ph *	N
pH (10)	3/21	9.89	10.0	18.87	9.97	17.27	± 0.3 Ph *	N
ORP (240 mv)	5/20	236.7	240	18.91	237.1	17.28	±10 mv	N
Dissolved Oxygen (%)	NA	89.9	100.0	19.10	98.4	17.69	-	N
Dissolved Oxygen (mg/L)	NA	9.13	10.0	19.10	9.61	17.69	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	NA	—	760	—	—	~~760~~	-	NA

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 11/1/19

Turbidity Instrument Calibration Log

Project/Site Name: Downs **Instrument:** LaMotte 2020we2

Calibrated By: VM **Serial Number:** 5083-5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
10/29/19	0.29	0.00	9.63	10.00	0.06	10.11	N
10/30/19	0.33	0.00	10.09	10.00	0.14	10.09	N
10/31/19	0.27	0.00	10.05	10.00	0.12	10.3	N
11/1/19	0.18	0.00	10.08	10.00	0.17	10.07	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:** 10/30/19 11/1/19

KGS

Field Instrument Calibration Log

Date: 11/4/19

Weather: 40's

Project/Site Name: Dover

Instrument: YSI 650XL

Calibrated By: KGA

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1330	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm°)	3/20	1.452	1.413	19.29°	1.407	17.87°	±10 µS/cm	N
pH (7)	2/21	6.73	7.00	19.47°	7.11	17.77°	± 0.3 Ph *	N
pH (4)	3/21	3.71	4.00	19.50°	4.01	17.79°	± 0.3 Ph *	N
pH (10)	2/21	9.80	10.00	19.33°	10.11	17.81°	± 0.3 Ph *	N
ORP (240 mv)	5/20	261.7	240.0	19.21°	236.7	17.82°	±10 mv	N
Dissolved Oxygen (%)	N/A	127.1%	100.0%	18.67°	92.6%	17.31°	-	N
Dissolved Oxygen (mg/L)	N/A	9.49	10.00	18.59°	9.90	17.46°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [signature]

Date: 11/4/19

KGS

Field Instrument Calibration Log

Date: 11/5/19

Weather: 50's

Project/Site Name: Dorset

Instrument: YSI 650XL

Calibrated By: [illegible]

Serial Number: 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 715		Cal. Temp. (°C)	PM Post Cal. Check Time 1445	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm^c)	3/20	1.397	1.413	18.21°	1.413	17.80°	±10 µS/cm	N
pH (7)	2/21	6.63	7.00	18.17°	7.11	17.77°	± 0.3 Ph *	N
pH (4)	3/21	3.81	4.00	18.17°	4.11	17.89°	± 0.3 Ph *	N
pH (10)	2/21	10.11	10.00	18.31°	10.10	17.86°	± 0.3 Ph *	N
ORP (240 mv)	5/20	227.9	240.0	18.22°	243.1	17.69°	±10 mv	N
Dissolved Oxygen (%)	N/A	79.6%	100.0%	17.90°	101.1%	17.50°	-	N
Dissolved Oxygen (mg/L)	N/A	9.81	10.00	17.91°	9.90	17.47°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

* Ph Unit with Ph 7 Buffer

(Mark Noted Variences on Field Forms)

Signature: [signature]

Date: 11/5/19

KGS

Field Instrument Calibration Log

Date: 11/6/19 **Weather:** Hot

Project/Site Name: Devons **Instrument:** * YSI 650X2

Calibrated By: KGA **Serial Number:** 11B100186

Parameters	Solution Expiration Date	AM Calibration Time 700		Cal. Temp. (°C)	PM Post Cal. Check Time 1200	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1.413 µS/cm)	3/20	1.432	1.413	19.77°	1.410	16.91°	±10 µS/cm	N
pH (7)	2/21	7.20	7.00	19.90°	7.00	16.88°	± 0.3 Ph *	N
pH (4)	2/21	4.31	4.00	19.93°	4.01	16.93°	± 0.3 Ph *	N
pH (10)	2/21	9.62	10.00	19.83°	10.03	16.90°	± 0.3 Ph *	N
ORP (240 mv)	5/20	251.1	240.0	19.98°	241.2	16.88°	±10 mv	N
Dissolved Oxygen (%)	N/A	120.0%	100.0%	18.16°	98.1%	16.03°	-	N
Dissolved Oxygen (mg/L)	N/A	9.72	10.00	18.26°	10.02	16.17°	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	N/A	—	760	—	760	—	-	N

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 11/6/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Devers

Instrument: LaMotte 2020we

Calibrated By: KA

Serial Number: 5083 - 5014

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
11/4/19	0.29	0.00	10.21	10.00	0.03	10.11	N
11/5/19	0.41	0.00	10.17	10.00	0.13	10.40	N
11/6/19	0.30	0.00	10.02	10.00	0.03	10.02	N
					Post Calibration Criteria		
					-	± 0.5	

Notes: Mark Noted Variences on Field Forms

Signature: [signature]

Date: 11/6/19

KGS

Field Instrument Calibration Log

Date: 11/18/19 **Weather:** 33-40°F, Cloudy, Rain PM

Project/Site Name: Revere PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Kristen Esser **Serial Number:** 16A100387

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1400	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1.433	1.413	16.69	1.585	16.43	±10 µS/cm	N
pH (7)	2/2021	6.90	7.01	16.74	6.94	17.37	± 0.3 Ph *	N
pH (4)	3/2021	4.19	4.03	16.60	4.10	17.48	± 0.3 Ph *	N
pH (10)	2/2021	10.07	10.00	16.72	9.99	17.64	± 0.3 Ph *	N
ORP (240 mv)	5/2020	242.7	240.1	16.56	245.2	17.37	±10 mv	N
Dissolved Oxygen (%)	—	93.5	100.0	17.37	105.6	10.77	-	—
Dissolved Oxygen (mg/L)	—	8.96	9.59	17.37	9.96	10.78	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	17.37	760.0	10.77	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/18/19

KGS

Field Instrument Calibration Log

Date: 11/19/19 _____ **Weather:** 38-42°F, Rainy AM, Cloudy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Kristen Esser **Serial Number:** 16A100387

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1150	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	~~3/2020~~ 4/2021	1.163	1.413	15.77	1.440	16.40	±10 µS/cm	N
pH (7)	2/2021	6.71	7.00	16.02	6.92	16.64	± 0.3 Ph *	N
pH (4)	3/2021	4.19	4.01	15.98	4.26	16.87	± 0.3 Ph *	N
pH (10)	2/2021	10.29	10.00	15.92	9.94	16.75	± 0.3 Ph *	N
ORP (240 mv)	5/2020	243.4	240.0	15.96	245.7	16.93	±10 mv	N
Dissolved Oxygen (%)	—	100.9	100.0	15.88	103.9	13.78	-	—
Dissolved Oxygen (mg/L)	—	9.99	9.90	15.88	10.16	13.78	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	15.88	760.0	13.78	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 11/19/19

KGS

Field Instrument Calibration Log

Date: 11/20/19 **Weather:** 37-40°F, Cloudy + Rainy

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Kristen Esser **Serial Number:** 16G100387

Parameters	Solution Expiration Date	AM Calibration Time 1125		Cal. Temp. (°C)	PM Post Cal. Check Time 1420	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	4/2021	1.412	1.413	17.89	1.421	16.11	±10 µS/cm	N
pH (7)	2/2021	6.35	7.00	17.97	6.94	16.91	± 0.3 Ph *	N
pH (4)	3/2021	4.36	4.11	17.88	4.08	17.15	± 0.3 Ph *	N
pH (10)	2/2021	10.06	10.02	17.96	9.97	17.09	± 0.3 Ph *	N
ORP (240 mv)	5/2020	247.4	240.0	17.92	240.0	16.95	±10 mv	N
Dissolved Oxygen (%)	—	124.2	100.0	17.06	115.6	8.40	-	—
Dissolved Oxygen (mg/L)	—	12.00	9.66	17.06	10.08	8.40	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	17.06	760.0	8.40	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/20/19

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Field Instrument Calibration Log

Date: 11/21/19 **Weather:** 31-48°F, clear

Project/Site Name: Devens PFAS RI **Instrument:** YSI 650 MDS

Calibrated By: Kristen Egan **Serial Number:** 16H100387

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1410	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm[c])	4/2021	1.417	1.413	18.31	1.514	18.96	±10 µS/cm	N
pH (7)	2/2021	6.69	7.00	18.32	6.92	18.74	± 0.3 Ph *	N
pH (4)	3/2021	4.21	4.07	18.39	4.17	18.69	± 0.3 Ph *	N
pH (10)	2/2021	10.04	10.00	18.28	10.02	18.71	± 0.3 Ph *	N
ORP (240 mv)	5/2020	244.7	240.2	18.24	247.3	18.68	±10 mv	N
Dissolved Oxygen (%)	—	99.4	100.0	19.25	109.1	13.27	-	—
Dissolved Oxygen (mg/L)	—	9.18	9.23	19.20	9.69	13.27	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	19.25	760.0	13.27	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: [signature] **Date:** 11/21/19

KGS

Turbidity Instrument Calibration Log

Project/Site Name: Darens PFAS RI **Instrument:** LaMotte 2020wa

Calibrated By: Kristen Esser **Serial Number:** 19252

Date	AM Calibration				PM Post Calibration Check		Variance Noted
	Pre-Cal 0 NTU	Post-Cal 0 NTU	Pre-Cal 10 NTU	Post-Cal 10 NTU	0 NTU	10 NTU	
11/18/19	1.74	0.01	9.17	9.75	0.02	9.83	N
11/19/19	1.89	0.00	9.88	9.93	0.01	9.49	N
11/20/19	1.58	0.01	12.53	9.96	0.03	9.68	N
11/21/19	1.56	0.01	6.74	9.82	0.02	9.46	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:**

KGS

Field Instrument Calibration Log

Date: 2/20/20 _____ **Weather:** Partly Cloudy, 20-30°F

Project/Site Name: Devens PFAS RI **Instrument:** 6050MDS

Calibrated By: Kristen Esther **Serial Number:** 11J100750

Parameters	Solution Expiration Date	AM Calibration Time 0645		Cal. Temp. (°C)	PM Post Cal. Check Time 1425	Post Cal. Check Temp (°C)	Post Cal. Check Criteria	Varience Noted (Y/N)
Specific Conductivity (1,413 µS/cm°)	3/2020	1.365	1.413	17.21	1.396	16.65	±10 µS/cm	N
pH (7)	2/2021	6.97	7.00	17.03	7.08	17.82	± 0.3 Ph *	N
pH (4)	3/2021	4.13	4.02	17.74	4.16	17.41	± 0.3 Ph *	N
pH (10)	2/2021	10.13	10.00	17.62	10.08	16.87	± 0.3 Ph *	N
ORP (240 mv)	5/2020	243.7	239.9	17.58	240.1	17.30	±10 mv	N
Dissolved Oxygen (%)	—	115.8	100.1	19.89	104.2	10.67	-	—
Dissolved Oxygen (mg/L)	—	10.55	9.11	19.92	9.59	10.67	± 0.5 mg/L < 0.5 mg/L for 0 mg/L solution, no negative value	N
Barometric Pressure (mmHg)	—	760.0	760.0	19.89	760.0	10.67	-	—

Notes:

*** Ph Unit with Ph 7 Buffer**

(Mark Noted Variences on Field Forms)

Signature: _____ **Date:** 2/20/20

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Turbidity Instrument Calibration Log

Project/Site Name: Devens PFAS RI **Instrument:** LaMotte 2020we

Calibrated By: Kristen Eggers **Serial Number:** 19252

	AM Calibration				PM Post Calibration Check		
Date	**Pre-Cal 0 NTU**	**Post-Cal 0 NTU**	**Pre-Cal 10 NTU**	**Post-Cal 10 NTU**	**0 NTU**	**10 NTU**	**Variance Noted**
2/19/20	0.02	0.01	8.06	10.10	0.02	9.79	N
2/20/20	0.03	0.01	9.76	9.66	0.00	9.86	N
2/21/20	0.02	0.01	9.84	9.91	0.01	10.01	N

Post Calibration Criteria	
-	± 0.5

Notes: Mark Noted Variences on Field Forms

Signature: [signature] **Date:**

APPENDIX E SOIL BORING LOGS

AOC 32/43A

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Dumas PFAS soil borings, Area 2	Boring No.: 32SB-19-01
Project No.: 01082-0011-533	Drilling Co.: TDS
Address: Dumas Recycling Center	Driller: Jay Jumonville
Logger: Chris Vignola	Drilling Method: Geoprobe (Direct Push)
Date: 10/29/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 25'	Static Water: N/A

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~ Symbols	GEOLOGIC LOG	REMARKS
0-5'	26"	0-26"	SM	Dry, dark brown, poorly graded, fine to medium sand, trace silt, ~~trace~~ few sub rounded fine gravel	0-0.5 ~ 0830 0.5-3 ~ 0835
5-10'	27"	0-10" 10-27"	SP SP	Dry, brown, poorly graded, fine sand with some sub angular fine gravel Dry, dark brown, poorly graded, fine to medium sand with some sub-angular, fine gravel	3-7 ~ 0840 DUP01-102919 ~ 0845 7-15 ~ 0850
10-15'	27"	0-8" 8-12" 12-27"	SP SP SP	Dry, brown, poorly graded, fine sand with few sub angular fine gravel Dry, brown to orange, poorly graded, fine sand with trace sub-angular fine gravel Dry, dark brown to light brown, poorly graded, fine sand with few sub-angular fine gravel, basalt cobble @ ~ 17"	
15-20'	23"	0-13" 13-23"	SP SP	Dry, brown fading to tan, poorly graded, fine sand with few sub-angular, fine gravel Dry, tan, poorly graded, fine to medium sand	
20-25'	60"	0-29" 29-48" 48-60"	SP SW SM	Dry, dark brown, poorly graded, fine sand with few sub-angular fine gravel Moist, tan, well graded, medium to coarse sand Moist, tan, well graded coarse sand; Tan silt layer present @ 53"-55"	22-24 ~ 0855 #MS/MSD taken Water table @ ~~24~~ 24'

Notes: FRB ~ 0915
EB ~ 0905

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS Soil Borings; Area 2	Boring No.: 3253-19-02
Project No.: 01082-0011-533	Drilling Co.: TDS
Address: Devens Recycling	Driller: Jay Jumonville
Logger: Chris Vignola	Drilling Method: Geoprobe (Direct Push)
Date: 10/29/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 25'	Static Water: N/A

Core Section	Recovery (ft)	Interval (ft)	USCS PID (ppm) Symbols	GEOLOGIC LOG	REMARKS
0-5'	30"	0-11"	SP	Dry, dark brown, poorly graded, medium sand, some organics, little sub-angular fine gravel	0-0.5 ~ 1025
		11-20"	SP	Dry, brown to tan, poorly graded medium sand, trace subrounded fine gravel.	
		20-30"	SP	Dry, dark brown, poorly graded, fine sand, some sub-angular fine gravel	0.5-3 ~ 1030
5-10'	36"	0-4"	SP	Dry, brown, poorly graded, medium sand	3-7 ~ 1035
		4-24"	SM	Dry, brown to red, poorly graded, fine sand, little sub angular gravel, few silt present throughout	
		24-36"	SP	Dry, tan, poorly graded, medium sand, little sub-angular fine gravel	7-15 ~ 1040
10-15'	47"	0-6"	SP	Dry, tan, poorly graded, medium to fine sand	
		6-14"	SM	Dry, dark brown, poorly graded, fine sand, trace silt, trace sub-angular fine gravel	
		14-47"	SW	Dry, tan, well graded, medium to coarse sand, some sub-angular fine gravel	
15-20'	46"	0-17"	SW	Dry, tan fading to brown, well graded, fine to medium sand, trace sub-angular fine gravel	
		17-29"	SW	Dry, tan, well graded, medium sand, trace sub-angular fine gravel	
		29-39"	SW	Dry, tan, well graded, coarse sand, trace rounded fine gravel	
		39-46"	SP	Dry, tan, poorly graded, fine sand, trace silt	
20-25'	51"	0-24"	~~SP~~ SW	Dry, brown, well graded, fine sand that gradually increases in coarseness to a coarse sand, trace subrounded fine gravel	23-25 ~ 1045
		24-51"	SP	Dry, tan, poorly graded, fine to medium sand with trace oxidation (red) streaks	water bubble @ ~ 25

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Drums PFAS soil borings, Area 3	Boring No.: 32SB-19-03
Project No.: 01082-0011-533	Drilling Co.: TDS
Address: Drums Recycling Center (AOC32)	Driller: Jay Jumonville
Logger: Chris Vigula	Drilling Method: Geoprobe (Direct Push)
Date: 10/28/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 25'	Static Water: N/A

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~ Symbol	GEOLOGIC LOG	REMARKS
0-5'	21"	0-9"	SM	Dry, dark brown, ~~fine sand~~ (w) poorly graded fine sand with few silt, trace sub rounded fine gravel	0-0.5 ~ 1400
		9-16"	SP-SM	Dry, brown, poorly graded, fine to medium sand with trace silt.	0.5 ~ 3 ~ 1405
		16-21	SM	Dry, dark brown, poorly graded fine sand, few silt	DUP01-102819-1410
5-10' ~~10-15~~ (w)	21"	0-21"	SP-SM	Dry, brown to tan, well graded fine to medium sand, little sub angular, fine gravel, trace silt	3-7 ~ 1415 7-15 ~ 1420
10-15'	29"	0-29"	SP	Dry, tan, poorly graded medium sand, trace coarse sand, trace sub angular, fine gravel	
15-20'	44"	0-10"	SP	Dry, tan to brown, poorly graded medium sand with trace, sub angular gravel (fine)	
		10-18"	SP	Dry, dark brown, poorly graded fine to medium sand, few sub rounded fine gravel	
		18-44"	SW	Dry, tan, well graded medium to coarse sand with trace sub rounded fine gravel	
20-25'	43"	0-20"	SP	Dry, brown, poorly graded medium sand with few ~~coars~~ fine sand	22-24 ~ 1425
		20-43"	SW	Dry, tan, well graded, medium and coarse sand with trace, sub-angular, fine gravel	24' ~ water ~~[illegible]~~ tabel

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Downs Parts Soil Borings: Area 2	Boring No.: 325B-19-04
Project No.: 01082-0011-533	Drilling Co.: TDS
Address: 8 Reilly's Auto Parts	Driller: Jay Jumonville
Logger: Chris Vignola	Drilling Method: Geoprobe (Direct Push)
Date: 10/30/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 3' (hit concrete pad)	Static Water: NA

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID~~ (~~ppm~~) Symbols	GEOLOGIC LOG	REMARKS
0-3'	—	—	—	Hit concrete pad within 3' designated location 3 times in different spots; Cannot break through with SP22 tooling.	NO SOIL SAMPLE COLLECTED

Notes:

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SOIL BORING LOG

Project: Devens PFAS Soil Boring Area 2	Boring No.: 32SB-19-05
Project No.: 02082-0011-533	Drilling Co.: TDS
Address: Area 2-SHL	Driller: Jay Dumonville
Logger: Kristen Escher	Drilling Method: Direct Push
Date: 10/30/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 19'	Static Water: NA

Qc: 6-26-20

Core Section	Recovery (in)	Interval (ft) in	UGCS PID (ppm) Symbols	GEOLOGIC LOG	REMARKS
0-5'	32	0-32	SW	dry Brown - tan med to course SAND with trace Subrounded Gravel, well graded	
5-10'	20	0-11	SP	0-11: dry Fine to med tan SAND poorly graded	
		11-24	SW	11-24: dry Tan - light brown med to coarse Wellgraded SAND with	
			SM	sandy silt layer from 14-16" trace organics	
10-15'	46	0-9	SP	0-9: med - coarse brown SAND trace subangular gravel - dry	
		9-11	SP	9-11: light grey med. SAND poorly graded - dry	
		11-20	SW	11-20: med - coarse light brown well graded SAND with trace gravel	
		20-36	SW	20-36: med-coarse tan SAND w/ little gravel	rock layer @ 33" - dry
RM 6-26-20	ML-GM	36-46	MP	36-46: orange-brown silt w/ subangular gravel - dry	
15-19'	33	0-9	SM	0-9: light brown SILTY-SAND trace subrounded gravel - dry	Water @ 18'
		9-16	SP	9-16: Fine - med dark brown SAND poorly graded - dry	
		16-33		16-33: light brown SILTY-SAND (fine) w/ some subangular gravel	
				Moist	

Notes: Samples @ 0-0.5, 0.5-3, 3-7, 7-15, 16-18

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS Soil Sampling; Area 2	Boring No.: 32SB-19-06
Project No.: 01082-0011-533	Drilling Co.: TDS
Address: Shegley's	Driller: Jay Jumonville
Logger: Chris Vigneau	Drilling Method: Geoprobe (Direct Push)
Date: 10/29/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 20'	Static Water: N/A

Core Section	Recovery (ft)	Interval (ft)	~~PID~~ USCS (ppm) symbols	GEOLOGIC LOG	REMARKS
0-5'	30"	0-17"	SW	Dry, orange to tan, well graded medium sand gradually increasing to coarse sand with few subrounded fine gravel	0-0.5 ~ 1425
		17-30"	SP	Dry, tan, poorly graded, fine to medium sand with trace subrounded fine gravel	0.5-3 ~ 1430
5-10'	39"	0-39"	SW	Dry, tan, well graded, medium to coarse sand with trace subrounded fine gravel; 6"-8": reddish brown fine sand band.	3-7 ~ 1435 7-15 ~ 1440
10-15'	42"	0-12"	SM	Dry, gray to brown, poorly graded, fine to medium sand with few silt	
		12-42"	SP	Dry, tan, well graded coarse sand with little subangular fine gravel	
15-20'	42"	0-20"	SW	Dry, brown, well graded medium sand gradually increasing to coarse sand, trace subangular gravel,	17-19 ~ 1445
			(SM) →	silty fine sand band from 7"-8"	
		20-42"	SM	Dry, tan, poorly graded silty sand with some angular fine gravel	water table ~ 19 ft

Notes:

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Revere PFAS Soil Boring Area 2	Boring No.: 325B-19-07
Project No.: 02082-6011-533	Drilling Co.: TDS
Address: Area 2-SHL	Driller: Jay Jumonville
Logger: Kristen Exner	Drilling Method: DPT
Date: 10/30/19	Drilling Equip: Geoprobe 6712
Total Boring Depth: 14'	Static Water: NA

Core Section	Recovery (ft) in	Interval (ft) in	USCS PID (ppm) symbol	GEOLOGIC LOG	REMARKS
0-5'	29	0-8 8-29	SM SW	0-8: orange-brown Fine SAND and SILT with trace subangular gravel 8-29: tan coarse SAND gradually finer to med. SAND. Well graded. Trace sub. round gravel (dry)	
5-10' NR	35	0-10 10-15 15-21 21-35	SP SW SP SW	0-10: med. tan SAND. poorly graded trace subang gravel 10-15: (dry) med-coarse tan well graded ~~SAND~~ SAND 15-21: (dry) trace sub. ang. gravel 21-35: (dry) med-fine light gray SAND poorly graded (dry) Well Graded tan SAND w/trace sub. round gravel	
10-14'	30	0-14 14-30		0-14: Brown Fine-med SAND trace Silt (dry) trace fine gravel (sub. round) 14-30: well graded coarse SAND, few Sub. round gravel (dry) (tan)	

Notes: Refusal @ 14', no water table sample
Samples @ 0-0.5, 0.5-3, 3-7, 7-14
Field dup @ 7-14

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS Soil Borings	Boring No.: 325B-19-08
Project No.: 02082-0011-533	Drilling Co.: TDS
Address: Area 2 - SHL	Driller: Jay Jumonville
Logger: Kristen Esser	Drilling Method: DPT
Date: 10/30/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 20'	Static Water: NA

Core Section	Recovery (ft) in	Interval (ft) in	USCS PID (ppm)	GEOLOGIC LOG	REMARKS
0-5'	26	0-10 10-26	SP SW	0-10: dry dark brown med-coarse SAND with few organics and trace subrounded 10-26: dry brown med-coarse SAND well graded band of tan med-coarse SAND @ 14-16" trace subrounded gravel	poorly graded
5-10'	26	0-26	SW	dry Brown well graded med-coarse SAND with few subangular gravel	
10-15'	30	0-8 8-29 29-30	SW SP SW	0-8: dry Brown well graded med-coarse SAND trace subrounded gravel 8-29: dry tan poorly graded med. SAND w/trace 29-30: dry tan med-coarse SAND well graded	subrounded gravel
15-20'	38	0-16 16-33 33-38	SP SW	0-16: dry tan-brown poorly graded SAND-fine gradually coarser 16-33: moist light gray med-coarse SAND to light brown. well graded 33-38: SILT with med. SAND and	tomed. SAND darkening gravel
				moist brown	

water @ 19'

Notes: Samples @ 0-0.5, 3-7, 7-15, 17-19

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS Soil Borings;	Boring No.: 3253-1209
Project No.: 01082.0011.533	Drilling Co.: TDS
Address: Shopley's	Driller: Jay Jamerville
Logger: Chris Vigeola	Drilling Method: Geoprobe (Direct Push)
Date: 10/29/19	Drilling Equip: Geoprobe 6712
Total Boring Depth: 20'	Static Water: NA

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (PPM)~~ Symbol	GEOLOGIC LOG	REMARKS
0-5'	31"	0-26"	SW	Dry, tan, well graded medium ~~sand~~ to coarse sand with some sub angular fine gravel	0-0.5 ~ 1300
		26-31"	SP	Dry, tan, poorly graded medium sand	0.5-3 ~ 1305
5-10'	40"	0-10"	SW	Dry, brown, well graded coarse sand with trace sub angular fine gravel	3-7 ~ 1310
		10-24"	SW	Dry, tan, well graded, 2~3" beds of medium to coarse sand	DUP02 taken ~ 1315
		24-40"	SP	Dry, tan, poorly graded fine to medium sand	7~15 ~ 1320
10-15'	46"	0-17"	SW	Dry, brown, well graded medium to coarse sand with some sub-angular fine gravel	
		17-46"	SP	Dry, tan, poorly graded, medium sand	
15-20'	51"	0-42"	SW	Dry, brown to tan, well graded medium to coarse sand with some sub rounded fine gravel	17-19 ~ 1325
		42-51"	GM	Moist, brown, poorly graded silty sand, ~~with~~ and subrounded fine gravel	water table ~ 19 ft

Notes:

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12/23/2019

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS Soil Borings	Boring No.: 32SB-19-10
Project No.: 02082-0011-533	Drilling Co.: TDS
Address: Area 2 - SHL	Driller: Jay Jamanville
Logger: Kristen Esser	Drilling Method: DPT
Date: 10/31/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 16'	Static Water: NA

Qc: 6-26-20

Core Section	Recovery (ft) in	Interval (ft) in	USCS PID (ppm) Symbol	GEOLOGIC LOG	REMARKS
0-5'	39	0-12	~~SM~~	0-12: Dark brown fine SAND and SILT, trace organics, poorly graded, dry	trace sub.round gravel
		12-15	SM-GW	12-15: Light brown fine SAND with SILT and sub.angular GRAVEL, dry	
		15-17	SM	15-17: Brown poorly graded fine SANDY SILT, dry	
		17-24	SM	17-24: Dark brown fine SAND with SILT, trace sub.round gravel, dry	oxidation bands
RM 6-26-20	SM-SP	24-32	~~SM-P~~	24-32: Orange fine SAND with SILT, poorly graded, dry	
		32-39	SP	32-39: tan fine - med SAND, poorly graded, dry	
5-10'	33	0-10	SW	0-10: tan well graded med - coarse SAND, dry, trace sub round gravel	
		10-24	SW-GW	10-24: tan med - coarse SAND, some sub.round gravel, well graded, dry	
		24-33	SP	24-33: light tan poorly graded fine SAND, dry	
10-15	30	0-19	SW	0-19: fine - med tan SAND, well graded, increasing dry coarseness the deeper the core runs.	
		19-30	SP	19-30: fine - med SAND, poorly graded, dry, tan	
15-16	20	0-7	SP	0-7: red-brown poorly graded fine - med SAND, dry	
		7-8	~~SM-P~~ SM-SP	7-8: Dark brown SILT with SAND, poorly graded, dry	
RM 6-26-20		8-16	SP	8-16: Dark brown med - coarse fine SAND, few SILT, poorly graded, moist	
		16-20	~~SM-GP~~ SM-GM	16-20: Light brown SILTY SAND with sub.angular gravel, moist	
					water @ 16'

Notes: Hit refusal @ 16' & water table. Will collect samples from 7-14' & 14-16'; 0-0.5, 0.5-3, 3-7.

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS Soil Borings	Boring No.: 32SB-19-11
Project No.: 02082-0011-533	Drilling Co.: TDS
Address: Area 2 - SH2	Driller: Jay Jumanville
Logger: Kristen Esser	Drilling Method: DPT
Date: 10/31/19	Drilling Equip: Geoprobe 6712
Total Boring Depth: 15'	Static Water: NA

Qc: 6-26-20

Core Section	Recovery ~~(ft)~~ in	Interval ~~(ft)~~ in	USCS ~~PID (ppm)~~ Sym.	GEOLOGIC LOG	REMARKS
0-5' RM 6-26-20	SM-OL/OH 43	0-4	SP	0-4: dry Dark brown poorly graded med. SAND, trace sub ang. gravel	
		4-12	~~SM-OP~~	4-12: dry Black poorly graded fine SAND with SILT, some organics	
		13-17	SP	13-17: dry Light & Dark gray fine-med poorly graded SAND	
		17-24	SM-SP	17-24: dry Dark gray & brown fine-med poorly graded SAND with some SILT	
		24-29	~~SG-SW~~ SW-GW	24-29: dry tan well graded med-coarse SAND with little GRAVEL	
0-5' RM 6-26-20	43	29-36	SM	29-36: dry Dark gray fine-med SAND with SILT, few sub ang. gravel	
		36-43	~~SM-AP~~ SM-ML	36-43: dry Red-brown poorly graded SILT and fine SAND	
5-10'	34	0-8	SP	0-8: dry Orange-yellow poorly graded fine-med SAND	
		8-30	SP	8-30: dry Tan-yellow poorly graded fine-med SAND	
		30-34	SP	30-34: dry Tan-orange med-coarse poorly graded SAND	
10-15' RM 6-26-20	34	0-15	ML	0-15: dry light tan-brown SILT, trace clay	
		15-26	ML-CL	15-26: dry light tan-brown with gray streaks SILT, some CLAY	
		26-34	~~ML-G~~ ML-GM	26-34: moist light tan-brown SILT with sub. angular GRAVEL	
					Water table @ 14'

Notes: Water table @ 14', Sample intervals; 0-0.5, 0.5-3, 3-7, ~~from~~ (LE) 7-12' & 12-14'

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AOC 76

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Davens PFAS RI	Boring No.: 76SB-19-01
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Korfjohn	Drilling Method: DPT
Date: 6/19/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 5 ft. bgs	Static Water: 2 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5	2.3/5.0	0-2	SP	Dry to moist, dark brown, poorly graded, fine SAND, some "topsoil", little organic material	~~76SB-19-01-0-1 @1230~~ (DF)
		2-5	SP	Wet, tan, poorly graded, medium SAND, some subangular gravel, little cobbles	76SB-19-01-0-2 @1235

Notes: QC'd by [signature] 10/3/2019

KGS
KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS AI	Boring No.: 76SB-19-02
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/18/19	Drilling Equip: Geoprobe 7712DT
Total Boring Depth: 20 ft. bgs	Static Water: 20 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5	2.4/5.0	0-0.5	SP	Dry, dark brown, poorly graded, fine to medium SAND, trace rounded gravel, ~~trace organics~~	76SB-19-02-0-1 @ 1405
		0.5-5	SW	Dry, tan, well graded, coarse SAND, some subrounded gravel	
5-10	3.2/5.0	5-10	SP	Dry, tan, poorly graded, fine to medium SAND, little subrounded gravel	76SB-19-02-3-7 @ 1410
10-15	4.5/5.0	10-15	SP	Dry, tan, poorly graded, fine to medium SAND, some subrounded gravel, little coarse sand	76SB-19-02-18-20 @ 1415
15-20	4.8/5.0	15-18	SP	(DP) ~~Moist~~ Dry, tan, poorly graded, medium SAND, some subrounded gravel, little coarse sand	
		18-20	SP	Moist to wet @ 20' bgs, tan, poorly graded, fine to medium SAND	

Notes: QC'd by CBW 10/3/2019

KGS

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 76SB-19-03
Project No.: 10B2	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/19/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15 ft. bgs	Static Water: 14 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5	2.4/5.0	0-0.5	SP	Dry, dark brown, fine SAND, poorly graded, some topsoil, little organic material	
		0.5-5	SP	Dry, light brown to tan, poorly graded fine to medium SAND, little subrounded gravel	76SB-19-03-0-1 @~~935~~ DUP 940
5-10	2.9/5.0	5-10	SP	Dry, tan, poorly graded, fine to medium SAND, trace subrounded gravel	76SB-19-03-3-7 @~~915~~ DUP 945 → MS/MSD
10-15	4.0/5.0	10-12	SP	Same as "5-10"	76SB-19-03-12-14 @950
		12-14	SP	Moist, light brown, poorly graded, medium SAND	
		14-15	SP	Wet, dark brown, poorly graded, medium SAND	

Notes: QC'd by CAB 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 765B-19-04-
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/19/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 15 ft. bgs	Static Water: 12 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5	3.7/5.0	0-0.5	SP	Dry, dark brown, poorly graded, fine SAND, some topsoil, trace organic material	
		0.5-5	SP	Dry, tan, poorly graded, fine to medium SAND, trace subrounded gravel	765B-19-04-0-1 @1400
5-10	3.9/5.0	5-10	SP	Dry, light brown, poorly graded, fine to medium SAND, trace subrounded gravel	765B-19-04-3-7 @1405 A2-SB-DUP-061919 @1408
~~10-12~~ (QC)		10-12	SP	Moist, light brown, poorly graded, fine to medium SAND	765B-19-04-10-12 @1410
10-15	3.2/5.0	12-15	SW	Wet, dark brown, well graded, coarse SAND, trace subangular gravel	

Notes: QC'd by CAB 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 76SB-19-05
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/18/19	Drilling Equip: Geoprobe 7712DT
Total Boring Depth: 20 ft. bgs	Static Water: 19 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5	2.3/5.0	0-1	SP	Dry, dark brown, poorly graded medium SAND, some topsoil, trace subangular gravel	
		1-5	SP	Dry, light brown, poorly graded, fine to medium SAND, little subangular gravel	76SB-19-05-0-1 @1255
5-10	2.5/5.0	5-10	ML	Dry, tan, poorly graded, fine silty SAND	76SB-19-05-3-7 @1300 A2-SB-DUP02-061819 @1303
10-15	3.3/5.0	10-15	ML	Dry, tan, poorly graded, fine silty SAND, trace angular gravel @12 ft. to moist	76SB-19-05-17-19 @1305
15-20	4.8/5.0	15-19	ML	Dry, tan, poorly graded, fine silty SAND	
		19-20	SP	Wet, light brown, poorly graded, medium SAND, little coarse sand	

Notes: QC'd by CBW 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 76SB-19-06
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/17/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15 ft. bgs	Static Water: 11 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5	3.1/5.0	0-0.5	SP	Dry, dark brown, fine to medium SAND, poorly graded, little subangular gravel, trace ~~organic~~ organic matter	
		0.5-5	SP	Dry, dark brown to light brown, poorly graded, fine to medium SAND, little subangular gravel	76SB-19-06-0-1 @1130
5-10	3.3/5.0	5-10	ML	Dry to moist @ 9', tan, poorly graded, fine silty SAND, little medium sand, trace, subrounded gravel	76SB-19-06-3-7 @1135 A2-SB-Dup~~e~~-06719 @1138
10-15	~~10 ft~~ (OK) 3.4/5.0	10-11	ML	Moist, tan, poorly graded, fine silty SAND	76SB-19-06-9-11 @1140
		11-14	SP	wet, light brown, poorly graded medium SAND	
		14-15	CL	wet, light brown, silty CLAY	

Notes: QC'd by [signature] 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 765B-19-07
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/17/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 10 ft. bgs	Static Water: 10 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	~~PID (ppm)~~ USCS	GEOLOGIC LOG	REMARKS
0-5	2.6/5.0	0-0.5	SP	Dry, dark brown, medium SAND, poorly graded, little subrounded gravel, trace organic matter	
		0.5-5	SP	Dry, light brown, poorly graded, fine to medium SAND, trace subrounded gravel	765B-19-07-0-1 @ 1010 765B-19-07-3-7 @ 1015
5-10	2.8/5.0	5-7	SP	Dry, light brown, poorly graded, fine to medium SAND, trace subangular gravel	
		7-9	ML	Moist, tan, poorly graded, fine silty SAND	765B-19-07-8-10 @ 1020
		9-10	ML	Moist to wet @10, tan, poorly graded, fine silty SAND	

Notes:

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10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 76SB-19-08
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/19/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 5 ft. bgs	Static Water: 2.5 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5	2.9/5.0	0-0.5	SP	Dry, dark brown, fine to medium, poorly graded, SAND, some topsoil, little subangular gravel, trace organic material	
		0.5-2.5	SP	Dry to moist tan, poorly graded, medium SAND, trace subrounded gravel	
		2.5-5	SM	Wet, dark brown to light brown, poorly graded, fine silty SAND, trace coarse sand	
					76SB-19-08-0-1 @1055 76SB-19-08-1-2.5 @1100

Notes: QC'd by [signature] 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 765B-19-09
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/17/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 10 feet bgs	Static Water: 9 feet bgs

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
0-5	2.0/5.0	0-0.5	SP	Dry, dark brown, poorly graded, medium SAND, little cobble, little organic matter	765B-19-09-0-1 @1310
		0.5-3	SP	Dry, dark to light brown, poorly graded, medium SAND, trace cobble, trace subrounded gravel	765B-19-09-3-7 @1315 → MS/MSD
		3-5	ML	Dry, tan, poorly graded, fine silty SAND	
5-10	3.8/5.0	5-7	ML	Dry, tan, poorly graded, fine silty SAND	765B-19-09-7-9 @1320
		7-9	SP	Moist, tan, poorly graded, fine to medium SAND, little fine silty sand	
		9-10	ML	Wet, tan, poorly graded, fine silty SAND	

Notes: QC'd by [signature] 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 765B-19-10
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: ~~6/20/19~~ 6/19/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 25 ft. bgs	Static Water: 23 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	PID (ppm)	GEOLOGIC LOG	REMARKS
0-5	2.7/5.0	0-1	SP	Dry, dark brown, poorly graded, medium SAND, some topsoil, little organic material	
		1-5	SP	Dry, light brown to orange, poorly graded, fine to medium SAND, trace angular gravel	765B-19-10-0-1 @ 835
5-10	3.0/5.0	5-10	SP	Dry, tan, poorly graded, fine to medium SAND, little subangular gravel	765B-19-10-3-7 @ 840
~~15 20~~ (DK) 10-15	3.3/5.0	10-13	SP	Same as "5-10"	
		13-15	SP	Dry, dark brown, poorly graded, ~~fine to~~ (DK) medium SAND, trace cobble, little subangular gravel	
~~15 20~~ (DK) 15-20	3.3/5.0	15-20	SP	Dry, light brown, poorly graded, medium SAND, some subangular gravel, trace cobble	
20-25	4.6/5.0	20-23	SP	Moist, light brown, poorly graded, medium SAND, trace subangular gravel	765B-19-10-21-23 @ 845
		23-25	~~ML~~ SM (DK)	Wet light brown, poorly graded, fine silty SAND, little coarse sand	

Notes: QC'd by CBW 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 76SB-19-11
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/17/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 10 ft. bgs	Static Water: ~~9 ft. bgs~~ (DK) 9 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID~~ (ppm)	GEOLOGIC LOG	REMARKS
0-5	2.7/5.0	0-3	SP	Dry, dark brown, poorly graded, fine to medium SAND, some subrounded gravel, trace organic matter at top	76SB-19-11-0-1 @1415
		3-5	ML	Dry, tan, poorly graded, fine silty SAND	76SB-19-11-3-7 @1420
5-10	3.6/5.0	5-9	ML	Dry to moist @ 7' bgs, tan, poorly graded, fine silty SAND	76SB-19-11-7-9 @1425
		9-10	CL	Wet, tan, silty CLAY	

Notes: QC'd by CAB 10/3/2019

KGS
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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 765B-19-12
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/18/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 15 ft. bgs	Static Water: 12 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5	2.5/5.0	0-1	SP	Dry, dark brown, poorly graded, fine to medium SAND, (topsoil), trace organics	→ some topsoil
		1-5	SW	Dry, light brown, well graded, coarse SAND, trace angular gravel, little medium sand	765B-19-12-0-1 @1100
5-10	3.8/5.0	5-10	SP	Dry, tan, poorly graded, fine to medium SAND, little subangular gravel	765B-19-12-3-7 @1105 765B-19-12-10-12 @1110
10-15	3.7/5.0	10-12	SP	Moist, tan, poorly graded, fine to medium SAND, trace subangular gravel	
		12-15	ML	Wet, tan, fine SILT	

Notes:

QC'd by
10/3/2019

KGS
KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 76SB-19-13
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/17/19	Drilling Equip: Geoprobe 6712 DT
Total Boring Depth: 15 ft. bgs	Static Water: 12 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~ Symbol	GEOLOGIC LOG	REMARKS
0-5'	2.2/5.0	0-0.5	N/A	Asphalt	76SB-19-13-0.5-1 @905
		0.5-5	~~SP~~ (DK) ML	Dry, dark brown, poorly graded, fine silty SAND, trace subangular gravel	
5-10'	4.6/5.0	5-7	~~SP~~ (DK) ML	Dry, light brown, poorly graded, fine silty SAND	76SB-19-13-3-7 @910
		7-10	CL	Dry to moist, light brown, silty CLAY	
10-15'	4.0/5.0	10-12	SP	Moist, light brown to tan, poorly graded, fine to medium SAND, trace subangular gravel	76SB-19-13-10-12 @915
		12-15	SP	Wet, light brown, poorly graded, fine silty SAND, trace coarse sand, little silty ~~CLAY~~ (DK) clay	

Notes: QC'd by CAB 10/3/2019

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 765B-19-14
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/18/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 10 ft. bgs	Static Water: 9ft. bgs

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5	2.0/5.0	0-1	SP	Dry, dark brown, poorly graded, fine to medium SAND, little subrounded gravel, trace organics	765B-19-14-0-1 @920
		1-5	SP	Dry, light brown to tan, poorly graded, fine to medium SAND, trace subrounded gravel	765B-19-14-3-7 @925
5-10	2.5/5.0	5-6	SP	same as "1-5"	765B-19-14-7-9 @930
		6-9	ML	Moist, tan, fine silty SAND, poorly graded	
		9-10	SP	Wet, tan, medium SAND, poorly graded, trace coarse sand	

Notes: QC'd by CAB 10/3/2019

KGS

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KOMAN Government Solutions, LLC
SOIL BORING LOG

Project: Devens PFAS RI	Boring No.: 76SB-19-15
Project No.: 1082	Drilling Co.: TDS
Address: AOC 76	Driller: Jay Jumonville
Logger: Dave Kortjohn	Drilling Method: DPT
Date: 6/18/19	Drilling Equip: Geoprobe 6712DT
Total Boring Depth: 5 ft. bgs	Static Water: 3.3 ft. bgs

Core Section	Recovery (ft)	Interval (ft)	USCS ~~PID (ppm)~~	GEOLOGIC LOG	REMARKS
0-5	3.0/5.0	0-1	SP	Dry, dark brown, fine to medium SAND, some subangular gravel, trace organics	poorly graded 76SB-19-15-0-1@810
		~~1-3.5~~ 1-1.5 (DUP)	SW	Moist, dark brown, medium SAND, ~~poorly~~ well graded, little subangular gravel, little coarse sand	1.5-3.5 ~~1-3.5~~ 76SB-19-15-1.5-3 (DUP) @815
		~~3.5-5~~ (DUP) 1.5-5	ML	wet, tan, fine silty SAND	A2-SB-DUP-061819 @818

Notes: QC'd by CSB 10/3/2019

KGS

KOMAN Government Solutions, LLC 293 Boston Post Road, Marlborough, MA

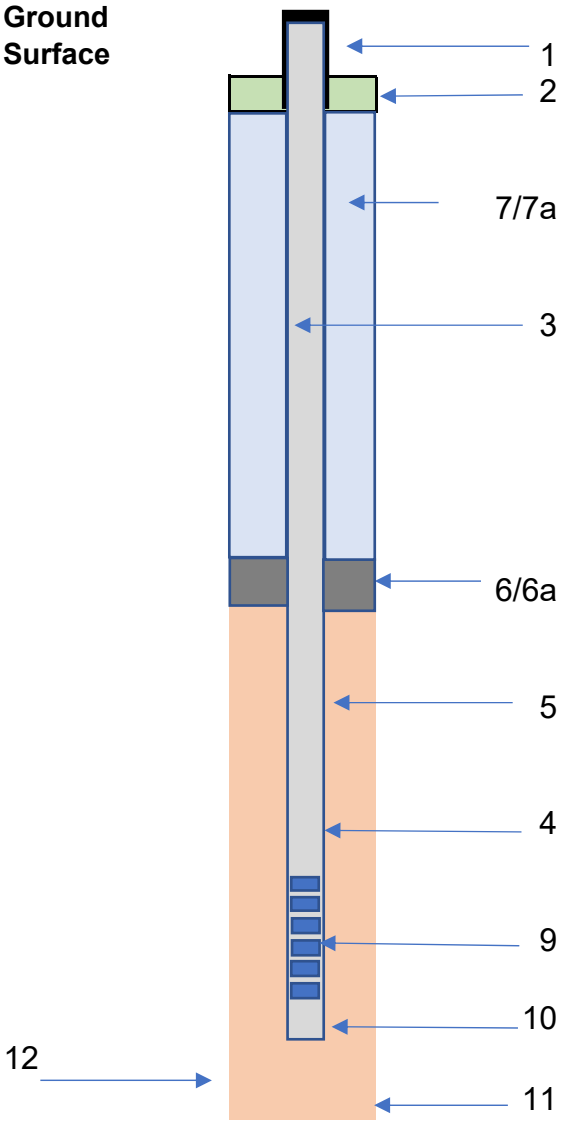
APPENDIX F MONITORING WELL AND PIEZOMETER CONSTRUCTION LOGS

AOC 32

KGS	Project: PFAS RI	Piezometer Identification: 32PZ-19-01
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: Located in grass south of Shepley's Landill.
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 9/16/2019-9/19/2019	Well Construction Date: 9/19/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kristen Esser (Jacobs)	Associated Vertical Profile: 32VP-19-10
Ground Elevation (ft NAVD88): 235.86	Top of PVC Elevation (ft NAVD88): 238.20
Easting (State Plane NAD83 [FT]): 630756.50	Northing (State Plane NAD83 [FT]): 3025650.80



1. Well Protection Type:	Steel Stickup
Stickup ht.	2.34 ft
2. Concrete Pad Depth:	1 ft
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#1 Silica
Quanity Used:	50-lbs
Top/Bottom of Pack:	5.5-17.5 ft bgs
6. Type of Seal:	Bentonite Chips
6a.Top/Bottom of Seal:	0-5.5 ft bgs
7. Backfill Mixture Used:	Bentonite
7a. Placement Method:	gravity
8. Screen length:	10 feet
9. Screen interval:	7.5-17.5 ft bgs
10. Sump Length:	1-inch
11. Bottom of Boring:	17.5 ft bgs
12. Diameter of borehole:	2.25-inch

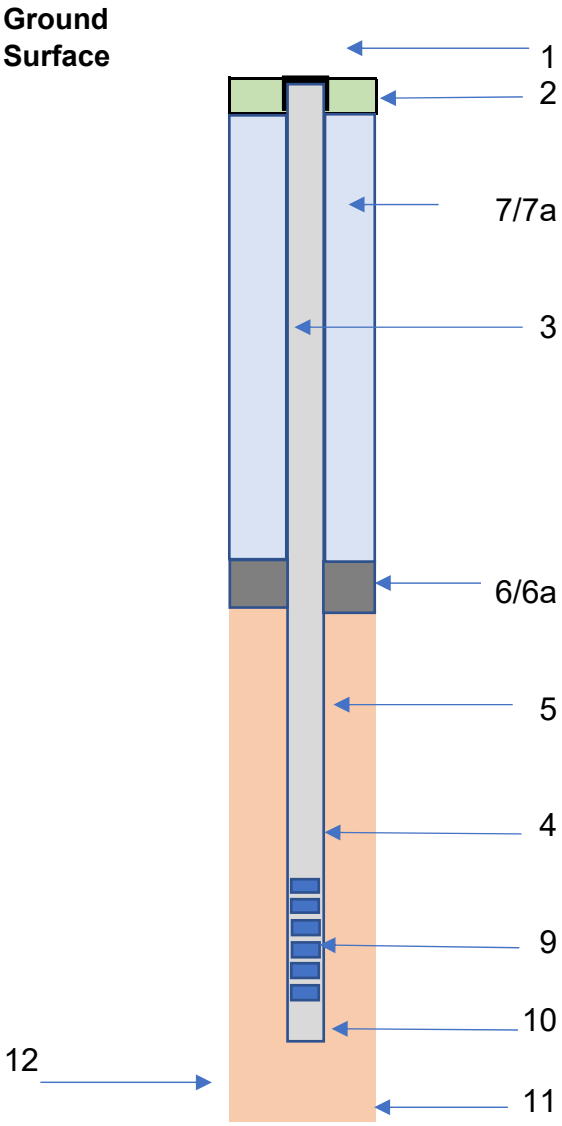
Comments:

QC
BrA 4/6/20

KGS	Project: PFAS RI	Piezometer Identification: 32PZ-19-02
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: Located in grass north of parking lot of
Drilling Company: Technical Drilling Services	51 Independence Drive.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 9/27/2019-10/7/2019	Well Construction Date: 10/7/2019
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kristen Esser (Jacobs)	Associated Vertical Profile: 32VP-19-12
Ground Elevation (ft NAVD88): 250.31	Top of PVC Elevation (ft NAVD88): 249.96
Easting (State Plane NAD83 [FT]): 630585.90	Northing (State Plane NAD83 [FT]): 3024968.90



1. Well Protection Type:	Flushmount roadbox
2. Concrete Pad Depth:	0.6 ft
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Filter Sand:	#1 Silica
Quanity Used:	50-lbs
Top/Bottom of Pack:	20-32 ft bgs
6. Type of Seal:	Bentonite
6a.Top/Bottom of Seal:	2-20 ft bgs
7. Backfill Mixture Used:	Bentonite
7a. Placement Method:	gravity
8. Screen length:	10 feet
9. Screen interval:	22-32 ft bgs
10. Sump Length:	1-inch
11. Bottom of Boring:	32 ft bgs
12. Diameter of borehole:	2.25-inch

Comments:

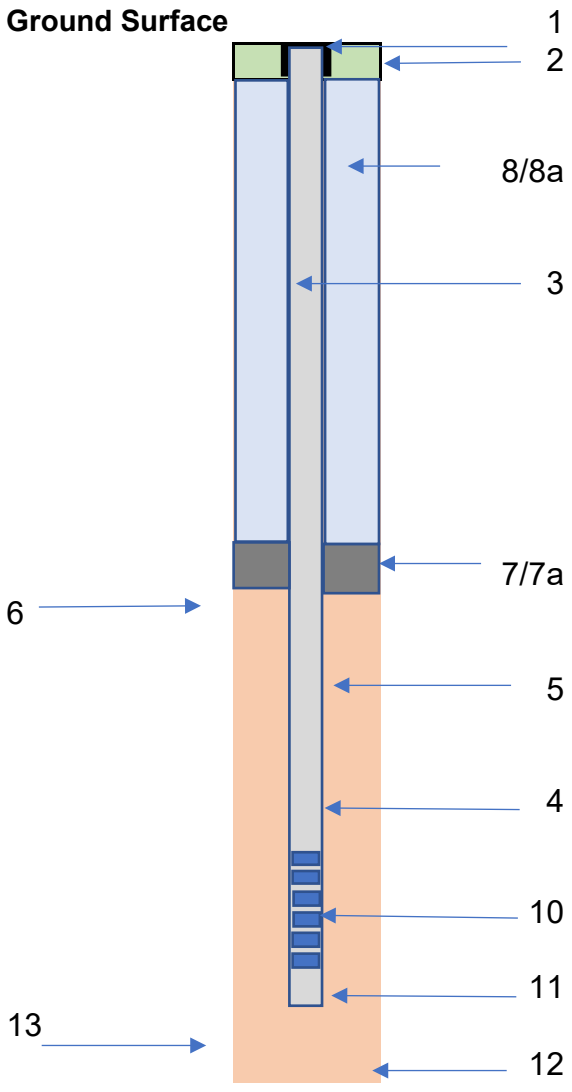
QC
BrA 4/6/20

AOC 76

KGS	Project: PFAS RI	Well Identification: 76PZ-19-01
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~45 feet south of Devens Fire Station in
Drilling Company: Technical Drilling Services	grass at corner of Jackson and Barnum.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 3/28/2019	Well Construction Date: 3/28/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-01
Ground Elevation (ft NAVD88): 264.97	Top of PVC Elevation (ft NAVD88): 264.51
Easting (State Plane NAD83 [FT]):626641.48	Easting (State Plane NAD83 [FT]): 3022568.96



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	50-lbs
Top/Bottom of Pack:	19.5-31.5 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-19.5 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	21.5-31.5 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	31.5 feet bgs
13. Diameter of borehole:	4 inches

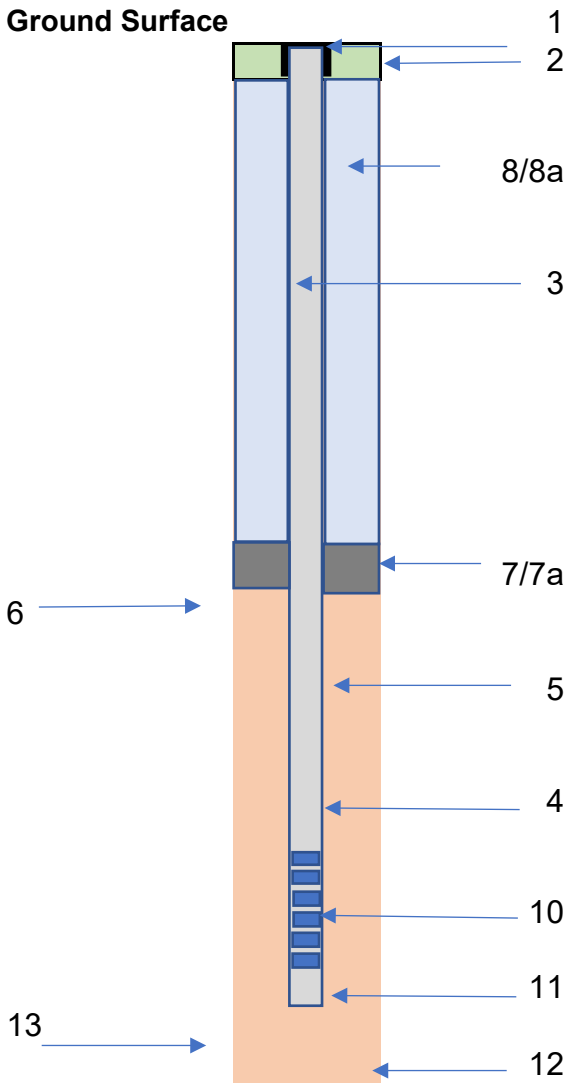
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-02
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~25 feet north of corner of Jackson and
Drilling Company: Technical Drilling Services	Buena Vista, in grass.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/10/2019	Well Construction Date: 4/10/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-19
Ground Elevation (ft NAVD88): 235.02	Top of PVC Elevation (ft NAVD88): 234.96
Easting (State Plane NAD83 [FT]): 627192.35	Easting (State Plane NAD83 [FT]): 3024051.18



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	50-lbs
Top/Bottom of Pack:	2-13 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0-2 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	3-13 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	13 feet bgs
13. Diameter of borehole:	3.75 inches

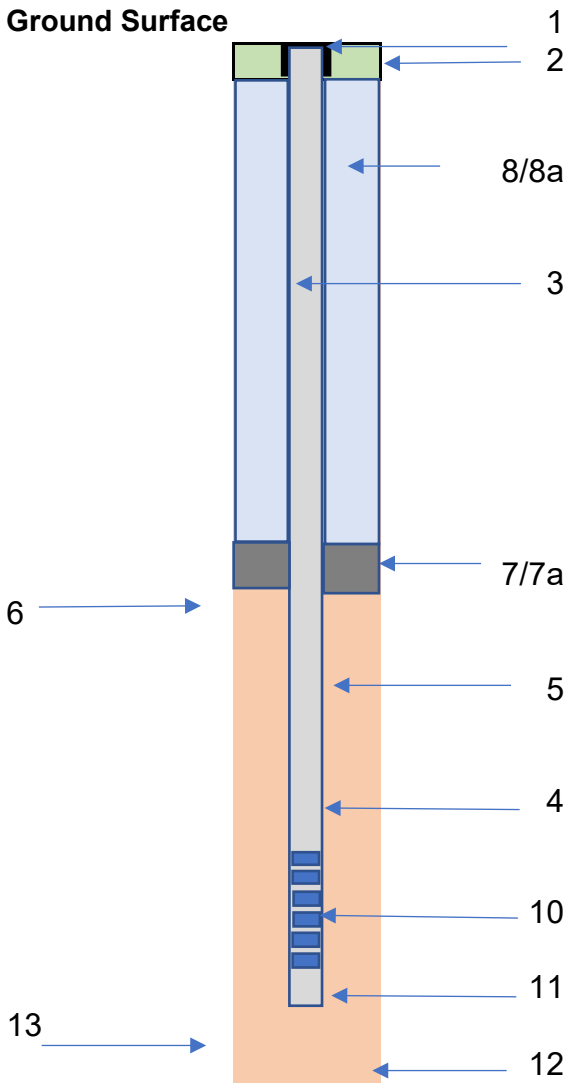
Comments:

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-03
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~40 feet north of Barnum road centerline
Drilling Company: Technical Drilling Services	in grass area 400 feet east of Devens Fire Station.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 2/8/2019	Well Construction Date: 2/8/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-03
Ground Elevation (ft NAVD88): 257.09	Top of PVC Elevation (ft NAVD88): 256.74
Easting (State Plane NAD83 [FT]): 627039.92	Easting (State Plane NAD83 [FT]): 3022344.82



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	75-lbs
Top/Bottom of Pack:	13-25 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	2-13 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	15-25 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	25 feet bgs
13. Diameter of borehole:	3.75 inches

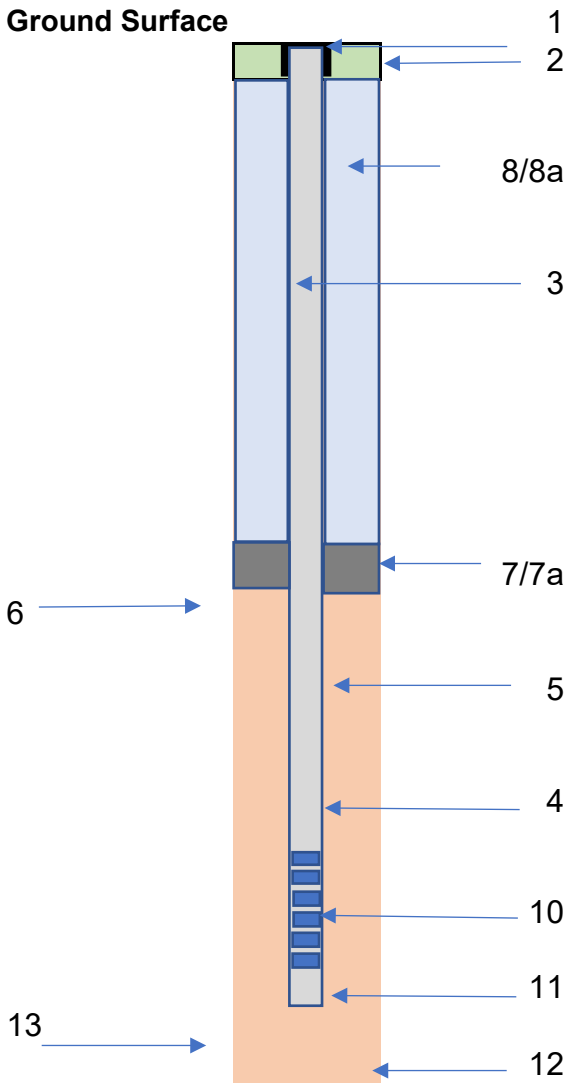
Comments: **near 76VP-19-03**

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-04
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~36 feet south of Adams Circle in grass area.
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/18/2019	Well Construction Date: 4/18/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-20
Ground Elevation (ft NAVD88): 249.56	Top of PVC Elevation (ft NAVD88): 249.14
Easting (State Plane NAD83 [FT]): 627714.39	Easting (State Plane NAD83 [FT]): 3022221.69



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	25-lbs
Top/Bottom of Pack:	3-15 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0-3 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	5-15 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	15 feet bgs
13. Diameter of borehole:	3.75 inches

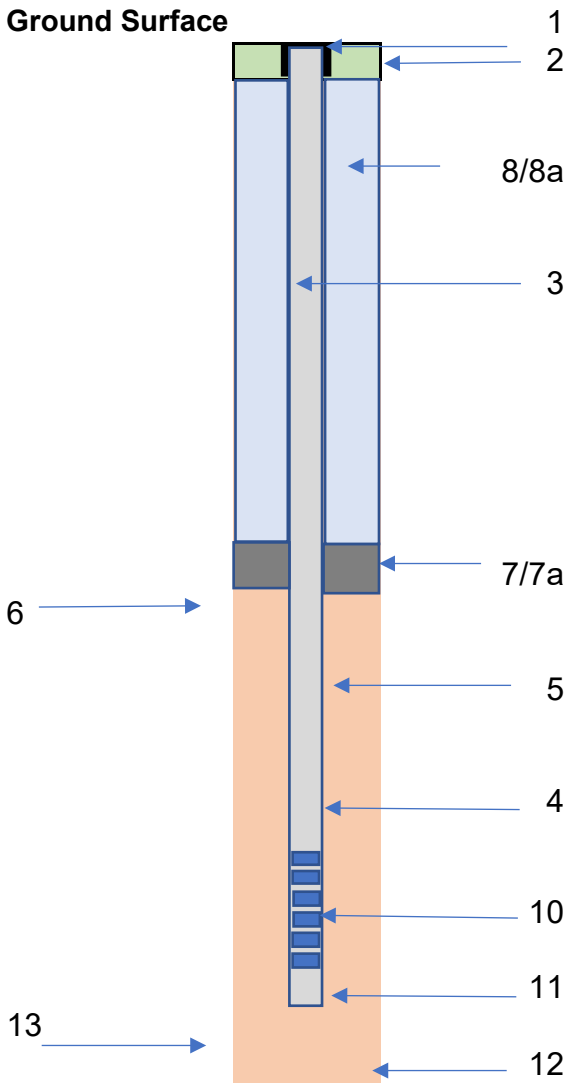
Comments: **near 76VP-19-20**

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-05
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~16 feet north of Devens Fire Station east p
Drilling Company: Technical Drilling Services	parking lot, northeast of Devens Fire Station in grass.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 2/8/2019	Well Construction Date: 2/8/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-05
Ground Elevation (ft NAVD88): 262.37	Top of PVC Elevation (ft NAVD88): 262.10
Easting (State Plane NAD83 [FT]): 626962.35	Easting (State Plane NAD83 [FT]): 3022593.48



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	75-lbs
Top/Bottom of Pack:	11-23 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	2-11 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	13-23 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	23 feet bgs
13. Diameter of borehole:	3.75 inches

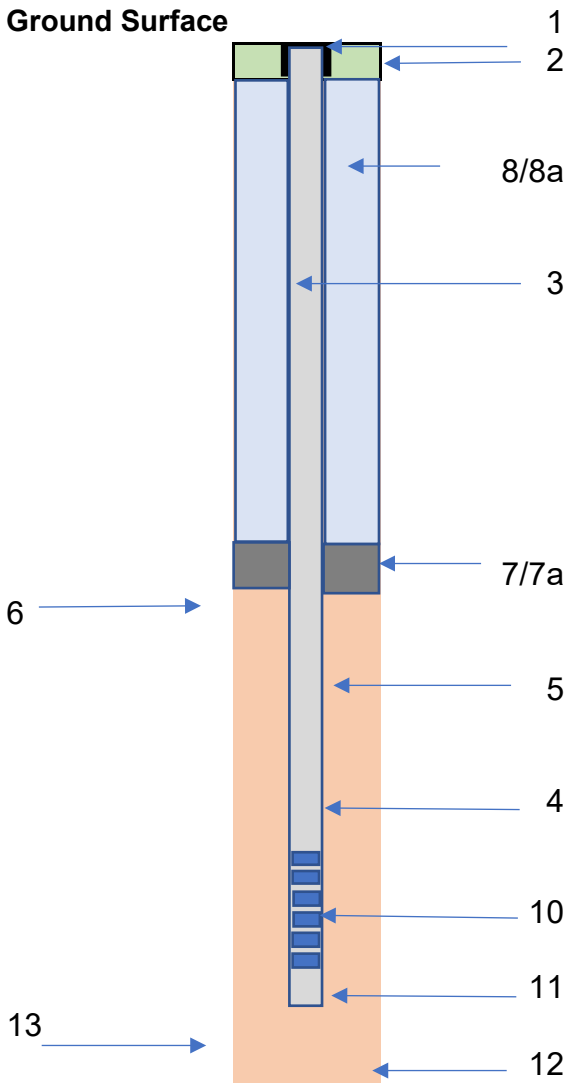
Comments: **near 76VP-19-05**

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-06
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~38 feet south of Buena Vista St, 30 feet
Drilling Company: Technical Drilling Services	east of Rogers Field in open grass area.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/24/2019	Well Construction Date: 4/24/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-21
Ground Elevation (ft NAVD88): 258.85	Top of PVC Elevation (ft NAVD88): 258.61
Easting (State Plane NAD83 [FT]): 626789.17	Northing (State Plane NAD83 [FT]): 3024035.99



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	100-lbs
Top/Bottom of Pack:	22-34 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0-22 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	24-34 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	34 feet bgs
13. Diameter of borehole:	3.75 inches

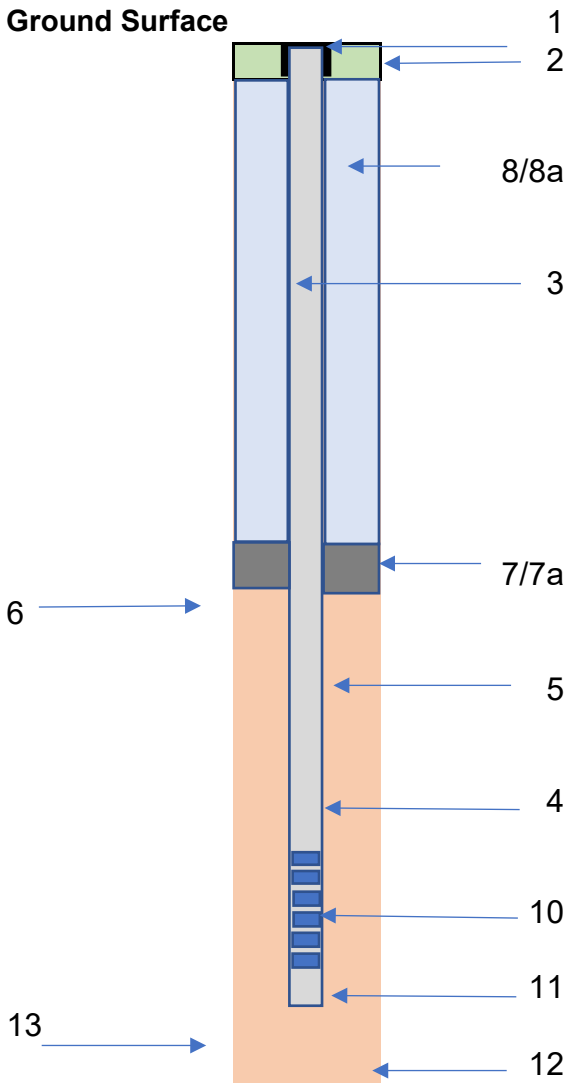
Comments: **near 76VP-19-21**

2' x 2' concrete pad

	Project: PFAS RI	Well Identification: 76PZ-19-07
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~35 feet west of parking lot of former
Drilling Company: Technical Drilling Services	church, west of Jackson Road, east of Rogers field.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/24/2019	Well Construction Date: 4/24/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-07
Ground Elevation (ft NAVD88): 254.80	Top of PVC Elevation (ft NAVD88): 254.3
Easting (State Plane NAD83 [FT]): 626799.05	Northing (State Plane NAD83 [FT]): 3023126.97



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	50-lbs
Top/Bottom of Pack:	10-22 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0-10 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	12-22 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	22 feet bgs
13. Diameter of borehole:	3.75 inches

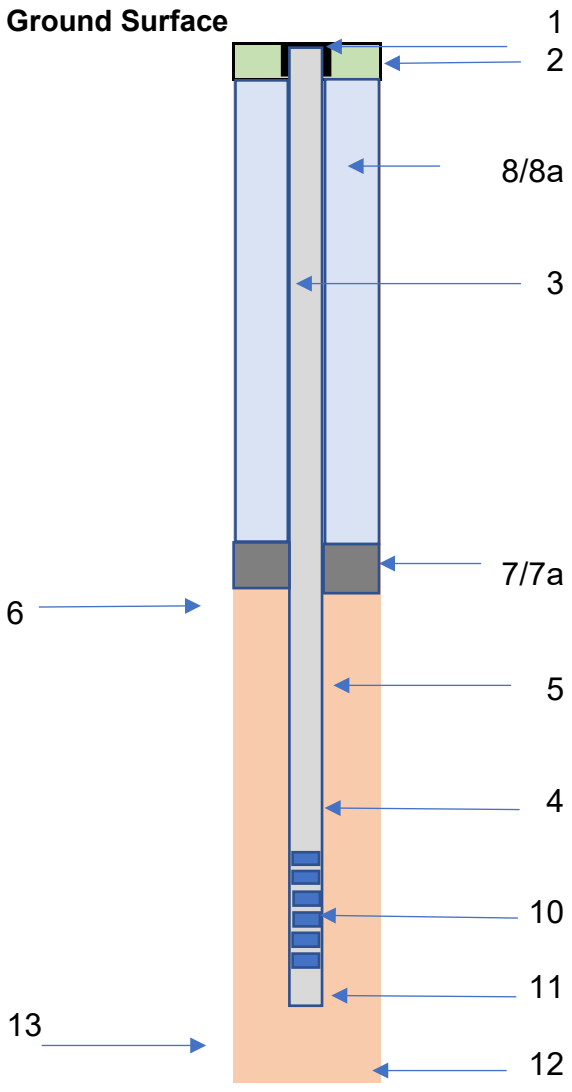
Comments: **near 76VP-19-07**

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-08
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~30 feet north of parking lot, off of Antietam
Drilling Company: Technical Drilling Services	Street, west of Jackson Road.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/22/2019	Well Construction Date: 4/22/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-22
Ground Elevation (ft NAVD88): 232.30	Top of PVC Elevation (ft NAVD88): 232.03
Easting (State Plane NAD83 [FT]): 626609.77	Northing (State Plane NAD83 [FT]):3025581.66



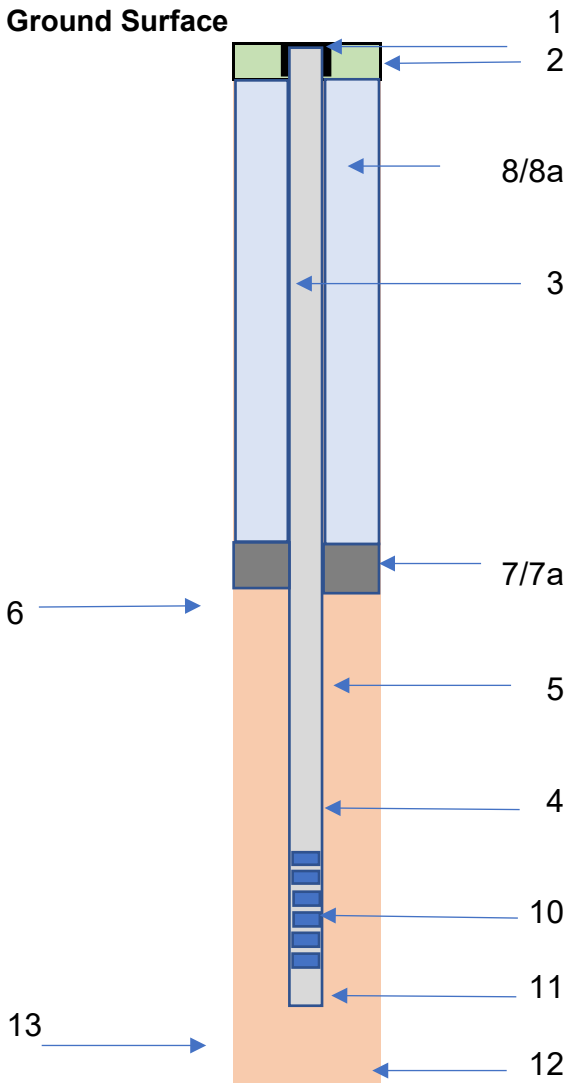
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	2 bags
Top/Bottom of Pack:	20-32 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-20 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	22-32 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	32 feet bgs
13. Diameter of borehole:	4 inches

Comments:

KGS	Project: PFAS RI	Well Identification: 76PZ-19-09
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~72 feet west of former guard shack
Drilling Company: Technical Drilling Services	entering jackson road from w. main street. In grass.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/11/2019	Well Construction Date: 4/11/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-25
Ground Elevation (ft NAVD88): 228.81	Top of PVC Elevation (ft NAVD88): 228.35
Easting (State Plane NAD83 [FT]): 626848.94	Northing (State Plane NAD83 [FT]):3026474.53



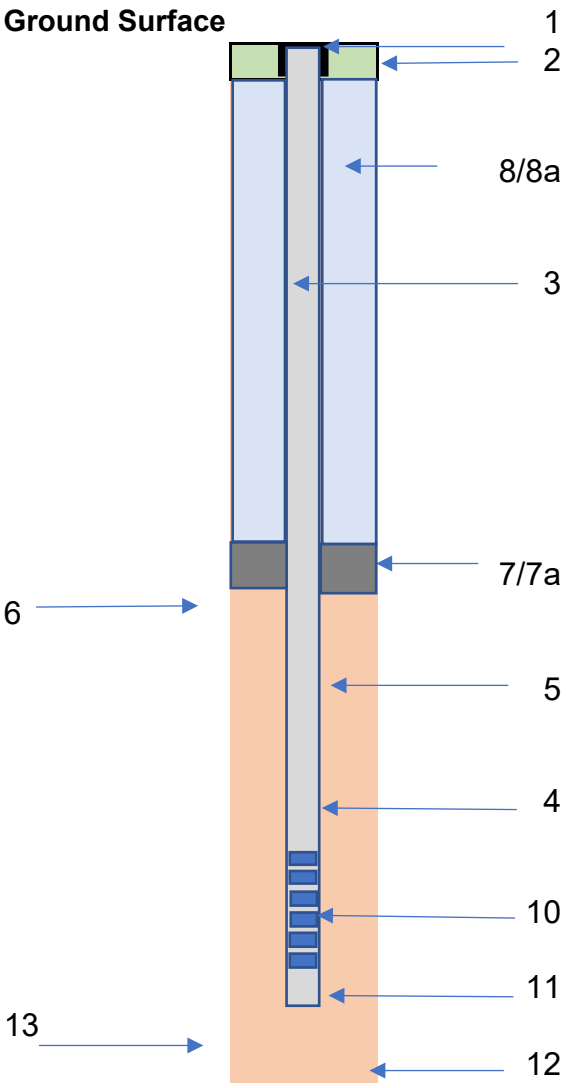
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	2 bags
Top/Bottom of Pack:	16-28 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-16 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	18-28 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	28 feet bgs
13. Diameter of borehole:	4 inches

Comments:

KGS	Project: PFAS RI	Well Identification: 76PZ-19-10
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~170 feet north of detention basin north of
Drilling Company: Technical Drilling Services	Devens Fire Station.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 3/27/2019	Well Construction Date: 3/27/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-10
Ground Elevation (ft NAVD88): 244.78	Top of PVC Elevation (ft NAVD88): 244.70
Easting (State Plane NAD83 [FT]): 627234.26	Northing (State Plane NAD83 [FT]): 3022936.41



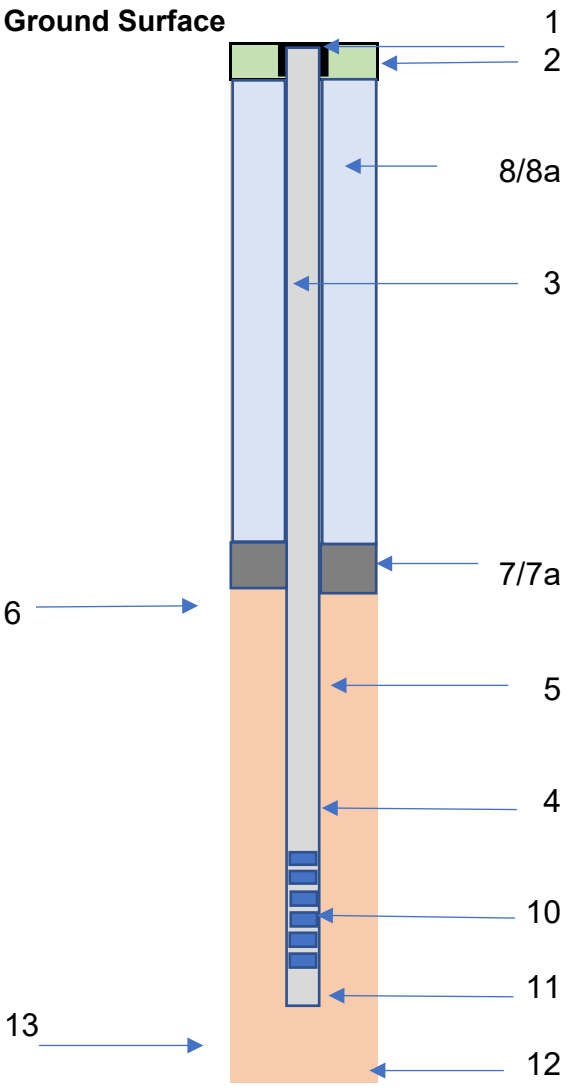
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	1 bag
Top/Bottom of Pack:	5-17 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-5 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	7-17 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	17 feet bgs
13. Diameter of borehole:	4 inches

Comments:

KGS	Project: PFAS RI	Well Identification: 76PZ-19-11
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~75 feet east of detention basin north of
Drilling Company: Technical Drilling Services	Devens Fire Station.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 3/27/2019	Well Construction Date: 3/27/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-11
Ground Elevation (ft NAVD88): 247.75	Top of PVC Elevation (ft NAVD88): 247.53
Easting (State Plane NAD83 [FT]): 627286.06	Northing (State Plane NAD83 [FT]): 3022638.79



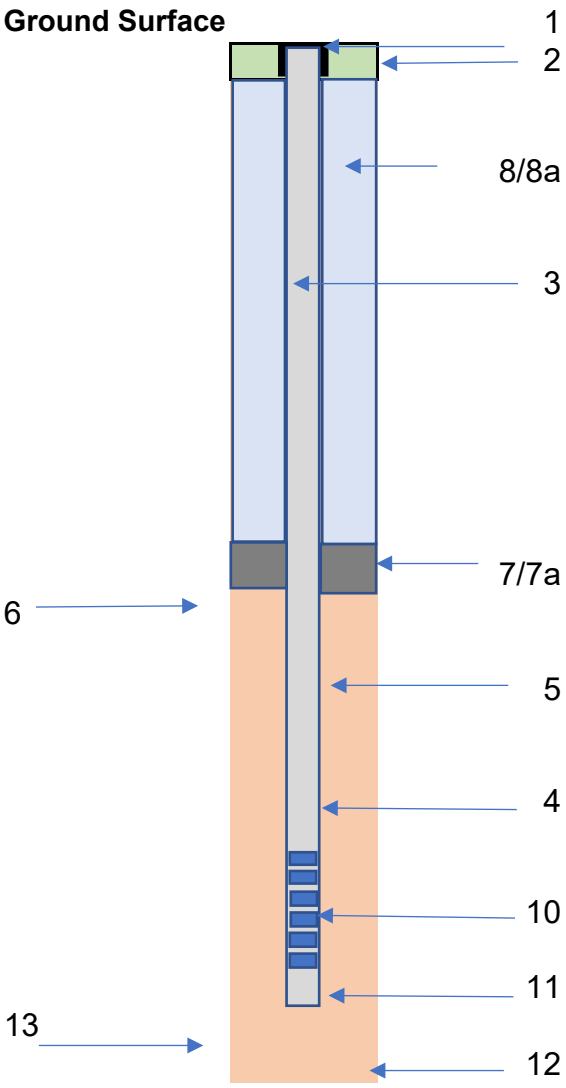
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	1 bag
Top/Bottom of Pack:	5-17 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-5 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	7-17 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	17 feet bgs
13. Diameter of borehole:	4 inches

Comments:

KGS	Project: PFAS RI	Well Identification: 76PZ-19-12
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~35 feet south of centerline in grass
Drilling Company: Technical Drilling Services	area, north of Job Corps.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/12/2019	Well Construction Date: 4/12/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-26
Ground Elevation (ft NAVD88): 224.68	Top of PVC Elevation (ft NAVD88): 224.28
Easting (State Plane NAD83 [FT]): 627312.08	Northing (State Plane NAD83 [FT]): 3026676.9



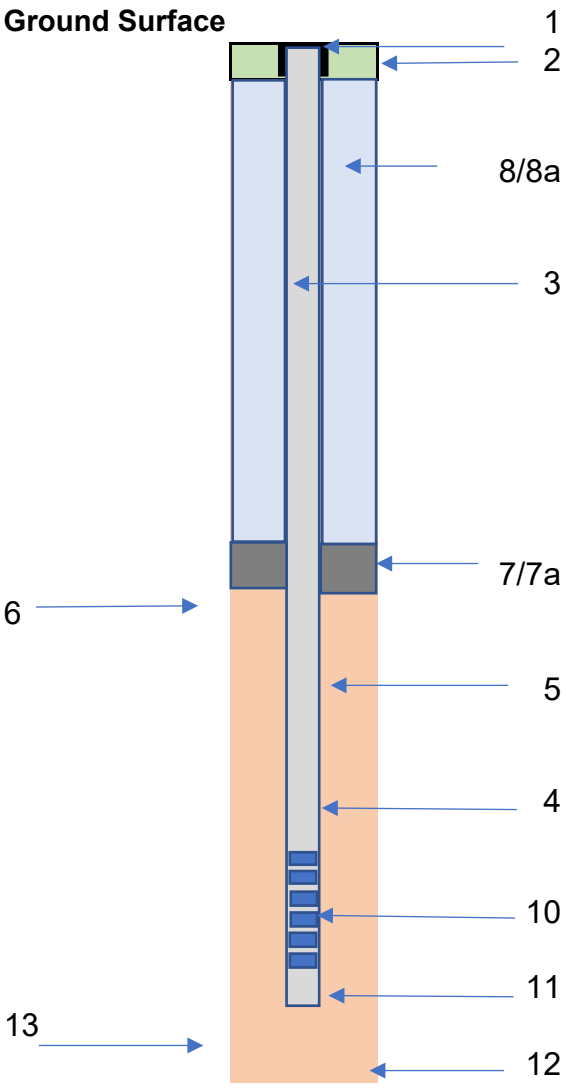
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	2 bags
Top/Bottom of Pack:	14-26 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-14 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	16-26 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	26 feet bgs
13. Diameter of borehole:	4 inches

Comments:

KGS	Project: PFAS RI	Well Identification: 76PZ-19-13
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In grass field, ~60 feet south of Adams
Drilling Company: Technical Drilling Services	Circle
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/16/2019	Well Construction Date: 4/16/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-13
Ground Elevation (ft NAVD88): 252.04	Top of PVC Elevation (ft NAVD88): 251.93
Easting (State Plane NAD83 [FT]): 627786.55	Northing (State Plane NAD83 [FT]): 3022831.09



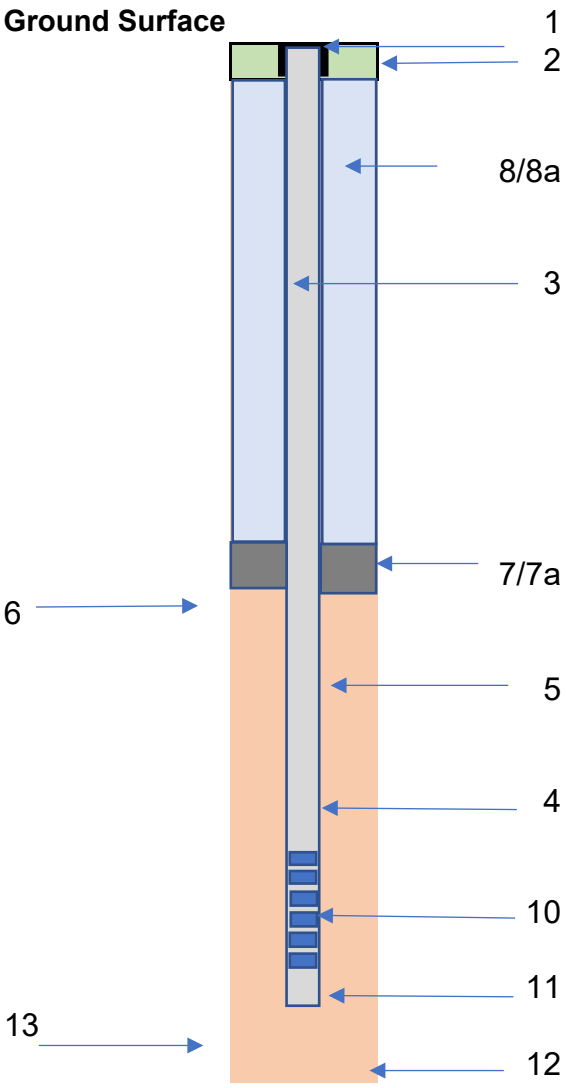
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	1 bag
Top/Bottom of Pack:	8-25 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0-8 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	15-25 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	25 feet bgs
13. Diameter of borehole:	3.75 inches

Comments: **off-set location from 76VP-19-13**

KGS	Project: PFAS RI	Well Identification: 76PZ-19-14
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~200 feet west of Jackson Road/W. Main
Drilling Company: Technical Drilling Services	Street Entrance in soccer field along tree line.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/9/2019	Well Construction Date: 4/9/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-27
Ground Elevation (ft NAVD88): 231.07	Top of PVC Elevation (ft NAVD88): 230.78
Easting (State Plane NAD83 [FT]): 626358.01	Northing (State Plane NAD83 [FT]): 3026359.8



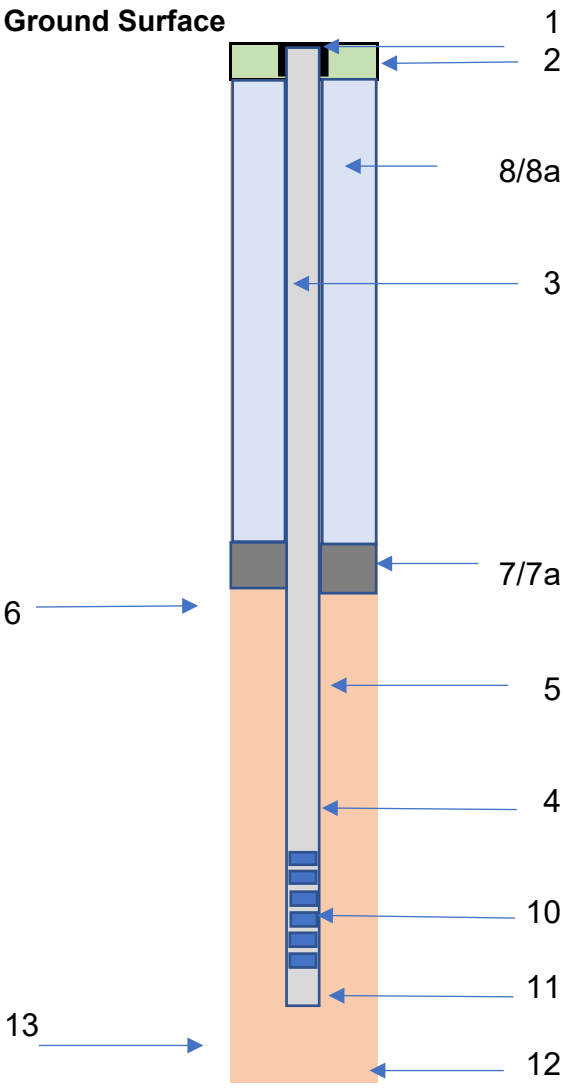
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	2 bag
Top/Bottom of Pack:	16-28 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-16 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	18-28 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	28 feet bgs
13. Diameter of borehole:	4 inches

Comments:

KGS	Project: PFAS RI	Well Identification: 76PZ-19-15
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: ~220 feet east of Devens Fire Station
Drilling Company: Technical Drilling Services	in grass
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 3/28/2019	Well Construction Date: 3/28/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-15
Ground Elevation (ft NAVD88): 246.04	Top of PVC Elevation (ft NAVD88): 245.83
Easting (State Plane NAD83 [FT]): 627308.77	Northing (State Plane NAD83 [FT]): 3022325.33



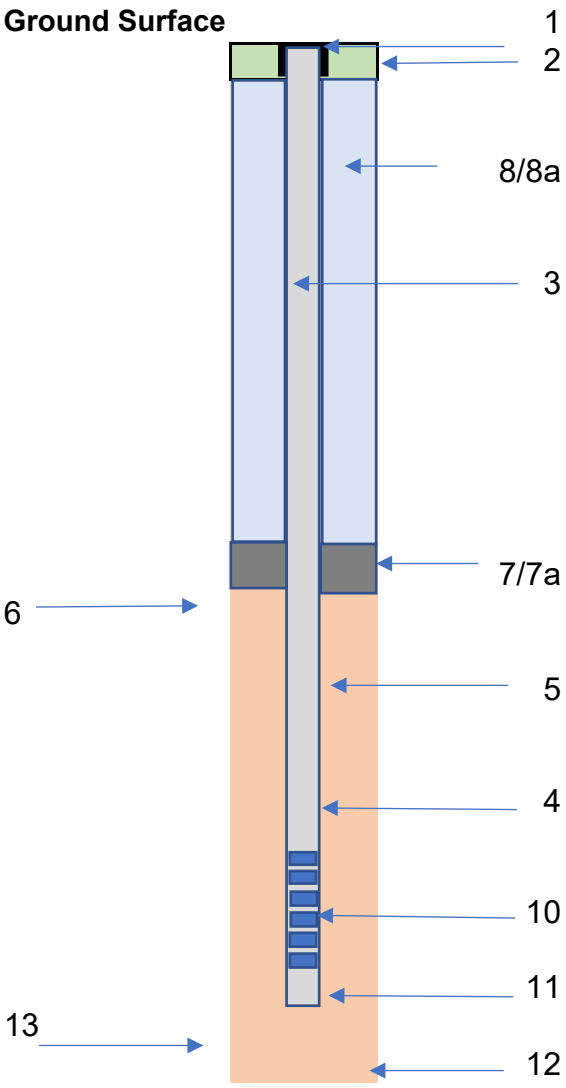
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	1 bag
Top/Bottom of Pack:	2-14 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-2 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	4-14 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	14 feet bgs
13. Diameter of borehole:	4 inches

Comments:

KGS	Project: PFAS RI	Well Identification: 76PZ-19-16
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: 19 Auman Street, next to sidewalk
Drilling Company: Technical Drilling Services	
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/29/19	Well Construction Date: 4/29/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn	Associated Vertical Profile: 76VP-19-16
Ground Elevation (ft NAVD88): 258.80	Top of PVC Elevation (ft NAVD88): 258.52
Easting (State Plane NAD83 [FT]): 627493.25	Northing (State Plane NAD83 [FT]): 3024063.67



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	1 bag
Top/Bottom of Pack:	27-39 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0-27 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	29-39 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	39 feet bgs
13. Diameter of borehole:	3.75 inches

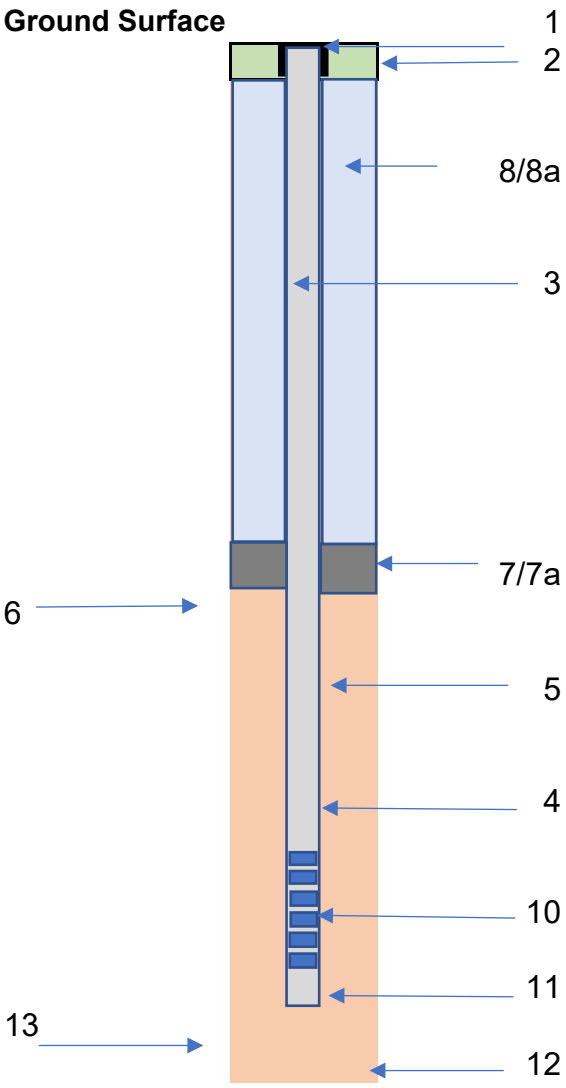
Comments: **off-set from 76VP-19-16**

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-17
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: In left field along tree line of western
Drilling Company: Technical Drilling Services	baseball field in Willard Park
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 6/14/19	Well Construction Date: 6/14/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: 76VP-19-28
Ground Elevation (ft NAVD88): 230.20	Top of PVC Elevation (ft NAVD88): 229.95
Easting (State Plane NAD83 [FT]): 625295.72	Northing (State Plane NAD83 [FT]): 3026158.24



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	1 bag
Top/Bottom of Pack:	15-27 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	1-15 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	17-27 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	27 feet bgs
13. Diameter of borehole:	3.75 inches

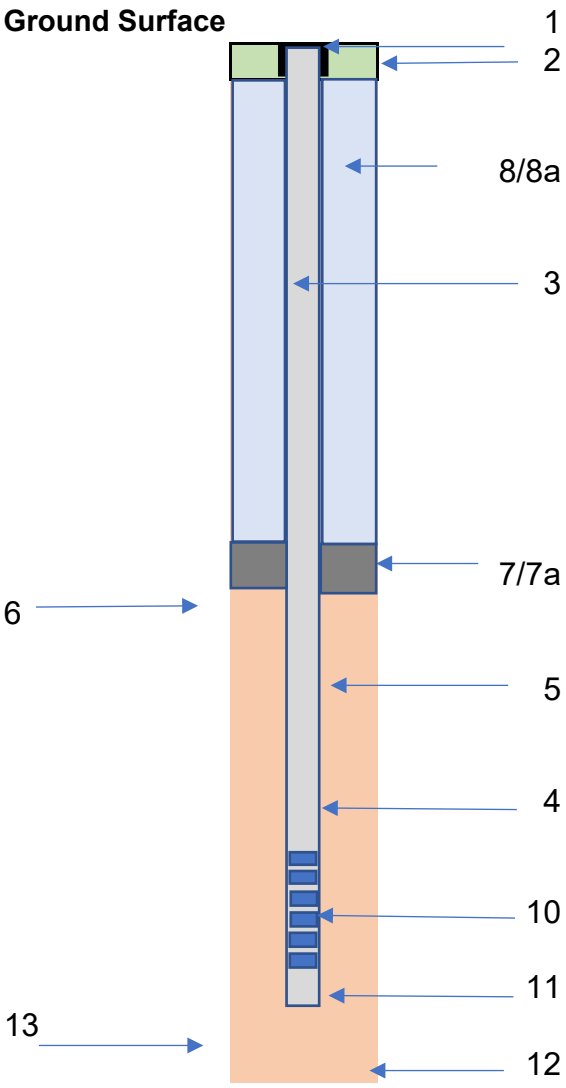
Comments: **off-set from 76VP-19-28**

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-18
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: Located approximately 70 feet north of
Drilling Company: Technical Drilling Services	centerline in grass, south of 253 Barnum Road.
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 6/17/19	Well Construction Date: 6/17/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-30
Ground Elevation (ft NAVD88): 248.26	Top of PVC Elevation (ft NAVD88): 248.01
Easting (State Plane NAD83 [FT]): 627858.59	Northing (State Plane NAD83 [FT]): 3021731.97



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6.Filter Sand:	#2
Quanity Used:	2 bag
Top/Bottom of Pack:	4-16 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-4 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	6-16 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	16 feet bgs
13. Diameter of borehole:	3.75 inches

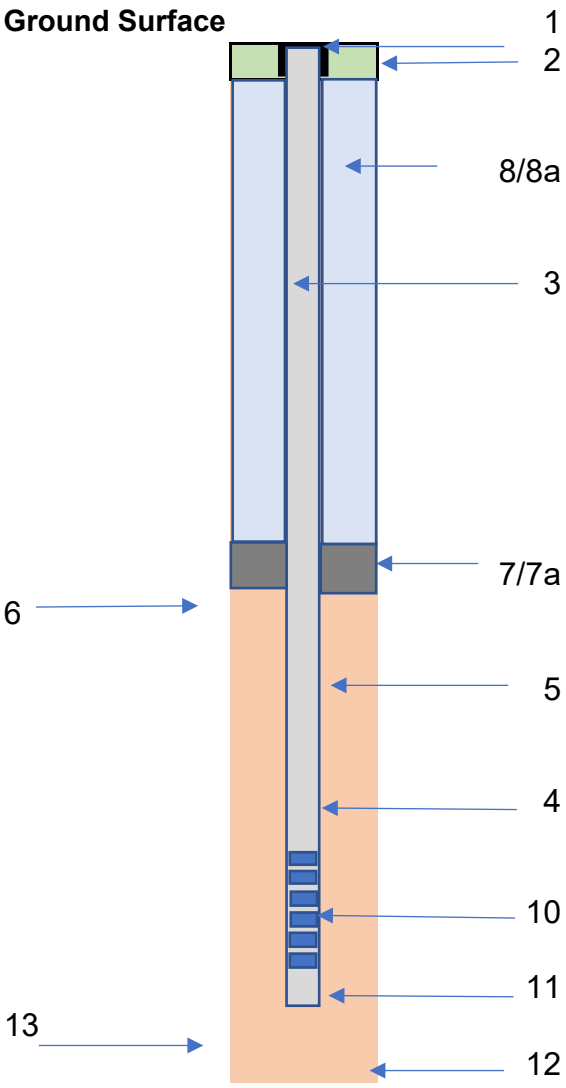
Comments: **off-set from 76VP-19-30**

2' x 2' concrete pad

KGS	Project: PFAS RI	Well Identification: 76PZ-19-19
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: Located in grass ~115 feet northeast
Drilling Company: Technical Drilling Services	of northeast corner of parking lot in Rogers Field
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 6/18/19	Well Construction Date: 6/18/19
Potable Water Used: (Y/N) Source: N	Drums of IDW: N/A
KGS Field Personnel: Kevin Anderson	Associated Vertical Profile: 76VP-19-32
Ground Elevation (ft NAVD88): 259.00	Top of PVC Elevation (ft NAVD88): 258.99
Easting (State Plane NAD83 [FT]): 626100.40	Northing (State Plane NAD83 [FT]): 3023685.86



1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	6 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
Type:	Pre-packed Filter #0 Sand
6. Filter Sand:	#2
Quanity Used:	2 bag
Top/Bottom of Pack:	17-29 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-17 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	19-29 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	29 feet bgs
13. Diameter of borehole:	4 inches

Comments: **off-set from 76VP-19-32**

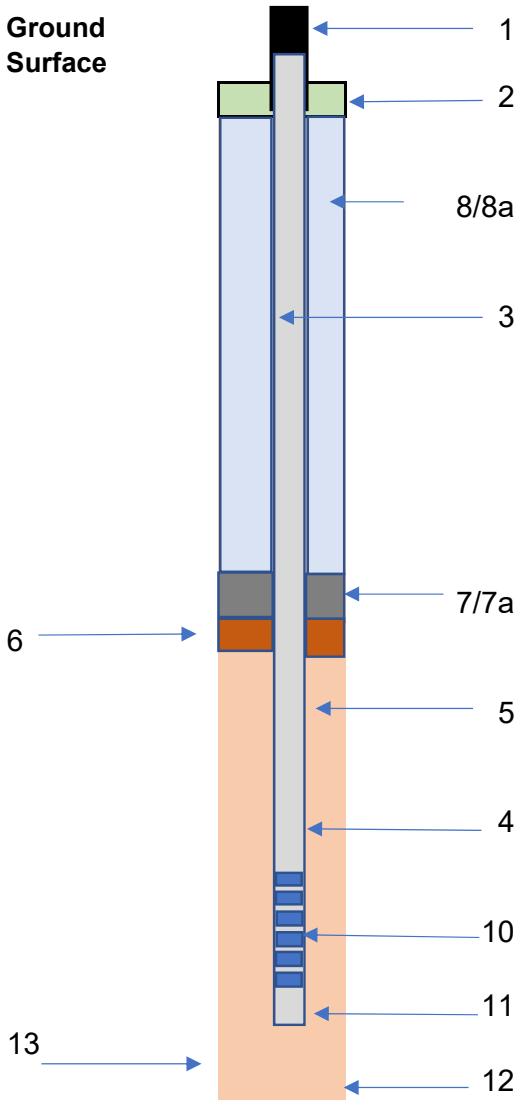
2' x 2' concrete pad

MacPherson

KGS	Project: PFAS RI	Piezometer Identification: MPPZ-19-01
	Project Number: 1082	

WELL CONSTRUCTION DIAGRAM

Client: USACE	Location: Located at the end of access road, off of
Drilling Company: Technical Drilling Services	Macpherson Road, south of railroad tracks
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/5/2019	Well Construction Date: 4/5/2019
Potable Water Used: (Y/N) Source: N/A	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: MPVP-19-03
Ground Elevation (ft NAVD88): 208.86	Top of PVC Elevation (ft NAVD88): 211.45
Easting (State Plane NAD83 [FT]): 626772.52	Northing (State Plane NAD83 [FT]): 3027552.35



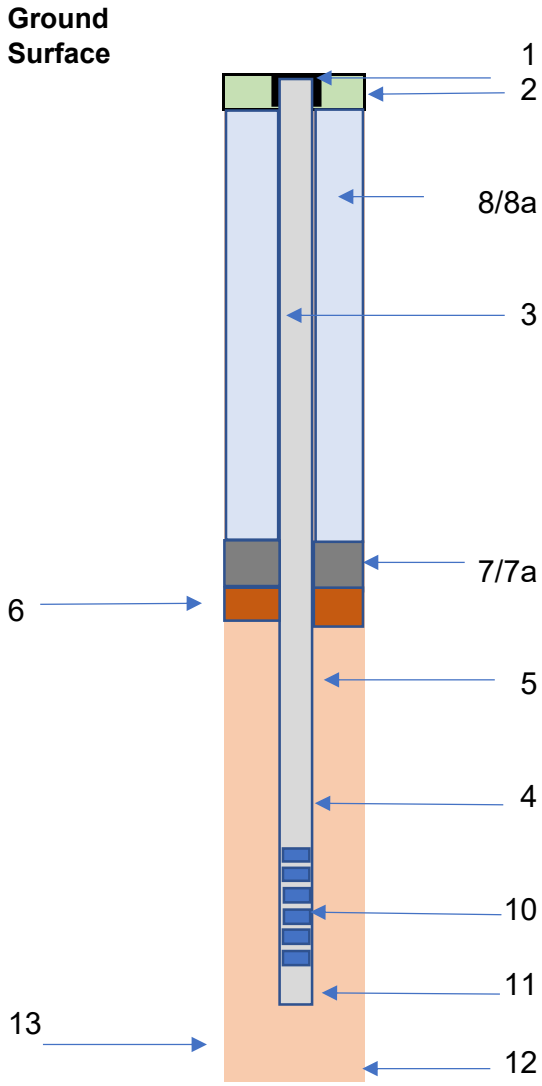
1. Well Protection Type:	Stickup/ Protective Casing
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch PVC shcedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter	Type 304 stainless steel mesh 60x60 (0.0065 inch)
6. Type of Filter Sand:	#0, #2
Quanity Used:	50 -lbs
Top/Bottom of Pack:	2-13 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0-2 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	3-13 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	13 feet bgs
13. Diameter of borehole:	3.75 inches

Comments: **2'x2' concrete pad**

KGS	Project: PFAS RI	Piezometer Identification: MPPZ-19-02
	Project Number: 1082	

PIEZOMETER CONSTRUCTION DIAGRAM

Client: USACE	Location: Near tree line, West Main Street, Ayer
Drilling Company: Technical Drilling Services	Property Lot ID: 32-14
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 6/5/2019	Well Construction Date: 6/5/2019
Potable Water Used: (Y/N) Source: N/A	Drums of IDW: N/A
KGS Field Personnel: Dave Kortjohn (Jacobs)	Associated Vertical Profile: MPPZ-19-04
Ground Elevation (ft NAVD88): 223.41	Top of PVC Elevation (ft NAVD88): 222.95
Easting (State Plane NAD83 [FT]): 627597.75	Northing (State Plane NAD83 [FT]): 3027639.80



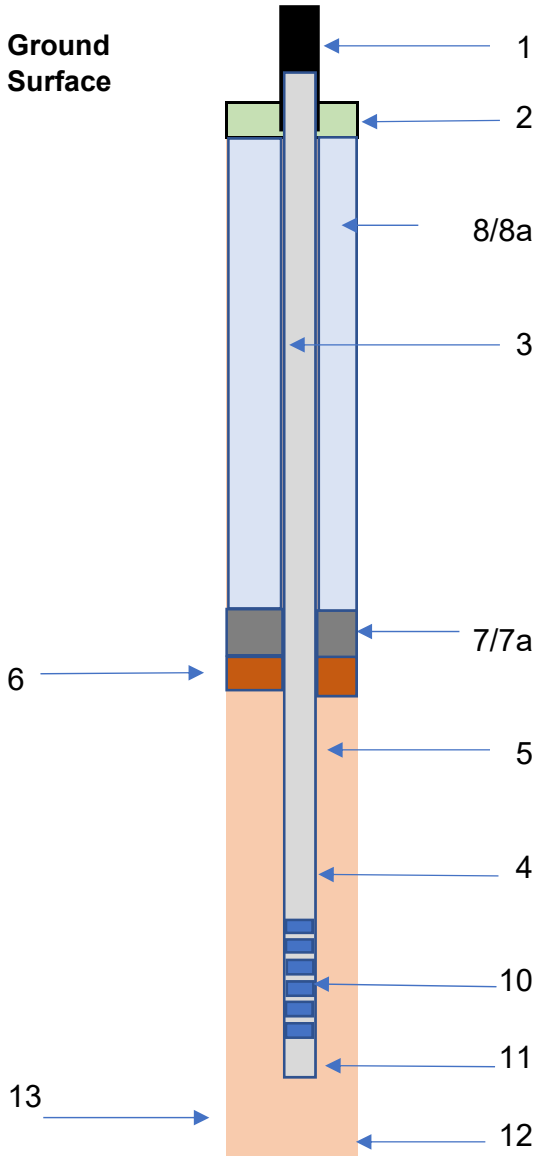
1. Well Protection Type:	Flushmount Road Box
2. Concrete Pad Depth:	4 inches
3. Diameter/Type of well casing:	1 inch/PVC schedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter Sand:	Type 304 stainless steel mesh
Quantity Used:	60x60 (0.0065 inch)
6. Pre-packed Filter Sand:	#0,#2
Quanity Used:	50 lbs
Top/Bottom of Pack:	13-25 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	1-13 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	15-25 feet bgs
11. Sump Length:	2 inches
12. Bottom of Boring:	25 feet bgs
13. Diameter of borehole:	3.75 inches

Comments: 2'x2' concrete pad

KGS	Project: PFAS RI	Piezometer Identification: MPPZ-19-03
	Project Number: 1082	

WELL CONSTRUCTION DIAGRAM

Client: USACE	Location: Located in woods behind MacPherson
Drilling Company: Technical Drilling Services	Pump Station, ~ 75 ft to the southwest
Drilling Method and Equipment: Direct Push	
Drilling Date(s): 4/26/2019	Well Construction Date: 4/26/2019
Potable Water Used: (Y/N) Source:	Drums of IDW:
KGS Field Personnel: Kevin Anderson	Associated Soil Boring Log: MPVP-19-06
Ground Elevation (ft NAVD88): 210.84	Top of PVC Elevation (ft NAVD88): 213.94
Easting (State Plane NAD83 [FT]): 626527.70	Northing (State Plane NAD83 [FT]): 3028166.82



1. Well Protection Type:	Stickup
2. Concrete Pad Depth:	0.5 feet
3. Diameter/Type of well casing:	1 inch PVC shcedule 40
4. Type/Screen Slot:	Schedule 40 PVC/0.010 inch
5. Type of Screen Filter	Type 304 stainless steel mesh 60x60 (0.0065 inch)
6. Type of Filter Sand:	#0
Quanity Used:	2 Bags
Top/Bottom of Pack:	2-14 feet bgs
7. Type of Seal:	Bentonite chips
7a.Top/Bottom of Seal:	0.5-2 feet bgs
8. Grout Mixture Used:	N/A
8a. Placement Method:	N/A
Top/Bottom of Grout:	N/A
9. Screen length:	10 feet
10. Screen interval:	4-14 feet bgs
11. Sump Length:	N/A
12. Bottom of Boring:	14 feet bgs
13. Diameter of borehole:	4 inches

Comments:

APPENDIX G GRAIN SIZE RESULTS

AOC 32

DETENTION

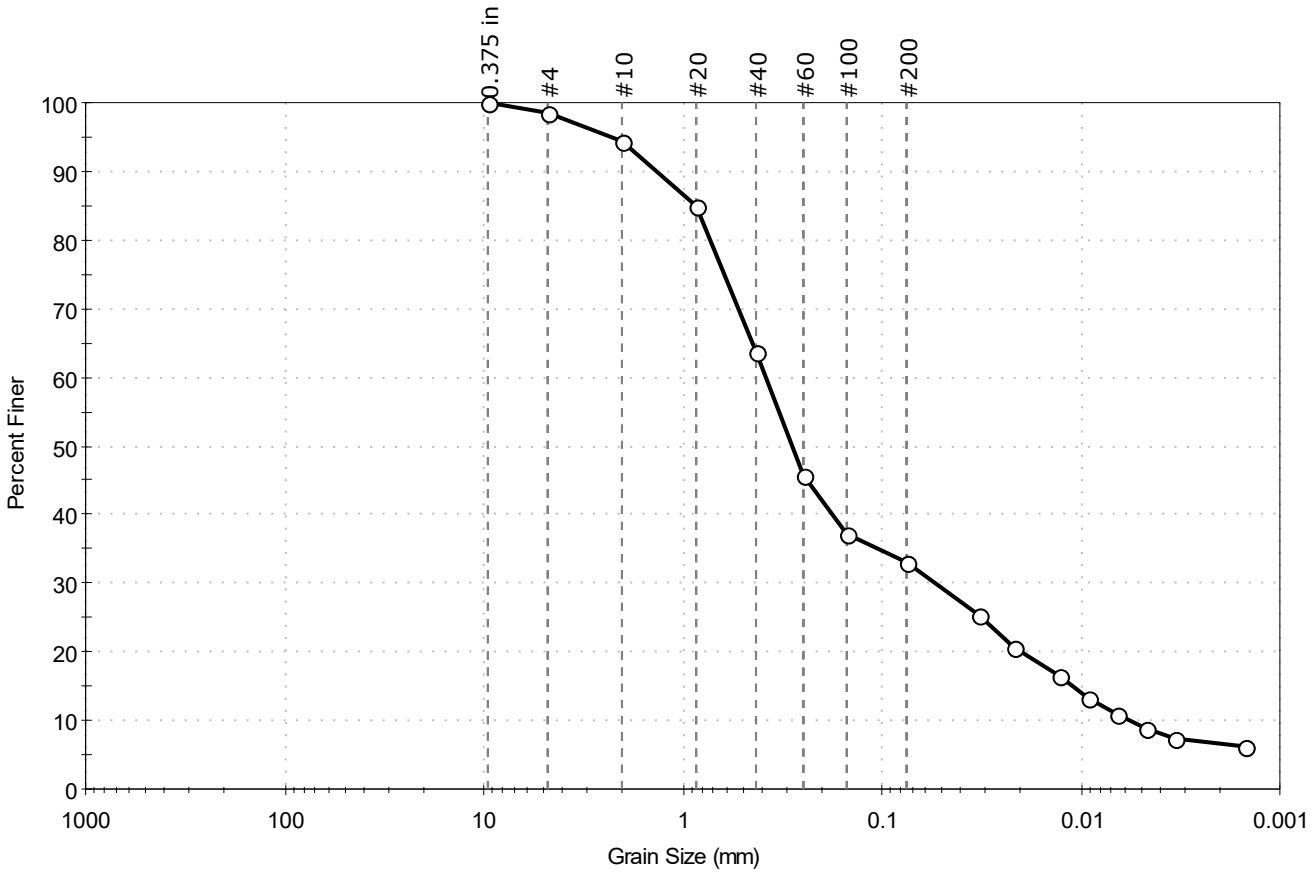
POND

Sediment Grain

Size Graphs

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	DP-SED-18-01-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.25'	Test Id:	489906		
Test Comment:	---				
Visual Description:	Moist, very dark gray silty sand				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	1.6	65.4	33.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	98		
#10	2.00	94		
#20	0.85	85		
#40	0.42	64		
#60	0.25	46		
#100	0.15	37		
#200	0.075	33		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0325	25		
---	0.0216	21		
---	0.0127	16		
---	0.0092	13		
---	0.0066	11		
---	0.0047	9		
---	0.0034	8		
---	0.0015	6		

Coefficients

D_{85} = 0.8615 mm	D_{30} = 0.0539 mm
D_{60} = 0.3815 mm	D_{15} = 0.0110 mm
D_{50} = 0.2838 mm	D_{10} = 0.0057 mm
C_u = 66.930	C_c = 1.336

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

WILLOW

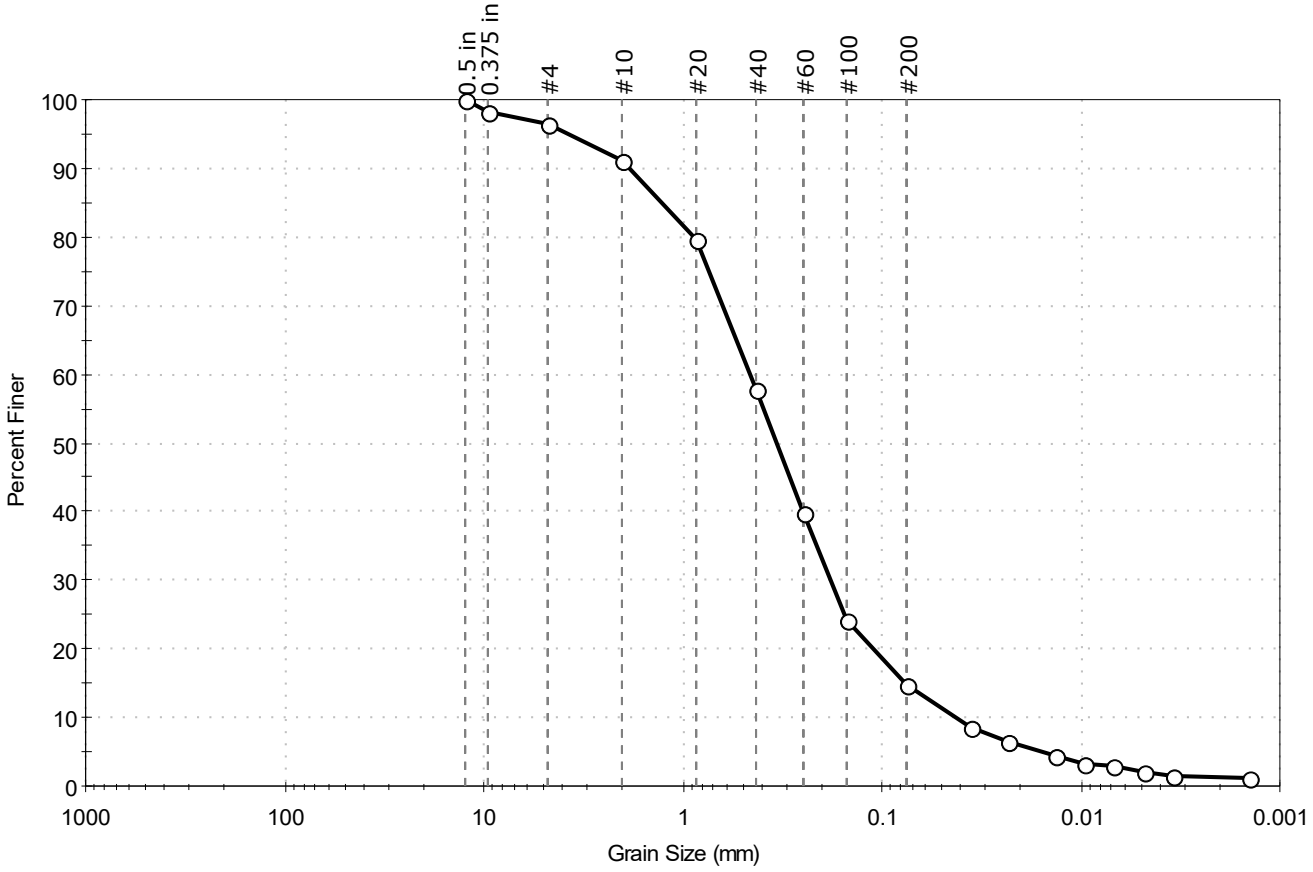
BROOK

Sediment Grain

Size Graphs

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	WB-SED-18-01-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489875		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	3.4	81.7	14.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	98		
#4	4.75	97		
#10	2.00	91		
#20	0.85	80		
#40	0.42	58		
#60	0.25	40		
#100	0.15	24		
#200	0.075	15		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0358	8		
---	0.0233	7		
---	0.0135	4		
---	0.0096	3		
---	0.0068	3		
---	0.0049	2		
---	0.0035	1		
---	0.0014	1		

Coefficients

D_{85} = 1.2658 mm	D_{30} = 0.1809 mm
D_{60} = 0.4568 mm	D_{15} = 0.0756 mm
D_{50} = 0.3379 mm	D_{10} = 0.0429 mm
C_u = 10.648	C_c = 1.670

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

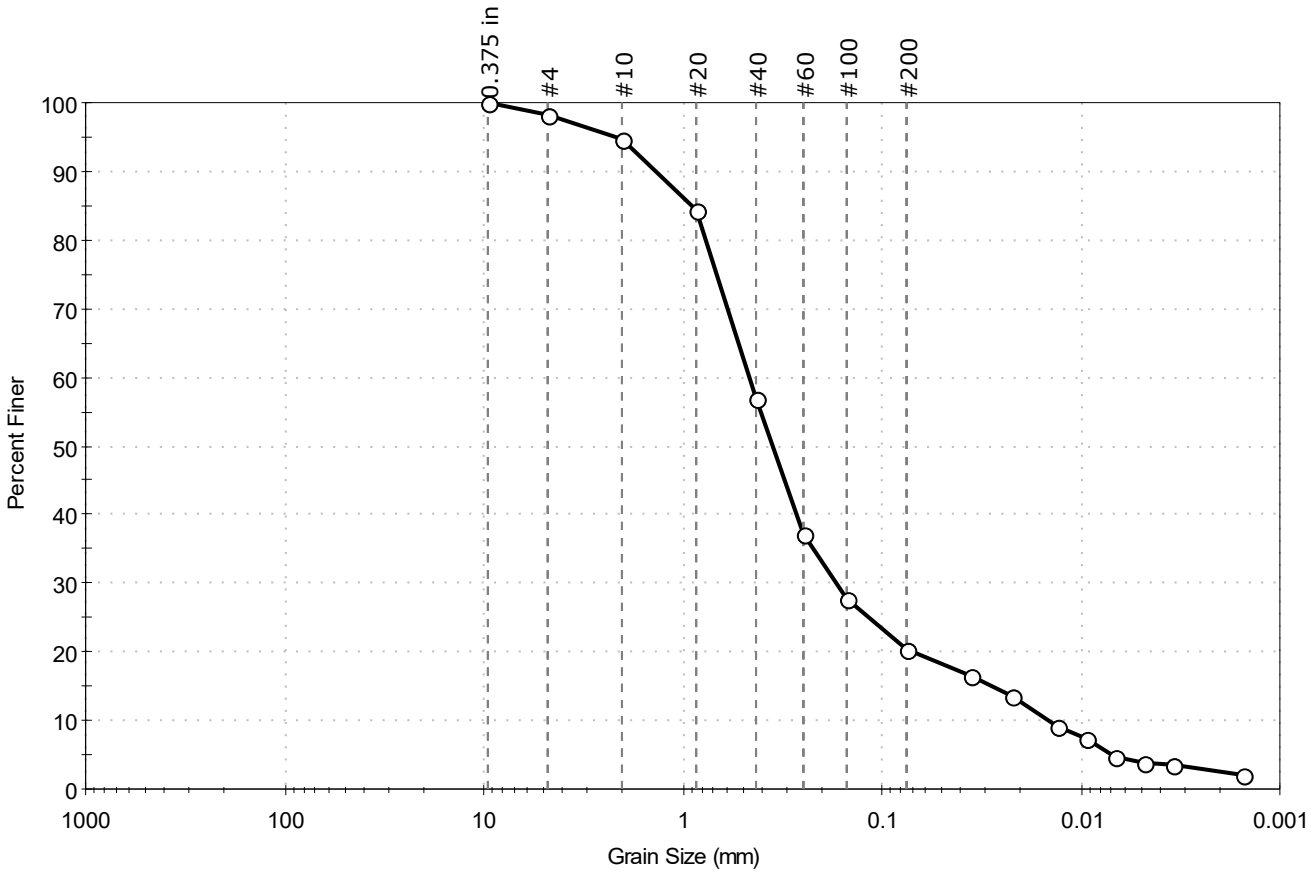
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	WB-SED-18-02-DEC18	Test Date:	02/07/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489874		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	1.9	77.7	20.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	98		
#10	2.00	95		
#20	0.85	84		
#40	0.42	57		
#60	0.25	37		
#100	0.15	28		
#200	0.075	20		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0358	17		
---	0.0225	14		
---	0.0133	9		
---	0.0095	7		
---	0.0068	5		
---	0.0048	4		
---	0.0034	3		
---	0.0015	2		

Coefficients

D_{85} = 0.8940 mm	D_{30} = 0.1702 mm
D_{60} = 0.4591 mm	D_{15} = 0.0280 mm
D_{50} = 0.3530 mm	D_{10} = 0.0145 mm
C_u = 31.662	C_c = 4.352

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

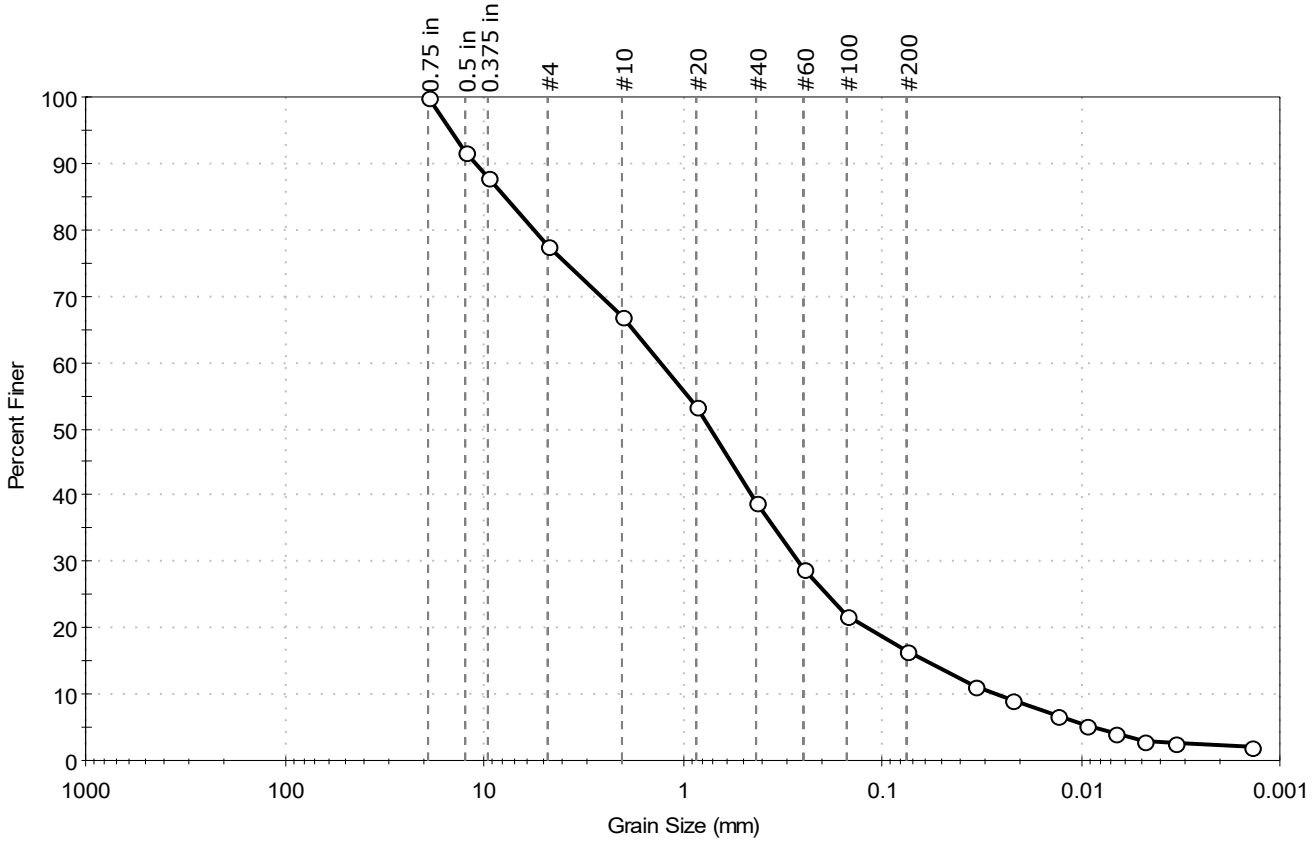
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	WB-SED-18-03-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489870		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	22.3	61.2	16.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	92		
0.375 in	9.50	88		
#4	4.75	78		
#10	2.00	67		
#20	0.85	54		
#40	0.42	39		
#60	0.25	29		
#100	0.15	22		
#200	0.075	16		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0343	11		
---	0.0221	9		
---	0.0131	7		
---	0.0094	5		
---	0.0067	4		
---	0.0048	3		
---	0.0034	3		
---	0.0014	2		

Coefficients

D_{85} = 7.7807 mm	D_{30} = 0.2646 mm
D_{60} = 1.2893 mm	D_{15} = 0.0600 mm
D_{50} = 0.7193 mm	D_{10} = 0.0267 mm
C_u = 48.288	C_c = 2.034

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

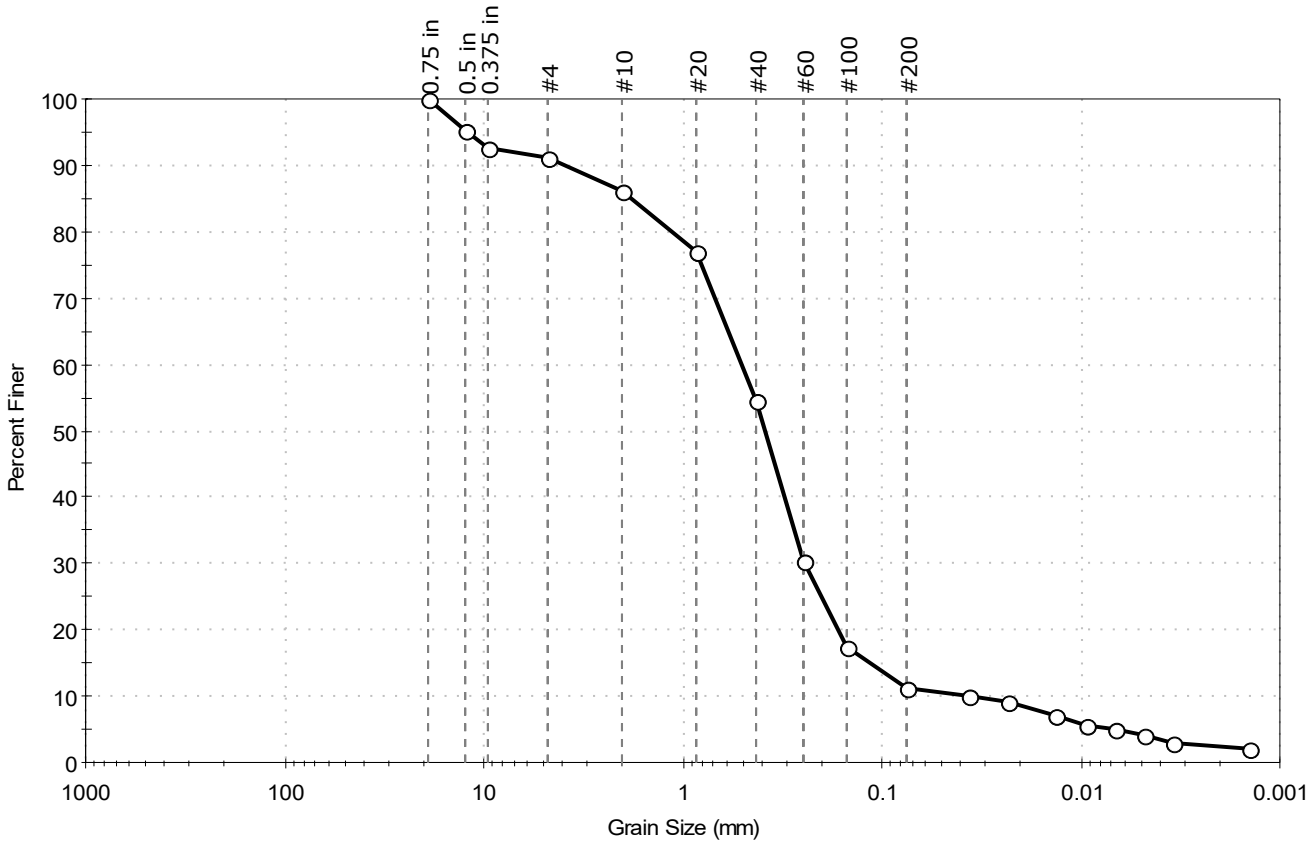
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	WB-SED-18-04-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489869		
Test Comment:	---				
Visual Description:	Moist, dark gray sand with silt				
Sample Comment:	----				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	8.9	79.9	11.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	95		
0.375 in	9.50	93		
#4	4.75	91		
#10	2.00	86		
#20	0.85	77		
#40	0.42	54		
#60	0.25	30		
#100	0.15	17		
#200	0.075	11		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0369	10		
---	0.0233	9		
---	0.0135	7		
---	0.0094	6		
---	0.0068	5		
---	0.0048	4		
---	0.0034	3		
---	0.0014	2		

Coefficients

D_{85} = 1.8027 mm	D_{30} = 0.2464 mm
D_{60} = 0.5041 mm	D_{15} = 0.1155 mm
D_{50} = 0.3850 mm	D_{10} = 0.0349 mm
C_u = 14.444	C_c = 3.451

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

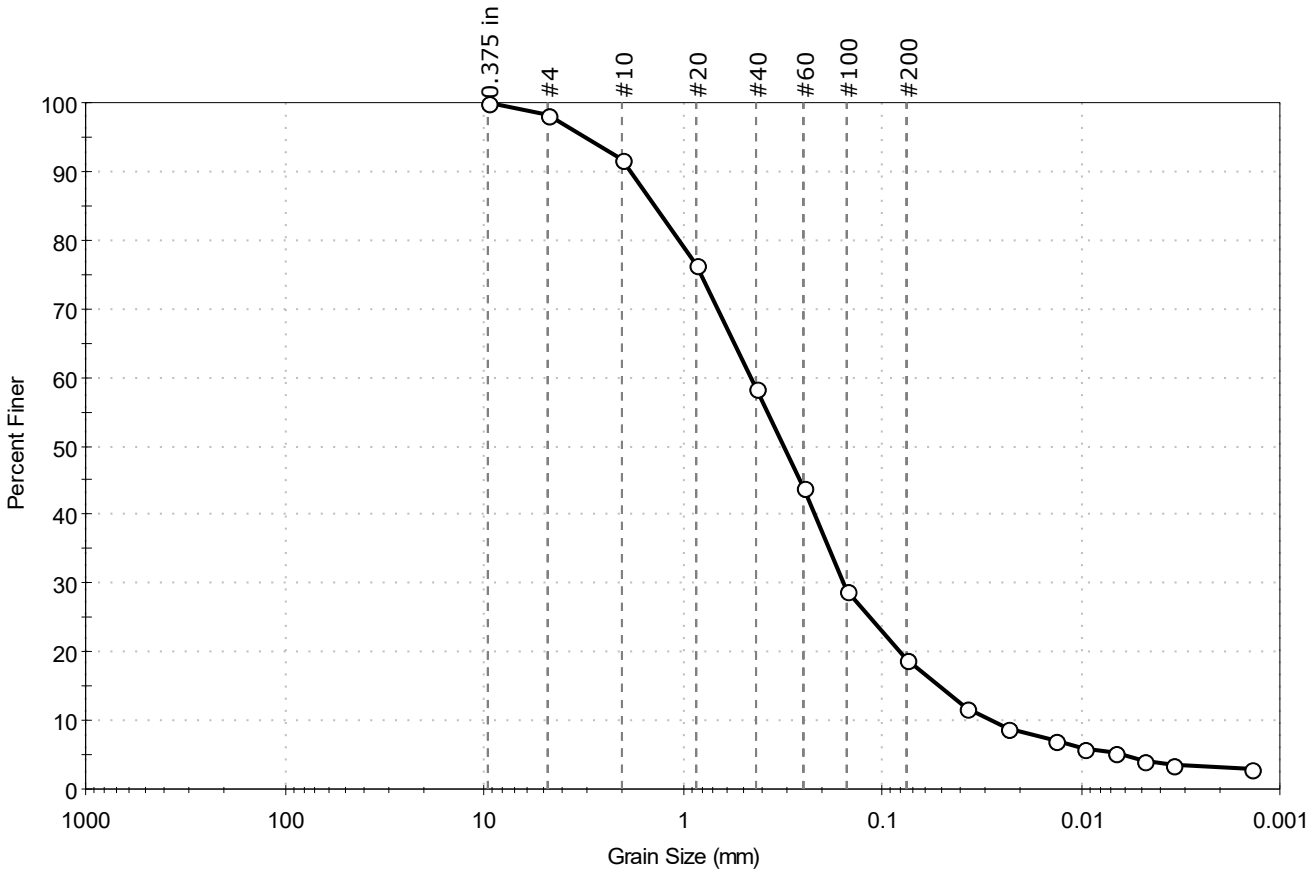
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	WB-SED-18-05-DEC18	Test Date:	02/03/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489867		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	1.9	79.3	18.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	98		
#10	2.00	92		
#20	0.85	77		
#40	0.42	58		
#60	0.25	44		
#100	0.15	29		
#200	0.075	19		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0373	12		
---	0.0235	9		
---	0.0136	7		
---	0.0096	6		
---	0.0068	5		
---	0.0048	4		
---	0.0034	3		
---	0.0014	3		

Coefficients

D_{85} = 1.3707 mm	D_{30} = 0.1562 mm
D_{60} = 0.4522 mm	D_{15} = 0.0510 mm
D_{50} = 0.3120 mm	D_{10} = 0.0278 mm
C_u = 16.266	C_c = 1.941

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

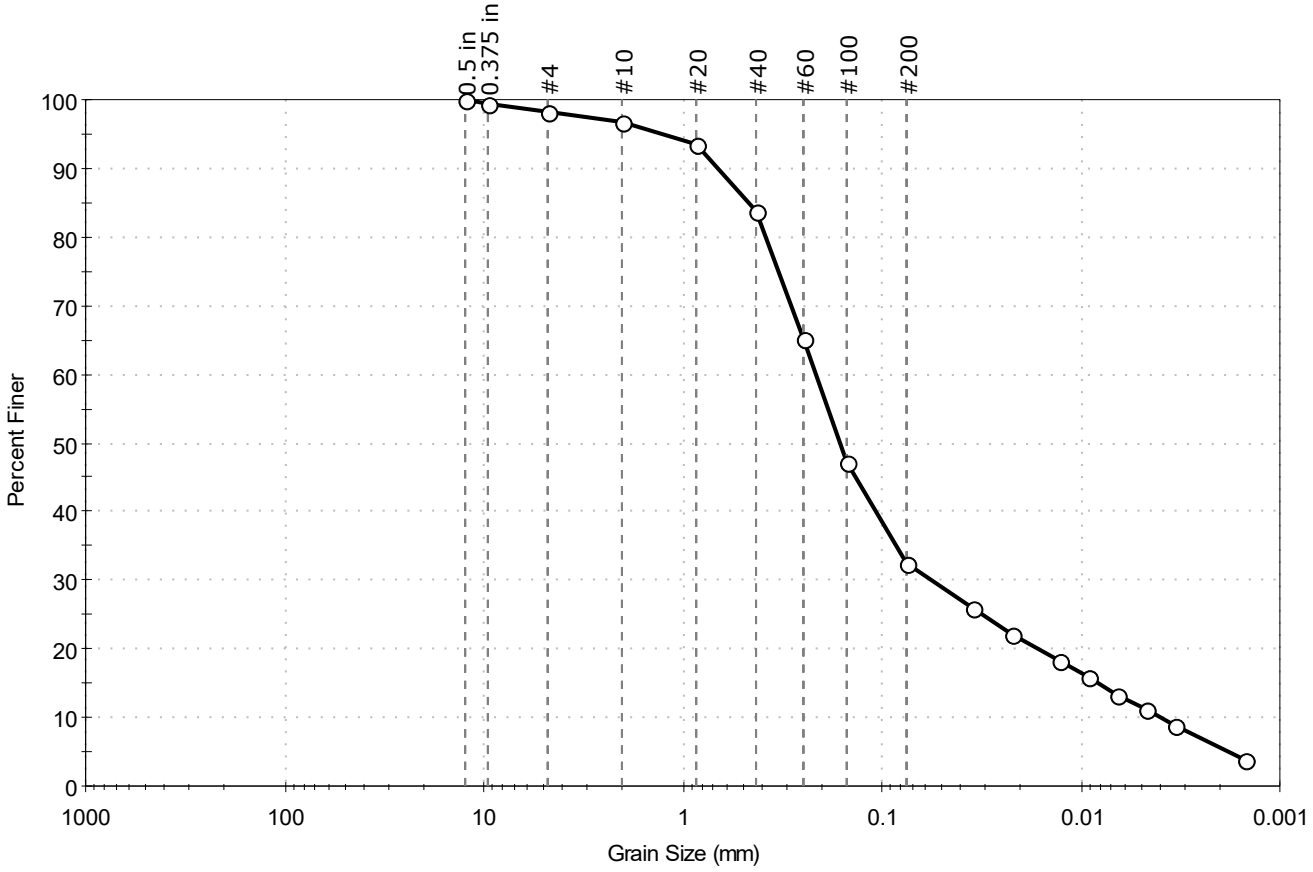
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	WB-SED-18-06-DEC18	Test Date:	02/02/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489866		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	1.8	65.8	32.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	99		
#4	4.75	98		
#10	2.00	97		
#20	0.85	94		
#40	0.42	84		
#60	0.25	65		
#100	0.15	47		
#200	0.075	32		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0347	26		
---	0.0220	22		
---	0.0128	18		
---	0.0092	16		
---	0.0065	13		
---	0.0047	11		
---	0.0034	9		
---	0.0015	4		

Coefficients

D_{85} =0.4617 mm	D_{30} =0.0563 mm
D_{60} =0.2152 mm	D_{15} =0.0082 mm
D_{50} =0.1623 mm	D_{10} =0.0039 mm
C_u =55.179	C_c =3.777

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

PLOW SHOP

POND

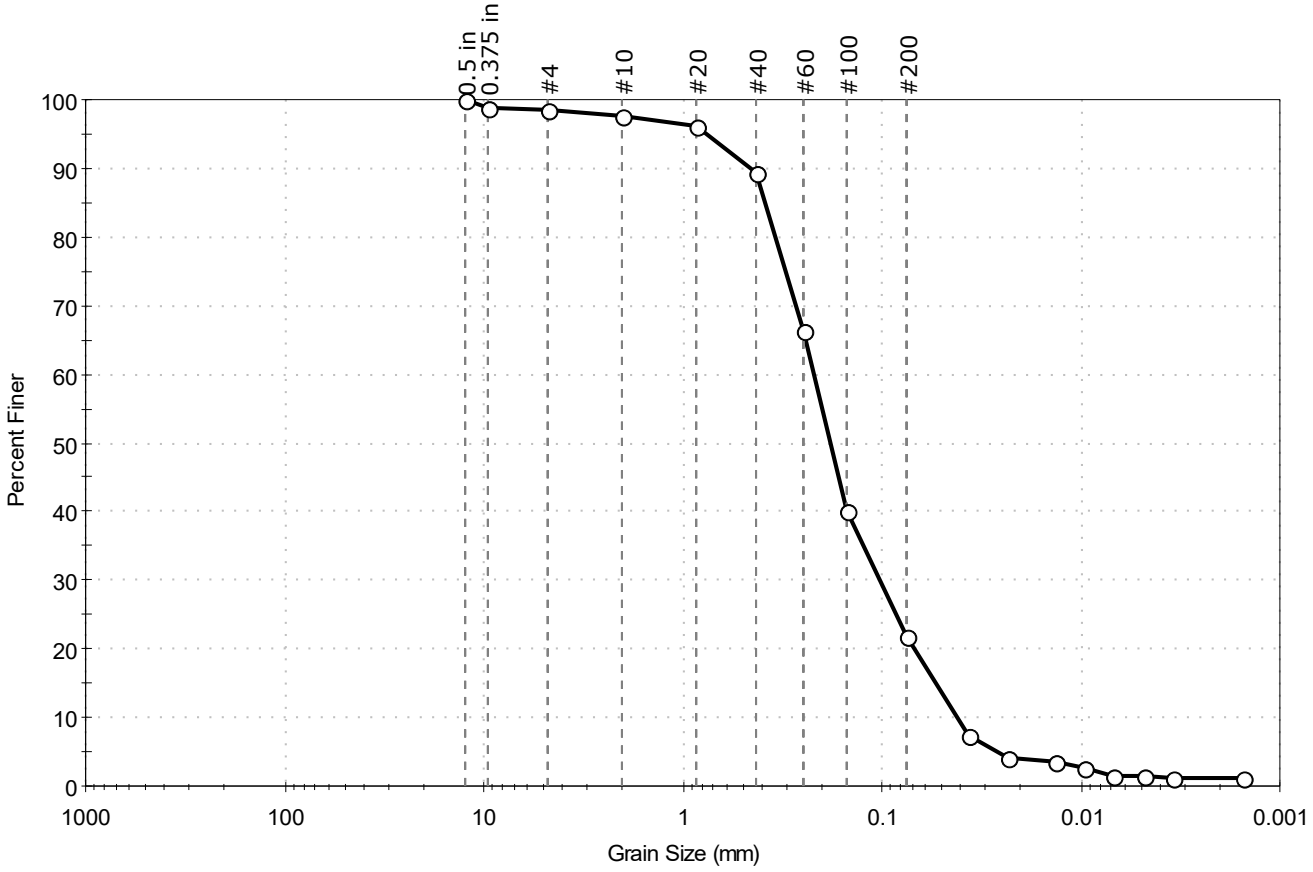
Sediment Grain

Size Graphs

GeoTesting EXPRESS

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	PS-SED-18-01-DEC18	Test Date:	02/02/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489871		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	1.6	76.6	21.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	99		
#4	4.75	98		
#10	2.00	98		
#20	0.85	96		
#40	0.42	89		
#60	0.25	66		
#100	0.15	40		
#200	0.075	22		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0369	7		
---	0.0232	4		
---	0.0136	3		
---	0.0097	3		
---	0.0069	1		
---	0.0049	1		
---	0.0035	1		
---	0.0015	1		

Coefficients

D_{85} = 0.3845 mm	D_{30} = 0.1023 mm
D_{60} = 0.2206 mm	D_{15} = 0.0536 mm
D_{50} = 0.1818 mm	D_{10} = 0.0419 mm
C_u = 5.265	C_c = 1.132

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

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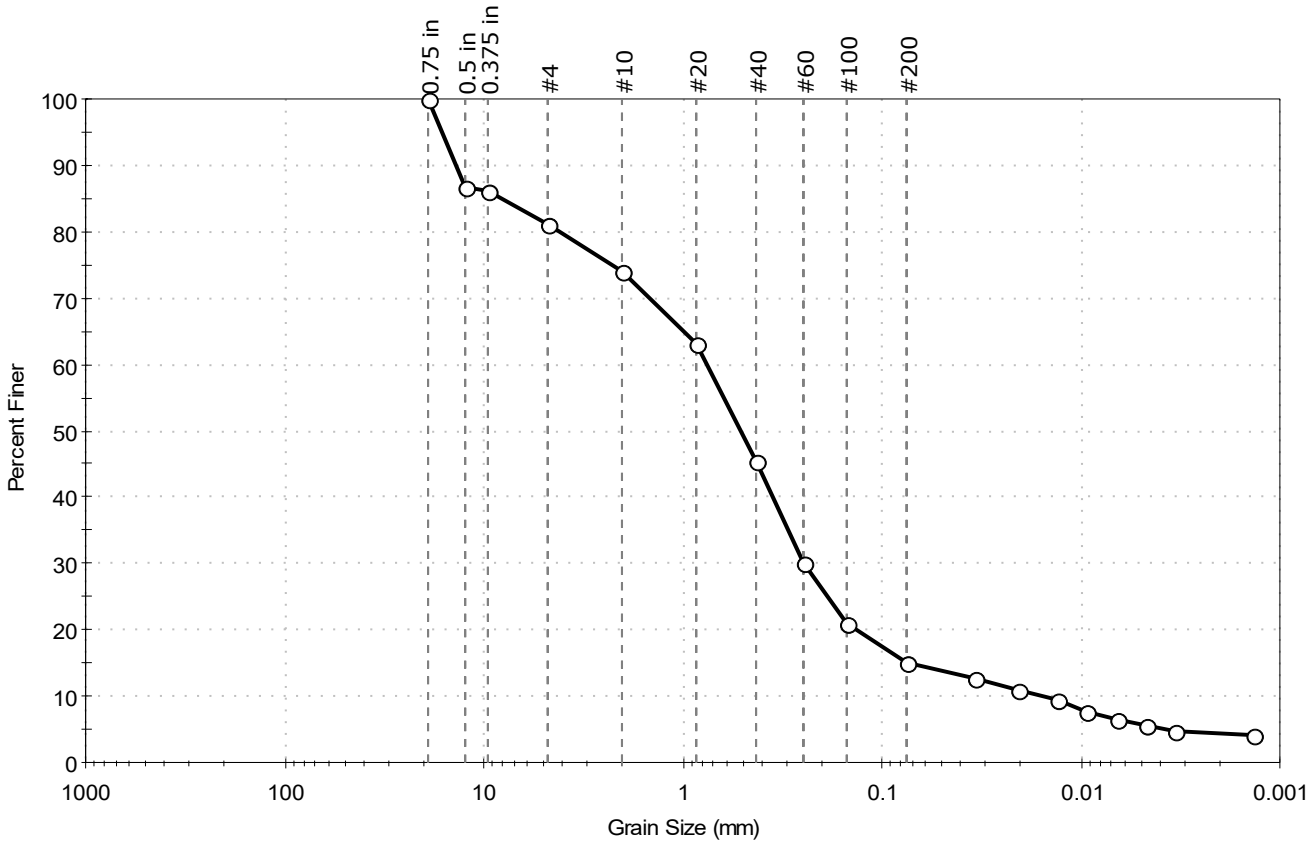
Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	PS-SED-18-02-DEC18	Test Date:	02/07/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489876		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand with gravel				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	19.0	66.1	14.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	87		
0.375 in	9.50	86		
#4	4.75	81		
#10	2.00	74		
#20	0.85	63		
#40	0.42	45		
#60	0.25	30		
#100	0.15	21		
#200	0.075	15		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0338	13		
---	0.0207	11		
---	0.0130	9		
---	0.0093	8		
---	0.0066	6		
---	0.0047	6		
---	0.0033	5		
---	0.0014	4		

Coefficients

D_{85} =8.0244 mm	D_{30} =0.2504 mm
D_{60} =0.7494 mm	D_{15} =0.0755 mm
D_{50} =0.5080 mm	D_{10} =0.0157 mm
C_u =47.732	C_c =5.329

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

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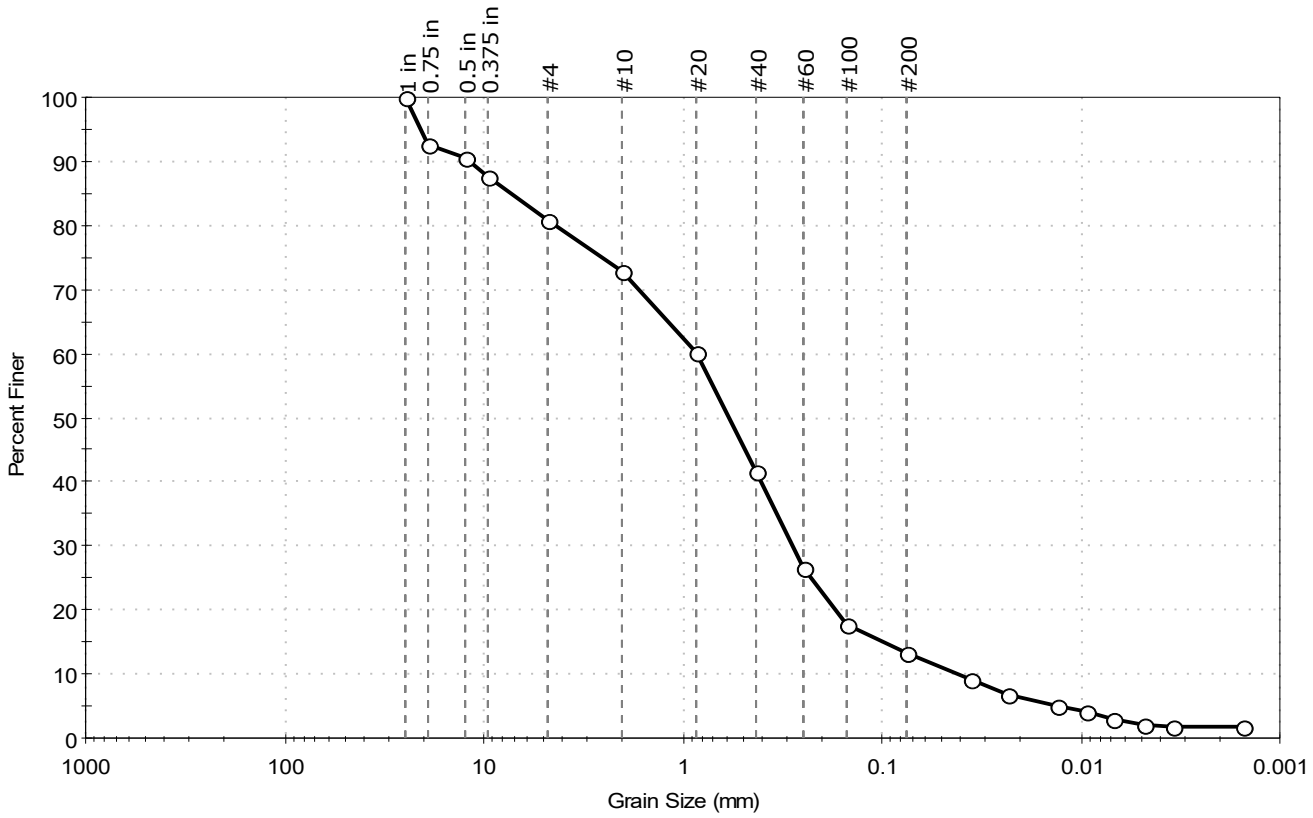
GeoTesting EXPRESS

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	PS-SED-18-03-DEC18	Test Date:	02/03/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489872		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand with gravel				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	19.0	67.7	13.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	93		
0.5 in	12.50	91		
0.375 in	9.50	88		
#4	4.75	81		
#10	2.00	73		
#20	0.85	60		
#40	0.42	42		
#60	0.25	27		
#100	0.15	18		
#200	0.075	13		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0355	9		
---	0.0233	7		
---	0.0133	5		
---	0.0094	4		
---	0.0068	3		
---	0.0049	2		
---	0.0034	2		
---	0.0015	2		

Coefficients

D_{85} = 7.2189 mm	D_{30} = 0.2819 mm
D_{60} = 0.8443 mm	D_{15} = 0.0979 mm
D_{50} = 0.5816 mm	D_{10} = 0.0407 mm
C_u = 20.744	C_c = 2.313

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

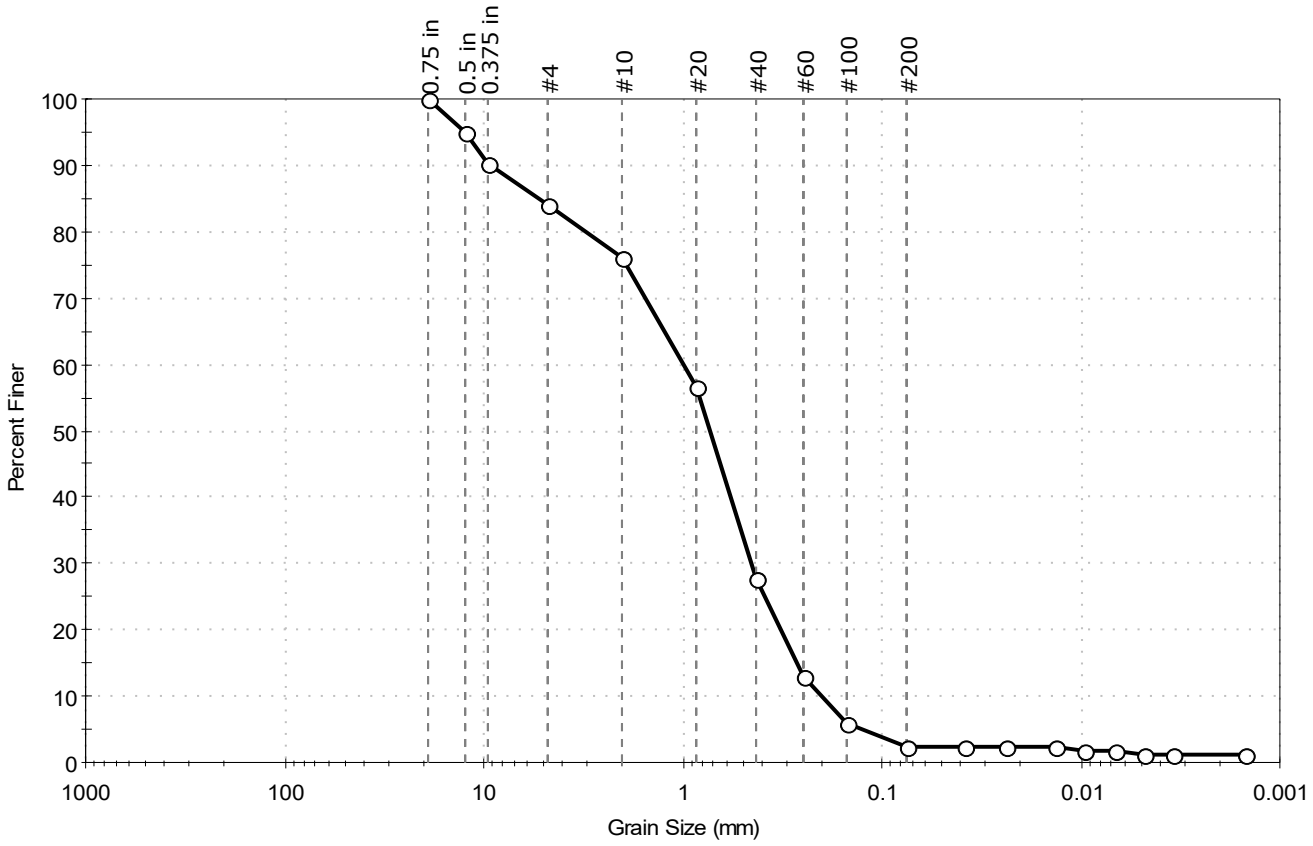
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	PS-SED-18-04-DEC18	Test Date:	02/01/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489873		
Test Comment:	---				
Visual Description:	Moist, dark gray sand with gravel				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	16.0	81.6	2.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	95		
0.375 in	9.50	90		
#4	4.75	84		
#10	2.00	76		
#20	0.85	57		
#40	0.42	28		
#60	0.25	13		
#100	0.15	6		
#200	0.075	2.4		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0381	2		
---	0.0238	2		
---	0.0136	2		
---	0.0097	2		
---	0.0067	2		
---	0.0048	1		
---	0.0034	1		
---	0.0015	1		

Coefficients

D_{85} = 5.2681 mm	D_{30} = 0.4477 mm
D_{60} = 0.9825 mm	D_{15} = 0.2693 mm
D_{50} = 0.7237 mm	D_{10} = 0.2022 mm
C_u = 4.859	C_c = 1.009

Classification

ASTM: Poorly graded SAND with Gravel (SP)

AASHTO: Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

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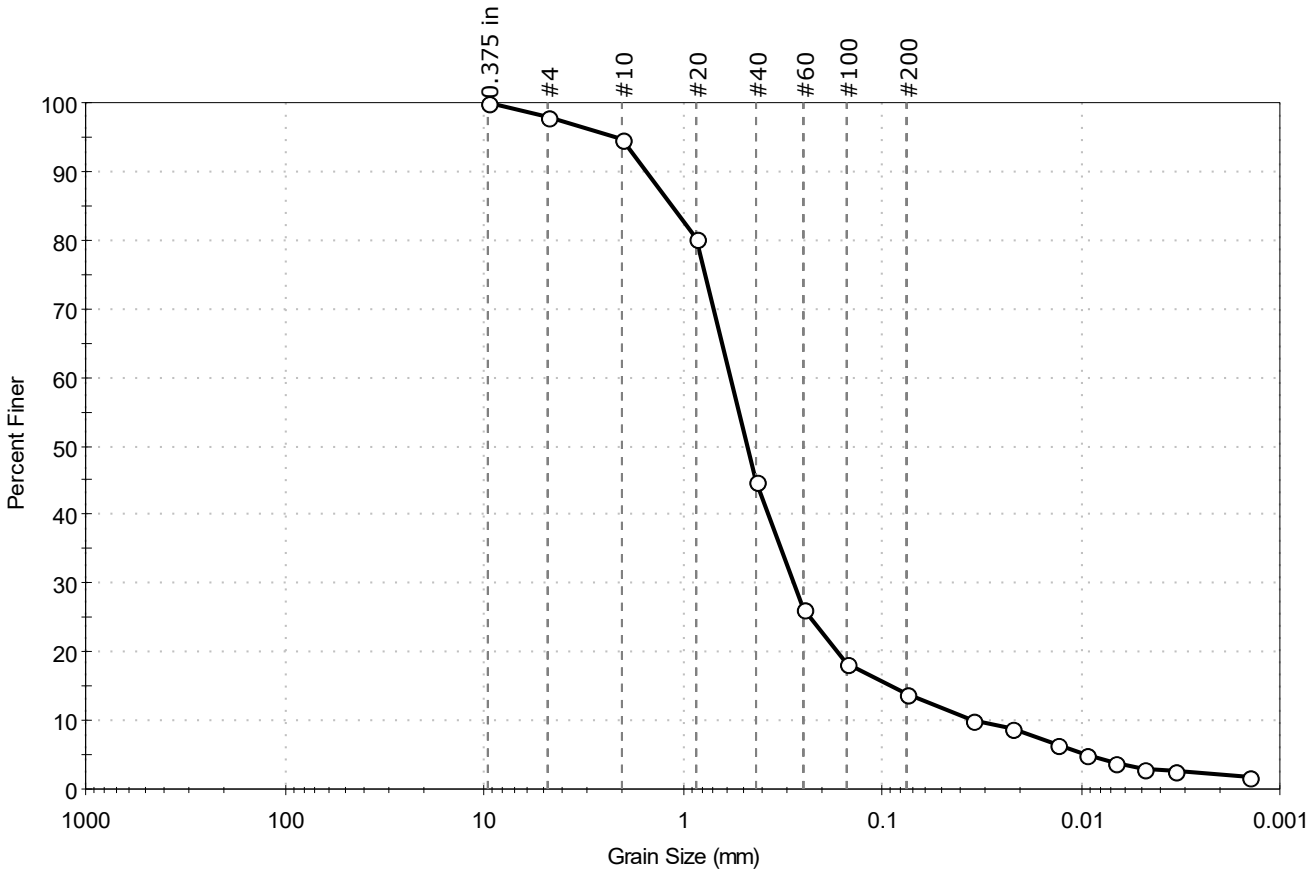
Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	PS-SED-18-05-DEC18	Test Date:	02/03/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489877		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	2.1	84.1	13.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	98		
#10	2.00	95		
#20	0.85	80		
#40	0.42	45		
#60	0.25	26		
#100	0.15	18		
#200	0.075	14		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0354	10		
---	0.0223	9		
---	0.0132	7		
---	0.0095	5		
---	0.0068	4		
---	0.0048	3		
---	0.0034	3		
---	0.0014	2		

Coefficients

D_{85} = 1.1272 mm
D_{30} = 0.2781 mm
D_{60} = 0.5713 mm
D_{15} = 0.0901 mm
D_{50} = 0.4696 mm
D_{10} = 0.0349 mm
C_u = 16.370
C_c = 3.879

Classification

ASTM N/A

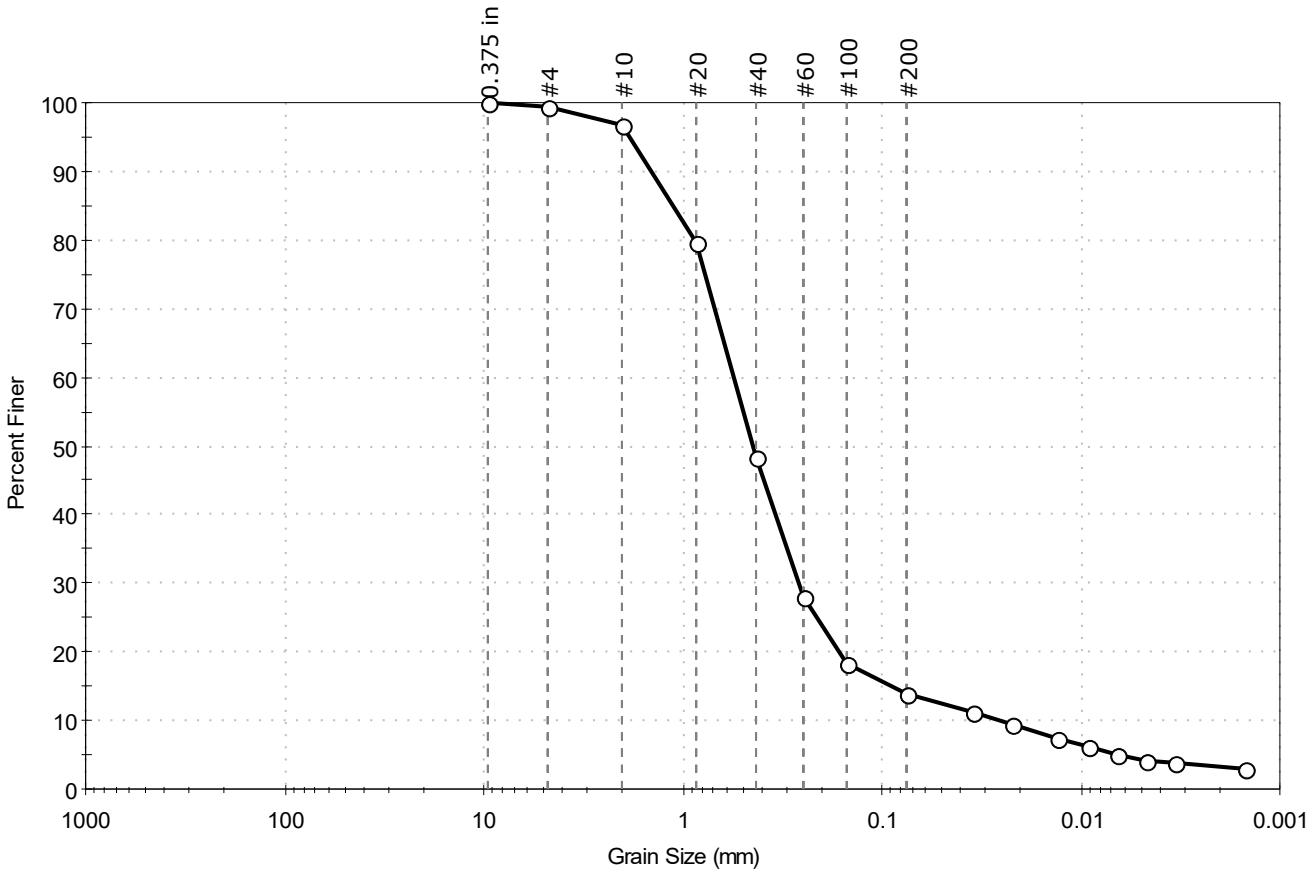
AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	PS-SED-18-06-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489878		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.7	85.3	14.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	97		
#20	0.85	80		
#40	0.42	48		
#60	0.25	28		
#100	0.15	18		
#200	0.075	14		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0351	11		
---	0.0222	9		
---	0.0130	7		
---	0.0093	6		
---	0.0067	5		
---	0.0047	4		
---	0.0034	4		
---	0.0015	3		

Coefficients

D_{85} = 1.1132 mm	D_{30} = 0.2623 mm
D_{60} = 0.5494 mm	D_{15} = 0.0879 mm
D_{50} = 0.4399 mm	D_{10} = 0.0262 mm
C_u = 20.969	C_c = 4.780

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

NONACOICUS

BROOK

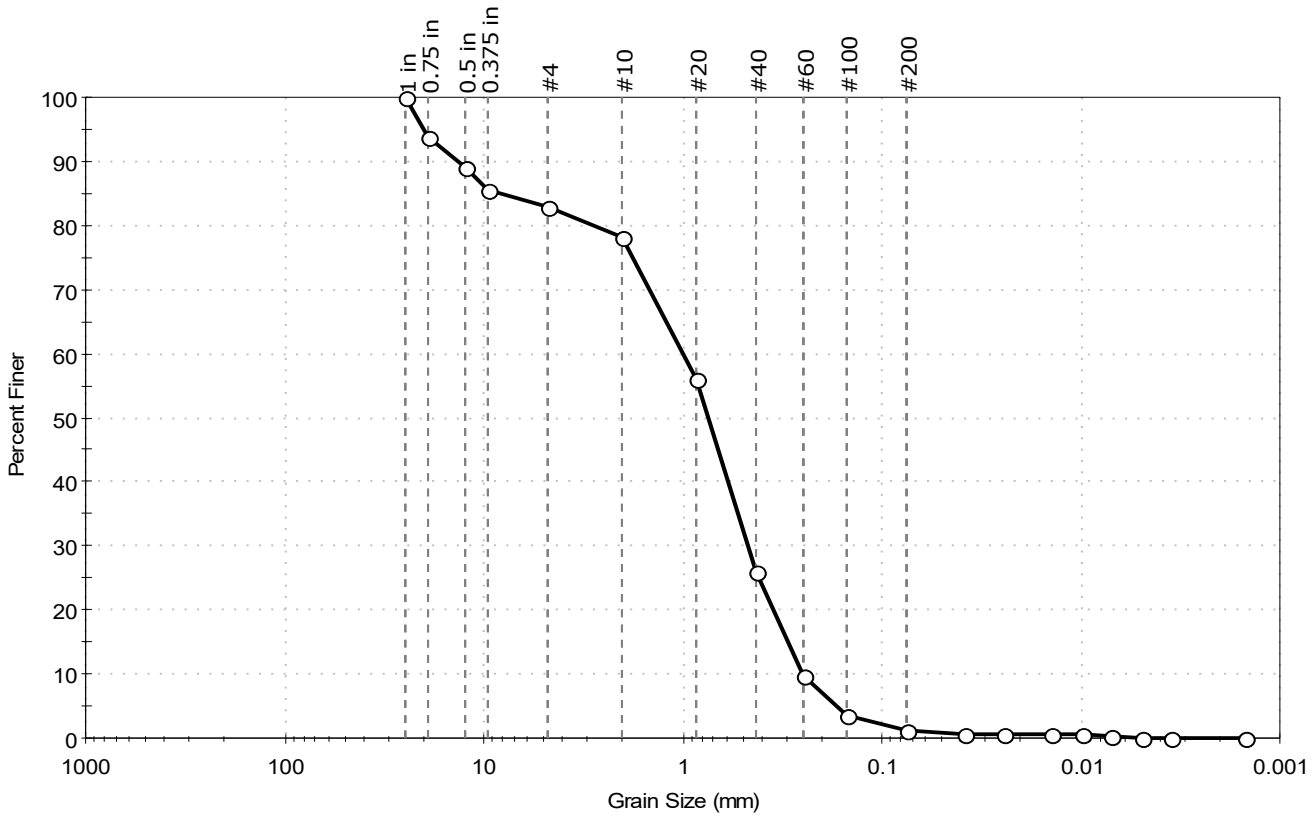
Sediment Grain

Size Graphs

GeoTesting EXPRESS

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NB-SED-18-01-DEC18	Test Date:	02/03/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489865		
Test Comment:	---				
Visual Description:	Moist, dark brown sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	17.2	81.7	1.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	94		
0.5 in	12.50	89		
0.375 in	9.50	86		
#4	4.75	83		
#10	2.00	78		
#20	0.85	56		
#40	0.42	26		
#60	0.25	10		
#100	0.15	4		
#200	0.075	1.1		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0387	1		
---	0.0246	1		
---	0.0141	1		
---	0.0099	1		
---	0.0070	0		
---	0.0050	0		
---	0.0035	0		
---	0.0015	0		

Coefficients

D_{85} = 8.2685 mm	D_{30} = 0.4668 mm
D_{60} = 0.9932 mm	D_{15} = 0.2967 mm
D_{50} = 0.7405 mm	D_{10} = 0.2517 mm
C_u = 3.946	C_c = 0.872

Classification

ASTM: Poorly graded SAND with Gravel (SP)

AASHTO: Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

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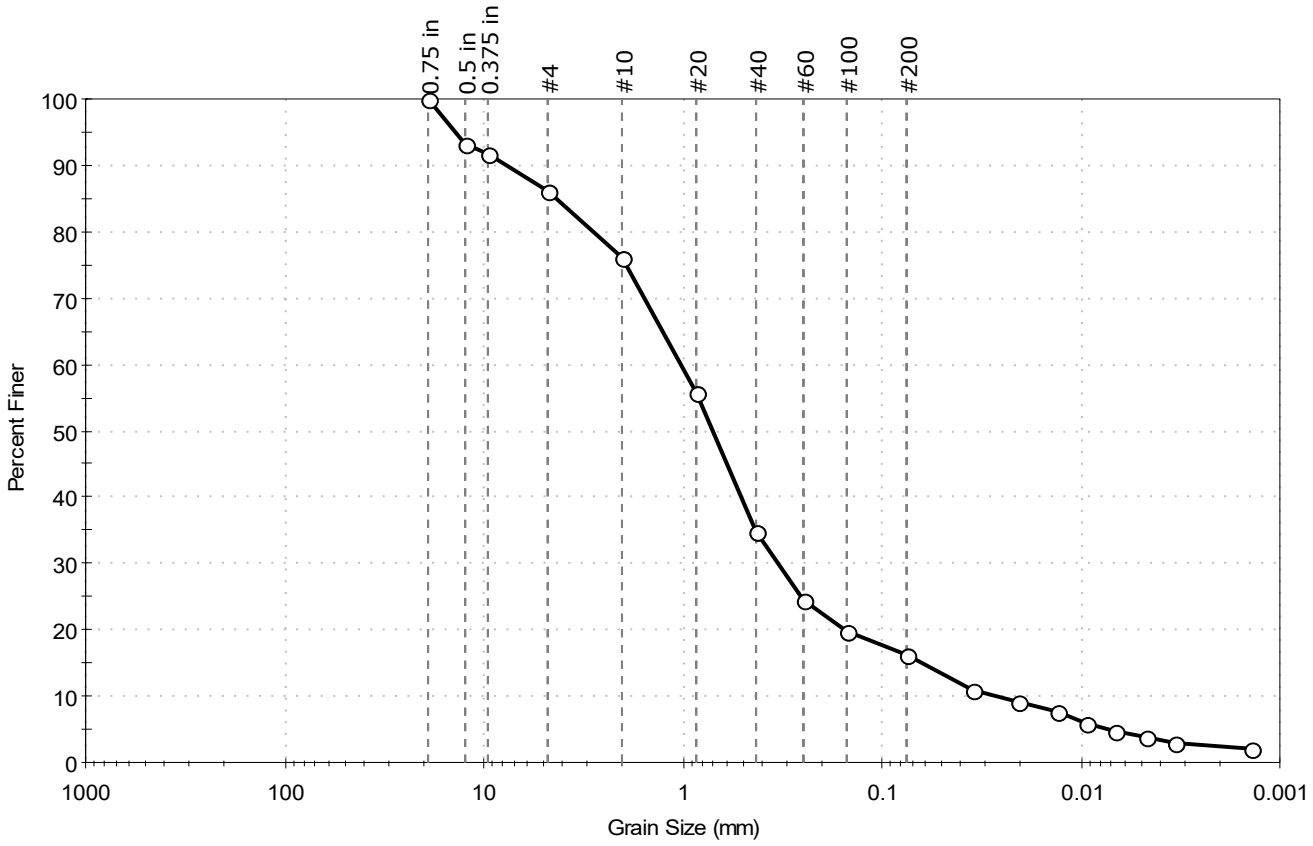
Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NB-SED-18-02-DEC18	Test Date:	02/03/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489862		
Test Comment:	---				
Visual Description:	Moist, dark brown silty sand				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	13.7	70.0	16.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	93		
0.375 in	9.50	92		
#4	4.75	86		
#10	2.00	76		
#20	0.85	56		
#40	0.42	35		
#60	0.25	25		
#100	0.15	20		
#200	0.075	16		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0352	11		
---	0.0205	9		
---	0.0131	8		
---	0.0094	6		
---	0.0067	5		
---	0.0048	4		
---	0.0034	3		
---	0.0014	2		

Coefficients

D_{85} =4.2607 mm	D_{30} =0.3326 mm
D_{60} =1.0154 mm	D_{15} =0.0626 mm
D_{50} =0.7037 mm	D_{10} =0.0257 mm
C_u =39.510	C_c =4.239

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

Dispersion Period : 1 minute

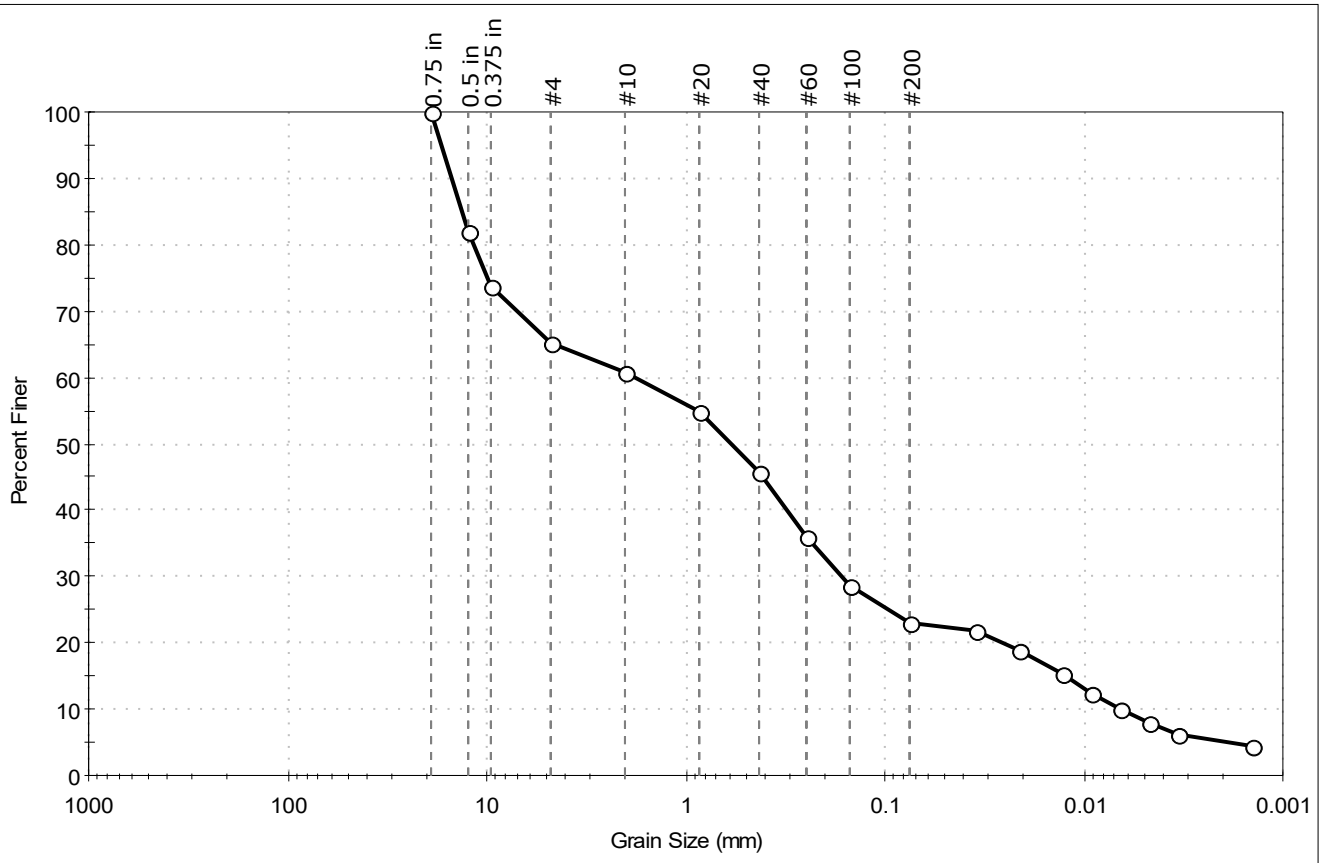
Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

printed 2/7/2019 10:57:09 AM

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NB-SED-18-03-DEC18	Test Date:	02/07/19	Checked By:	emm
Depth :	0-0.25'	Test Id:	489861		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand with gravel				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	34.8	42.2	23.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	82		
0.375 in	9.50	74		
#4	4.75	65		
#10	2.00	61		
#20	0.85	55		
#40	0.42	46		
#60	0.25	36		
#100	0.15	29		
#200	0.075	23		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0348	22		
---	0.0213	19		
---	0.0128	15		
---	0.0092	12		
---	0.0066	10		
---	0.0047	8		
---	0.0034	6		
---	0.0014	4		

Coefficients

D_{85} = 13.3703 mm	D_{30} = 0.1654 mm
D_{60} = 1.8029 mm	D_{15} = 0.0125 mm
D_{50} = 0.5902 mm	D_{10} = 0.0066 mm
C_u = 273.167	C_c = 2.299

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

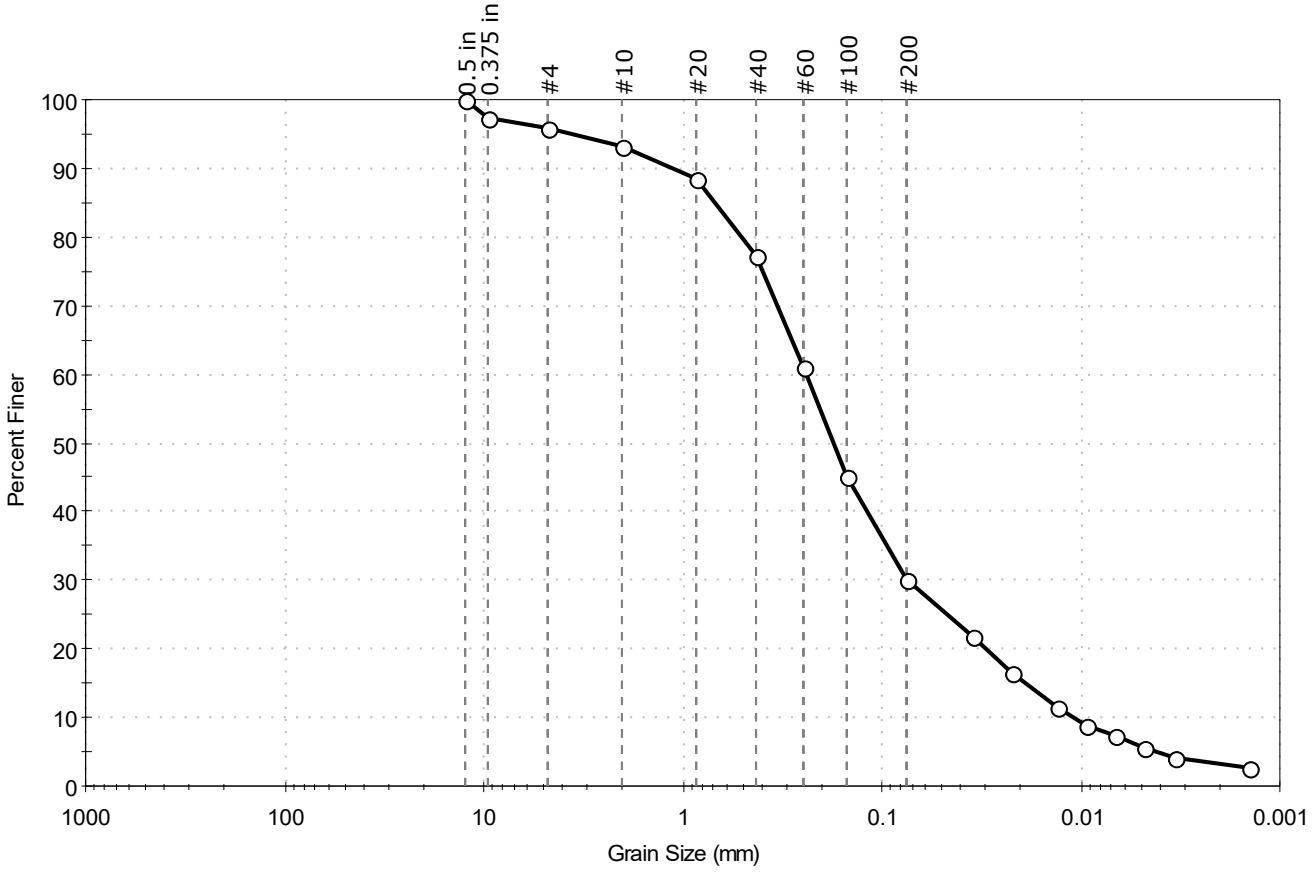
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NB-SED-18-04-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.25'	Test Id:	489860		
Test Comment:	---				
Visual Description:	Moist, dark gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	4.3	65.6	30.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	97		
#4	4.75	96		
#10	2.00	93		
#20	0.85	88		
#40	0.42	77		
#60	0.25	61		
#100	0.15	45		
#200	0.075	30		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0350	22		
---	0.0223	17		
---	0.0132	11		
---	0.0094	9		
---	0.0067	7		
---	0.0048	6		
---	0.0034	4		
---	0.0014	3		

Coefficients

D_{85} =0.6895 mm	D_{30} =0.0741 mm
D_{60} =0.2413 mm	D_{15} =0.0190 mm
D_{50} =0.1754 mm	D_{10} =0.0110 mm
C_u =21.936	C_c =2.069

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

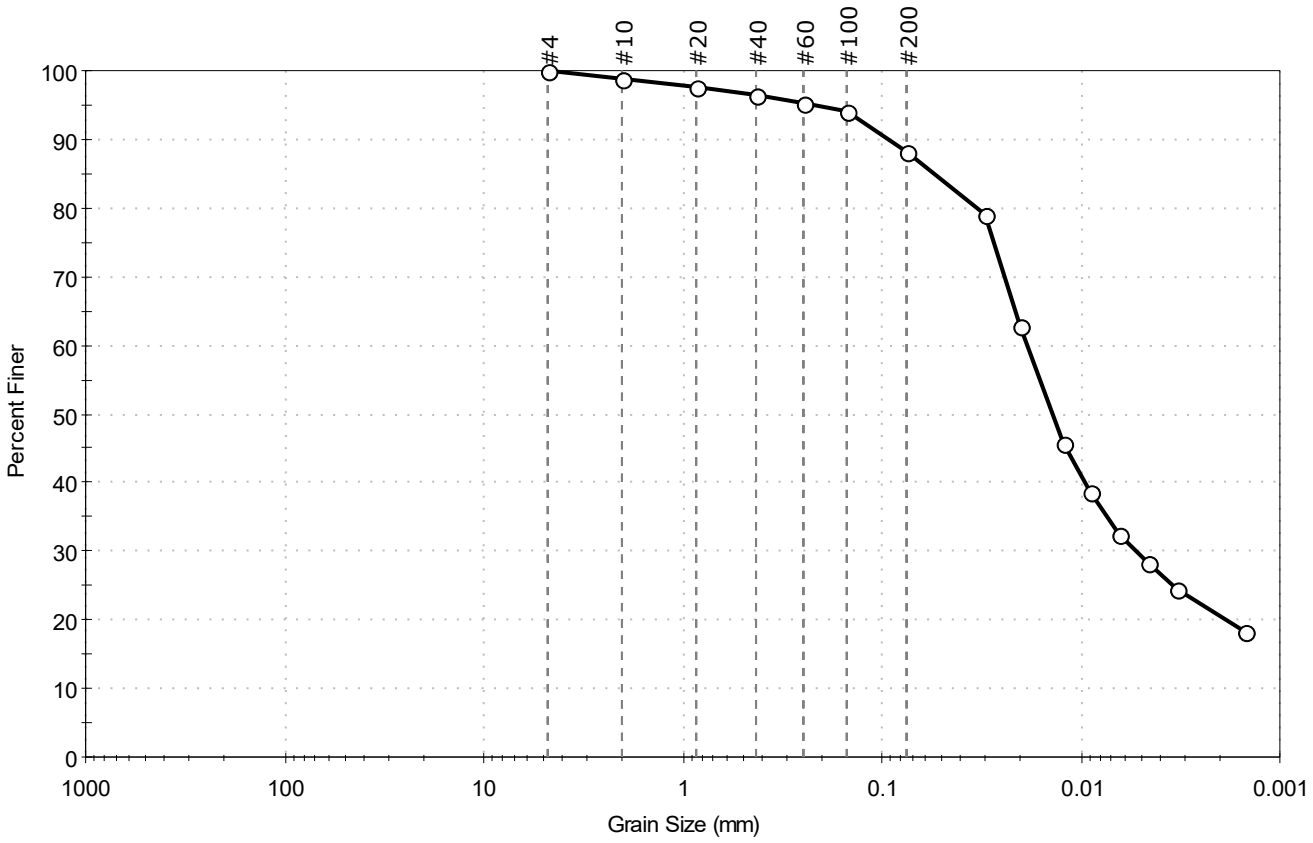
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NB-SED-18-05-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.25'	Test Id:	489859		
Test Comment:	---				
Visual Description:	Moist, dark gray silt				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	11.7	88.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	96		
#60	0.25	95		
#100	0.15	94		
#200	0.075	88		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0305	79		
---	0.0202	63		
---	0.0122	46		
---	0.0089	39		
---	0.0064	32		
---	0.0046	28		
---	0.0033	24		
---	0.0015	18		

Coefficients

D_{85} = 0.0542 mm D_{30} = 0.0052 mm
D_{60} = 0.0186 mm D_{15} = N/A
D_{50} = 0.0138 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

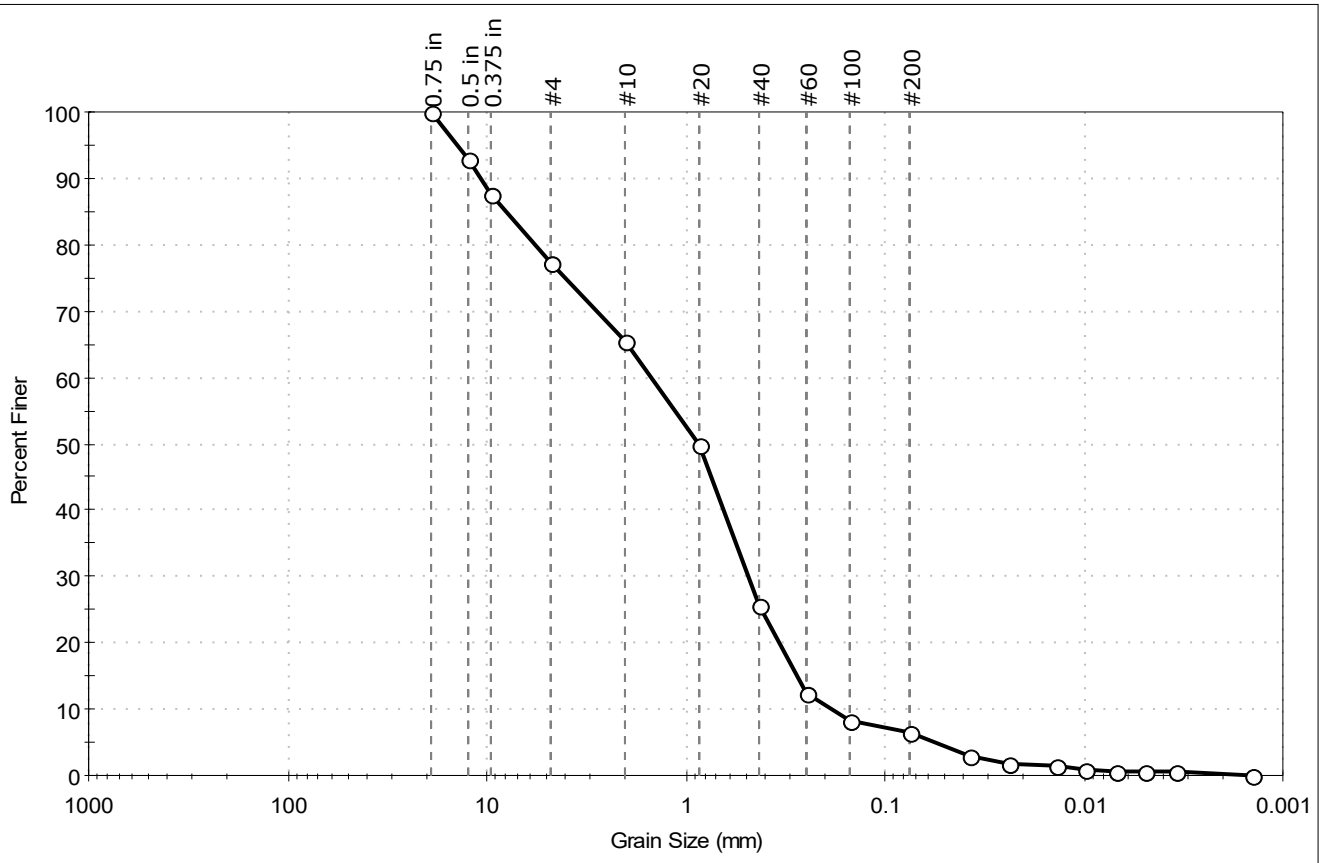
AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NB-SED-18-06-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.5'	Test Id:	489863		
Test Comment:	---				
Visual Description:	Moist, dark gray sand with silt and gravel				
Sample Comment:	Sample contains organics				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	22.8	70.7	6.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	93		
0.375 in	9.50	88		
#4	4.75	77		
#10	2.00	65		
#20	0.85	50		
#40	0.42	26		
#60	0.25	13		
#100	0.15	8		
#200	0.075	6.5		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0379	3		
---	0.0238	2		
---	0.0138	1		
---	0.0098	1		
---	0.0069	1		
---	0.0049	0		
---	0.0035	0		
---	0.0014	0		

Coefficients

D_{85} = 7.9642 mm	D_{30} = 0.4809 mm
D_{60} = 1.4905 mm	D_{15} = 0.2764 mm
D_{50} = 0.8616 mm	D_{10} = 0.1867 mm
C_u = 7.983	C_c = 0.831

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description

Sand/Gravel Particle Shape : ROUNDED

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

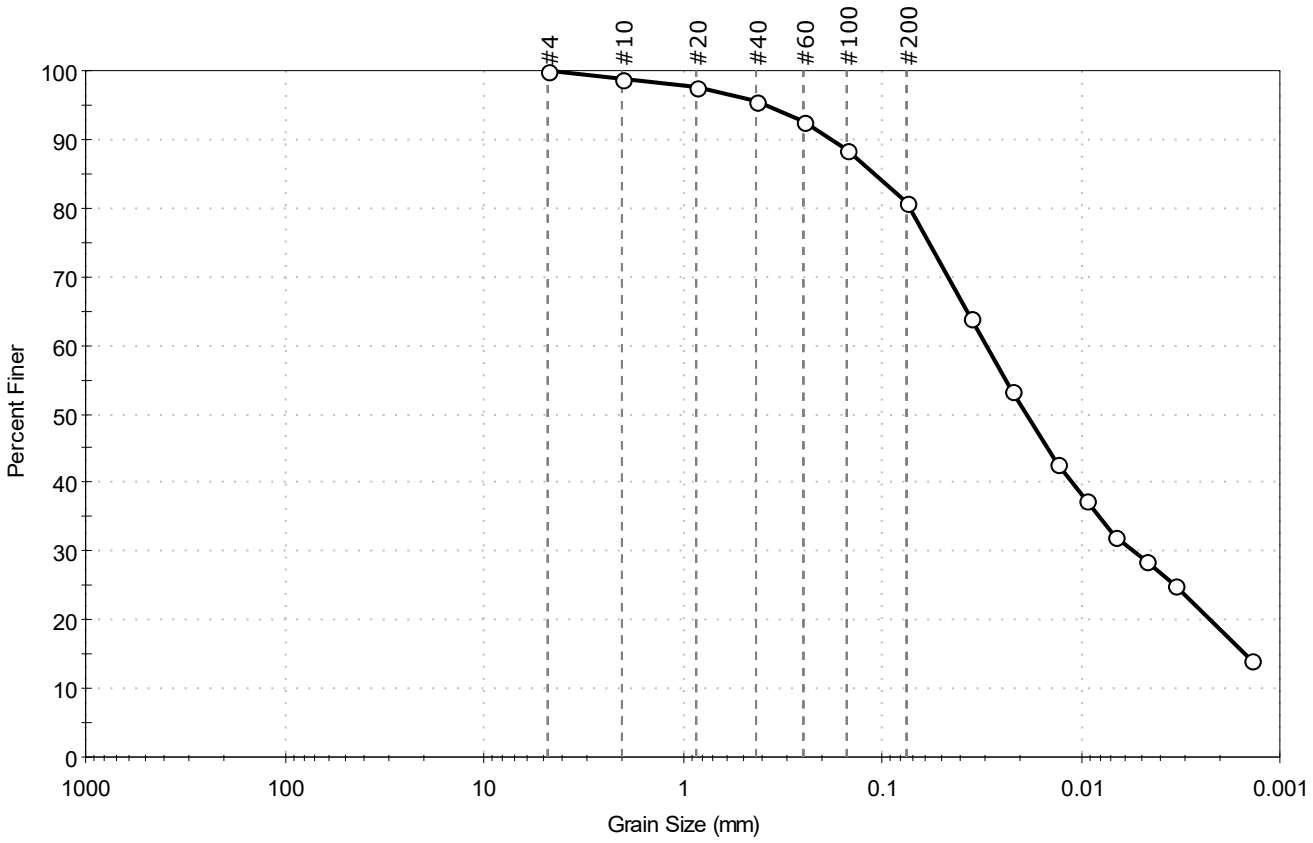
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	KOMAN Government Solutions, LLC				
Project:	Devens PFAS Remedial Investigation				
Location:	Devens, MA			Project No:	GTX-309411
Boring ID:	---	Sample Type:	bag	Tested By:	ckg
Sample ID:	NB-SED-18-07-DEC18	Test Date:	02/06/19	Checked By:	emm
Depth :	0-0.25'	Test Id:	489864		
Test Comment:	---				
Visual Description:	Moist, dark gray silt with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	0.0	19.2	80.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	96		
#60	0.25	93		
#100	0.15	89		
#200	0.075	81		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0358	64		
---	0.0225	53		
---	0.0132	43		
---	0.0094	37		
---	0.0067	32		
---	0.0047	28		
---	0.0034	25		
---	0.0014	14		

Coefficients

D_{85} = 0.1090 mm D_{30} = 0.0055 mm
D_{60} = 0.0299 mm D_{15} = 0.0015 mm
D_{50} = 0.0189 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---
Sand/Gravel Hardness : ---
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve



APPENDIX H ANALYTICAL RESULTS

H-1

PFAS in Groundwater at Existing Monitoring Well Locations

AOC 32/43A

Existing Monitoring Well Results

PFAS in Groundwater at Monitoring Well Locations
AOC 32/43A

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
32M-01-13XBR	13.7	23.7	258.30	239.60	12/20/2018	N	13.9	27.5	2.9	11	< 2	6.4	6.7	0.52	< 40	< 20	< 20	< 20	3	< 2	14	< 4	< 4	< 2
32M-01-14XBR	35.8	45.8	254.11	213.31	1/10/2019	N	110	143	59	51	0.79	9.8	20	2	< 35	< 18	< 18	< 18	2.5	< 1.8	13	< 3.5	< 3.5	< 1.8
	35.8	45.8	254.11	213.31	11/15/2019	N	74.0	96.3	42	32	0.62	7.2	13	1.5	< 36	< 18	< 18	< 18	1.9	< 1.8	9.2	< 3.6	< 3.6	< 1.8
	35.8	45.8	254.11	213.31	5/8/2020	N	99.0	124	58	41	0.8	7.5	15	2.1	< 37	< 18	< 18	< 18	2.1	< 1.8	8.5	< 3.7	< 3.7	< 1.8
32M-01-14XOB	17.3	27.3	254.30	232.00	1/10/2019	N	46.0	62.2	22	24	< 1.7	5.4	9.6	1.2	< 33	< 17	< 17	< 17	2	< 1.7	8.4	< 3.3	< 3.3	< 1.7
32M-01-15XBR	34.5	44.5	258.03	218.53	12/20/2018	N	11.5	20.0	2.7	8.8	< 1.9	3.2	5.3	< 1.9	< 38	< 19	< 19	< 19	1.8	< 1.9	7	< 3.8	< 3.8	< 1.9
32M-01-16XBR	21	31	257.70	231.70	12/18/2018	N	6.30	14.9	1.3	5	< 2	1.9	6.7	< 2	< 39	< 20	< 20	< 20	3	< 2	3.9	< 3.9	< 3.9	< 2
32M-01-17XBR	41.4	51.4	256.85	210.45	1/4/2019	N	13.2	22.3	4.5	8.7	< 1.9	3.3	5.2	0.59	< 38	< 19	< 19	< 19	1.6	< 1.9	6.1	< 3.8	< 3.8	< 1.9
32M-01-18XBR	14	24	258.61	239.61	1/10/2019	N	23.1	37.8	9.1	14	0.98	5	6.9	1.8	< 34	< 17	< 17	< 17	2.2	< 1.7	9.2	< 3.4	< 3.4	< 1.7
32M-92-01X	13	23	258.26	240.26	12/13/2018	N	59.0	86.6	34	25	< 1.8	7.4	18	2.2	< 36	< 18	< 18	< 18	3.8	< 1.8	10	< 3.6	< 3.6	< 1.8
32M-92-03X	23.2	33.2	258.23	230.03	1/2/2019	N	8.80	20.0	5.6	3.2	< 1.9	2	9.2	< 1.9	< 37	< 19	< 19	< 19	1.2	< 1.9	4.6	< 3.7	< 3.7	< 1.9
32Z-01-05XOB	25.5	35.5	261.00	230.50	1/15/2019	N	12.0	26.7	3.2	8.8	< 2	4.1	10	0.64	< 40	< 20	< 20	< 20	2.4	< 2	7.2	< 4	< 4	< 2
32Z-01-06XBR	16.7	26.7	259.82	238.12	12/20/2018	N	68.0	112	14	54	< 1.9	31	11	1.5	< 38	< 19	< 19	< 19	6.2	< 1.9	32	< 3.8	< 3.8	< 1.9
32Z-01-07XOB	12.7	22.7	257.68	239.98	12/20/2018	N	177	316	57	120	< 1.9	59	73	7	< 38	< 19	< 19	< 19	7.2	< 1.9	66	< 3.8	< 3.8	< 1.9
32Z-01-08XOB	12	22	258.59	241.59	12/18/2018	N	9.70	69.7	1.6	8.1	< 1.9	14	46	< 1.9	< 38	< 19	< 19	< 19	2.4	< 1.9	20	< 3.8	< 3.8	< 1.9
32Z-01-09XOB	23.5	33.5	257.80	229.30	1/15/2019	N	24.4	57.7	9.4	15	< 1.9	6.3	26	0.99	< 39	< 19	< 19	< 19	2.6	< 1.9	7	< 3.9	< 3.9	< 1.9
32Z-01-10XBR	12.5	22.5	257.76	240.26	12/19/2018	N	12.1	22.1	5.1	7	< 1.8	1.9	7.4	0.66	< 36	< 18	< 18	< 18	2.3	< 1.8	2.2	< 3.6	< 3.6	< 1.8
	12.5	22.5	257.76	240.26	12/19/2018	FD	13.4	23.5	4.7	8.7	< 1.9	2.1	7.3	0.65	< 38	< 19	< 19	< 19	2.2	< 1.9	2.7	< 3.8	< 3.8	< 1.9
32Z-01-12XBR	27.78	37.78	258.24	225.46	12/20/2018	N	6.1	61.1	< 3.8	6.1	< 1.9	18	37	< 1.9	< 38	< 19	< 19	< 19	6	< 1.9	55	< 3.8	< 3.8	< 1.9
32Z-99-02X	14.5	29.5	257.48	235.48	1/15/2019	N	0.00	20.0	< 3.8	< 1.9	< 1.9	< 1.9	20	< 1.9	< 38	< 19	< 19	< 19	5.1	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
43M-01-16XBR	47.5	57.5	257.04	204.54	1/3/2019	N	6.50	25.6	2.5	4	< 1.9	4.1	15	< 1.9	< 38	< 19	< 19	< 19	2.3	< 1.9	13	< 3.8	< 3.8	< 1.9
43M-01-16XOB	24	34	257.11	228.11	12/18/2018	N	11.6	56.2	3.3	8.3	< 1.9	9.6	35	< 1.9	< 37	< 19	< 19	< 19	4	< 1.9	25	< 3.7	< 3.7	< 1.9
43M-01-17XBR	47.5	57.5	258.53	206.03	1/3/2019	N	34.0	55.5	23	11	< 1.9	3.3	17	1.2	< 38	< 19	< 19	< 19	2.1	< 1.9	5.7	< 3.8	< 3.8	0.68
43M-01-17XOB	23.5	33.5	258.51	230.01	1/3/2019	N	11.0	22.1	< 3.9	11	< 2	6.6	4.5	< 2	< 39	< 20	< 20	< 20	1.1	< 2	4.1	< 3.9	< 3.9	< 2
	23.5	33.5	258.51	230.01	1/3/2019	FD	10.0	20.6	< 3.7	10	6.1	4.5	< 1.8	< 37	< 18	< 18	< 18	1.2	< 1.8	< 1.8	3.5	< 3.7	< 3.7	< 1.8
43M-01-20XBR	68.3	78.3	257.78	184.48	12/13/2018	N	0.00	1.00	< 3.7	< 1.8	< 1.8	< 1.8	1	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	0.47	< 3.7	< 3.7	< 1.8
43M-01-20XOB	24	34	257.78	228.78	12/13/2018	N	9.90	29.2	3.5	6.4	< 1.8	3.3	16	< 1.8	< 35	< 18	< 18	< 18	1.5	< 1.8	6.8	< 3.5	< 3.5	< 1.8

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

MacPherson

Existing Monitoring Well Results

PFAS in Groundwater at MacPherson Well Locations

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
McPh-Sentinel	93	98	211.91	116.41	4/4/2019	N	70.0	126.0	44	26	< 1.8	13	42	0.58	< 37	< 18	< 18	< 18	3.9	< 1.8	17	< 3.7	< 3.7	< 1.8
MPP-93-02	0	0	212.72	212.72	1/15/2019	N	28.3	57.9	20	8.3	< 1.8	3.8	25	0.78	< 36	< 18	< 18	< 18	3	< 1.8	5.4	< 3.6	< 3.6	< 1.8
MPP-93-03	0	0	212.09	212.09	1/15/2019	N	30.0	59.6	19	11	< 1.7	5.7	22	1.9	< 35	< 17	< 17	< 17	2.2	< 1.7	4.6	< 3.5	< 3.5	< 1.7

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

AOC 69W

Existing Monitoring Well Results

PFAS in Groundwater at Monitoring Well Locations
AOC69W

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
ZWM-01-25X	4	14	222.58	213.58	12/11/2018	N	59.0	90.2	22	37	< 1.9	6.9	22	2.3	< 38	< 19	< 19	< 19	28	< 1.9	14	< 3.8	< 3.8	< 1.9
ZWM-95-15X	3	15.87	222.14	212.705	10/4/2019	N	12.2	22.2	8.8	3.4	< 2	2.2	6.7	1.1	< 40	< 20	< 20	< 20	1.3	< 2	2.9	< 4	< 4	< 2
ZWM-95-15X	3	15.87	222.14	212.705	5/18/2020	N	56.0	110	33	23	< 2	17	34	3.4	< 41	< 20	< 20	< 20	3.1	< 2	32	< 4.1	< 4.1	< 2
ZWM-95-17X	12.2	22.2	235.27	218.07	12/11/2018	N	83.0	131	56	27	< 1.9	7.6	40	0.85	< 38	< 19	< 19	< 19	10	< 1.9	12	< 3.8	< 3.8	< 1.9
	12.2	22.2	235.27	218.07	12/11/2018	FD	85.0	131	57	28	< 1.9	8.1	37	0.81	< 39	< 19	< 19	< 19	10	< 1.9	12	< 3.9	< 3.9	< 1.9
	12.2	24.76	235.27	216.79	10/4/2019	N	65.0	98.7	50	15	< 2.1	4.7	28	0.96	< 41	< 21	< 21	< 21	7.6	< 2.1	11	< 4.1	< 4.1	< 2.1
	12.2	24.76	235.27	216.79	5/18/2020	N	51.0	77.5	30	21	< 1.8	5.8	20	0.68	< 37	< 18	< 18	< 18	7.7	< 1.8	9.8	< 3.7	< 3.7	< 1.8
ZWM-95-18X	3	13	219.93	211.93	12/19/2018	N	56.1	153	50	6.1	< 1.8	0.86	95	1	< 36	< 18	< 18	< 18	7.3	< 1.8	0.72	< 3.6	< 3.6	< 1.8
ZWP-95-01X	10	12	223.63	212.63	12/11/2018	N	156	292	110	46	< 1.9	25	110	0.59	< 38	< 19	< 19	< 19	7.2	< 1.9	56	< 3.8	< 3.8	< 1.9

Notes:
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EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

Town of Ayer Sludge Landfill

Existing Monitoring Well Results

PFAS in Groundwater at
Existing Monitoring Wells
Town of Ayer Sludge Landfill

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
AYR-MW001	0	0	0	0	1/7/2019	N	2.3	2.3	1.7	0.6	< 1.9	< 1.9	< 1.9	< 1.9	< 38	< 19	< 19	< 19	< 1.9	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
AYR-MW002	0	0	0	0	1/7/2019	N	26	32.2	14	12	< 2	1.8	4.4	< 2	< 39	< 20	< 20	< 20	0.95	< 2	1.1	< 3.9	< 3.9	< 2
AYR-MW-003	0	0	0	0	1/7/2019	N	2.6	8.7	< 3.8	2.6	< 1.9	0.7	5.4	< 1.9	< 38	< 19	< 19	< 19	1.6	< 1.9	0.52	< 3.8	< 3.8	< 1.9
AYR-MW-004	0	0	0	0	1/7/2019	N	1.7	1.7	< 3.6	1.7	< 1.8	< 1.8	< 1.8	< 1.8	< 36	< 18	< 18	< 18	< 1.8	< 1.8	0.43	< 3.6	< 3.6	< 1.8
	0	0	0	0	1/7/2019	FD	1.4	1.4	< 3.5	1.4	< 1.8	< 1.8	< 1.8	< 1.8	< 35	< 18	< 18	< 18	< 1.8	< 1.8	0.46	< 3.5	< 3.5	< 1.8

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

Town of Ayer Waste-Water Treatment Plant Effluent Results

PFAS in Groundwater at Ayer Waste Water Treatment Plant Effluent

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
AYR-WWTP	0	0	230	230	1/7/2019	N	19.2	32.8	8.2	11	< 1.8	7.9	5.1	0.64	< 37	< 18	< 18	< 18	3.1	< 1.8	18	< 3.7	< 3.7	< 1.8

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

Shepley's Hill Landfill

Existing Monitoring Well Results

PFAS in Groundwater at Monitoring Well Locations
Shepley's Hill Landfill

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
EPA-PZ-2012-2A	18.14	23.14	219.72	199.08	11/13/2018	N	21.5	28.0	12	9.5	< 1.9	2.8	2.6	1.1	< 37	< 19	< 19	< 19	0.9	< 1.9	1.4	< 3.7	< 3.7	< 1.9
EPA-PZ-2012-2B	73.16	78.16	219.76	144.10	11/13/2018	N	99.0	214	79	20	< 1.9	4.5	110	0.77	< 37	< 19	< 19	< 19	4.1	< 1.9	16	< 3.7	< 3.7	< 1.9
EPA-PZ-2012-3A	19.09	24.09	219.2	197.61	11/14/2018	N	15.2	21.2	6.4	8.8	< 1.9	2.9	2.6	0.52	< 37	< 19	< 19	< 19	1	< 1.9	4.3	< 3.7	< 3.7	< 1.9
EPA-PZ-2012-3B	68.7	73.7	219.25	148.05	11/14/2018	N	98.0	214	74	24	< 1.9	5.3	110	0.64	< 39	< 19	< 19	< 19	4.2	< 1.9	20	< 3.9	< 3.9	< 1.9
N1-P1	65	70	227.78	160.28	11/14/2019	N	31.0	50.8	17	14	< 1.9	4	15	0.79	< 37	< 19	< 19	< 19	1.8	< 1.9	5.7	< 3.7	< 3.7	< 1.9
N1-P2	40	45	227.78	185.28	11/14/2019	N	97.0	184	78	19	< 1.8	4.5	81	1.4	< 36	< 18	< 18	< 18	3.8	< 1.8	13	< 3.6	< 3.6	< 1.8
N2-P1	35	40	220.55	183.05	12/6/2018	N	127	264	99	28	< 1.8	5.8	130	1.2	< 36	< 18	< 18	< 18	6.7	< 1.8	21	< 3.6	< 3.6	< 1.8
	35	40	220.55	183.05	11/4/2019	N	95.0	174	77	18	< 2	3.7	74	1.1	< 40	< 20	< 20	< 20	3.3	< 2	13	< 4	< 4	< 2
	35	40	220.55	183.05	5/5/2020	N	133	261	110	23	< 1.9	6.6	120	1.4	16	< 19	< 19	< 19	5.9	< 1.9	23	< 3.8	< 3.8	< 1.9
N2-P2	4	9	220.55	214.05	11/14/2019	N	16.8	29.8	5.8	11	< 1.8	5.4	6.3	1.3	< 36	< 18	< 18	< 18	1.7	< 1.8	7.6	< 3.6	< 3.6	< 1.8
N3-P1	32	35	218.81	185.31	11/15/2019	N	36.0	93.8	17	19	< 1.8	3.8	54	< 1.8	< 36	< 18	< 18	< 18	7.7	< 1.8	12	< 3.6	< 3.6	< 1.8
N3-P2	4	9	218.81	212.31	11/15/2019	N	8.10	11.4	2.8	5.3	< 1.8	1.7	0.93	0.7	< 35	< 18	< 18	< 18	< 1.8	< 1.8	0.79	< 3.5	< 3.5	< 1.8
N6-P1	85.5	87.5	256.06	169.56	1/15/2019	N	52.0	126	30	22	< 1.8	7.6	66	0.88	< 36	< 18	< 18	< 18	8.1	< 1.8	23	< 3.6	< 3.6	< 1.8
N7-P1	66	68	253.18	186.18	12/20/2018	N	17.4	40.4	5.4	12	< 1.9	7	15	0.99	< 39	< 19	< 19	< 19	10	< 1.9	25	< 3.9	< 3.9	< 1.9
N7-P2	29	34	253.18	221.68	12/20/2018	N	75.0	232	49	26	< 1.9	5.6	150	0.9	< 39	< 19	< 19	< 19	10	< 1.9	17	< 3.9	< 3.9	< 1.9
	29	34	253.18	221.68	11/7/2019	N	77.0	194	47	30	< 1.9	6.1	110	0.98	< 39	< 19	< 19	< 19	9	0.76	19	< 3.9	2.3	5
	29	34	253.18	221.68	5/5/2020	N	170	275	150	20	< 2	6.1	98	1.1	< 40	< 20	< 20	< 20	9.2	< 2	16	< 4	< 4	< 2
SHL-12	15	30	247.22	224.72	11/26/2018	N	92.0	353	42	50	< 1.7	11	250	< 1.7	< 34	< 17	< 17	< 17	14	< 1.7	21	< 3.4	< 3.4	< 1.7
	15	30	247.22	224.72	11/7/2019	N	118	287	94	24	< 1.9	8.5	160	< 1.9	< 38	< 19	< 19	< 19	14	< 1.9	22	< 3.8	< 3.8	< 1.9
	15	30	247.22	224.72	5/18/2020	N	85.0	174	66	19	< 2.2	7	82	< 2.2	< 45	< 22	< 22	< 22	11	< 2.2	18	< 4.5	< 4.5	< 2.2
SHL-15	14	24	259.02	240.02	11/12/2018	N	29.0	52.9	14	15	< 2	9.6	11	3.3	< 40	< 20	< 20	< 20	3.4	< 2	12	< 4	< 4	< 2
SHL-17	6	16	231.88	220.88	12/10/2018	N	3.80	6.77	2	1.8	1.1	1.1	< 1.9	0.77	< 39	< 19	< 19	< 19	< 1.9	< 1.9	2.1	< 3.9	< 3.9	0.69
SHL-20	39	49	234.72	190.72	11/11/2019	N	91.0	174	76	15	0.65	3.9	77	1.3	< 38	< 19	< 19	< 19	3	< 1.9	12	< 3.8	< 3.8	< 1.9
SHL-25	23.5	33.5	256.28	227.78	12/10/2018	N	13.0	35.5	< 3.8	13	< 1.9	7.5	15	< 1.9	< 38	< 19	< 19	< 19	10	< 1.9	10	< 3.8	< 3.8	< 1.9
SHL-3	24	34	245.80	216.80	11/15/2019	N	7.20	12.6	2.2	5	< 1.8	1.4	3.5	0.51	< 36	< 18	< 18	< 18	0.53	< 1.8	1.3	< 3.6	< 3.6	< 1.8
SHL-4	3	13	226.08	218.08	11/14/2018	N	10.6	16.3	3.7	6.9	< 1.9	2.3	3.4	< 1.9	< 39	< 19	< 19	< 19	1.3	< 1.9	3	< 3.9	< 3.9	< 1.9
SHL-5/WT-5	0	0	216.90	216.90	11/14/2018	N	14.2	19.7	7.7	6.5	< 1.9	2.1	1.7	1.7	< 38	< 19	< 19	< 19	0.89	< 1.9	2.1	< 3.8	< 3.8	< 1.9
SHL-8D	68	70	218.83	149.83	9/30/2019	N	6.50	14.0	1.7	4.8	< 1.7	2.5	5	< 1.7	< 34	< 17	< 17	< 17	1.3	< 1.7	5.2	< 3.4	< 3.4	< 1.7
SHM-05-40X	32	34	223.48	190.48	11/26/2018	N	60.0	120	30	30	< 1.7	6.9	53	0.5	< 35	< 17	< 17	< 17	3.5	< 1.7	18	< 3.5	< 3.5	< 1.7
	32	34	223.48	190.48	11/26/2018	FD	58.0	120	29	29	< 1.8	6.4	56	< 1.8	< 36	< 18	< 18	< 18	3.4	< 1.8	18	< 3.6	< 3.6	< 1.8
SHM-05-41A	42	44	222.72	179.72	11/16/2018	N	14.1	18.8	4.1	10	< 1.9	1.9	2.8	< 1.9	< 37	< 19	< 19	< 19	0.52	< 1.9	1.4	< 3.7	< 3.7	< 1.9
SHM-05-41B	62	64	222.50	159.50	11/16/2018	N	37.0	75.1	22	15	< 1.9	3.1	35	< 1.9	< 37	< 19	< 19	< 19	2.3	< 1.9	7.7	< 3.7	< 3.7	< 1.9
SHM-05-41C	88	93	222.91	132.41	11/8/2019	N	10.0	18.6	2.8	7.2	< 1.9	2.9	5.7	< 1.9	< 38	< 19	< 19	< 19	0.54	< 1.9	5.2	< 3.8	< 3.8	< 1.9
SHM-05-42A	40	42	213.65	172.65	11/15/2018	N	5.00	9.43	1.4	3.6	< 1.9	0.63	3.8	< 1.9	< 38	< 19	< 19	< 19	0.89	< 1.9	1.4	< 3.8	< 3.8	< 1.9
SHM-05-42B	70	72	213.65	142.65	11/15/2018	N	61.0	130	35	26	< 1.9	6.3	62	1	< 39	< 19	< 19	< 19	4.1	< 1.9	20	< 3.9	< 3.9	< 1.9
SHM-07-03	25	35	227.96	197.96	11/19/2018	N	9.60	13.9	2.9	6.7	< 2	1.8	1.5	1	< 40	< 20	< 20	< 20	2.7	< 2	1.6	< 4	< 4	< 2
SHM-10-03	58.5	68.5	229.77	166.27	11/28/2018	N	36.0	69.0	16	20	< 1.7	4	29	< 1.7	< 35	< 17	< 17	< 17	5.2	< 1.7	12	< 3.5	< 3.5	< 1.7
SHM-10-06	69.5	79.5	230.03	155.53	11/12/2018	N	80.0	179	57	23	< 1.9	5.6	93	0.6	< 38	< 19	< 19	< 19	3.7	< 1.9	16	< 3.8	< 3.8	< 1.9
SHM-10-10	56	66	215.40	154.40	11/19/2018	N	47.0	86.7	18	29	< 1.9	7.7	32	< 1.9	< 38	< 19	< 19	< 19	2.9	< 1.9	15	< 3.8	< 3.8	< 1.9
SHM-10-11	50	60	261.16	206.16	11/9/2018	N	37.0	103	22	15	< 1.9	5.9	60	0.56	< 39	< 19	< 19	< 19	5.5	< 1.9	16	< 3.9	< 3.9	< 1.9
SHM-10-16	75	85	216.72	136.72	11/15/2018	N	89.0	179	53	36	< 2.1	9.1	81	< 2.1	< 42	< 21	< 21	< 21	5.1	< 2.1	29	< 4.2	< 4.2	< 2.1
SHM-11-06	25	35	233.33	203.33	11/12/2018	N	76.0	181	58	18	< 2	4.2	100	1.1	< 39	< 20	< 20	< 20	3.4	< 2	10	< 3.9	< 3.9	< 2
SHM-13-03	42	52	209.91	162.91	11/19/2018	N	62.0	110	26	36	< 2.1	8.9	39	< 2.1	< 42	< 21	< 21	< 21	3.4	< 2.1	22	< 4.2	< 4.2	< 2.1
SHM-13-04	20	30	227.34	202.34	11/13/2018	N	7.60	12.2	3.3	4.3	< 2	1.3	3.3	< 2	< 39	< 20	< 20	< 20	2.1	< 2	1.8	< 3.9	< 3.9	< 2
SHM-13-05	75	85	225.39	145.39	11/12/2019	N	9.30	15.2	5.4	3.9	0.68	1.5	3.7	< 1.9	< 38	< 19	< 19	< 19	0.96	< 1.9	3.5	< 3.8	< 3.8	< 1.9
SHM-13-08	55	65	228.19	168.19	11/19/2018	N	21.7	36.1	9.7	12	< 2	3.4	11	< 2	< 40	< 20	< 20	< 20	1.4	< 2	6.2	< 4	< 4	< 2
SHM-13-15	50	60	205.98	150.98	11/15/2018	N	23.0	41.9	11	12	0.63	3.3	15	< 2	< 40	< 20	< 20	< 20	2.1	< 2	8.3	< 4	< 4	< 2
SHM-93-01A	15.5	25.5	240.68	220.18	11/13/2019	N	17.9	24.3	3.9	14	< 1.9	2.6	2.9	0.91	< 38	< 19	< 19	< 19	1.4	< 1.9	2.6	< 3.8	< 3.8	< 1.9
SHM-93-10D	0	0	245.51	245.51	11/14/2019	N	63.0	143	47	16	< 1.8	2.9	77	0.52	< 36	< 18	< 18	< 18	9.1	< 1.8	8.6	< 3.6	< 3.6	< 1.8
SHM-93-18B	78.5	88.5	235.21	151.71	11/13/2019	N	120	190	110	9.5	< 1.8	2.7	67	0.81	< 36	< 18	< 18	< 18	3.9	< 1.8	11	< 3.6	< 3.6	< 1.8
SHM-93-24A	13.2	23.2	235.39	217.19	11/26/2018	N	30.0	58.9	5	25	< 1.9	14	14	0.85	< 38	< 19	< 19	< 19	4.9	< 1.9	17	< 3.8	< 3.8	< 1.9
SHM-96-5B	80	90	217.38	132.38	11/26/2018	N	73.0	144	40	33	0.77	9.3	58	2.6	< 37	< 18	< 18	< 18	4.2	< 1.8	22	< 3.7	< 3.7	< 1.8
	80	90	217.38	132.38	11/26/2018	FD	75.0	147	42	33	0.76	9.7	59	2.5	< 39	< 20	< 20	< 20	4.6	< 2	22	< 3.9	< 3.9	< 2
	80	90	217.38	132.38	11/7/2019	N	78.0	154	49	29	0.54	8.6	65	2.3	< 38	< 19	< 19	< 19	4.3	< 1.9	21	< 3.8	< 3.8	< 1.9
	80	90	217.38	132.38	11/7/2019	FD	77.0	149	48	29	0.57	8.1	61	2.1	< 38	< 19	< 19	< 19	4.1	< 1.9	20	< 3.8	< 3.8	< 1.9
	80	90	217.38	132.38	5/6/2020	N	88.0	175	58	30	0.85	9.1	75	2.3	< 39	< 19	< 19	< 19	5.2	< 1.9	22	< 3.9	< 3.9	< 1.9
	80	90	217.38	132.38	5/6/2020	FD	83.0	165	55	28	< 1.9	8.8	71	2.5	< 38	< 19	< 19	< 19	4.7	< 1.9	24	< 3.8	< 3.8	< 1.9
SHM-96-5C	50	60	217.39	162.39	11/20/2018	N	38.0	68.6	26	12	< 1.9	3.3	26	1.3	< 39	< 19	< 19	< 19	1.7	< 1.9	7	< 3.9	< 3.9	< 1.9
SHM-99-32X	72	82	219.12	142.12	9/30/2019	N	19.3	31.9	7.3	12	< 1.7	1.4	10	1.2	< 34	< 17	< 17	< 17	1.7	< 1.7	3.7	< 3.4	< 3.4	< 1.7
SHP-01-38B	18	23	218.88	198.38	12/6/2018	N	64.0	110	50	14	< 1.8	2.9	42	1	< 36	< 18	< 18	< 18	2.3	< 1.8	7.5	< 3.6	< 3.6	< 1.8
	18	23	218.88	198.38	12/6/2018	FD	62.0	103	47	15	< 1.8	3.3	37	0.86	< 37	< 18	< 18	< 18	2.3	< 1.8	7.7	< 3.7	< 3.7	< 1.8
SHP-05-43	50.5	60.5	258.38	202.88	1/11/2019	N	92.0	160	69	23	< 1.8	7.7	58	2	< 37	< 18	< 18	< 18	3.1	< 1.8	33	< 3.7	< 3.7	< 1.8
SHP-05-44	51	61	255.56	199.56	1/15/2019	N	32.3	80.9	23	9.3	< 1.8	3.6	45	< 1.8	< 36	< 18	< 18	< 18	2.4	< 1.8	10	< 3.6	< 3.6	< 1.8
SHP-05-46A	20	25	226.31	203.81	12/10/2018	N	31.0	53.2	11	20	< 1.9	5.2	17	< 1.9	< 38	< 19	< 19	< 19	2.3	< 1.9	13	< 3.8	< 3.8	< 1.9
	20	25	226.31	203.81	12/10/2018	FD	34.0	56.4	11	23	< 1.9	5.4	17	< 1.9	< 39	< 19	< 19	< 19	2.4	< 1.9	13	< 3.9	< 3.9	< 1.9
SHP-05-46B	65	75	226.03	156.03	12/10/2018	N	79.0	153	55	24	< 2	5	68	0.93	< 40	< 20	< 20	< 20	2.9	< 2	15	< 4	< 4	< 2

PFAS in Groundwater at Monitoring Well Locations
Shepley's Hill Landfill

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
SHP-2016-06A	81	86	240.05	156.55	11/9/2018	N	0.570	1.87	< 3.8	0.57	< 1.9	0.73	0.57	< 1.9	< 38	< 19	< 19	< 19	< 1.9	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
SHP-2016-06B	102	112	240.05	133.05	11/7/2018	N	0.00	0.00	< 3.8	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	18	< 19	< 19	< 19	< 1.9	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
SHP-2016-06C	123	133	240.05	112.05	11/7/2018	N	0.00	0.00	< 3.8	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 38	< 19	< 19	< 19	< 1.9	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
SHP-2016-1A	13	23	224.69	206.69	11/13/2018	N	7.60	11.0	3.1	4.5	< 1.9	1.3	2.1	< 1.9	< 38	< 19	< 19	< 19	3.6	< 1.9	0.89	< 3.8	< 3.8	< 1.9
SHP-2016-1B	75	85	224.69	144.69	11/13/2018	N	18.7	29.1	11	7.7	< 1.9	2.9	6.9	0.6	< 39	< 19	< 19	< 19	1.6	< 1.9	4.1	< 3.9	< 3.9	< 1.9
SHP-2016-2A	20	25	223.73	201.23	11/15/2018	N	2.20	3.70	< 3.8	2.2	< 1.9	< 1.9	1.5	< 1.9	< 38	< 19	< 19	< 19	< 1.9	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
SHP-2016-2B	80	85	223.73	141.23	11/15/2018	N	67.0	133	39	28	< 1.9	7.2	58	0.66	< 38	< 19	< 19	< 19	3.8	< 1.9	19	< 3.8	< 3.8	< 1.9
SHP-99-33A	10.5	15.5	221.06	208.06	12/10/2018	N	18.9	30.7	4.9	14	< 1.9	5.2	5.1	1.5	< 38	< 19	< 19	< 19	1.3	< 1.9	6.2	< 3.8	< 3.8	< 1.9
SHP-99-33B	74.5	79.5	221.16	144.16	12/6/2018	N	83.0	159	39	44	< 1.9	10	65	0.53	< 38	< 19	< 19	< 19	4.8	< 1.9	29	< 3.8	< 3.8	< 1.9
	74.5	79.5	221.16	144.16	11/14/2019	N	77.0	157	48	29	< 1.8	7.2	72	0.57	< 36	< 18	< 18	< 18	3.9	< 1.8	21	< 3.6	< 3.6	< 1.8
	74.5	79.5	221.16	144.16	5/19/2020	N	89.0	167	55	34	< 1.9	7.7	70	< 1.9	< 38	< 19	< 19	< 19	4.6	< 1.9	26	< 3.8	< 3.8	< 1.9

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

Devens Car Wash Supply Well Results

PFAS in Groundwater at Devens Car Wash Supply Well Location

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
A2-IG1	0	0	0	0	09/12/19	N	12.6	28.7	5	7.6	< 1.9	3.3	12	0.77	< 39	< 19	< 19	< 19	1.4	< 1.9	4.6	< 3.9	< 3.9	< 1.9

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

H-2

PFAS in Groundwater at Vertical Profile Locations

AOC 32/43A

Vertical Profile Results

PFAS in Groundwater at Vertical Profile Locations
AOC 32/43A

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
32VP-19-01	17	21	240.96	221.96	5/14/2019	N	2880	4300	2800	83	< 1.9	12	1400	1	< 38	< 19	< 19	< 19	38	< 1.9	150	< 3.8	< 3.8	< 1.9
	27	31	240.96	211.96	5/14/2019	N	1430	1640	1400	27	< 1.8	15	200	1.4	< 37	< 18	< 18	< 18	17	< 1.8	79	< 3.7	< 3.7	< 1.8
	37	41	240.96	201.96	5/14/2019	N	165	239	150	15	0.78	9.3	63	1.4	< 37	< 18	< 18	< 18	7	< 1.8	25	< 3.7	< 3.7	< 1.8
	47	51	240.96	191.96	5/14/2019	N	24.0	49.5	11	13	0.68	6.6	17	1.2	< 37	< 18	< 18	< 18	4.8	< 1.8	15	< 3.7	< 3.7	< 1.8
	57	61	240.96	181.96	5/15/2019	N	5.80	16.8	4.3	1.5	< 1.8	< 1.8	11	< 1.8	< 37	< 18	< 18	< 18	1.2	< 1.8	0.79	< 3.7	< 3.7	< 1.8
32VP-19-02	12	16	240.96	226.96	6/18/2019	N	42.0	140	15	27	< 1.9	1.1	96	0.49	< 38	< 19	< 19	< 19	2.5	< 1.9	4.3	< 3.8	< 3.8	< 1.9
	22	26	240.96	216.96	6/19/2019	N	3.30	4.07	2.1	1.2	0.77	< 1.9	< 1.9	< 1.9	< 39	< 19	< 19	< 19	0.61	< 1.9	1.2	< 3.9	< 3.9	< 1.9
	32	36	240.96	206.96	6/19/2019	N	108	266	97	11	1.3	4.7	150	1.6	< 40	< 20	< 20	< 20	10	< 2	15	< 4	< 4	0.79
	42	46	240.96	196.96	6/19/2019	N	29.9	48.2	20	9.9	0.57	7.5	9.3	0.93	< 39	< 19	< 19	< 19	18	< 1.9	21	< 3.9	< 3.9	< 1.9
	42	46	240.96	196.96	6/19/2019	FD	29.7	48.4	20	9.7	0.69	7.5	9.5	1	< 39	< 19	< 19	< 19	19	< 1.9	22	< 3.9	< 3.9	< 1.9
	52	56	240.96	186.96	6/19/2019	N	15.7	32.9	6.8	8.9	< 1.9	7.8	8.7	0.66	< 37	< 19	< 19	< 19	21	< 1.9	24	< 3.7	< 3.7	< 1.9
	62	66	240.96	176.96	6/19/2019	N	19.3	46.7	8.3	11	< 1.9	8.3	18	1.1	< 37	< 19	< 19	< 19	12	< 1.9	25	< 3.7	< 3.7	< 1.9
	66.5	70.5	240.96	172.46	6/20/2019	N	19.7	44.4	6.7	13	< 1.9	6	18	0.7	< 38	< 19	< 19	< 19	5.2	< 1.9	13	< 3.8	< 3.8	< 1.9
32VP-19-03	27	31	256.86	227.86	3/15/2019	N	42.2	102	8.2	34	1.1	6.9	47	5	< 38	< 19	< 19	< 19	4.4	< 1.9	9.6	< 3.8	< 3.8	< 1.9
	37	41	256.86	217.86	3/15/2019	N	25.3	39.9	18	7.3	4.9	3.7	3.8	2.2	< 36	< 18	< 18	< 18	2.8	< 1.8	6	< 3.6	< 3.6	< 1.8
	47	51	256.86	207.86	3/15/2019	N	20.0	33.0	12	8	3	3.5	4.7	1.8	< 38	< 19	< 19	< 19	2.7	< 1.9	6.1	< 3.8	< 3.8	< 1.9
32VP-19-04	17	21	244.67	225.67	2/5/2019	N	10	37.7	< 3.6	10	< 1.8	9.7	18	< 1.8	< 36	< 18	< 18	< 18	6.9	< 1.8	15	< 3.6	< 3.6	< 1.8
	27	31	244.67	215.67	2/5/2019	N	52.0	75.4	35	17	1.8	5.4	14	2.2	< 36	< 18	< 18	< 18	2.3	< 1.8	8.7	< 3.6	< 3.6	< 1.8
	27	31	244.67	215.67	2/5/2019	FD	51.0	74.6	35	16	2.2	5.3	14	2.1	< 36	< 18	< 18	< 18	2.5	< 1.8	9	< 3.6	< 3.6	< 1.8
	37	41	244.67	205.67	2/5/2019	N	46.0	66.9	25	21	0.79	5.4	12	2.7	< 36	< 18	< 18	< 18	2.4	< 1.8	7.1	< 3.6	< 3.6	< 1.8
	47	51	244.67	195.67	2/5/2019	N	12.3	17.1	6.8	5.5	< 1.8	1.9	1.5	1.4	< 36	< 18	< 18	< 18	0.46	< 1.8	1.7	< 3.6	< 3.6	< 1.8
	57	61	244.67	185.67	2/5/2019	N	10.7	16.9	4	6.7	< 1.8	1.9	3.1	1.2	< 36	< 18	< 18	< 18	0.82	< 1.8	2.5	< 3.6	< 3.6	< 1.8
	67	71	244.67	175.67	2/5/2019	N	7.90	11.3	3.9	4	< 1.8	1.2	1.2	0.98	< 36	< 18	< 18	< 18	0.41	< 1.8	1.2	< 3.6	< 3.6	< 1.8
	77	81	244.67	165.67	2/6/2019	N	13.2	18.2	5.5	7.7	< 1.8	1.7	3.3	< 1.8	< 36	< 18	< 18	< 18	0.56	< 1.8	2.1	< 3.6	< 3.6	< 1.8
	87	91	244.67	155.67	2/6/2019	N	12.6	17.2	6	6.6	< 1.8	1.8	1.4	1.4	< 36	< 18	< 18	< 18	< 1.8	< 1.8	1.7	< 3.6	< 3.6	< 1.8
	97	101	244.67	145.67	2/6/2019	N	18.1	23.5	9.2	8.9	< 2	1.9	3.5	< 2	< 40	< 20	< 20	< 20	0.62	< 2	2.3	< 4	< 4	< 2
32VP-19-05	22	26	241.11	217.11	2/5/2019	N	108	154	14	94	< 2	28	17	0.6	< 40	< 20	< 20	< 20	2.4	< 2	51	< 4	< 4	< 2
	32	36	241.11	207.11	2/5/2019	N	21.4	31.5	9.4	12	< 1.9	3.2	6.1	0.8	< 38	< 19	< 19	< 19	1.1	< 1.9	4.1	< 3.8	< 3.8	< 1.9
	42	46	241.11	197.11	2/5/2019	N	29.0	41.8	18	11	0.88	3.7	5.9	2.3	< 39	< 20	< 20	< 20	1.3	< 2	4.5	< 3.9	< 3.9	< 2
	52	56	241.11	187.11	2/5/2019	N	22.0	34.0	9	13	< 1.7	3.3	7.4	1.3	< 34	< 17	< 17	< 17	1.6	< 1.7	4.6	< 3.4	< 3.4	< 1.7
	52	56	241.11	187.11	2/5/2019	FD	21.3	32.9	8.3	13	< 1.7	3.2	7.3	1.1	< 34	< 17	< 17	< 17	1.6	< 1.7	4.3	< 3.4	< 3.4	< 1.7
	62	66	241.11	177.11	2/5/2019	N	28.6	46.7	7.6	21	< 1.9	7.2	10	0.9	< 37	< 19	< 19	< 19	2.3	< 1.9	8.5	< 3.7	< 3.7	< 1.9
	72	76	241.11	167.11	2/5/2019	N	16.4	27.5	6.5	9.9	< 2.1	3.6	6	1.5	< 43	< 21	< 21	< 21	1.1	< 2.1	3.7	< 4.3	< 4.3	< 2.1
	82	86	241.11	157.11	2/6/2019	N	12.0	24.1	4.8	7.2	3.4	2.2	2.9	3.6	< 37	< 19	< 19	< 19	0.7	0.86	1.9	< 3.7	< 3.7	1.6
	92	96	241.11	147.11	2/6/2019	N	14.3	21.3	7.6	6.7	< 1.8	2.1	2.9	2	< 36	< 18	< 18	< 18	0.71	< 1.8	2.8	< 3.6	< 3.6	< 1.8
	102	106	241.11	137.11	2/6/2019	N	10.9	17.4	4.9	6	< 2.2	1.4	4.5	0.58	< 43	< 22	< 22	< 22	0.74	< 2.2	2.2	< 4.3	< 4.3	< 2.2
32VP-19-06	17	21	229.01	210.01	2/26/2019	N	14.0	23.0	6.1	7.9	0.48	3.1	3.2	2.2	< 38	< 19	< 19	< 19	< 1.9	< 1.9	5.5	< 3.8	< 3.8	< 1.9
	27	31	229.01	200.01	2/26/2019	N	18.1	27.4	8.5	9.6	< 1.9	4.4	2.9	2	< 39	< 19	< 19	< 19	2.1	< 1.9	7.7	< 3.9	< 3.9	< 1.9
	37	41	229.01	190.01	2/26/2019	N	20.6	29.2	11	9.6	< 1.9	3.8	3.1	1.7	< 38	< 19	< 19	< 19	2	< 1.9	7.2	< 3.8	< 3.8	< 1.9
	47	51	229.01	180.01	2/26/2019	N	14.8	23.9	7.6	7.2	< 1.9	2.7	4.1	2.3	< 39	< 19	< 19	< 19	1.3	< 1.9	4.3	< 3.9	< 3.9	< 1.9
	57	61	229.01	170.01	2/27/2019	N	16.4	31.0	4.4	12	< 1.8	6	6.1	2.5	< 37	< 18	< 18	< 18	5.5	< 1.8	9.9	< 3.7	< 3.7	< 1.8
	57	61	229.01	170.01	2/27/2019	FD	16.6	31.0	4.6	12	< 1.8	10	6	2.3	< 36	< 18	< 18	< 18	6	< 1.8	6.1	< 3.6	< 3.6	< 1.8
	67	71	229.01	160.01	2/27/2019	N	10.2	20.5	3.7	6.5	< 1.9	4.5	5	0.77	< 38	< 19	< 19	< 19	12	< 1.9	10	< 3.8	< 3.8	< 1.9
	77	81	229.01	150.01	2/27/2019	N	18.7	31.8	8.7	10	1.1	5.4	2.9	3.7	< 37	< 18	< 18	< 18	2.7	< 1.8	9.8	< 3.7	< 3.7	< 1.8
	87	91	229.01	140.01	2/27/2019	N	3.20	10.6	2	1.2	< 1.8	< 1.8	7.4	< 1.8	< 36	< 18	< 18	< 18	0.97	< 1.8	0.58	< 3.6	< 3.6	< 1.8
32VP-19-07	32	36	234.77	200.77	2/26/2019	N	10.5	13.3	7.8	2.7	< 2.3	0.93	1.2	0.64	< 47	< 23	< 23	< 23	0.65	< 2.3	0.99	< 4.7	< 4.7	< 2.3
	42	46	234.77	190.77	2/26/2019	N	21.3	24.3	18	3.3	< 1.9	0.84	1.5	0.69	< 38	< 19	< 19	< 19	0.75	< 1.9	1.1	< 3.8	< 3.8	< 1.9
	52	56	234.77	180.77	2/26/2019	N	31.5	43.5	23	8.5	< 1.8	2.4	7.2	2.4	< 37	< 18	< 18	< 18	1	< 1.8	3.1	< 3.7	< 3.7	< 1.8
	62	66	234.77	170.77	2/26/2019	N	13.4	23.3	7.1	6.3	1	4.5	2.4	2	< 48	< 24	< 24	< 24	2.9	< 2.4	7.5	< 4.8	< 4.8	< 2.4
	72	76	234.77	160.77	2/27/2019	N	15.1	26.6	7.3	7.8	1.1	4.9	3.5	2	< 36	< 18	< 18	< 18	3.1	< 1.8	11	< 3.6	< 3.6	< 1.8
	82	86	234.77	150.77	2/27/2019	N	22.0	35.0	14	8	1.1	4	5	2.9	< 37	< 19	< 19	< 19	2.4	< 1.9	9.8	< 3.7	< 3.7	< 1.9
	82	86	234.77	150.77	2/27/2019	FD	22.5	35.7	14	8.5	1.1	4.3	4.7	3.1	< 41	< 21	< 21	< 21	2.4	< 2.1	10	< 4.1	< 4.1	< 2.1
	92	96	234.77	140.77	2/27/2019	N	14.6	29.2	9.2	5.4	< 1.8	2.1	11	1.5	< 37	< 18	< 18	< 18	2.3	< 1.8	4.8	< 3.7	< 3.7	< 1.8
32VP-19-09	12	16	238.15	224.15	9/24/2019	N	127	149	95	32	0.72	6.4	13	1.9	< 38	< 19	5.5	< 19	3.1	< 1.9	11	< 3.8	< 3.8	< 1.9
	19	23	238.15	217.15	9/19/2019	N	11.7	15.6	6.9	4.8	< 1.9	2.1	1.8	< 1.9	< 37	< 19	< 19	< 19	< 1.9	< 1.9	4.2	< 3.7	< 3.7	< 1.9
	29	33	238.15	207.15	9/19/2019	N	32.2	40.5	23	9.2	< 1.9	2.8	2.8	2.7	< 37	< 19	< 19	< 19	1.2	< 1.9	5.3	< 3.7	< 3.7	< 1.9
	39	43	238.15	197.15	9/20/2019	N	13.8	19.2	8.4	5.4	< 1.9	2.3	1.4	1.7	< 37	< 19	< 19	< 19	0.75	< 1.9	3.9	< 3.7	< 3.7	< 1.9
	49	53	238.15	187.15	9/20/2019	N	223	329	220	3.1	3.4	1.1	100	1.1	< 36	< 18	< 18	< 18	3.9	< 1.8	2.4	< 3.6	< 3.6	0.96
	59	63	238.15	177.15	9/20/2019	N	75.0	163	63	12	0.64	6.5	79	1.8	< 40	< 20	< 20	< 20	5.8	< 2	18	< 4	< 4	< 2
	69	73	238.15	167.15	9/23/2019	N	84.0	187	71	13	< 1.9	6.6	95	1.2	< 37	< 19	< 19	< 19	6	< 1.9	14	< 3.7	< 3.7	< 1.9
	79	83	238.15	157.15	9/23/2019	N	9.10	18.1	6.2	2.9	< 1.8	0.88	8.1	< 1.8	< 37	< 18	< 18	< 18	1.2	< 1.8	2.4	< 3.7	< 3.7	< 1.8
	83.5	87.5	238.15	152.65	9/23/2019	N	6.70	14.6	4.4	2.3	< 1.8	0.67	7.2	< 1.8	< 36	< 18	< 18	< 18	1.1	< 1.8	2.3	< 3.6	< 3.6	< 1.8
32VP-19-10	9	13	235.86	224.86	9/16/2019	N	217	277	67	150	3.3	31	21	5.1	23	23	20	17	< 1.9	< 1.9	38	< 3.7	< 3.7	< 1.9
	19	23	235.86	214.86	9/16/2019	N	14.6	23.1	8.2	6.4	0.69	2.9	2.3	2.6	< 37	< 19	< 19	< 19	1.4	< 1.9	6.2	< 3.7	< 3.7	< 1.9
	29	33	235.86	204.86	9/16/2019	N	0.00	0.00	< 3.8	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 38	< 19	< 19	< 19	< 1.9	< 1.9	1.1	< 3.8	< 3.8	< 1.9
	39	43	235.86	194.86	9/17/2019	N	6.40	9.80	2.5	3.9	< 1.8	2.5	< 1.8	0.9	< 37	< 18	< 18	< 18	1.6	< 1.8	5.7	< 3.7	< 3.7	< 1.8
	49	53	235.86	184.86	9/17/2019	N	5.90	8.70	3	2.9	< 1.8	1.7	< 1.8	1.1	< 37	< 18	< 18	< 18	0.86	< 1.8	3.1	< 3.7	< 3.7	< 1.8
	59	63	235.86	174.86	9/17/2019	N	7.20	12.6	3.2	4	< 1.9	2.2	2	1.2	< 38	< 19	< 19	< 19	1.1	< 1.9	4.4	< 3.8	< 3.8	< 1.9
	69	73	235.86	164.86	9/17/2019	N	8.30	14.5	4.1	4.2	0.51	2.5	1.7	1.5	< 38	< 19	< 19	< 19	1	< 1.9	5.2	< 3.8	< 3.8	< 1.9
	79	83	235.86	154.86	9/18/2019	N	128	330	110	18	0.52	9.2	190	2	< 37	< 19	< 19	< 19	5.4	< 1.9	20	< 3.7	< 3.7	< 1.9

PFAS in Groundwater at Vertical Profile Locations
AOC 32/43A

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
	89	93	235.86	144.86	9/18/2019	N	8.60	17.9	5.9	2.7	< 1.8	0.61	8.7	< 1.8	< 37	< 18	< 18	< 18	0.65	< 1.8	1.5	< 3.7	< 3.7	< 1.8
	99	103	235.86	134.86	9/18/2019	N	14.3	35.3	7.9	6.4	< 1.9	2	19	< 1.9	< 39	< 19	< 19	< 19	1.5	< 1.9	4.8	< 3.9	< 3.9	< 1.9
	99	103	235.86	134.86	9/18/2019	FD	14.8	35.9	8.3	6.5	< 2	2.1	19	< 2	< 41	< 20	< 20	< 20	1.7	< 2	5	< 4.1	< 4.1	< 2
32VP-19-11	29	33	253.79	222.79	9/26/2019	N	32.0	56.7	21	11	2.1	6.7	13	2.9	< 36	< 18	< 18	< 18	3.6	< 1.8	15	< 3.6	< 3.6	< 1.8
	39	43	253.79	212.79	9/24/2019	N	14.4	23.4	7.5	6.9	< 1.8	3	6	< 1.8	< 37	< 18	< 18	< 18	1.2	< 1.8	3.5	< 3.7	< 3.7	< 1.8
	39	43	253.79	212.79	9/24/2019	FD	14.5	23.4	7.6	6.9	< 1.8	2.9	6	< 1.8	< 37	< 18	< 18	< 18	1.3	< 1.8	3.2	< 3.7	< 3.7	< 1.8
	49	53	253.79	202.79	9/24/2019	N	15.1	28.7	8.5	6.6	0.61	2.7	9.6	0.65	< 37	< 18	< 18	< 18	1.8	< 1.8	3.9	< 3.7	< 3.7	< 1.8
	59	63	253.79	192.79	9/25/2019	N	6.48	9.58	5.6	0.88	< 1.9	< 1.9	3.1	< 1.9	< 37	< 19	< 19	< 19	1.3	< 1.9	< 1.9	< 3.7	< 3.7	< 1.9
	69	73	253.79	182.79	9/25/2019	N	6.54	9.14	5.7	0.84	< 1.9	< 1.9	2.6	< 1.9	< 37	< 19	< 19	< 19	< 1.9	< 1.9	0.5	< 3.7	< 3.7	< 1.9
	79	83	253.79	172.79	9/25/2019	N	7.40	10.6	6.2	1.2	< 1.8	< 1.8	3.2	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	0.43	< 3.7	< 3.7	< 1.8
	89	93	253.79	162.79	9/26/2019	N	8.60	16.4	5.2	3.4	< 2.7	< 2.7	7.8	< 2.7	< 53	< 27	< 27	< 27	0.69	< 2.7	1.7	< 5.3	< 5.3	1.1
	99	103	253.79	152.79	9/26/2019	N	5.00	13.0	3.7	1.3	< 1.9	< 1.9	8	< 1.9	< 38	< 19	< 19	< 19	0.78	< 1.9	0.55	< 3.8	< 3.8	< 1.9
32VP-19-12	22	26	250.31	226.31	10/8/2019	N	449	534	8.6	440	< 1.9	67	17	0.9	< 38	< 19	< 19	< 19	7.5	< 1.9	39	< 3.8	< 3.8	< 1.9
	29	33	250.31	219.31	9/27/2019	N	14.5	32.4	5.2	9.3	< 1.8	4.2	12	1.7	< 37	< 18	< 18	< 18	2.7	< 1.8	7.1	< 3.7	< 3.7	< 1.8
	39	43	250.31	209.31	9/27/2019	N	13.5	21.6	5	8.5	< 1.9	2.9	4.5	0.71	< 37	< 19	< 19	< 19	1.2	< 1.9	5	< 3.7	< 3.7	< 1.9
	49	53	250.31	199.31	9/27/2019	N	15.6	24.9	6.5	9.1	0.58	3.2	4.8	0.69	< 37	< 19	< 19	< 19	1.3	< 1.9	4.2	< 3.7	< 3.7	< 1.9
	59	63	250.31	189.31	10/1/2019	N	16.3	27.5	5.3	11	0.81	3.5	5.5	1.4	< 38	< 19	< 19	< 19	1.3	< 1.9	5.2	< 3.8	< 3.8	< 1.9
	69	73	250.31	179.31	10/1/2019	N	16.5	29.8	5.5	11	1.3	3.7	7	1.3	< 37	< 19	< 19	< 19	1	< 1.9	4.3	< 3.7	< 3.7	< 1.9
	69	73	250.31	179.31	10/1/2019	FD	16.3	29.6	5.3	11	1.3	3.7	7	1.3	< 37	< 19	< 19	< 19	1.2	0.79	4.3	< 3.7	< 3.7	< 1.9
	79	83	250.31	169.31	10/1/2019	N	11.0	22.6	4.1	6.9	< 1.8	1.6	10	< 1.8	< 36	< 18	< 18	< 18	1.6	< 1.8	2	< 3.6	< 3.6	< 1.8
	89	93	250.31	159.31	10/1/2019	N	4.90	12.6	1.9	3	< 1.9	0.63	7.1	< 1.9	< 38	< 19	< 19	< 19	1.1	< 1.9	0.79	< 3.8	< 3.8	< 1.9
	99	103	250.31	149.31	10/2/2019	N	1.20	1.94	1.2	< 2	< 2	< 2	0.74	< 2	< 40	< 20	< 20	< 20	< 2	< 2	< 2	< 4	< 4	< 2
	109	113	250.31	139.31	10/2/2019	N	7.20	12.5	4.1	3.1	1.5	0.95	2.2	0.67	< 49	< 24	< 24	< 24	< 2.4	< 2.4	1.3	< 4.9	< 4.9	< 2.4
	119	123	250.31	129.31	10/3/2019	N	0.57	3.17	< 3.8	0.57	< 1.9	< 1.9	2.6	< 1.9	< 38	< 19	< 19	< 19	0.61	< 1.9	< 1.9	< 3.8	< 3.8	< 1.9
	128	132	250.31	120.31	10/8/2019	N	3.60	8.10	2.3	1.3	< 1.9	< 1.9	4.5	< 1.9	< 38	< 19	< 19	< 19	0.59	< 1.9	0.62	< 3.8	< 3.8	< 1.9
43AVP-19-01	37	41	258.97	219.97	4/23/2019	N	13.9	31.4	4.9	9	1.6	3.8	11	1.1	< 43	< 21	< 21	< 21	1.5	< 2.1	3.8	< 4.3	< 4.3	< 2.1
	47	51	258.97	209.97	4/23/2019	N	24.5	57.6	8.5	16	1.8	4.7	25	1.6	< 38	< 19	< 19	< 19	2.5	1.9	8.4	< 3.8	< 3.8	4.4
	57	61	258.97	199.97	4/23/2019	N	24.8	49.9	15	9.8	< 2	3.1	22	< 2	< 40	< 20	< 20	< 20	1.9	< 2	6	< 4	< 4	< 2
	67	71	258.97	189.97	4/23/2019	N	30.0	55.2	19	11	< 2.4	3.2	22	< 2.4	< 48	< 24	< 24	< 24	1.8	< 2.4	5.2	< 4.8	< 4.8	< 2.4
	75	79	258.97	181.97	4/24/2019	N	29.0	54.2	17	12	< 2.6	3.2	22	< 2.6	< 52	< 26	< 26	< 26	1.7	< 2.6	5	< 5.2	< 5.2	< 2.6
43AVP-19-02	32	36	259.49	225.49	5/10/2019	N	16.3	29.7	12	4.3	0.81	1.9	10	0.71	< 37	< 19	< 19	< 19	1.3	< 1.9	2.8	< 3.7	< 3.7	< 1.9
	42	46	259.49	215.49	5/10/2019	N	16.3	32.0	8	8.3	< 1.9	3	12	0.68	< 39	< 19	< 19	< 19	2.2	< 1.9	5	< 3.9	< 3.9	< 1.9
	52	56	259.49	205.49	5/10/2019	N	14.8	30.6	7.1	7.7	< 2.1	3	12	0.81	< 41	< 21	< 21	< 21	1.4	< 2.1	4.2	< 4.1	< 4.1	< 2.1
	62	66	259.49	195.49	5/10/2019	N	16.8	36.4	6.8	10	< 1.9	3.6	16	< 1.9	< 37	< 19	< 19	< 19	1.9	< 1.9	4.4	< 3.7	< 3.7	< 1.9
	72	76	259.49	185.49	5/13/2019	N	24.5	43.8	15	9.5	< 2.1	3.3	16	< 2.1	< 42	< 21	< 21	< 21	1.8	< 2.1	5.4	< 4.2	< 4.2	< 2.1
	78	82	259.49	179.49	5/13/2019	N	15.8	32.0	7	8.8	< 2.4	3.2	13	< 2.4	< 47	< 24	< 24	< 24	1.4	< 2.4	4.6	< 4.7	< 4.7	< 2.4
43AVP-19-03	27	31	259.8	230.8	3/29/2019	N	23.0	60.4	12	11	< 1.8	3.9	33	0.54	< 37	< 18	< 18	< 18	3.5	< 1.8	7.2	< 3.7	< 3.7	< 1.8
	37	41	259.8	220.8	3/29/2019	N	5.00	17.0	3	2	1.1	1.1	9.2	0.58	< 39	< 20	< 20	< 20	2.1	< 2	1.4	< 3.9	< 3.9	< 2
	47	51	259.8	210.8	3/29/2019	N	6.00	22.8	2.4	3.6	0.74	4.2	11	0.89	< 40	< 20	< 20	< 20	1.9	< 2	11	< 4	< 4	< 2
	47	51	259.8	210.8	3/29/2019	FD	5.80	23.9	2.5	3.3	0.87	4.2	12	1	< 38	< 19	< 19	< 19	1.8	< 1.9	10	< 3.8	< 3.8	< 1.9
	57	61	259.8	200.8	3/29/2019	N	8.30	24.4	4.5	3.8	< 2	3.1	13	< 2	< 40	< 20	< 20	< 20	2.1	< 2	11	< 4	< 4	< 2
43AVP-19-04	27	31	260.09	231.09	3/28/2019	N	14.1	28.5	5	9.1	0.94	3.7	8.8	1	< 37	< 19	< 19	< 19	0.96	< 1.9	4.3	< 3.7	< 3.7	< 1.9
	37	41	260.09	221.09	3/28/2019	N	6.40	13.2	3.3	3.1	0.85	2.4	2.6	0.93	< 37	< 18	< 18	< 18	1	< 1.8	4.8	< 3.7	< 3.7	0.95
	47	51	260.09	211.09	3/28/2019	N	12.8	21.7	9.4	3.4	1.3	2.6	3.6	1.4	< 37	< 18	< 18	< 18	1	< 1.8	2.8	< 3.7	< 3.7	< 1.8
	57	61	260.09	201.09	3/29/2019	N	20.4	43.4	11	9.4	< 2.1	3	20	< 2.1	< 42	< 21	< 21	< 21	2.2	< 2.1	5.3	< 4.2	< 4.2	< 2.1
	57	61	260.09	201.09	3/29/2019	FD	20.0	44.8	10	10	< 2.1	2.8	22	< 2.1	< 42	< 21	< 21	< 21	2.2	< 2.1	5.8	< 4.2	< 4.2	< 2.1
	66	70	260.09	192.09	3/29/2019	N	28.0	45.4	16	12	< 2.1	3.4	14	< 2.1	< 43	< 21	< 21	< 21	1.8	< 2.1	4.4	< 4.3	< 4.3	< 2.1

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

AOC 76

Vertical Profile Results

PFAS in Groundwater at Vertical Profile Locations
AOC 76

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
76VP-19-01	27	31	263.79	234.79	3/1/2019	N	23.0	46.4	11	12	< 1.8	5.6	17	0.78	< 37	< 18	< 18	< 18	4.5	< 1.8	9.7	< 3.7	< 3.7	< 1.8
	37	41	263.79	224.79	3/1/2019	N	28.0	50.4	16	12	< 1.8	4.9	17	0.51	< 37	< 18	< 18	< 18	4.9	< 1.8	9.6	< 3.7	< 3.7	< 1.8
	37	41	263.79	224.79	3/1/2019	FD	27.0	49.1	15	12	< 1.8	5.1	17	< 1.8	< 36	< 18	< 18	< 18	4.7	< 1.8	9.7	< 3.6	< 3.6	< 1.8
76VP-19-02	27	31	267.99	238.99	3/15/2019	N	19.9	40.0	7.9	12	< 1.8	4.5	15	0.58	< 36	< 18	< 18	< 18	3	< 1.8	7.2	< 3.6	< 3.6	< 1.8
	37	41	267.99	228.99	3/15/2019	N	49.0	76.0	32	17	0.68	5.6	19	1.7	< 37	< 18	< 18	< 18	4.7	< 1.8	11	< 3.7	< 3.7	< 1.8
	42	46	267.99	223.99	3/15/2019	N	46.0	72.4	29	17	< 1.8	5.8	19	1.6	< 37	< 18	< 18	< 18	4.7	< 1.8	9.5	< 3.7	< 3.7	< 1.8
76VP-19-03	17	21	256.17	237.17	2/6/2019	N	38.0	76.7	26	12	0.45	7.6	30	0.64	< 36	< 18	< 18	< 18	16	< 1.8	52	< 3.6	< 3.6	< 1.8
	27	31	256.17	227.17	2/7/2019	N	73.0	111	51	22	1	9.9	25	1.6	< 36	< 18	< 18	< 18	5.7	< 1.8	17	< 3.6	< 3.6	< 1.8
	37	41	256.17	217.17	2/7/2019	N	67.0	114	42	25	< 1.9	7.8	38	1.3	< 37	< 19	< 19	< 19	8.7	< 1.9	12	< 3.7	< 3.7	< 1.9
	47	51	256.17	207.17	2/7/2019	N	53.0	97.0	34	19	< 1.8	5.8	37	1.2	< 36	< 18	< 18	< 18	7.8	< 1.8	11	< 3.6	< 3.6	< 1.8
	57	61	256.17	197.17	2/7/2019	N	55.0	123	26	29	7.7	21	30	9.3	< 36	< 18	< 18	< 18	7.7	7.7	37	2.7	2.1	5.2
	61	65	256.17	193.17	2/7/2019	N	46.0	84.4	27	19	< 1.8	6.4	31	1	< 36	< 18	< 18	< 18	7.9	< 1.8	12	< 3.6	< 3.6	< 1.8
76VP-19-04	17	21	256.34	237.34	3/12/2019	N	640	1120	530	110	< 1.9	51	420	6.2	78	36	< 19	< 19	12	< 1.9	190	< 3.7	< 3.7	< 1.9
	27	31	256.34	227.34	3/12/2019	N	55.0	85.1	32	23	0.64	7.9	20	1.6	< 37	< 18	< 18	< 18	4.7	< 1.8	14	< 3.7	< 3.7	< 1.8
	37	41	256.34	217.34	3/12/2019	N	39.0	65.9	22	17	< 1.8	6.8	19	1.1	< 36	< 18	< 18	< 18	4.6	< 1.8	12	< 3.6	< 3.6	< 1.8
	47	51	256.34	207.34	3/13/2019	N	38.0	65.9	22	16	< 1.8	5.8	21	1.1	< 36	< 18	< 18	< 18	5.1	< 1.8	10	< 3.6	< 3.6	< 1.8
76VP-19-05	27	31	261.68	232.68	1/30/2019	N	40.0	63.0	27	13	0.96	4.6	16	1.4	< 34	< 17	< 17	< 17	4.7	< 1.7	9.8	< 3.4	< 3.4	< 1.7
	37	41	261.68	222.68	1/30/2019	N	50.0	81.7	30	20	< 1.8	7.2	23	1.5	< 36	< 18	< 18	< 18	5.8	< 1.8	12	< 3.6	< 3.6	< 1.8
	47	51	261.68	212.68	1/30/2019	N	58.0	96.7	39	19	< 1.8	6.4	31	1.3	< 36	< 18	< 18	< 18	7.8	< 1.8	11	< 3.6	< 3.6	< 1.8
	57	61	261.68	202.68	1/30/2019	N	48.0	86.8	30	18	< 1.8	6.7	31	1.1	< 37	< 18	< 18	< 18	8.1	< 1.8	11	< 3.7	< 3.7	< 1.8
	67	71	261.68	192.68	2/4/2019	N	45.0	86.9	24	21	1.3	13	25	2.6	< 36	< 18	< 18	< 18	7.3	1.2	24	< 3.6	< 3.6	1.2
	73	77	261.68	186.68	2/4/2019	N	42.0	71.0	26	16	< 1.8	5.9	22	1.1	< 36	< 18	< 18	< 18	6.5	< 1.8	10	< 3.6	< 3.6	< 1.8
76VP-19-06	12	16	253.91	239.91	3/13/2019	N	126	678	5.5	120	2.9	210	340	< 1.8	24	3	< 18	< 18	7.1	< 1.8	300	< 3.6	< 3.6	< 1.8
	22	26	253.91	229.91	3/13/2019	N	69.0	364	43	26	0.47	33	260	1.7	< 37	< 19	< 19	< 19	130	< 1.9	180	< 3.7	< 3.7	< 1.9
	32	36	253.91	219.91	3/13/2019	N	197	383	130	67	4.3	81	82	19	16	22	< 18	< 18	5.2	< 1.8	65	< 3.7	< 3.7	< 1.8
	42	46	253.91	209.91	3/13/2019	N	134	241	87	47	4.3	28	71	3.3	11	< 18	< 18	< 18	5.8	< 1.8	27	< 3.7	< 3.7	< 1.8
	42	46	253.91	209.91	3/13/2019	FD	135	240	87	48	4.5	28	69	3.4	9.3	< 18	< 18	< 18	5.7	< 1.8	27	< 3.7	< 3.7	< 1.8
	52	56	253.91	199.91	3/14/2019	N	111	191	71	40	0.7	11	66	2.2	< 37	< 18	< 18	< 18	6	< 1.8	19	< 3.7	< 3.7	< 1.8
	62	66	253.91	189.91	3/14/2019	N	148	272	96	52	0.66	11	110	2.6	< 37	< 18	< 18	< 18	7.4	< 1.8	19	< 3.7	< 3.7	< 1.8
	72	76	253.91	179.91	3/14/2019	N	109	250	50	59	< 1.8	9.3	130	1.6	< 37	< 18	< 18	< 18	7.7	< 1.8	22	< 3.7	< 3.7	< 1.8
	78	82	253.91	173.91	3/14/2019	N	108	249	53	55	< 1.9	9.6	130	1.4	< 37	< 19	< 19	< 19	7.4	< 1.9	21	< 3.7	< 3.7	< 1.9
76VP-19-07	12	16	254.8	240.8	4/18/2019	N	62.4	86.4	56	6.4	< 1.9	3	21	< 1.9	< 38	< 19	< 19	< 19	61	< 1.9	10	< 3.8	< 3.8	< 1.9
	22	26	254.80	230.80	4/18/2019	N	740	1110	630	110	0.96	40	330	4.1	30	42	< 18	< 18	15	< 1.8	120	< 3.7	< 3.7	< 1.8
	32	36	254.80	220.80	4/19/2019	N	39.0	70.6	25	14	< 1.9	6.8	24	0.79	< 37	< 19	< 19	< 19	4.9	11	11	2.8	11	1.6
	42	46	254.80	210.80	4/19/2019	N	47.0	79.5	33	14	1.2	6.1	24	1.2	< 37	< 18	< 18	< 18	4.6	< 1.8	11	< 3.7	< 3.7	0.82
	52	56	254.80	200.80	4/19/2019	N	65.0	114	47	18	< 1.8	8.6	40	0.88	< 37	< 18	< 18	< 18	5	< 1.8	16	< 3.7	< 3.7	< 1.8
	62	66	254.80	190.80	4/19/2019	N	56.0	92.5	40	16	< 1.8	6.6	29	0.93	< 37	< 18	< 18	< 18	4.8	< 1.8	11	< 3.7	< 3.7	< 1.8
	71	75	254.80	181.80	4/22/2019	N	59.0	104	40	19	< 1.9	7.3	37	1.1	< 38	< 19	< 19	< 19	5.3	< 1.9	13	< 3.8	< 3.8	< 1.9
76VP-19-08	7	11	245.71	236.71	3/6/2019	N	2750	2960	2700	49	1.8	69	130	12	81	6.5	< 19	< 19	4.3	< 1.9	93	< 3.7	< 3.7	< 1.9
	17	21	245.71	226.71	3/6/2019	N	2340	2550	2300	39	1.3	50	150	9.6	63	9.6	< 18	< 18	6	< 1.8	60	< 3.7	< 3.7	< 1.8
	27	31	245.71	216.71	3/6/2019	N	46.0	86.1	27	19	< 1.8	6.6	32	1.5	< 36	< 18	< 18	< 18	7.6	< 1.8	12	< 3.6	< 3.6	< 1.8
	37	41	245.71	206.71	3/7/2019	N	76.0	123	55	21	< 1.8	7.1	39	1.3	< 36	< 18	< 18	< 18	7.4	< 1.8	12	< 3.6	< 3.6	< 1.8
	47	51	245.71	196.71	3/7/2019	N	46.0	84.8	28	18	< 1.8	6.5	31	1.3	< 36	< 18	< 18	< 18	7.5	< 1.8	10	< 3.6	< 3.6	< 1.8
	52	56	245.71	191.71	3/7/2019	N	41.0	77.8	24	17	< 1.8	5.8	30	0.98	< 35	< 18	< 18	< 18	6.6	< 1.8	10	< 3.5	< 3.5	< 1.8
76VP-19-09	8	12	248.06	238.06	3/1/2019	N	100	171	84	16	< 1.8	4.7	65	1	< 37	< 18	< 18	< 18	2.3	< 1.8	16	< 3.7	< 3.7	< 1.8
	18	22	248.06	228.06	3/1/2019	N	174	277	120	54	< 1.8	14	86	2.5	< 37	< 18	< 18	< 18	7.3	< 1.8	24	< 3.7	< 3.7	< 1.8
	18	22	248.06	228.06	3/1/2019	FD	173	286	120	53	0.89	14	95	3.1	< 36	< 18	< 18	< 18	7.3	< 1.8	25	< 3.6	< 3.6	< 1.8
	28	32	248.06	218.06	3/5/2019	N	185	326	130	55	< 1.9	18	120	2.7	< 37	< 19	< 19	< 19	8.2	< 1.9	30	< 3.7	< 3.7	< 1.9
	38	42	248.06	208.06	3/5/2019	N	138	270	87	51	< 2	11	120	1.4	< 40	< 20	< 20	< 20	7.7	< 2	19	< 4	< 4	< 2
	48	52	248.06	198.06	3/5/2019	N	143	277	89	54	< 1.8	12	120	1.8	< 36	< 18	< 18	< 18	7.9	< 1.8	24	< 3.6	< 3.6	< 1.8
	58	62	248.06	188.06	3/5/2019	N	97.0	205	53	44	< 1.8	9.3	97	1.3	< 37	< 18	< 18	< 18	8.1	< 1.8	19	< 3.7	< 3.7	< 1.8
	72	76	244.31	170.31	1/2/2019	N	89.0	220	43	46	< 2	10	120	0.65	< 40	< 20	< 20	< 20	8.2	< 2	24	< 4	< 4	< 2
76VP-19-10	12	16	244.31	230.31	1/2/2019	N	179	291	120	59	< 1.8	35	75	2.2	7.7	< 18	< 18	< 18	5.9	< 1.8	35	< 3.7	< 3.7	< 1.8
	22	26	244.31	220.31	1/2/2019	N	228	407	180	48	< 3.1	28	150	1.1	< 63	< 31	< 31	< 31	9.2	< 3.1	48	< 6.3	< 6.3	< 3.1
	32	36	244.31	210.31	1/2/2019	N	145	266	100	45	< 2.1	9.8	110	1.1	< 42	< 21	< 21	< 21	6	< 2.1	17	< 4.2	< 4.2	< 2.1
	32	36	244.31	210.31	1/2/2019	FD	157	266	110	47	< 2.1	10	98	1	< 41	< 21	< 21	< 21	6.1	< 2.1	16	< 4.1	< 4.1	< 2.1
	42	46	244.31	200.31	1/2/2019	N	169	300	120	49	< 1.8	9.4	120	1.6	< 37	< 18	< 18	< 18	6	< 1.8	16	< 3.7	< 3.7	< 1.8
	52	56	244.31	190.31	1/2/2019	N	162	270	110	52	< 1.8	14	93	1.1	< 36	< 18	< 18	< 18	5.4	< 1.8	25	< 3.6	< 3.6	< 1.8
	62	66	244.31	180.31	1/2/2019	N	142	263	96	46	< 2	9.9	110	1	< 40	< 20	< 20	< 20	6.1	< 2	18	< 4	< 4	< 2
76VP-19-11	12	16	243.02	229.02	3/11/2019	N	740	1660	580	160	< 1.8	320	590	8.2	53	< 18	< 18	< 18	14	< 1.8	390	< 3.7	< 3.7	< 1.8
	22	26	243.02	219.02	3/11/2019	N	68.0	109	49	19	< 1.9	7.3	34	< 1.9	< 38	< 19	< 19	< 19	2.6	< 1.9	12	< 3.8	< 3.8	< 1.9
	32	36	243.02	209.02	3/11/2019	N	261	483	170	91	0.92	79	140	2.3	< 61	< 19	< 19	< 19	7.2	< 1.9	83	< 3.7	< 3.7	< 1.9
	42	46	243.02	199.02	3/11/2019	N	161	273	110	51	< 1.8	10	100	2	< 37	< 18	< 18	< 18	6.1	< 1.8	19	< 3.7	< 3.7	< 1.8
	52	56	243.02	189.02	3/11/2019	N	168	292	110	58	< 1.8	12	110	2.1	< 37	< 18	< 18	< 18	6.3	< 1.8	23	< 3.7	< 3.7	< 1.8
	62	66	243.02	179.02	3/11/2019	N	150	261	100	50	< 1.8	9.5	100	1.5	< 37	< 18	< 18	< 18	6.1	< 1.8	17	< 3.7	< 3.7	< 1.8
	72	76	243.02	169.02	3/12/2019	N	182	316	120	62	< 1.8	12	120	1.8	< 37	< 18	< 18	< 18	6.9	< 1.8	21	< 3.7	< 3.7	< 1.8
	82	86	243.02	159.02	3/12/2019	N	177	311	120	57	< 1.8	12	120	1.5	< 36	< 18	< 18	< 18	6.8	< 1.8	20	< 3.6	< 3.6	< 1.8
	82	86	243.02	159.02	3/12/2019	FD	170	314	110	60	< 1.9	12	130	1.6	< 37	< 19	< 19	< 19	6.6	< 1.9	21	< 3.7	< 3.7	< 1.9
	90	94	243.02	151.02	3/12/2019	N	236	450	160	76	< 2.1	22	190	2	< 41	< 21	< 21	< 21	11	< 2.1	41	< 4.1	< 4.1	< 2.1
76VP-19-12	22	26	252.05	228.05	2/7/2019	N	0.730	3.83	< 4.2	0.73	< 2.1	< 2.1	3.1	< 2.1	< 42	< 21	< 21	< 21	0.52	< 2.1	0.65	< 4.2	< 4.2	< 2.1

PFAS in Groundwater at Vertical Profile Locations
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Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
76VP-19-12	32	36	252.05	218.05	2/7/2019	N	126	258	87	39	< 2.6	11	120	0.9	< 52	< 26	< 26	< 26	6.7	< 2.6	19	< 5.2	< 5.2	< 2.6
	32	36	252.05	218.05	2/7/2019	FD	128	260	90	38	< 2.8	12	120	< 2.8	< 55	< 28	< 28	< 28	6.2	< 2.8	20	< 5.5	< 5.5	< 2.8
	42	46	252.05	208.05	2/7/2019	N	145	238	110	35	< 1.9	10	80	2.7	< 39	< 19	< 19	< 19	5.7	< 1.9	16	< 3.9	< 3.9	< 1.9
	52	56	252.05	198.05	2/7/2019	N	400	767	290	110	< 2	110	240	17	170	6.7	< 20	< 20	17	< 2	140	< 4	< 4	< 2
	62	66	252.05	188.05	2/7/2019	N	219	361	160	59	0.48	17	120	4.4	< 40	< 20	< 20	< 20	7.8	< 2	30	< 4	< 4	< 2
	72	76	252.05	178.05	2/8/2019	N	222	414	150	72	10	31	140	11	54	4.9	< 20	< 20	9.3	2.1	45	< 4.1	< 4.1	4.5
	82	86	252.05	168.05	2/8/2019	N	235	456	160	75	1.1	43	170	7	79	8.4	< 21	< 21	12	< 2.1	60	< 4.2	< 4.2	< 2.1
76VP-19-13	17	21	252.04	233.04	4/11/2019	N	4.60	11.7	< 3.7	4.6	< 1.9	2	5.1	< 1.9	< 37	< 19	< 19	< 19	1.8	< 1.9	2.9	< 3.7	< 3.7	< 1.9
	17	21	252.04	233.04	4/11/2019	FD	3.70	11.0	< 3.7	3.7	< 1.8	1.8	5.5	< 1.8	< 37	< 18	< 18	< 18	1.7	< 1.8	2.6	< 3.7	< 3.7	< 1.8
	27	31	252.04	223.04	4/11/2019	N	12.0	28.1	< 3.6	12	< 1.8	5.1	11	< 1.8	< 36	< 18	< 18	< 18	2.8	< 1.8	9.1	< 3.6	< 3.6	< 1.8
	37	41	252.04	213.04	4/11/2019	N	34.0	42.7	13	21	< 1.8	3	5.7	< 1.8	< 36	< 18	< 18	< 18	1.3	< 1.8	4	< 3.6	< 3.6	< 1.8
	47	51	252.04	203.04	4/12/2019	N	37.0	45.6	24	13	< 1.8	2.8	5.8	< 1.8	< 37	< 18	< 18	< 18	1	< 1.8	3.7	< 3.7	< 3.7	< 1.8
	57	61	252.04	193.04	4/12/2019	N	14.0	17.4	11	3	< 1.8	0.58	2	0.82	< 36	< 18	< 18	< 18	0.54	< 1.8	0.71	< 3.6	< 3.6	< 1.8
	67	71	252.04	183.04	4/12/2019	N	521	847	450	71	< 1.8	15	310	1.2	< 37	< 18	< 18	< 18	15	< 1.8	45	< 3.7	< 3.7	< 1.8
	76	80	252.04	174.04	4/12/2019	N	533	929	450	83	< 1.8	15	380	0.97	< 36	< 18	< 18	< 18	19	< 1.8	53	< 3.6	< 3.6	< 1.8
76VP-19-14	12	16	251.70	237.70	1/2/2019	N	450	2240	270	180	0.99	370	1400	17	80	4.9	< 18	< 18	41	< 1.8	1300	< 3.7	< 3.7	< 1.8
	22	26	251.70	227.70	1/2/2019	N	156	404	16	140	< 1.8	7.6	240	< 1.8	< 36	< 18	< 18	< 18	33	< 1.8	48	< 3.6	< 3.6	< 1.8
	32	36	251.70	217.70	1/2/2019	N	30.0	51.4	19	11	< 1.8	5.4	16	< 1.8	< 37	< 18	< 18	< 18	1.3	< 1.8	6.5	< 3.7	< 3.7	< 1.8
	42	46	251.70	207.70	1/2/2019	N	69.0	112	50	19	< 1.9	17	25	0.53	< 37	< 19	< 19	< 19	2.5	< 1.9	20	< 3.7	< 3.7	< 1.9
	52	56	251.70	197.70	1/2/2019	N	121	229	96	25	< 1.9	7.2	100	0.76	< 37	< 19	< 19	< 19	6.1	< 1.9	9.8	< 3.7	< 3.7	< 1.9
	52	56	251.70	197.70	1/2/2019	FD	123	230	99	24	< 1.8	6.8	99	0.7	< 37	< 18	< 18	< 18	6.3	< 1.8	9.7	< 3.7	< 3.7	< 1.8
	62	66	251.70	187.70	1/2/2019	N	108	190	78	30	< 1.8	9.7	71	0.86	< 37	< 18	< 18	< 18	4.7	< 1.8	13	< 3.7	< 3.7	< 1.8
	72	76	251.70	177.70	1/2/2019	N	120	274	63	57	< 1.8	13	140	0.77	< 37	< 18	< 18	< 18	8.5	< 1.8	27	< 3.7	< 3.7	< 1.8
76VP-19-15	7	11	245.85	236.85	3/13/2019	N	206	2420	96	110	0.59	210	2000	7.7	9.7	2.9	< 19	< 19	92	< 1.9	490	< 3.7	< 3.7	< 1.9
	7	11	245.85	236.85	3/13/2019	FD	205	2620	95	110	0.78	210	2200	7.6	9.6	< 19	< 19	< 19	92	< 1.9	490	< 3.7	< 3.7	< 1.9
	17	21	245.85	226.85	3/13/2019	N	32.0	93.3	16	16	< 1.9	3.3	58	< 1.9	7.1	< 19	< 19	< 19	4.8	< 1.9	13	< 3.8	< 3.8	< 1.9
	27	31	245.85	216.85	3/14/2019	N	32.2	48.3	25	7.2	< 1.8	2.1	14	< 1.8	< 36	< 18	< 18	< 18	1.2	< 1.8	1.8	< 3.6	< 3.6	< 1.8
	37	41	245.85	206.85	3/14/2019	N	94.0	156	66	28	< 1.8	6.7	54	1	< 37	< 18	< 18	< 18	3.1	< 1.8	9.9	< 3.7	< 3.7	< 1.8
	47	51	245.85	196.85	3/14/2019	N	99.0	150	73	26	< 1.8	7.1	43	0.83	< 37	< 18	< 18	< 18	3	< 1.8	9	< 3.7	< 3.7	< 1.8
	55	59	245.85	188.85	3/14/2019	N	134	276	79	55	< 1.8	11	130	1.1	< 37	< 18	< 18	< 18	7.5	< 1.8	22	< 3.7	< 3.7	< 1.8
76VP-19-16	32	36	241.93	207.93	4/25/2019	N	172	306	140	32	< 1.8	14	120	< 1.8	< 37	< 18	< 18	< 18	6.2	< 1.8	21	< 3.7	< 3.7	< 1.8
	42	46	241.93	197.93	4/25/2019	N	358	623	310	48	< 1.8	23	240	1.5	6.9	< 18	< 18	< 18	10	< 1.8	37	< 3.7	< 3.7	< 1.8
	52	56	241.93	187.93	4/25/2019	N	163	287	130	33	< 1.8	22	100	2.1	12	< 18	< 18	< 18	5.4	< 1.8	35	< 3.7	< 3.7	< 1.8
	62	66	241.93	177.93	4/26/2019	N	238	550	170	68	< 1.8	68	240	3.9	120	< 18	< 18	< 18	14	< 1.8	120	< 3.7	< 3.7	< 1.8
	67	71	241.93	172.93	4/26/2019	N	380	859	290	90	< 1.9	67	410	1.7	190	< 19	< 19	< 19	24	< 1.9	140	< 3.7	< 3.7	< 1.9
76VP-19-17	7	11	242.17	233.17	3/8/2019	N	75.0	190	31	44	3.3	45	53	14	< 36	< 18	< 18	< 18	2.9	< 1.8	54	< 3.6	< 3.6	< 1.8
	17	21	242.17	223.17	3/8/2019	N	66.0	293	27	39	1.8	79	140	6.2	< 36	< 18	< 18	< 18	4.3	< 1.8	79	< 3.6	< 3.6	< 1.8
	27	31	242.17	213.17	3/8/2019	N	278	416	240	38	0.92	34	100	3.1	< 38	< 19	< 19	< 19	6.2	< 1.9	49	< 3.8	< 3.8	< 1.9
	37	41	242.17	203.17	3/8/2019	N	384	666	300	84	< 1.8	41	240	0.6	< 36	2.7	< 18	< 18	13	< 1.8	68	< 3.6	< 3.6	< 1.8
	47	51	242.17	193.17	3/8/2019	N	170	259	130	40	< 1.9	8.5	78	2.1	< 38	< 19	< 19	< 19	4.8	< 1.9	14	< 3.8	< 3.8	< 1.9
	57	61	242.17	183.17	3/8/2019	N	195	319	140	55	< 1.8	11	110	2.5	< 36	< 18	< 18	< 18	6.3	< 1.8	19	< 3.6	< 3.6	< 1.8
	57	61	242.17	183.17	3/8/2019	FD	171	262	130	41	< 1.8	8.5	81	1.9	< 37	< 18	< 18	< 18	4.9	< 1.8	13	< 3.7	< 3.7	< 1.8
	67	71	242.17	173.17	3/11/2019	N	148	262	100	48	0.98	10	100	2.8	< 37	< 18	< 18	< 18	6.3	< 1.8	18	< 3.7	< 3.7	< 1.8
	77	81	242.17	163.17	3/11/2019	N	207	406	130	77	< 1.8	17	180	2.1	< 37	< 18	< 18	< 18	9.5	< 1.8	32	< 3.7	< 3.7	< 1.8
76VP-19-18	12	16	242.49	228.49	1/3/2019	N	175	464	130	45	2.6	61	220	5.4	21	< 20	< 20	< 20	9.3	< 2	110	< 4	< 4	< 2
	22	26	242.49	218.49	1/3/2019	N	151	280	120	31	< 2	9	120	< 2	11	< 20	< 20	< 20	6.1	< 2	17	< 4	< 4	< 2
	32	36	242.49	208.49	1/3/2019	N	155	312	110	45	< 2.1	17	140	< 2.1	< 41	< 21	< 21	< 21	7.7	< 2.1	25	< 4.1	< 4.1	< 2.1
	42	46	242.49	198.49	1/3/2019	N	202	403	140	62	< 3.3	21	180	< 3.3	< 66	< 33	< 33	< 33	9.8	< 3.3	35	< 6.6	< 6.6	< 3.3
	52	56	242.49	188.49	1/4/2019	N	196	348	140	56	< 2	10	140	2.1	< 39	< 20	< 20	< 20	6.6	< 2	19	< 3.9	< 3.9	< 2
	62	66	242.49	178.49	1/4/2019	N	208	413	140	68	< 2	14	190	1.2	< 40	< 20	< 20	< 20	9.7	< 2	31	< 4	< 4	< 2
	72	76	242.49	168.49	1/4/2019	N	250	479	170	80	< 2	35	190	4.3	9.1	< 20	< 20	< 20	9.6	< 2	47	< 3.9	< 3.9	< 2
	81.5	85.5	242.49	158.99	1/4/2019	N	306	568	220	86	< 1.9	30	230	2.3	8.3	< 19	< 19	< 19	12	< 1.9	58	< 3.8	< 3.8	< 1.9
76VP-19-19	7	11	235.02	226.02	4/8/2019	N	47.7	90.4	43	4.7	0.53	3.7	37	1.5	< 37	< 18	< 18	< 18	4.1	< 1.8	7.7	< 3.7	< 3.7	< 1.8
	17	21	235.02	216.02	4/9/2019	N	142	250	110	32	< 1.9	27	78	2.5	< 38	< 19	< 19	< 19	3.9	< 1.9	41	< 3.8	< 3.8	< 1.9
	27	31	235.02	206.02	4/9/2019	N	122	321	78	44	< 1.8	9.4	190	< 1.8	< 36	< 18	< 18	< 18	13	< 1.8	29	< 3.6	< 3.6	< 1.8
	37	41	235.02	196.02	4/9/2019	N	113	291	70	43	< 1.8	7.8	170	< 1.8	< 37	< 18	< 18	< 18	9.9	2.7	25	< 3.7	1.1	0.99
	47	51	235.02	186.02	4/9/2019	N	84.0	192	44	40	< 1.8	8.4	100	< 1.8	< 37	< 18	< 18	< 18	5.8	< 1.8	21	< 3.7	< 3.7	< 1.8
	57	61	235.02	176.02	4/9/2019	N	82.0	198	43	39	5.8	8.3	100	2	< 37	< 18	< 18	< 18	6	5.4	21	1.3	2.6	12
	67	71	235.02	166.02	4/10/2019	N	20.5	89.5	6.5	14	< 1.8	3	66	< 1.8	< 37	< 18	< 18	< 18	6.1	< 1.8	12	< 3.7	< 3.7	< 1.8
	77	81	235.02	156.02	4/10/2019	N	89.0	257	48	41	< 1.8	7.8	160	< 1.8	< 37	< 18	< 18	< 18	12	< 1.8	27	< 3.7	< 3.7	< 1.8
	86	90	235.02	147.02	4/10/2019	N	175	374	110	65	< 1.9	18	180	0.86	< 38	< 19	< 19	< 19	9.6	1.4	39	0.95	1.7	< 1.9
76VP-19-20	7	11	249.56	240.56	4/18/2019	N	24.7	29.2	5.7	19	< 1.9	4.5	< 1.9	< 1.9	< 37	< 19	< 19	< 19	0.61	< 1.9	6.4	< 3.7	< 3.7	< 1.9
	17	21	249.56	230.56	4/16/2019	N	8.20	15.3	3.2	5	< 1.8	0.91	6.2	< 1.8	< 36	< 18	< 18	< 18	1	< 1.8	1.7	< 3.6	< 3.6	< 1.8
	27	31	249.56	220.56	4/16/2019	N	126	316	63	63	< 1.8	68	120	2.1	79	< 18	< 18	< 18	8.4	< 1.8	94	< 3.7	< 3.7	< 1.8
	37	41	249.56	210.56	4/16/2019	N	103	207	68	35	< 1.8	41	55	8.2	< 37	< 18	< 18	< 18	4.9	< 1.8	55	< 3.7	< 3.7	< 1.8
	47	51	249.56	200.56	4/17/2019	N	200	462	120	80	< 1.8	96	160	6.4	64	< 18	< 18	< 18	11	< 1.8	120	< 3.7	< 3.7	< 1.8
	57	61	249.56	190.56	4/17/2019	N	86.0	153	65	21	< 1.8	27	35	5.2	< 37	< 18	< 18	< 18	4	15	38	2.6	9.5	< 2.2
	57	61	249.56	190.56	4/17/2019	FD	87.0	154	65	22	< 1.8	27	35	5.4	< 37	< 18	< 18	< 18	4	< 1.8	36	< 3.7	< 3.7	< 1.8
	67	71	249.56	180.56	4/17/2019	N	199	381	140	59	< 1.8	74	94	14	71	< 18	< 18	< 18	9.2	< 1.8	98	< 3.7	< 3.7	< 1.8
	77	81	249.56	170.56	4/17/2019	N	238	438	170	68	< 1.8	77	110	13	110	7.7	< 18	< 18	9.2	< 1.8	100	< 3.7	< 3.7	< 1.8
76VP-19-21	27	31	258.85	229.85	4/22/2019	N	27.6	65.6	5.6	22	< 1.9	26	12	< 1.9	< 37	< 19	< 19	< 19	17	0.56	67	< 3.7	< 3.7	1.1

PFAS in Groundwater at Vertical Profile Locations
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Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
76VP-19-21	37	41	258.85	219.85	4/22/2019	N	28.0	60.0	9	19	< 1.9	14	18	< 1.9	< 37	< 19	< 19	< 19	16	< 1.9	29	< 3.7	< 3.7	< 1.9
	37	41	258.85	219.85	4/22/2019	FD	29.4	61.4	9.4	20	< 1.9	14	18	< 1.9	< 37	< 19	< 19	< 19	16	< 1.9	29	< 3.7	< 3.7	< 1.9
	47	51	258.85	209.85	4/22/2019	N	40.0	91.9	26	14	< 1.8	5.4	46	0.51	< 37	< 18	< 18	< 18	5	< 1.8	12	< 3.7	< 3.7	< 1.8
	57	61	258.85	199.85	4/23/2019	N	78.0	162	54	24	< 1.9	8.7	75	0.76	< 38	< 19	< 19	< 19	5.6	< 1.9	21	< 3.8	< 3.8	< 1.9
	67	71	258.85	189.85	4/23/2019	N	12.7	38.8	4	8.7	0.98	3.4	21	0.68	< 37	< 19	< 19	< 19	4	< 1.9	5.9	< 3.7	< 3.7	< 1.9
	73	77	258.85	183.85	4/23/2019	N	28.0	70.1	12	16	< 1.9	6.1	36	< 1.9	< 37	< 19	< 19	< 19	5.5	< 1.9	12	< 3.7	< 3.7	< 1.9
76VP-19-22	22	26	232.30	208.30	4/18/2019	N	96.0	196	69	27	< 1.9	20	78	2	< 37	< 19	< 19	< 19	6.8	< 1.9	37	< 3.7	< 3.7	< 1.9
	32	36	232.30	198.30	4/18/2019	N	125	208	100	25	< 1.8	15	66	2	< 37	< 18	< 18	< 18	5	< 1.8	27	< 3.7	< 3.7	< 1.8
	42	46	232.30	188.30	4/19/2019	N	110	198	84	26	< 1.9	19	67	2.1	< 37	< 19	< 19	< 19	5.7	< 1.9	31	< 3.7	< 3.7	< 1.9
	52	56	232.30	178.30	4/19/2019	N	95.0	179	72	23	< 2.2	16	66	1.6	< 45	< 22	< 22	< 22	4.7	< 2.2	32	< 4.5	< 4.5	< 2.2
	62	66	232.30	168.30	4/19/2019	N	92.0	161	68	24	2.1	17	49	1.2	< 37	< 18	< 18	< 18	4.4	0.54	29	< 3.7	< 3.7	1.6
	72	76	232.30	158.30	4/19/2019	N	117	200	89	28	< 1.8	18	63	1.5	< 37	< 18	< 18	< 18	4.3	< 1.8	28	< 3.7	< 3.7	1.8
	79.5	83.5	232.30	150.80	4/19/2019	N	160	369	110	50	< 1.9	28	180	0.97	7.7	< 19	< 19	< 19	12	< 1.9	52	< 3.7	< 3.7	< 1.9
76VP-19-23	12	16	225.05	211.05	4/5/2019	N	281	416	250	31	0.68	22	110	2	< 37	< 19	< 19	< 19	7.1	< 1.9	45	< 3.8	< 3.8	5.6
	22	26	225.05	201.05	4/5/2019	N	288	447	250	38	< 1.8	26	130	2.8	< 37	< 18	< 18	< 18	7.9	< 1.8	47	< 3.7	< 3.7	< 1.8
	32	36	225.05	191.05	4/8/2019	N	215	445	170	45	< 1.9	20	210	< 1.9	13	< 19	< 19	< 19	13	< 1.9	51	< 3.8	< 3.8	< 1.9
	32	36	225.05	191.05	4/8/2019	FD	213	442	170	43	< 1.8	19	210	< 1.8	13	< 18	< 18	< 18	13	< 1.8	49	< 3.7	< 3.7	< 1.8
	39	43	225.05	184.05	4/8/2019	N	194	396	150	44	< 1.8	22	180	< 1.8	18	< 18	< 18	< 18	12	< 1.8	52	< 3.7	< 3.7	< 1.8
76VP-19-24	7	11	226.05	217.05	5/16/2019	N	51.0	85.4	37	14	0.69	4.4	28	1.3	< 37	< 19	< 19	< 19	2.7	< 1.9	11	< 3.7	< 3.7	< 1.9
	17	21	226.05	207.05	5/16/2019	N	42.0	74.7	22	20	0.6	7.3	24	0.82	< 39	< 20	< 20	< 20	6.4	< 2	12	< 3.9	< 3.9	< 2
	27	31	226.05	197.05	5/16/2019	N	30.0	52.5	19	11	1	3.7	17	0.79	< 39	< 19	< 19	< 19	2.3	< 1.9	6.8	< 3.9	< 3.9	< 1.9
	37	41	226.05	187.05	5/16/2019	N	13.1	26.9	5.9	7.2	< 1.9	2.9	10	0.85	< 38	< 19	< 19	< 19	1.3	< 1.9	2.5	< 3.8	< 3.8	< 1.9
	47	51	226.05	177.05	5/16/2019	N	16.1	32.2	6.8	9.3	< 1.9	3.3	12	0.8	< 38	< 19	< 19	< 19	1.6	< 1.9	4.6	< 3.8	< 3.8	< 1.9
	57	61	226.05	167.05	5/17/2019	N	17.6	36.4	9	8.6	< 1.9	2.8	16	< 1.9	< 38	< 19	< 19	< 19	2	< 1.9	4	< 3.8	< 3.8	< 1.9
	67	71	226.05	157.05	5/17/2019	N	18.1	39.6	9.9	8.2	< 2	2.5	19	< 2	< 40	< 20	< 20	< 20	2.1	< 2	4.2	< 4	< 4	< 2
	77	81	226.05	147.05	5/17/2019	N	5.80	21.1	1.4	4.4	< 1.9	1.3	14	< 1.9	< 37	< 19	< 19	< 19	1.5	< 1.9	3.7	< 3.7	< 3.7	< 1.9
	87	91	226.05	137.05	5/17/2019	N	5.10	27.0	1.6	3.5	< 2	0.92	21	< 2	< 39	< 20	< 20	< 20	2.8	< 2	3.1	< 3.9	< 3.9	< 2
	92	96	226.05	132.05	5/20/2019	N	10.5	31.2	4.3	6.2	< 1.8	1.7	19	< 1.8	< 37	< 18	< 18	< 18	2.2	< 1.8	5.9	< 3.7	< 3.7	< 1.8
76VP-19-25	22	26	228.81	204.81	4/9/2019	N	80.0	145	62	18	< 1.8	11	53	1.1	< 36	< 18	< 18	< 18	4.8	< 1.8	18	< 3.6	< 3.6	< 1.8
	32	36	228.81	194.81	4/9/2019	N	100	167	76	24	< 1.8	16	49	2.2	< 36	< 18	< 18	< 18	5.1	< 1.8	29	< 3.6	< 3.6	< 1.8
	42	46	228.81	184.81	4/9/2019	N	78.0	147	59	19	< 1.7	12	56	0.87	< 35	< 17	< 17	< 17	4.9	< 1.7	19	< 3.5	< 3.5	< 1.7
	52	56	228.81	174.81	4/10/2019	N	123	226	95	28	< 1.8	18	83	1.7	< 36	< 18	< 18	< 18	6.8	< 1.8	35	< 3.6	< 3.6	< 1.8
	62	66	228.81	164.81	4/10/2019	N	127	236	100	27	< 1.8	20	87	1.9	< 35	< 18	< 18	< 18	6.1	< 1.8	36	< 3.5	< 3.5	< 1.8
	72	76	228.81	154.81	4/10/2019	N	99.0	205	74	25	< 1.7	15	90	0.88	< 35	< 17	< 17	< 17	7.3	< 1.7	30	< 3.5	< 3.5	< 1.7
	81.5	85.5	228.81	145.31	4/10/2019	N	87.0	197	61	26	< 1.8	9.8	100	< 1.8	< 36	< 18	< 18	< 18	7.9	< 1.8	24	< 3.6	< 3.6	< 1.8
76VP-19-26	22	26	224.68	200.68	4/11/2019	N	31.9	56.3	1.9	30	< 1.9	13	7	4.4	< 37	< 19	< 19	< 19	3.6	< 1.9	9.2	< 3.7	< 3.7	< 1.9
	32	36	224.68	190.68	4/11/2019	N	55.0	103	17	38	3.6	22	13	9.8	< 37	< 18	< 18	< 18	12	< 1.8	32	< 3.7	< 3.7	< 1.8
	42	46	224.68	180.68	4/11/2019	N	17.5	34.8	8.2	9.3	< 1.8	4.3	12	0.95	< 36	< 18	< 18	< 18	1.9	< 1.8	9.1	< 3.6	< 3.6	< 1.8
	42	46	224.68	180.68	4/11/2019	FD	17.7	35.3	9	8.7	< 1.8	4.5	12	1.1	< 37	< 18	< 18	< 18	1.9	< 1.8	8.9	< 3.7	< 3.7	< 1.8
	48	52	224.68	174.68	4/12/2019	N	17.8	36.1	8.8	9	< 1.8	4.3	13	0.95	< 36	< 18	< 18	< 18	2.2	< 1.8	11	< 3.6	< 3.6	< 1.8
	48	52	224.68	174.68	4/12/2019	FD	18.4	36.3	9.5	8.9	< 1.8	4	13	0.89	< 37	< 18	< 18	< 18	2	< 1.8	10	< 3.7	< 3.7	< 1.8
76VP-19-27	22	26	231.07	207.07	4/8/2019	N	139	250	110	29	0.52	18	91	1.6	< 37	< 18	< 18	< 18	11	< 1.8	35	< 3.7	< 3.7	< 1.8
	32	36	231.07	197.07	4/8/2019	N	137	244	110	27	0.56	17	88	1.7	< 35	< 18	< 18	< 18	8.1	< 1.8	34	< 3.5	< 3.5	< 1.8
	42	46	231.07	187.07	4/8/2019	N	186	295	160	26	< 2.1	17	90	2.2	< 43	< 21	< 21	< 21	8.8	< 2.1	34	< 4.3	< 4.3	< 2.1
	42	46	231.07	187.07	4/8/2019	FD	186	292	160	26	0.5	17	86	2.1	< 38	< 19	< 19	< 19	8.7	< 1.9	32	< 3.8	< 3.8	< 1.9
	48	52	231.07	181.07	4/9/2019	N	58.0	144	38	20	< 1.8	6.7	79	< 1.8	< 36	< 18	< 18	< 18	5.8	< 1.8	18	< 3.6	< 3.6	< 1.8
76VP-19-28	17	21	230.20	211.20	6/13/2019	N	20.5	33.9	3.5	17	< 1.8	8.6	4.8	< 1.8	< 37	< 18	< 18	< 18	15	< 1.8	8.3	< 3.7	< 3.7	< 1.8
	27	31	230.20	201.20	6/13/2019	N	41.2	70.1	9.2	32	< 1.8	19	9.3	0.57	< 37	< 18	< 18	< 18	5.1	< 1.8	13	< 3.7	< 3.7	< 1.8
	37	41	230.20	191.20	6/13/2019	N	38.1	68.2	6.1	32	< 1.8	21	9.1	< 1.8	< 37	< 18	< 18	< 18	7.3	< 1.8	14	< 3.7	< 3.7	< 1.8
	47	51	230.20	181.20	6/13/2019	N	53.3	92.1	6.3	47	< 1.8	28	10	0.75	< 36	< 18	< 18	< 18	4.8	< 1.8	18	< 3.6	< 3.6	< 1.8
	57	61	230.20	171.20	6/13/2019	N	47.5	81.1	5.5	42	< 1.9	24	9.6	< 1.9	< 37	< 19	< 19	< 19	5.2	< 1.9	16	< 3.7	< 3.7	< 1.9
76VP-19-29	7	11	250.15	241.15	6/6/2019	N	31.0	40.0	18	13	0.63	4	2.8	1.6	< 36	< 18	< 18	< 18	0.42	< 1.8	6.2	< 3.6	< 3.6	< 1.8
	7	11	250.15	241.15	6/6/2019	FD	30.0	39.2	17	13	0.75	4.1	2.7	1.6	< 37	< 18	< 18	< 18	< 1.8	< 1.8	5.9	< 3.7	< 3.7	< 1.8
	17	21	250.15	231.15	6/7/2019	N	28.5	34.6	21	7.5	< 1.9	2.1	3.4	0.62	< 38	< 19	< 19	< 19	0.89	< 1.9	2.2	< 3.8	< 3.8	< 1.9
	27	31	250.15	221.15	6/7/2019	N	7.90	9.27	5.8	2.1	< 1.9	0.63	0.74	< 1.9	< 37	< 19	< 19	< 19	0.57	< 1.9	< 1.9	< 3.7	< 3.7	< 1.9
	27	31	250.15	221.15	6/7/2019	FD	7.90	9.74	5.8	2.1	< 1.8	0.62	0.73	0.49	< 36	< 18	< 18	< 18	0.54	< 1.8	< 1.8	< 3.6	< 3.6	< 1.8
	37	41	250.15	211.15	6/7/2019	N	3.00	3.69	1.9	1.1	0.69	< 1.9	< 1.9	< 1.9	< 37	< 19	< 19	< 19	< 1.9	< 1.9	1.1	< 3.7	< 3.7	< 1.9
	47	51	250.15	201.15	6/7/2019	N	4.48	5.01	3.8	0.68	< 1.9	< 1.9	0.53	< 1.9	< 37	< 19	< 19	< 19	< 1.9	< 1.9	0.61	< 3.7	< 3.7	< 1.9
	57	61	250.15	191.15	6/10/2019	N	5.80	8.76	4.3	1.5	0.66	1	1.3	< 1.8	< 36	< 18	< 18	< 18	0.7	< 1.8	0.75	< 3.6	< 3.6	< 1.8
	57	61	250.15	191.15	6/10/2019	FD	6.20	8.32	4.8	1.4	< 1.8	0.82	1.3	< 1.8	< 37	< 18	< 18	< 18	0.77	< 1.8	0.58	< 3.7	< 3.7	< 1.8
	62	66	250.15	186.15	6/10/2019	N	6.00	9.32	3.9	2.1	0.61	0.86	1.3	0.55	< 37	< 18	< 18	< 18	0.62	< 1.8	1.4	< 3.7	< 3.7	< 1.8
76VP-19-30	7	11	248.26	239.26	6/13/2019	N	2.40	11.0	1.1	1.3	< 2	< 2	8.6	< 2	< 40	< 20	< 20	< 20	0.74	< 2	1.8	< 4	< 4	< 2
	17	21	248.26	229.26	6/13/2019	N	179	480	130	49	< 1.9	29	270	1.8	< 37	< 19	< 19	< 19	7.8	< 1.9	49	< 3.7	< 3.7	< 1.9
	27	31	248.26	219.26	6/13/2019	N	118	238	75	43	< 1.9	44	72	3.7	< 38	< 19	< 19	< 19	5.6	< 1.9	62	< 3.8	< 3.8	< 1.9
	27	31	248.26	219.26	6/13/2019	FD	117	239	76	41	< 1.9	46	72	3.9	< 38	< 19	< 19	< 19	5.7	< 1.9	60	< 3.8	< 3.8	< 1.9
	37	41	248.26	209.26	6/14/2019	N	148	323	100	48	< 2	56	110	8.7	< 40	< 20	< 20	< 20	6.4	< 2	72	< 4	< 4	< 2
	47	51	248.26	199.26	6/14/2019	N	166	311	120	46	0.95	38	99	7.2	< 61	< 30	< 30	< 30	6.4	< 3	65	< 6.1	< 6.1	< 3
	57	61	248.26	189.26	6/14/2019	N	241	428	190	51	< 2.1	23	160	3.6	8.7	< 21	< 21	< 21	7.5	< 2.1	49	< 4.1	< 4.1	< 2.1
	67	71	248.26	179.26	6/14/2019	N	264	446	200	64	< 2.1	18	160	4	7.9	< 21	< 21	< 21	7.7	< 2.1	44	< 4.3	< 4.3	< 2.1
	77	81	248.26	169.26	6/14/2019	N	282	475	220	62	0.48	19	170	3.4	< 38	< 19	< 19	< 19	7.6	< 1.9	48	< 3.8	< 3.8	< 1.9

PFAS in Groundwater at Vertical Profile Locations
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Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
76VP-19-30	87	91	248.26	159.26	6/17/2019	N	271	470	200	71	0.48	15	180	3.8	< 37	< 19	< 19	< 19	7.9	2.4	32	< 3.7	1.9	0.69
	97	101	248.26	149.26	6/17/2019	N	263	478	180	83	< 1.8	14	200	1.3	< 37	< 18	< 18	< 18	12	< 1.8	36	< 3.7	< 3.7	< 1.8
76VP-19-31	7	11	251.41	242.41	6/6/2019	N	42.0	47.4	27	15	< 1.8	2.3	1.8	1.3	< 37	< 18	< 18	< 18	0.82	< 1.8	1.7	< 3.7	< 3.7	< 1.8
	17	21	251.41	232.41	6/6/2019	N	17.2	22.9	6.2	11	< 1.8	2.3	3.4	< 1.8	< 37	< 18	< 18	< 18	0.86	< 1.8	3.4	< 3.7	< 3.7	< 1.8
	27	31	251.41	222.41	6/6/2019	N	10.6	24.5	3.6	7	< 1.8	0.9	13	< 1.8	< 37	< 18	< 18	< 18	0.58	< 1.8	3	< 3.7	< 3.7	< 1.8
	27	31	251.41	222.41	6/6/2019	FD	9.9	24.7	3.3	6.6	< 1.8	0.83	14	< 1.8	< 37	< 18	< 18	< 18	0.56	< 1.8	3.1	< 3.7	< 3.7	< 1.8
	35	39	251.41	214.41	6/6/2019	N	9.20	23.0	3.2	6	< 1.8	0.84	13	< 1.8	< 36	< 18	< 18	< 18	0.55	< 1.8	2.5	< 3.6	< 3.6	< 1.8
	35	39	251.41	214.41	6/6/2019	FD	9.70	22.6	3.4	6.3	< 1.9	0.93	12	< 1.9	< 37	< 19	< 19	< 19	0.57	< 1.9	2.6	< 3.7	< 3.7	< 1.9
76VP-19-32	22	26	259.00	235.00	6/13/2019	N	17.1	46.0	5.1	12	< 1.9	5.1	23	0.83	< 38	< 19	< 19	< 19	12	< 1.9	11	< 3.8	< 3.8	< 1.9
	28.5	32.5	259.00	228.50	6/13/2019	N	17.1	45.2	5.1	12	< 1.9	5.3	22	0.76	< 38	< 19	< 19	< 19	13	< 1.9	11	< 3.8	< 3.8	< 1.9
	47	51	256.25	207.25	6/11/2019	N	19.9	35.9	4.9	15	< 1.8	7.5	8.5	< 1.8	< 37	< 18	< 18	< 18	25	< 1.8	13	< 3.7	< 3.7	< 1.8
76VP-19-33	57	61	256.25	197.25	6/11/2019	N	15.0	28.7	4	11	< 1.8	6.5	7.2	< 1.8	< 37	< 18	< 18	< 18	23	< 1.8	12	< 3.7	< 3.7	< 1.8
	67	71	256.25	187.25	6/11/2019	N	22.9	40.2	4.9	18	< 1.8	9	8.3	< 1.8	< 37	< 18	< 18	< 18	22	< 1.8	11	1.2	< 3.7	< 1.8

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.
ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

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Vertical Profile Results

PFAS in Groundwater at Vertical Profile Locations
MacPherson

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA
MPVP-19-01	7	11	213.43	204.43	3/26/2019	N	0.00	0.00	< 3.7	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
	17	21	213.43	194.43	3/26/2019	N	13.2	39.5	8.8	4.4	< 1.8	2.3	24	< 1.8	< 37	< 18	< 18	< 18	2.5	< 1.8	5.2	< 3.7	< 3.7	< 1.8
	27	31	213.43	184.43	3/26/2019	N	42.0	106	30	12	< 1.8	6.5	56	1.3	< 37	< 18	< 18	< 18	4.9	< 1.8	9.4	< 3.7	< 3.7	< 1.8
	37	41	213.43	174.43	3/26/2019	N	49.0	115	35	14	< 1.8	7.9	57	1.5	< 37	< 18	< 18	< 18	6.7	< 1.8	11	< 3.7	< 3.7	< 1.8
	37	41	213.43	174.43	3/26/2019	FD	49.0	115	34	15	< 1.8	7.1	58	1.3	< 37	< 18	< 18	< 18	7.3	< 1.8	11	< 3.7	< 3.7	< 1.8
	47	51	213.43	164.43	3/26/2019	N	60.0	145	39	21	< 1.8	11	72	1.6	< 36	< 18	< 18	< 18	9.1	< 1.8	18	< 3.6	< 3.6	< 1.8
	57	61	213.43	154.43	3/26/2019	N	58.0	140	38	20	< 1.8	10	70	1.7	< 37	< 18	< 18	< 18	10	< 1.8	16	< 3.7	< 3.7	< 1.8
	67	71	213.43	144.43	3/27/2019	N	60.0	143	39	21	< 1.8	9.7	72	1.4	< 37	< 18	< 18	< 18	10	< 1.8	17	< 3.7	< 3.7	< 1.8
	77	81	213.43	134.43	3/27/2019	N	59.0	144	38	21	< 1.8	9.4	75	0.75	< 37	< 18	< 18	< 18	12	< 1.8	18	< 3.7	< 3.7	< 1.8
	87	91	213.43	124.43	3/27/2019	N	15.5	40.0	11	4.5	< 1.8	1.5	23	< 1.8	< 37	< 18	< 18	< 18	4.1	< 1.8	5.3	< 3.7	< 3.7	< 1.8
	96	100	213.43	115.43	3/27/2019	N	14.0	35.3	9.4	4.6	< 1.8	1.3	20	< 1.8	< 37	< 18	< 18	< 18	3.7	< 1.8	4.9	< 3.7	< 3.7	< 1.8
MPVP-19-02	7	11	214.85	205.85	4/16/2019	N	1.40	1.40	1.4	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 36	< 18	< 18	< 18	0.6	0.48	0.68	< 3.6	< 3.6	< 1.8
	17	21	214.85	195.85	4/16/2019	N	38.5	85.7	29	9.5	< 1.8	5.9	40	1.3	< 36	< 18	< 18	< 18	2.6	< 1.8	7.4	< 3.6	< 3.6	< 1.8
	27	31	214.85	185.85	4/16/2019	N	74.0	167	51	23	0.63	17	72	3	< 37	< 18	< 18	< 18	5.2	< 1.8	27	< 3.7	< 3.7	< 1.8
	27	31	214.85	185.85	4/16/2019	FD	73.0	166	50	23	< 1.8	17	73	2.6	< 37	< 18	< 18	< 18	5.3	< 1.8	27	< 3.7	< 3.7	< 1.8
	37	41	214.85	175.85	4/16/2019	N	99.0	213	54	45	< 1.8	36	74	4.2	< 37	< 18	< 18	< 18	7.4	< 1.8	53	< 3.7	< 3.7	< 1.8
	47	51	214.85	165.85	4/16/2019	N	74.0	158	42	32	< 1.8	21	61	2.4	< 37	< 18	< 18	< 18	9.4	< 1.8	30	< 3.7	< 3.7	< 1.8
	57	61	214.85	155.85	4/17/2019	N	61.0	131	34	27	3.7	15	49	2.5	< 36	< 18	< 18	< 18	9.8	5.5	22	0.77	1.6	12
	67	71	214.85	145.85	4/17/2019	N	57.0	107	33	24	< 1.8	10	39	1.2	< 37	< 18	< 18	< 18	9.6	< 1.8	16	< 3.7	< 3.7	< 1.8
	77	81	214.85	135.85	4/17/2019	N	52.0	105	30	22	< 1.8	11	40	1.8	< 36	< 18	< 18	< 18	10	< 1.8	16	< 3.6	< 3.6	< 1.8
	87	91	214.85	125.85	4/17/2019	N	48.0	91.6	32	16	< 1.8	5.6	38	< 1.8	< 37	< 18	< 18	< 18	11	< 1.8	11	< 3.7	< 3.7	< 1.8
	87	91	214.85	125.85	4/17/2019	FD	46.0	90.4	31	15	< 1.8	5.4	39	< 1.8	< 36	< 18	< 18	< 18	11	12	11	4	12	< 1.8
	93	97	214.85	119.85	4/18/2019	N	36.0	65.7	22	14	< 1.8	4.7	25	< 1.8	< 37	< 18	< 18	< 18	6.9	< 1.8	8.1	< 3.7	< 3.7	< 1.8
MPVP-19-03	7	11	208.86	199.86	4/1/2019	N	118	203	88	30	0.92	23	56	4.8	< 37	< 18	< 18	< 18	3.5	< 1.8	40	< 3.7	< 3.7	< 1.8
	17	21	208.86	189.86	4/1/2019	N	94.0	165	72	22	0.87	15	51	4.4	< 37	< 18	< 18	< 18	3.9	< 1.8	25	< 3.7	< 3.7	< 1.8
	27	31	208.86	179.86	4/1/2019	N	70.0	125	55	15	0.83	8.7	42	3.7	< 37	< 18	< 18	< 18	3.4	< 1.8	15	< 3.7	< 3.7	< 1.8
	37	41	208.86	169.86	4/1/2019	N	75.0	144	52	23	1.1	20	44	4.3	< 37	< 18	< 18	< 18	4.1	43	29	9.6	26	7.4
	47	51	208.86	159.86	4/2/2019	N	74.0	157	44	30	0.45	27	52	4	< 37	< 18	< 18	< 18	4.9	< 1.8	34	< 3.7	< 3.7	< 1.8
	57	61	208.86	149.86	4/2/2019	N	41.0	78.4	21	20	< 1.8	9.4	24	4	< 37	< 18	< 18	< 18	7.1	< 1.8	9.2	< 3.7	< 3.7	< 1.8
	57	61	208.86	149.86	4/2/2019	FD	41.0	77.7	21	20	< 1.8	8.9	24	3.8	< 36	< 18	< 18	< 18	7.1	< 1.8	9.1	< 3.6	< 3.6	< 1.8
	67	71	208.86	139.86	4/2/2019	N	29.0	52.4	16	13	< 1.8	4.8	17	1.6	< 36	< 18	< 18	< 18	2.9	< 1.8	9.4	< 3.6	< 3.6	< 1.8
	72	76	208.86	134.86	4/3/2019	N	31.0	54.8	18	13	< 1.8	5	17	1.8	< 37	< 18	< 18	< 18	2.7	< 1.8	10	< 3.7	< 3.7	< 1.8
MPVP-19-04	17	21	223.41	204.41	6/4/2019	N	37.7	59.4	4.7	33	< 1.9	12	5.6	4.1	9.8	< 19	< 19	< 19	1.8	< 1.9	8.3	< 3.9	< 3.9	< 1.9
	27	31	223.41	194.41	6/4/2019	N	49.0	91.7	11	38	0.6	26	7.6	8.5	< 40	< 20	< 20	< 20	1.6	< 2	16	< 4	< 4	< 2
	37	41	223.41	184.41	6/4/2019	N	27.7	54.7	5.7	22	< 2	17	6.2	3.8	< 39	< 20	< 20	< 20	1.6	< 2	12	< 3.9	< 3.9	< 2
	47	51	223.41	174.41	6/4/2019	N	30.4	56.3	5.4	25	< 2	16	4.8	5.1	< 39	< 20	< 20	< 20	1.1	< 2	12	< 3.9	< 3.9	< 2
	56	60	223.41	165.41	6/5/2019	N	30.3	57.3	6.3	24	< 2	15	8.6	3.4	< 39	< 20	< 20	< 20	1.6	< 2	13	< 3.9	< 3.9	< 2
MPVP-19-06	7	11	210.84	201.84	4/24/2019	N	36.0	59.8	26	10	< 1.8	5.4	17	1.4	< 36	< 18	< 18	< 18	1.1	< 1.8	9.3	< 3.6	< 3.6	< 1.8
	17	21	210.84	191.84	4/24/2019	N	70.0	151	42	28	< 1.9	21	57	3.1	< 37	< 19	< 19	< 19	5.2	< 1.9	28	< 3.7	< 3.7	< 1.9
	17	21	210.84	191.84	4/24/2019	FD	65.0	149	39	26	< 1.9	22	58	3.5	< 37	< 19	< 19	< 19	5.4	7	29	9.4	15	0.87
	27	31	210.84	181.84	4/25/2019	N	57.0	124	38	19	< 1.8	9.3	55	2.9	< 37	< 18	< 18	< 18	6.6	< 1.8	12	< 3.7	< 3.7	0.7
	37	41	210.84	171.84	4/25/2019	N	97.0	197	68	29	< 1.8	15	83	1.8	< 37	< 18	< 18	< 18	8	< 1.8	21	< 3.7	< 3.7	< 1.8
	47	51	210.84	161.84	4/25/2019	N	119	304	82	37	< 1.9	5.2	180	< 1.9	< 37	< 19	< 19	< 19	14	8.2	19	1.1	4.2	1
	57	61	210.84	151.84	4/25/2019	N	90.0	186	64	26	< 1.8	13	81	1.9	< 37	< 18	< 18	< 18	7.3	< 1.8	18	< 3.7	< 3.7	< 1.8
	67	71	210.84	141.84	4/25/2019	N	91.0	187	66	25	< 1.8	13	81	2.1	< 37	< 18	< 18	< 18	7.3	< 1.8	17	< 3.7	< 3.7	< 1.8
	77	81	210.84	131.84	4/25/2019	N	56.0	118	31	25	< 1.8	14	44	3.7	< 36	< 18	< 18	< 18	5.2	< 1.8	16	< 3.6	< 3.6	< 1.8
	85.5	89.5	210.84	123.34	4/26/2019	N	60.0	123	37	23	< 2	11	49	3.2	< 39	< 20	< 20	< 20	6.4	< 2	12	< 3.9	< 3.9	< 2
MPVP-19-07	7	11	211.24	202.24	4/4/2019	N	0.76	1.58	< 3.6	0.76	< 1.8	< 1.8	0.82	< 1.8	< 36	< 18	< 18	< 18	< 1.8	< 1.9	< 1.8	< 3.9	< 3.9	< 1.8
	17	21	211.24	192.24	4/4/2019	N	13.8	46.8	9.1	4.7	< 1.9	2	31	< 1.9	< 37	< 19	< 19	< 19	2.7	< 1.9	4.2	< 3.7	< 3.7	< 1.9
	27	31	211.24	182.24	4/4/2019	N	54.0	145	35	19	< 1.8	10	78	2.6	< 37	< 18	< 18	< 18	6	< 1.9	13	< 3.9	< 3.9	7.5
	37	41	211.24	172.24	4/4/2019	N	76.0	172	43	33	< 1.9	21	71	3.8	< 37	< 19	< 19	< 19	6.7	< 1.9	31	< 3.9	< 3.9	< 1.9
	47	51	211.24	162.24	4/4/2019	N	68.0	161	40	28	< 1.9	17	73	3.4	< 38	< 19	< 19	< 19	6.5	< 1.9	23	< 3.8	< 3.8	< 1.9
	57	61	211.24	152.24	4/4/2019	N	78.0	171	46	32	0.69	23	65	4.3	< 37	< 18	< 18	< 18	6.5	< 1.9	30	< 3.9	< 3.9	2
	67	71	211.24	142.24	4/5/2019	N	73.0	171	42	31	< 1.8	20	74	3.9	< 37	< 18	< 18	< 18	6.9	< 1.8	26	< 3.7	< 3.7	< 1.8
	77	81	211.24	132.24	4/5/2019	N	53.0	133	31	22	0.87	14	62	3	< 48	< 24	< 24	< 24	6	< 2.7	20	< 5.3	< 5.3	11
	87	91	211.24	122.24	4/5/2019	N	62.0	134	36	26	< 1.8	14	53	4.6	< 37	< 18	< 18	< 18	6	< 2	16	< 3.9	< 3.9	2.5
	93.5	97.5	211.24	115.74	4/5/2019	N	66.0	139	37	29	< 1.9	15	53	4.5	< 37	< 19	< 19	< 19	5.8	< 1.9	17	< 3.7	< 3.7	< 1.9
MPVP-19-08	37	41	235.50	196.50	4/3/2019	N	286	385	46	240	0.53	65	27	6.5	< 37	< 18	< 18	< 18	3.8	< 1.8	43	< 3.7	< 3.7	< 1.8
	47	51	235.50	186.50	4/3/2019	N	138	184	38	100	< 1.8	28	16	2.1	< 37	< 18	< 18	< 18	2.3	< 1.8	23	< 3.7	< 3.7	< 1.8
	57	61	235.50	176.50	4/4/2019	N	1.10	1.66	< 3.6	1.1	< 1.8	< 1.8	0.56	< 1.8	< 36	< 18	< 18	< 18	< 1.8	< 1.9	0.56	< 3.9	< 3.9	< 1.8
	67	71	235.50	166.50	4/4/2019	N	1.20	2.14	1.2	< 1.8	< 1.8	< 1.8	0.94	< 1.8	< 37	< 18	< 18	< 18	< 1.8	< 1.8	< 1.8	< 3.7	< 3.7	< 1.8
	77	81	235.50	156.50	4/4/2019	N	10.0	14.6	10	< 1.9	< 1.9	< 1.9	4.6	< 1.9	< 37	< 19	< 19	< 19	< 1.9	< 1.9	< 1.9	< 3.7	< 3.7	< 1.9
	85	89	235.50	148.50	4/4/2019	N	53.6	85.0	49	4.6	< 1.9	2.4	29	< 1.9	< 37	< 19	< 19	< 19	2.1	< 1.9	10	< 3.9	< 3.9	2.2

Notes:
Results shown are displayed as parts per trillion (ppt).
bgs = below ground surface.

PFAS in Groundwater at Vertical Profile Locations
MacPherson

Location	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Ground Surface Elevation (ft NAVD88)	Midpoint Sample Elevation (ft NAVD88)	Sample Date	Sample Type	EPA LHA	MassDEP GW-1	PFOS	PFOA	PFDA	PFHPA	PFHXS	PFNA	62FTS	82FTS	NETFOSAA	NMEFOSAA	PFBS	PFDOA	PFHXA	PFTEA	PFTRIA	PFUNA

ft = feet.
EPA = U.S. Environmental Protection Agency.
LHA = Lifetime Health Advisory.
MassDEP = Massachusetts Department of Environmental Protection.
MassDEP GW-1 denotes sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).
NAVD88 = North American Vertical Datum 1988.
Result exceeds the EPA LHA (70 ppt) for either PFOA, PFOS, and/or the sum of PFOA+PFOS).
Result exceeds the MassDEP GW-1 (20 ppt) sum of 6 compounds (PFOS, PFOA, PFDA, PFHpA, PFHxS, PFNA).

H-3

PFAS in Groundwater at Water Supply Wells

PFAS in MacPherson Water Supply Well

PFAS Summary Report – Groundwater
Former Fort Devens, PFAS Community and Town Supply Wells
KOMAN, PFAS Sampling of Community and Private Wells, Historical Data
Community and Residential Wells

Location	2019001-03G	2019001-03G
Field Sample ID	DUP-01	MacPherson Well
Sampling Depth	0.00 - 0.00	0.00 - 0.00
Sampling Date	07/28/2016	07/28/2016
SDG	128033	128033
Sample Type	**Field Duplicate**	**Normal**
E537	Results (µg/L)	Results (µg/L)
Perfluorobutanesulfonic acid (PFBS)	0.100	0.0970
Perfluoroheptanoic acid (PFHpA)	**0.0110**	**0.0150**
Perfluorohexanesulfonic acid (PFHxS)	**0.0520**	**0.0540**
Perfluorononanoic acid (PFNA)	0.0220	0.0210
Perfluorooctanesulfonic acid (PFOS)	**0.0420**	**0.0440**
Perfluorooctanoic acid (PFOA)	**0.0240**	**0.0250**
†PFOS + PFOA (EPA)	**0.0660**	**0.0690**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.129**	**0.138**

PFAS Summary Report – Groundwater
Former Fort Devens, PFAS Community and Town Supply Wells
KOMAN, PFAS Sampling of Town Water Supply Wells, Q2 2019
Community and Residential Wells

Location	2019001-03G
Field Sample ID	MACPHERSON WELL_MAY19
Sampling Depth	0.00 - 0.00
Sampling Date	05/21/2019
SDG	L1921697_erp
Sample Type	**Normal**
PFAS	Results (ng/L)
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.89 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.89 U
Perfluorobutanesulfonic acid (PFBS)	**6.56**
Perfluorodecanoic acid (PFDA)	1.89 U
Perfluorododecanoic acid (PFDoA)	1.89 U
Perfluoroheptanoic acid (PFHpA)	**7.28**
Perfluorohexanesulfonic acid (PFHxS)	**49.4**
Perfluorohexanoic acid (PFHxA)	**11.9**
Perfluorononanoic acid (PFNA)	**2.29**
Perfluorooctanesulfonic acid (PFOS)	**31.8**
Perfluorooctanoic acid (PFOA)	**21.0**
Perfluorotetradecanoic acid (PFTA)	1.89 U
Perfluorotridecanoic acid (PFTrDA)	1.89 U
Perfluoroundecanoic acid (PFUnA)	1.89 U
†PFOS + PFOA (EPA)	**52.8**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**112**

PFAS Summary Report – Groundwater
Former Fort Devens, PFAS Community and Town Supply Wells

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated; UJ = estimated non detect

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detection of PFAS above the EPA Lifetime Health Advisory: PFOS + PFOA > 70 ng/L.

Bolded and highlighted results indicate detection of PFAS above the MassDEP and the MassDEP Office of Research and Standards Guideline (ORSG): PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA > 20 ng/L

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ Final PFAS-Related Revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, December 27, 2019

‡ PFAS Maximum Contaminant Level (MCL) Proposed Amendment & Public Comment ("MCL", 310 CMR 22.00 PFAS MCL Amendments), Massachusetts Department of Environmental Protection, December 27, 2019

‡ Documentation for Updated Office of Research and Standards Guidelines (ORSG) for Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water, Massachusetts Department of Environmental Protection, January 27, 2020

PFAS in Town of Shirley Patterson Water Supply Well

PFAS Summary Report – Groundwater
Former Fort Devens, PFAS Community and Town Supply Wells

KOMAN, PFAS Sampling of Town Water Supply Wells, Q2 2019

Community and Residential Wells

Location	2270000-03G
Field Sample ID	PATTERSON WELL_MAY19
Sampling Depth	0.00 - 0.00
Sampling Date	05/22/2019
SDG	L1921697_erp
Sample Type	**Normal**

PFAS	Results (ng/L)
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	1.84 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	1.84 U
Perfluorobutanesulfonic acid (PFBS)	1.84 U
Perfluorodecanoic acid (PFDA)	1.84 U
Perfluorododecanoic acid (PFDoA)	1.84 U
Perfluoroheptanoic acid (PFHpA)	1.84 U
Perfluorohexanesulfonic acid (PFHxS)	1.84 U
Perfluorohexanoic acid (PFHxA)	1.84 U
Perfluorononanoic acid (PFNA)	1.84 U
Perfluorooctanesulfonic acid (PFOS)	1.84 U
Perfluorooctanoic acid (PFOA)	1.84 U
Perfluorotetradecanoic acid (PFTA)	1.84 U
Perfluorotridecanoic acid (PFTrDA)	1.84 U
Perfluoroundecanoic acid (PFUnA)	1.84 U
†PFOS + PFOA (EPA)	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.00**

PFAS Summary Report – Groundwater
Former Fort Devens, PFAS Community and Town Supply Wells

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated; UJ = estimated non detect

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Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detection of PFAS above the EPA Lifetime Health Advisory: PFOS + PFOA > 70 ng/L.

Bolded and highlighted results indicate detection of PFAS above the MassDEP and the MassDEP Office of Research and Standards Guideline (ORSG): PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA > 20 ng/L

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ Final PFAS-Related Revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, December 27, 2019

‡ PFAS Maximum Contaminant Level (MCL) Proposed Amendment & Public Comment ("MCL", 310 CMR 22.00 PFAS MCL Amendments), Massachusetts Department of Environmental Protection, December 27, 2019

‡ Documentation for Updated Office of Research and Standards Guidelines (ORSG) for Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water, Massachusetts Department of Environmental Protection, January 27, 2020

PFAS in Town of Shirley Walker Water Supply Well

PFAS Summary Report – Groundwater
Former Fort Devens, PFAS Community and Town Supply Wells

KOMAN, PFAS Sampling of Town Water Supply Wells, Q2 2019

Community and Residential Wells

Location	2270000-04G
Field Sample ID	WALKER WELL_MAY19
Sampling Depth	0.00 - 0.00
Sampling Date	05/22/2019
SDG	L1921697_erp
Sample Type	**Normal**

PFAS	Results (ng/L)
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.02 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.02 U
Perfluorobutanesulfonic acid (PFBS)	2.02 U
Perfluorodecanoic acid (PFDA)	2.02 U
Perfluorododecanoic acid (PFDoA)	2.02 U
Perfluoroheptanoic acid (PFHpA)	2.02 U
Perfluorohexanesulfonic acid (PFHxS)	2.02 U
Perfluorohexanoic acid (PFHxA)	2.02 U
Perfluorononanoic acid (PFNA)	2.02 U
Perfluorooctanesulfonic acid (PFOS)	2.02 U
Perfluorooctanoic acid (PFOA)	2.02 U
Perfluorotetradecanoic acid (PFTA)	2.02 U
Perfluorotridecanoic acid (PFTrDA)	2.02 U
Perfluoroundecanoic acid (PFUnA)	2.02 U
†PFOS + PFOA (EPA)	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP/ORSG)	**0.00**

PFAS Summary Report – Groundwater
Former Fort Devens, PFAS Community and Town Supply Wells

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated; UJ = estimated non detect

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Bolded and highlighted results indicate detection of PFAS above the EPA Lifetime Health Advisory: PFOS + PFOA > 70 ng/L.

Bolded and highlighted results indicate detection of PFAS above the MassDEP and the MassDEP Office of Research and Standards Guideline (ORSG): PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA > 20 ng/L

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ Final PFAS-Related Revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000), Massachusetts Department of Environmental Protection, December 27, 2019

‡ PFAS Maximum Contaminant Level (MCL) Proposed Amendment & Public Comment ("MCL", 310 CMR 22.00 PFAS MCL Amendments), Massachusetts Department of Environmental Protection, December 27, 2019

‡ Documentation for Updated Office of Research and Standards Guidelines (ORSG) for Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water, Massachusetts Department of Environmental Protection, January 27, 2020

H-4

PFAS in Surface Water and Sediment and TOC in Sediment

AOC 32 Detention Pond

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Detention Pond

	Location	DP-18-01
	Field Sample ID	DP-SW-18-01-DEC18
	Sampling Depth	0.00 - 0.00
	Sampling Date	12/05/2018
	SDG	320459171
	Sample Type	Normal
PFAS Isotope Dilution	**Limits (ng/l)**	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		8.80 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		8.80 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		8.80 U
Perfluorobutanesulfonic acid (PFBS)	2030000	0.880 U
Perfluorodecanoic acid (PFDA)		0.880 U
Perfluorododecanoic acid (PFDoA)		1.30 U
Perfluoroheptanoic acid (PFHpA)		**0.850 J**
Perfluorohexanesulfonic acid (PFHxS)		**0.370 J**
Perfluorohexanoic acid (PFHxA)		**0.960 J**
Perfluorononanoic acid (PFNA)		**0.580 J**
Perfluorooctanesulfonic acid (PFOS)	2030	2.60 U
Perfluorooctanoic acid (PFOA)	2030	**1.10 J**
Perfluorotetradecanoic acid (PFTA)		2.60 U
Perfluorotridecanoic acid (PFTrDA)		2.60 U
Perfluoroundecanoic acid (PFUnA)		1.30 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Detention Pond

	Location	DP-18-01
	Field Sample ID	DP-SED-18-01-DEC18
	Sampling Depth	0.00 - 0.25
	Sampling Date	12/05/2018
	SDG	320459171
	Sample Type	Normal
PFAS Isotope Dilution Sediment	**Limits (ug/kg)**	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		4.70 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		2.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		**2.30 J**
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		**1.10 J**
Perfluorobutanesulfonic acid (PFBS)	609000	0.420 U
Perfluorodecanoic acid (PFDA)		**0.220 J**
Perfluorododecanoic acid (PFDoA)		**0.680 J**
Perfluoroheptanoic acid (PFHpA)		0.470 U
Perfluorohexanesulfonic acid (PFHxS)		**0.230 J**
Perfluorohexanoic acid (PFHxA)		0.470 U
Perfluorononanoic acid (PFNA)		**0.730**
Perfluorooctanesulfonic acid (PFOS)	609	1.20 U
Perfluorooctanoic acid (PFOA)	609	0.470 U
Perfluorotetradecanoic acid (PFTA)		**0.580 J**
Perfluorotridecanoic acid (PFTrDA)		**0.870**
Perfluoroundecanoic acid (PFUnA)		**0.920**

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

KOMAN, PFAS RI, Surface Water/Sediment-Area2

Detention Pond

Locations:	DP-18-01
Field Sample ID:	DP-SED-18-01-DEC18
Sample Begin Depth:	0
Sample End Depth:	0.25
Sample Date:	12/05/2018

Gen. Chemistry (MG/KG)	
Total Organic Carbon	**38,000**

Detects are displayed in bold font

Units

MG/KG = milligrams per kilogram

Willow Brook

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Willow Brook

	Location	WB-18-01	WB-18-02	WB-18-03	WB-18-04	WB-18-05	WB-18-05
	Field Sample ID	WB-SW-18-01-DEC18	WB-SW-18-02-DEC18	WB-SW-18-03-DEC18	WB-SW-18-04-DEC18	A2-SW-DUP-121318	WB-SW-18-05-DEC18
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Sampling Date	12/17/2018	12/17/2018	12/13/2018	12/13/2018	12/13/2018	12/13/2018
	SDG	320463651	320463651	320461841	320461841	320461841	320461841
	Sample Type	Normal	Normal	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	**Limits (ng/l)**	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		18.0 U	17.0 U	19.0 U	20.0 U	19.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		8.90 U	8.70 U	9.30 U	10.0 U	9.40 U	8.90 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		8.90 U	8.70 U	9.30 U	10.0 U	9.40 U	8.90 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		8.90 U	8.70 U	9.30 U	10.0 U	9.40 U	8.90 U
Perfluorobutanesulfonic acid (PFBS)	2030000	**2.30**	**2.70**	**3.10**	**3.20**	**4.60**	**4.10**
Perfluorodecanoic acid (PFDA)		**0.460 J**	0.870 U	0.930 U	1.00 U	**0.620 J**	**0.610 J**
Perfluorododecanoic acid (PFDoA)		1.30 U	1.30 U	1.40 U	1.50 U	1.40 U	1.30 U
Perfluoroheptanoic acid (PFHpA)		**6.50**	**6.80**	**13.0**	**13.0**	**14.0**	**13.0**
Perfluorohexanesulfonic acid (PFHxS)		**15.0**	**18.0**	**36.0**	**44.0**	**55.0**	**53.0**
Perfluorohexanoic acid (PFHxA)		**12.0**	**13.0**	**19.0**	**20.0**	**20.0**	**20.0**
Perfluorononanoic acid (PFNA)		**1.50 J**	**1.20 J**	**2.20**	**2.20**	**2.80**	**2.50**
Perfluorooctanesulfonic acid (PFOS)	2030	**34.0**	**23.0**	**55.0**	**58.0**	**72.0**	**66.0**
Perfluorooctanoic acid (PFOA)	2030	**14.0**	**13.0**	**19.0**	**19.0**	**25.0**	**25.0**
Perfluorotetradecanoic acid (PFTA)		2.70 U	2.60 U	2.80 U	3.00 U	2.80 U	2.70 U
Perfluorotridecanoic acid (PFTrDA)		2.70 U	2.60 U	2.80 U	3.00 U	2.80 U	2.70 U
Perfluoroundecanoic acid (PFUnA)		1.30 U	1.30 U	1.40 U	1.50 U	1.40 U	1.30 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Willow Brook

	Location	WB-18-06
	Field Sample ID	WB-SW-18-06-DEC18
	Sampling Depth	0.00 - 0.00
	Sampling Date	12/13/2018
	SDG	320461841
	Sample Type	Normal
PFAS Isotope Dilution	**Limits (ng/l)**	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		17.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		8.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		8.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		8.40 U
Perfluorobutanesulfonic acid (PFBS)	2030000	**4.40**
Perfluorodecanoic acid (PFDA)		**0.460 J**
Perfluorododecanoic acid (PFDoA)		1.30 U
Perfluoroheptanoic acid (PFHpA)		**13.0**
Perfluorohexanesulfonic acid (PFHxS)		**49.0**
Perfluorohexanoic acid (PFHxA)		**20.0**
Perfluorononanoic acid (PFNA)		**2.20**
Perfluorooctanesulfonic acid (PFOS)	2030	**48.0**
Perfluorooctanoic acid (PFOA)	2030	**21.0**
Perfluorotetradecanoic acid (PFTA)		2.50 U
Perfluorotridecanoic acid (PFTrDA)		2.50 U
Perfluoroundecanoic acid (PFUnA)		1.30 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

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Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Willow Brook

	Location	WB-18-01	WB-18-01	WB-18-01	WB-18-02	WB-18-03	WB-18-04
	Field Sample ID	WB-SED-18-01-DEC18	WB-SED-18-01-DEC18	WB-SED-18-01-DEC18	WB-SED-18-02-DEC18	WB-SED-18-03-DEC18	WB-SED-18-04-DEC18
	Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
	Sampling Date	12/17/2018	12/17/2018	12/17/2018	12/17/2018	12/13/2018	12/13/2018
	SDG	320463651	320463651	320463651	320463651	320461841	320461841
	Sample Type	Matrix Spike	Matrix Spike Duplicate	Normal	Normal	Normal	Normal
PFAS Isotope Dilution Sediment	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		**2.86 J**	**2.95 J**	3.00 U	3.60 U	2.30 U	2.90 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		**2.72 J**	**2.78 J**	1.50 U	1.80 U	1.10 U	1.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		**3.17**	**3.03**	1.50 U	**0.610 J**	1.10 U	1.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		**2.86 J**	**2.71 J**	1.50 U	**0.670 J**	1.10 U	1.50 U
Perfluorobutanesulfonic acid (PFBS)	609000	**2.46**	**2.65**	0.270 U	0.330 U	0.200 U	0.260 U
Perfluorodecanoic acid (PFDA)		**2.70**	**2.88**	0.300 U	**0.310 J**	0.230 U	0.290 U
Perfluorododecanoic acid (PFDoA)		**2.94**	**2.91**	0.300 U	**0.450 J**	0.230 U	**0.400 J**
Perfluoroheptanoic acid (PFHpA)		**2.88**	**2.83**	0.300 U	0.360 U	0.230 U	0.440 U
Perfluorohexanesulfonic acid (PFHxS)		**2.51**	**2.51**	0.300 U	**0.840**	0.230 U	0.440 U
Perfluorohexanoic acid (PFHxA)		**2.77**	**2.76**	0.300 U	0.360 U	0.230 U	**0.210 J**
Perfluorononanoic acid (PFNA)		**2.83**	**2.82**	0.300 U	**0.240 J**	0.230 U	0.290 U
Perfluorooctanesulfonic acid (PFOS)	609	**3.40**	**3.07**	**0.580 J**	**3.00**	**0.420 J**	**1.90**
Perfluorooctanoic acid (PFOA)	609	**2.85**	**2.99**	0.300 U	**0.300 J**	0.230 U	**0.250 J**
Perfluorotetradecanoic acid (PFTA)		**2.83**	**2.88**	0.450 U	**0.200 J**	0.340 U	0.440 U
Perfluorotridecanoic acid (PFTrDA)		**2.66**	**2.73**	0.300 U	**0.220 J**	0.230 U	**0.170 J**
Perfluoroundecanoic acid (PFUnA)		**3.06**	**2.89**	0.300 U	**0.390 J**	0.230 U	**0.440**

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Willow Brook

	Location	WB-18-05	WB-18-05	WB-18-05	WB-18-05	WB-18-06
	Field Sample ID	A2-SED-DUP-121318	A2-SED-DUP-121318	A2-SED-DUP-121318	WB-SED-18-05-DEC18	WB-SED-18-06-DEC18
	Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
	Sampling Date	12/13/2018	12/13/2018	12/13/2018	12/13/2018	12/13/2018
	SDG	320461841	320461841	320461841	320461841	320461841
	Sample Type	Field Duplicate	Matrix Spike	Matrix Spike Duplicate	Normal	Normal
PFAS Isotope Dilution Sediment	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		3.10 U	**3.06 J**	**3.31 J**	2.90 U	4.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.50 U	**3.40**	**7.07**	1.40 U	2.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		**0.740 J**	**3.81**	**5.41**	1.40 U	2.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		**0.670 J**	**3.67**	**3.73**	1.40 U	2.10 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.280 U	**2.93**	**2.94**	0.260 U	0.370 U
Perfluorodecanoic acid (PFDA)		0.310 U	**3.22**	**3.33**	0.290 U	**0.390 J**
Perfluorododecanoic acid (PFDoA)		**0.200 J**	**2.86**	**3.00**	0.290 U	**0.500 J**
Perfluoroheptanoic acid (PFHpA)		0.310 U	**3.26**	**3.49**	0.290 U	0.410 U
Perfluorohexanesulfonic acid (PFHxS)		**0.710**	**3.55**	**3.88**	0.430 U	**1.00**
Perfluorohexanoic acid (PFHxA)		**0.140 J**	**3.24**	**3.29**	0.290 U	**0.150 J**
Perfluorononanoic acid (PFNA)		0.310 U	**2.97**	**2.93**	0.290 U	**0.220 J**
Perfluorooctanesulfonic acid (PFOS)	609	**2.70**	**4.87**	**5.76**	**0.930 J**	**7.90**
Perfluorooctanoic acid (PFOA)	609	**0.170 J**	**3.04**	**3.14**	0.290 U	**0.430 J**
Perfluorotetradecanoic acid (PFTA)		**0.180 J**	**3.05**	**3.33**	0.430 U	0.620 U
Perfluorotridecanoic acid (PFTrDA)		**0.200 J**	**3.21**	**3.39**	0.290 U	**0.290 J**
Perfluoroundecanoic acid (PFUnA)		0.310 U	**3.20**	**3.41**	0.290 U	**0.840**

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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Bolded and highlighted results indicate detections of PFAS above criteria

Criteria = EPA Region 1 Memorandum - Sediment 2/28/2018

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

KOMAN, PFAS RI, Surface Water/Sediment-Area2

Willow Brook

Locations:	WB-18-01	WB-18-02	WB-18-03	WB-18-04	WB-18-05	WB-18-05 (FD)	WB-18-06
Field Sample ID:	WB-SED-18-01-	WB-SED-18-02-	WB-SED-18-03-	WB-SED-18-04-	WB-SED-18-05-	A2-SED-DUP-	WB-SED-18-06-
Sample Begin Depth:	0	0	0	0	0	0	0
Sample End Depth:	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sample Date:	12/17/2018	12/17/2018	12/13/2018	12/13/2018	12/13/2018	12/13/2018	12/13/2018
Gen. Chemistry (MG/KG)							
Total Organic Carbon	**8,300**	**28,000**	**2,600**	**12,000**	**46,000**	**34,000**	**61,000**

Detects are displayed in bold font

Units

MG/KG = milligrams per kilogram

Plow Shop Pond

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Plow Shop Pond

	Location	PS-18-01	PS-18-02	PS-18-03	PS-18-04	PS-18-05	PS-18-06
	Field Sample ID	PS-SW-18-01-DEC18	PS-SW-18-02-DEC18	PS-SW-18-03-DEC18	PS-SW-18-04-DEC18	PS-SW-18-05-DEC18	PS-SW-18-06-DEC18
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Sampling Date	12/14/2018	12/17/2018	12/14/2018	12/14/2018	12/17/2018	12/17/2018
	SDG	320461841	320463651	320461841	320461841	320463651	320463651
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ng/l)**	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		19.0 U	17.0 U	19.0 U	19.0 U	17.0 U	17.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.60 U	8.30 U	9.50 U	9.60 U	8.40 U	8.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.60 U	8.30 U	9.50 U	9.60 U	8.40 U	8.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.60 U	8.30 U	9.50 U	9.60 U	8.40 U	8.60 U
Perfluorobutanesulfonic acid (PFBS)	2030000	**0.610 J**	**0.910 J**	**1.30 J**	**1.20 J**	**1.00 J**	**0.920 J**
Perfluorodecanoic acid (PFDA)		**0.510 J**	0.830 U	0.950 U	0.960 U	0.840 U	0.860 U
Perfluorododecanoic acid (PFDoA)		1.40 U	1.20 U	1.40 U	1.40 U	1.30 U	1.30 U
Perfluoroheptanoic acid (PFHpA)		**1.80 J**	**3.00**	**4.00**	**4.20**	**3.60**	**1.20 J**
Perfluorohexanesulfonic acid (PFHxS)		**1.40 J**	**2.90**	**3.10**	**2.80**	**3.20**	**7.40**
Perfluorohexanoic acid (PFHxA)		**2.00**	**3.70**	**5.40**	**5.20**	**4.70**	**1.90**
Perfluorononanoic acid (PFNA)		1.40 U	**0.700 J**	**0.960 J**	**0.850 J**	**0.850 J**	**0.480 J**
Perfluorooctanesulfonic acid (PFOS)	2030	**5.00**	**3.90**	**4.30**	**4.40**	**3.70**	**9.80**
Perfluorooctanoic acid (PFOA)	2030	**3.90**	**6.10**	**9.80**	**9.40**	**7.50**	**4.10**
Perfluorotetradecanoic acid (PFTA)		2.90 U	2.50 U	2.80 U	2.90 U	2.50 U	2.60 U
Perfluorotridecanoic acid (PFTrDA)		2.90 U	2.50 U	2.80 U	2.90 U	2.50 U	2.60 U
Perfluoroundecanoic acid (PFUnA)		1.40 U	1.20 U	1.40 U	1.40 U	1.30 U	1.30 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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Criteria = EPA Region 1 Memorandum - Surface Water 2/28/2019

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Plow Shop Pond

	Location	PS-18-01	PS-18-02	PS-18-03	PS-18-04	PS-18-05	PS-18-06
	Field Sample ID	PS-SED-18-01-DEC18	PS-SED-18-02-DEC18	PS-SED-18-03-DEC18	PS-SED-18-04-DEC18	PS-SED-18-05-DEC18	PS-SED-18-06-DEC18
	Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50	0.00 - 0.50
	Sampling Date	12/14/2018	12/17/2018	12/14/2018	12/14/2018	12/17/2018	12/17/2018
	SDG	320461841	320463651	320461841	320461841	320463651	320463651
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution Sediment	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.70 U	3.00 U	3.60 U	2.60 U	3.40 U	2.90 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.30 U	1.50 U	1.80 U	1.30 U	1.70 U	1.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.30 U	1.50 U	1.80 U	1.30 U	1.70 U	1.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 U	1.50 U	1.80 U	1.30 U	1.70 U	1.40 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.240 U	0.270 U	0.330 U	0.230 U	0.310 U	0.260 U
Perfluorodecanoic acid (PFDA)		0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U
Perfluorododecanoic acid (PFDoA)		0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U
Perfluoroheptanoic acid (PFHpA)		0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U
Perfluorohexanesulfonic acid (PFHxS)		0.270 U	**0.160 J**	0.360 U	0.260 U	0.340 U	**0.120 J**
Perfluorohexanoic acid (PFHxA)		0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U
Perfluorononanoic acid (PFNA)		0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U
Perfluorooctanesulfonic acid (PFOS)	609	0.670 U	**1.70**	0.910 U	0.650 U	0.850 U	**1.40**
Perfluorooctanoic acid (PFOA)	609	0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U
Perfluorotetradecanoic acid (PFTA)		0.400 U	0.440 U	0.540 U	0.390 U	0.510 U	0.430 U
Perfluorotridecanoic acid (PFTrDA)		0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U
Perfluoroundecanoic acid (PFUnA)		0.270 U	0.300 U	0.360 U	0.260 U	0.340 U	0.290 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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KOMAN, PFAS RI, Surface Water/Sediment-Area2

Plow Shop Pond

Locations:	PS-18-01	PS-18-03	PS-18-04	PS-18-05	PS-18-06
Field Sample ID:	PS-SED-18-01-DEC18	PS-SED-18-03-DEC18	PS-SED-18-04-DEC18	PS-SED-18-05-DEC18	PS-SED-18-06-DEC18
Sample Begin Depth:	0	0	0	0	0
Sample End Depth:	0.5	0.5	0.5	0.5	0.5
Sample Date:	12/14/2018	12/14/2018	12/14/2018	12/17/2018	12/17/2018
Gen. Chemistry (MG/KG)					
Total Organic Carbon	**7,800**	**80,000**	**16,000**	**18,000**	**16,000**

Detects are displayed in bold font

Units

MG/KG = milligrams per kilogram

Nonacoicus Brook

Surface Water and Sediment Results

PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Nonacoicus Brook

	Location	NB-18-01	NB-18-02	NB-18-03	NB-18-04	NB-18-05	NB-18-06
	Field Sample ID	NB-SW-18-01-DEC18	NB-SW-18-02-DEC18	NB-SW-18-03-DEC18	NB-SW-18-04-DEC18	NB-SW-18-05-DEC18	NB-SW-18-06-DEC18
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Sampling Date	12/11/2018	12/11/2018	12/06/2018	12/06/2018	12/06/2018	12/11/2018
	SDG	320461241	320461241	320459931	320459931	320459931	320461241
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ng/l)**	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		17.0 U	17.0 U	17.0 U	18.0 U	18.0 U	17.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		8.60 U	8.50 U	8.60 U	8.80 U	8.90 U	8.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		8.60 U	8.50 U	8.60 U	8.80 U	8.90 U	8.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		8.60 U	8.50 U	8.60 U	8.80 U	8.90 U	8.60 U
Perfluorobutanesulfonic acid (PFBS)	2030000	**1.20 J**	**1.30 J**	**1.30 J**	**1.20 J**	**2.10**	**1.30 J**
Perfluorodecanoic acid (PFDA)		**0.440 J**	0.850 U	0.860 U	0.880 U	0.890 U	0.860 U
Perfluorododecanoic acid (PFDoA)		1.30 U	1.30 U	1.30 U	1.30 U	1.30 U	1.30 U
Perfluoroheptanoic acid (PFHpA)		**3.90**	**4.20**	**4.00**	**3.20**	**6.40**	**3.90**
Perfluorohexanesulfonic acid (PFHxS)		**3.00**	**3.40**	**3.10**	**2.80**	**16.0**	**2.80**
Perfluorohexanoic acid (PFHxA)		**4.90**	**4.80**	**5.00**	**4.10**	**9.40**	**4.70**
Perfluorononanoic acid (PFNA)		**1.00 J**	**0.850 J**	**0.970 J**	**0.740 J**	**1.30 J**	**0.870 J**
Perfluorooctanesulfonic acid (PFOS)	2030	**4.10**	**4.80**	**4.90 J**	**3.70**	**17.0**	**3.00 J**
Perfluorooctanoic acid (PFOA)	2030	**8.30**	**8.10**	**8.80**	**7.40**	**12.0**	**9.30**
Perfluorotetradecanoic acid (PFTA)		2.60 U	2.50 U	2.60 U	2.70 U	2.70 U	2.60 U
Perfluorotridecanoic acid (PFTrDA)		2.60 U	2.50 U	2.60 U	2.70 U	2.70 U	2.60 U
Perfluoroundecanoic acid (PFUnA)		1.30 U	1.30 U	1.30 U	1.30 U	1.30 U	1.30 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Nonacoicus Brook

	Location	NB-18-07
	Field Sample ID	NB-SW-18-07-DEC18
	Sampling Depth	0.00 - 0.00
	Sampling Date	12/11/2018
	SDG	320461241
	Sample Type	Normal
PFAS Isotope Dilution	**Limits (ng/l)**	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		17.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		8.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		8.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		8.50 U
Perfluorobutanesulfonic acid (PFBS)	2030000	**3.20**
Perfluorodecanoic acid (PFDA)		0.850 U
Perfluorododecanoic acid (PFDoA)		1.30 U
Perfluoroheptanoic acid (PFHpA)		**2.00**
Perfluorohexanesulfonic acid (PFHxS)		**5.90**
Perfluorohexanoic acid (PFHxA)		**2.90**
Perfluorononanoic acid (PFNA)		1.30 U
Perfluorooctanesulfonic acid (PFOS)	2030	**3.60**
Perfluorooctanoic acid (PFOA)	2030	**6.40**
Perfluorotetradecanoic acid (PFTA)		2.60 U
Perfluorotridecanoic acid (PFTrDA)		2.60 U
Perfluoroundecanoic acid (PFUnA)		1.30 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Nonacoicus Brook

	Location	NB-18-01	NB-18-02	NB-18-03	NB-18-04	NB-18-05	NB-18-06
	Field Sample ID	NB-SED-18-01-DEC18	NB-SED-18-02-DEC18	NB-SED-18-03-DEC18	NB-SED-18-04-DEC18	NB-SED-18-05-DEC18	NB-SED-18-06-DEC18
	Sampling Depth	0.00 - 0.50	0.00 - 0.50	0.00 - 0.25	0.00 - 0.25	0.00 - 0.25	0.00 - 0.25
	Sampling Date	12/11/2018	12/11/2018	12/06/2018	12/06/2018	12/06/2018	12/11/2018
	SDG	320461241	320461241	320459931	320459931	320459931	320461241
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution Sediment	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.50 U	3.50 U	5.00 U	4.40 U	4.00 U	2.80 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.70 U	2.50 U	2.20 U	2.00 U	1.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.70 U	2.50 U	2.20 U	2.00 U	1.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.70 U	2.50 U	2.20 U	2.00 U	1.40 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.220 U	0.310 U	0.450 U	0.390 U	0.360 U	0.250 U
Perfluorodecanoic acid (PFDA)		0.250 U	0.350 U	0.500 U	0.440 U	**0.220 J**	0.280 U
Perfluorododecanoic acid (PFDoA)		0.250 U	0.350 U	0.500 U	0.440 U	0.400 U	0.280 U
Perfluoroheptanoic acid (PFHpA)		0.250 U	0.350 U	0.500 U	0.440 U	**0.300 J**	0.280 U
Perfluorohexanesulfonic acid (PFHxS)		0.250 U	0.350 U	0.750 U	0.440 U	**2.00**	0.280 U
Perfluorohexanoic acid (PFHxA)		0.250 U	0.350 U	0.500 U	0.440 U	**0.360 J**	0.280 U
Perfluorononanoic acid (PFNA)		0.250 U	0.350 U	0.500 U	0.440 U	**0.350 J**	0.280 U
Perfluorooctanesulfonic acid (PFOS)	609	0.620 U	**0.550 J**	**4.00 J**	**0.710 J**	**6.40**	0.690 U
Perfluorooctanoic acid (PFOA)	609	0.250 U	0.350 U	0.500 U	0.440 U	**0.930**	0.280 U
Perfluorotetradecanoic acid (PFTA)		0.370 U	0.520 U	0.750 U	0.660 U	0.600 U	0.410 U
Perfluorotridecanoic acid (PFTrDA)		0.250 U	0.350 U	0.500 U	0.440 U	0.400 U	0.280 U
Perfluoroundecanoic acid (PFUnA)		0.250 U	0.350 U	0.500 U	0.440 U	0.400 U	0.280 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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PFAS Summary Report – Soil, Sediment, and Surface Water
Former Fort Devens, PFAS Remedial Investigation
KOMAN, PFAS RI, Surface Water/Sediment-Area2
Nonacoicus Brook

	Location	NB-18-07
	Field Sample ID	NB-SED-18-07-DEC18
	Sampling Depth	0.00 - 0.25
	Sampling Date	12/11/2018
	SDG	320461241
	Sample Type	Normal
PFAS Isotope Dilution Sediment	**Limits (ug/kg)**	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		6.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		3.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		3.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		3.10 U
Perfluorobutanesulfonic acid (PFBS)	609000	0.560 U
Perfluorodecanoic acid (PFDA)		0.620 U
Perfluorododecanoic acid (PFDoA)		0.620 U
Perfluoroheptanoic acid (PFHpA)		0.620 U
Perfluorohexanesulfonic acid (PFHxS)		0.930 U
Perfluorohexanoic acid (PFHxA)		0.620 U
Perfluorononanoic acid (PFNA)		0.620 U
Perfluorooctanesulfonic acid (PFOS)	609	1.50 U
Perfluorooctanoic acid (PFOA)	609	0.620 U
Perfluorotetradecanoic acid (PFTA)		0.930 U
Perfluorotridecanoic acid (PFTrDA)		0.620 U
Perfluoroundecanoic acid (PFUnA)		0.620 U

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated

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KOMAN, PFAS RI, Surface Water/Sediment-Area2

Nonacoicus Brook

Locations:	NB-18-01	NB-18-03	NB-18-04	NB-18-05	NB-18-06	NB-18-07
Field Sample ID:	NB-SED-18-01-DEC18	NB-SED-18-03-DEC18	NB-SED-18-04-DEC18	NB-SED-18-05-DEC18	NB-SED-18-06-DEC18	NB-SED-18-07-DEC18
Sample Begin Depth:	0	0	0	0	0	0
Sample End Depth:	0.5	0.25	0.25	0.25	0.25	0.25
Sample Date:	12/11/2018	12/06/2018	12/06/2018	12/06/2018	12/11/2018	12/11/2018
Gen. Chemistry (MG/KG)						
Total Organic Carbon	**2,000**	**77,000**	**110,000**	**84,000**	**7,100**	**150,000**

Detects are displayed in bold font

Units

MG/KG = milligrams per kilogram

H-5

PFAS in Soil

AOC 32/43A

PFAS Results in Soil Samples

PFAS Summary Report – Soil, Sediment, and Surface Water
PFAS Remedial Investigation
KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-01	32SB-19-01	32SB-19-01	32SB-19-01	32SB-19-01	32SB-19-01
	Field Sample ID	32SB-19-01-0-0.5	32SB-19-01-0.5-3	32SB-19-01-3-7	A2-SB-DUP01-102919	32SB-19-01-7-15	32SB-19-01-22-24
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00	7.00 - 15.00	22.00 - 24.00
	Sampling Date	10/29/2019	10/29/2019	10/29/2019	10/29/2019	10/29/2019	10/29/2019
	SDG	320558521	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Normal	Field Duplicate	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.20 U	2.10 U	2.10 U	2.10 U	2.00 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.10 U	1.00 U	1.00 U	0.990 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.10 U	1.00 U	1.00 U	0.990 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.10 U	1.00 U	1.00 U	0.990 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.200 U	0.190 U	0.190 U	0.190 U	0.180 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.150 J**	**0.150 J**	**0.170 J**	**0.170 J**	**0.300**	**0.220 J**
Perfluorohexanoic acid (PFHxA)		0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorononanoic acid (PFNA)	0.320	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**1.40**	**1.60**	**5.60**	**6.30**	**2.00**	**2.30**
Perfluorooctanoic acid (PFOA)	0.720	0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluorotetradecanoic acid (PFTA)		0.330 U	0.320 U	0.310 U	0.310 U	0.300 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.220 U	0.210 U	0.210 U	0.210 U	0.200 U	0.210 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

Bolded results indicate detections of PFAS
Bolded and highlighted results indicate detections of PFAS above criteria
Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

PFAS Summary Report – Soil, Sediment, and Surface Water
PFAS Remedial Investigation
KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-02	32SB-19-02	32SB-19-02	32SB-19-02	32SB-19-02
	Field Sample ID	32SB-19-02-0-0.5	32SB-19-02-0.5-3	32SB-19-02-3-7	32SB-19-02-7-15	32SB-19-02-23-25
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	23.00 - 25.00
	Sampling Date	10/29/2019	10/29/2019	10/29/2019	10/29/2019	10/29/2019
	SDG	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.50 U	2.10 U	2.10 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.10 U	1.10 U	1.00 U	0.980 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.10 U	1.10 U	1.00 U	0.980 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.10 U	1.10 U	1.00 U	0.980 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.190 U	0.190 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.150 J**	0.210 U	0.320 U	**0.140 J**	**0.180 J**
Perfluorohexanoic acid (PFHxA)		0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**1.00 J**	**1.10**	**1.60**	**1.20 J**	0.490 U
Perfluorooctanoic acid (PFOA)	0.720	**0.120 J**	0.210 U	0.210 U	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.370 U	0.320 U	0.320 U	0.300 U	0.290 U
Perfluorotridecanoic acid (PFTrDA)		0.250 U	0.210 U	0.210 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.250 U	0.210 U	0.210 U	0.200 U	0.200 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

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‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts

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PFAS Remedial Investigation
KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-03	32SB-19-03	32SB-19-03	32SB-19-03	32SB-19-03	32SB-19-03
	Field Sample ID	32SB-19-03-0-0.5	32SB-19-03-0.5-3	A2-SB-DUP01-102819	32SB-19-03-3-7	32SB-19-03-7-15	32SB-19-03-22-24
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	22.00 - 24.00
	Sampling Date	10/28/2019	10/28/2019	10/28/2019	10/28/2019	10/28/2019	10/28/2019
	SDG	320558521	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Field Duplicate	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.30 U	2.10 U	2.60 U	2.20 U	2.10 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.00 U	1.30 U	1.10 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.00 U	1.30 U	1.10 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.00 U	1.30 U	1.10 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.210 U	0.190 U	0.230 U	0.200 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	**0.130 J**	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.0970 J**	**0.0680 J**	**0.0820 J**	0.220 U	0.210 U	**0.0620 J**
Perfluorohexanoic acid (PFHxA)		0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**1.30**	**0.830 J**	**1.20 J**	**0.310 J**	**0.630 J**	**0.710 J**
Perfluorooctanoic acid (PFOA)	0.720	0.230 U	**0.190 J**	**0.200 J**	0.220 U	0.210 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.350 U	0.310 U	0.390 U	0.330 U	0.310 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.230 U	0.210 U	0.260 U	0.220 U	0.210 U	0.200 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

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KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-05	32SB-19-05	32SB-19-05	32SB-19-05	32SB-19-05
	Field Sample ID	32SB-19-05-0-0.5	32SB-19-05-0.5-3	32SB-19-05-3-7	32SB-19-05-7-15	32SB-19-05-16-18
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	16.00 - 18.00
	Sampling Date	10/30/2019	10/30/2019	10/30/2019	10/30/2019	10/30/2019
	SDG	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.30 U	2.00 U	1.90 U	2.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.20 U	1.00 U	0.970 U	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.20 U	1.00 U	0.970 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.20 U	1.00 U	0.970 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.210 U	0.180 U	0.170 U	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
Perfluorododecanoic acid (PFDoA)		0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.310 U	0.230 U	**0.390**	0.290 U	0.350 U
Perfluorohexanoic acid (PFHxA)		0.200 U	0.230 U	**0.0810 J**	0.190 U	0.230 U
Perfluorononanoic acid (PFNA)	0.320	0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**1.30**	**2.00**	**1.90**	**0.620 J**	**0.890 J**
Perfluorooctanoic acid (PFOA)	0.720	0.200 U	0.230 U	**0.250 J**	**0.150 J**	0.230 U
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.350 U	0.300 U	0.290 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		0.200 U	0.230 U	0.200 U	0.190 U	0.230 U
Perfluoroundecanoic acid (PFUnA)		0.200 U	0.230 U	0.200 U	0.190 U	0.230 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
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AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-06	32SB-19-06	32SB-19-06	32SB-19-06	32SB-19-06
	Field Sample ID	32SB-19-06-0-0.5	32SB-19-06-0.5-3	32SB-19-06-3-7	32SB-19-06-7-15	32SB-19-06-17-19
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	17.00 - 19.00
	Sampling Date	10/29/2019	10/29/2019	10/29/2019	10/29/2019	10/29/2019
	SDG	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.60 U	2.00 U	2.00 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.30 U	0.980 U	0.980 U	1.00 U	0.990 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.30 U	0.980 U	0.980 U	1.00 U	0.990 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 U	0.980 U	0.980 U	1.00 U	0.990 U
Perfluorobutanesulfonic acid (PFBS)		0.230 U	0.180 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.260 U	**0.220 J**	**0.450**	0.300 U	0.300 U
Perfluorohexanoic acid (PFHxA)		0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.650 U	**0.280 J**	0.490 U	**0.350 J**	**0.280 J**
Perfluorooctanoic acid (PFOA)	0.720	**0.270 J**	**0.570**	**0.380**	**0.130 J**	**0.140 J**
Perfluorotetradecanoic acid (PFTA)		0.390 U	0.290 U	0.290 U	0.300 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.260 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.260 U	0.200 U	0.200 U	0.200 U	0.200 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

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PFAS Remedial Investigation
KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-07	32SB-19-07	32SB-19-07	32SB-19-07	32SB-19-07
	Field Sample ID	32SB-19-07-0-0.5	32SB-19-07-0.5-3	32SB-19-07-3-7	32SB-19-07-7-14	A2-SB-DUP-103019
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 14.00	7.00 - 14.00
	Sampling Date	10/30/2019	10/30/2019	10/30/2019	10/30/2019	10/30/2019
	SDG	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.00 U	1.00 U	0.990 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.00 U	1.00 U	0.990 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.00 U	1.00 U	0.990 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.180 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.110 J**	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.300 U	**0.410**	**0.350**	0.300 U	0.300 U
Perfluorohexanoic acid (PFHxA)		0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**1.40**	0.500 U	0.510 U	0.500 U	0.510 U
Perfluorooctanoic acid (PFOA)	0.720	**0.700**	**0.100 J**	**0.100 J**	0.200 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.300 U	0.300 U	0.310 U	0.300 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.200 U	0.200 U	0.200 U	0.200 U	0.200 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

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KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-08	32SB-19-08	32SB-19-08	32SB-19-08	32SB-19-08
	Field Sample ID	32SB-19-08-0-0.5	32SB-19-08-0.5-3	32SB-19-08-3-7	32SB-19-08-7-15	32SB-19-08-17-19
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 15.00	17.00 - 16.00
	Sampling Date	10/30/2019	10/30/2019	10/30/2019	10/30/2019	10/30/2019
	SDG	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.30 U	2.00 U	2.00 U	2.10 U	2.00 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.00 U	1.00 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.00 U	1.00 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.00 U	1.00 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.200 U	0.180 U	0.180 U	0.180 U	0.180 U
Perfluorodecanoic acid (PFDA)	0.300	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluorododecanoic acid (PFDoA)		0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluorohexanoic acid (PFHxA)		0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluorononanoic acid (PFNA)	0.320	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**0.380 J**	**0.870 J**	**1.10**	**0.260 J**	0.500 U
Perfluorooctanoic acid (PFOA)	0.720	0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluorotetradecanoic acid (PFTA)		0.340 U	0.300 U	0.310 U	0.310 U	0.300 U
Perfluorotridecanoic acid (PFTrDA)		0.230 U	0.200 U	0.200 U	0.210 U	0.200 U
Perfluoroundecanoic acid (PFUnA)		0.230 U	0.200 U	0.200 U	0.210 U	0.200 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

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Bolded and highlighted results indicate detections of PFAS above criteria
Criteria = Massachusetts Contingency Plan, 2019 Proposed PFAS Revisions

‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000),

PFAS Summary Report – Soil, Sediment, and Surface Water
PFAS Remedial Investigation
KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-09	32SB-19-09	32SB-19-09	32SB-19-09	32SB-19-09	32SB-19-09
	Field Sample ID	32SB-19-09-0-0.5	32SB-19-09-0.5-3	32SB-19-09-3-7	A2-SB-DUP02-102919	32SB-19-09-7-15	32SB-19-09-17-19
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	3.00 - 7.00	7.00 - 15.00	17.00 - 19.00
	Sampling Date	10/29/2019	10/29/2019	10/29/2019	10/29/2019	10/29/2019	10/29/2019
	SDG	320558521	320558521	320558521	320558521	320558521	320558521
	Sample Type	Normal	Normal	Normal	Field Duplicate	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.10 U	1.90 U	2.00 U	2.00 U	2.00 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	0.970 U	1.00 U	1.00 U	1.00 U	1.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	0.970 U	1.00 U	1.00 U	1.00 U	1.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	0.970 U	1.00 U	1.00 U	1.00 U	1.00 U
Perfluorobutanesulfonic acid (PFBS)		0.190 U	0.180 U	0.180 U	0.180 U	0.180 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	**0.140 J**	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorohexanoic acid (PFHxA)		0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorononanoic acid (PFNA)	0.320	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	0.520 U	**0.270 J**	0.500 U	**0.490 J**	0.500 U	**0.260 J**
Perfluorooctanoic acid (PFOA)	0.720	0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluorotetradecanoic acid (PFTA)		0.310 U	0.290 U	0.300 U	0.310 U	0.300 U	0.310 U
Perfluorotridecanoic acid (PFTrDA)		0.210 U	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		**0.110 J**	0.190 U	0.200 U	0.200 U	0.200 U	0.210 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
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‡ PFAS-Related revisions to the Massachusetts Contingency Plan ("MCP", 310 CMR

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KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-10	32SB-19-10	32SB-19-10	32SB-19-10	32SB-19-10
	Field Sample ID	32SB-19-10-0-0.5	32SB-19-10-0.5-3	32SB-19-10-3-7	32SB-19-10-7-14	32SB-19-10-14-16
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 14.00	14.00 - 16.00
	Sampling Date	10/31/2019	10/31/2019	10/31/2019	10/31/2019	10/31/2019
	SDG	320559201	320559201	320559201	320559201	320559201
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.50 U	2.60 U	2.50 U	2.20 U	2.30 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.30 U	1.30 U	1.30 U	1.10 U	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.30 U	1.30 U	1.30 U	1.10 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 U	1.30 U	1.30 U	1.10 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.230 U	0.230 U	0.230 U	0.200 U	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	**0.160 J**	0.260 U	0.250 U	0.220 U	0.230 U
Perfluorododecanoic acid (PFDoA)		0.250 U	0.260 U	0.250 U	0.220 U	0.230 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.250 U	0.260 U	0.250 U	0.220 U	0.230 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.250 U	**0.220 J**	**0.0850 J**	0.220 U	0.230 U
Perfluorohexanoic acid (PFHxA)		0.250 U	0.260 U	0.250 U	0.220 U	0.230 U
Perfluorononanoic acid (PFNA)	0.320	0.250 U	0.260 U	0.250 U	0.220 U	0.230 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**1.00 J**	**1.40**	0.630 U	0.550 U	**0.360 J**
Perfluorooctanoic acid (PFOA)	0.720	0.250 U	0.260 U	**0.200 J**	0.220 U	0.230 U
Perfluorotetradecanoic acid (PFTA)		0.380 U	0.390 U	0.380 U	0.330 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		0.250 U	0.260 U	0.250 U	0.220 U	0.230 U
Perfluoroundecanoic acid (PFUnA)		0.250 U	0.260 U	0.250 U	0.220 U	0.230 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
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KOMAN, PFAS RI, Soil Boring Samples-Area 2
AOC 32, Former Defense Reuse and Marketing Office

	Location	32SB-19-11	32SB-19-11	32SB-19-11	32SB-19-11	32SB-19-11
	Field Sample ID	32SB-19-11-0-0.5	32SB-19-11-0.5-3	32SB-19-11-3-7	32SB-19-11-7-12	32SB-19-11-12-14
	Sampling Depth	0.00 - 0.50	0.50 - 3.00	3.00 - 7.00	7.00 - 12.00	12.00 - 14.00
	Sampling Date	10/31/2019	10/31/2019	10/31/2019	10/31/2019	10/31/2019
	SDG	320559201	320559201	320559201	320559201	320559201
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.80 U	2.20 U	2.20 U	2.30 U	2.50 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.40 U	1.10 U	1.10 U	1.10 U	1.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		**1.20 J**	1.10 U	1.10 U	1.10 U	1.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.40 U	1.10 U	1.10 U	1.10 U	1.30 U
Perfluorobutanesulfonic acid (PFBS)		0.250 U	0.200 U	0.200 U	0.200 U	0.230 U
Perfluorodecanoic acid (PFDA)	0.300	0.280 U	0.220 U	0.220 U	0.230 U	0.250 U
Perfluorododecanoic acid (PFDoA)		0.280 U	0.220 U	0.220 U	0.230 U	0.250 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.280 U	0.220 U	0.220 U	0.230 U	0.250 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.0970 J**	**0.0960 J**	**0.120 J**	0.230 U	0.250 U
Perfluorohexanoic acid (PFHxA)		0.280 U	0.220 U	0.220 U	0.230 U	0.250 U
Perfluorononanoic acid (PFNA)	0.320	**0.130 J**	0.220 U	0.220 U	0.230 U	0.250 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**3.30**	**1.20**	**1.40**	**0.430 J**	0.630 U
Perfluorooctanoic acid (PFOA)	0.720	**0.320 J**	**0.170 J**	**0.240 J**	0.230 U	0.250 U
Perfluorotetradecanoic acid (PFTA)		0.420 U	0.330 U	0.340 U	0.340 U	0.380 U
Perfluorotridecanoic acid (PFTrDA)		0.280 U	0.220 U	0.220 U	0.230 U	0.250 U
Perfluoroundecanoic acid (PFUnA)		0.280 U	0.220 U	0.220 U	0.230 U	0.250 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
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AOC 76

PFAS Results in Soil Samples

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AOC 76, Devens Fire Station

	Location	76SB-19-01	76SB-19-02	76SB-19-02	76SB-19-02
	Field Sample ID	76SB-19-01-0-2	76SB-19-02-0-1	76SB-19-02-3-7	76SB-19-02-18-20
	Sampling Depth	0.00 - 2.00	0.00 - 1.00	3.00 - 7.00	18.00 - 20.00
	Sampling Date	06/19/2019	06/18/2019	06/18/2019	06/18/2019
	SDG	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.70 U	2.10 U	2.60 U	2.40 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		**1.20 J**	**3.10**	**0.700 J**	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.30 U	1.00 U	1.30 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 U	1.00 U	1.30 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.240 U	0.190 U	0.240 U	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	**0.770**	**2.90**	**0.430**	0.240 U
Perfluorododecanoic acid (PFDoA)		**1.40**	**1.00**	0.260 U	0.240 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.150 J**	**0.130 J**	0.260 U	0.240 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.140 J**	**0.0740 J**	0.260 U	0.240 U
Perfluorohexanoic acid (PFHxA)		0.270 U	**0.110 J**	0.260 U	0.240 U
Perfluorononanoic acid (PFNA)	0.320	**0.250 J**	**0.500**	**0.140 J**	0.240 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**0.400 J**	**0.960 J**	**0.360 J**	0.590 U
Perfluorooctanoic acid (PFOA)	0.720	**0.380 J**	**0.230 J**	0.260 U	0.240 U
Perfluorotetradecanoic acid (PFTA)		**0.610**	**0.380 J**	0.390 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		**0.630**	**0.230 J**	0.260 U	0.240 U
Perfluoroundecanoic acid (PFUnA)		**1.60**	**1.50**	0.260 U	0.240 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

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AOC 76, Devens Fire Station

	Location	76SB-19-03	76SB-19-03	76SB-19-03
	Field Sample ID	76SB-19-03-0-1	76SB-19-03-3-7	76SB-19-03-12-14
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	12.00 - 14.00
	Sampling Date	06/19/2019	06/19/2019	06/19/2019
	SDG	320515251	320515251	320515251
	Sample Type	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.70 U	2.10 U	2.40 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.30 U	1.10 U	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.30 U	1.10 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 U	1.10 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.240 U	0.190 U	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	**0.270 J**	0.210 U	0.240 U
Perfluorododecanoic acid (PFDoA)		0.270 U	0.210 U	0.240 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.270 U	0.210 U	0.240 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.270 U	0.210 U	0.240 U
Perfluorohexanoic acid (PFHxA)		0.270 U	0.210 U	0.240 U
Perfluorononanoic acid (PFNA)	0.320	**0.320 J**	0.210 U	0.240 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**2.10**	0.540 U	0.590 U
Perfluorooctanoic acid (PFOA)	0.720	**0.170 J**	0.210 U	0.240 U
Perfluorotetradecanoic acid (PFTA)		0.400 U	0.320 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		0.270 U	0.210 U	0.240 U
Perfluoroundecanoic acid (PFUnA)		**0.250 J**	0.210 U	0.240 U

Notes:
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‡ PFAS-Related revisions to the Massachusetts Contingency Plan (“MCP”, 310 CMR 40.0000), Massachusetts Department of Environmental Protection, April 19, 2019

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	Location	76SB-19-04	76SB-19-04	76SB-19-04	76SB-19-04
	Field Sample ID	76SB-19-04-0-1	76SB-19-04-3-7	A2-SB-DUP-061919	76SB-19-04-10-12
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00	10.00 - 12.00
	Sampling Date	06/19/2019	06/19/2019	06/19/2019	06/19/2019
	SDG	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.40 U	2.50 U	2.40 U	2.60 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.20 U	1.30 U	1.20 U	1.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.30 U	1.20 U	1.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.30 U	1.20 U	1.30 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.230 U	0.210 U	0.230 U
Perfluorodecanoic acid (PFDA)	0.300	**0.140 J**	0.250 U	0.240 U	0.260 U
Perfluorododecanoic acid (PFDoA)		0.240 U	0.250 U	0.240 U	0.260 U
Perfluoroheptanoic acid (PFHpA)	0.500	0.240 U	0.250 U	0.240 U	0.260 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	0.240 U	0.250 U	0.240 U	0.260 U
Perfluorohexanoic acid (PFHxA)		0.240 U	0.250 U	0.240 U	0.260 U
Perfluorononanoic acid (PFNA)	0.320	**0.110 J**	0.250 U	0.240 U	0.260 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**0.930 J**	0.630 U	0.600 U	0.640 U
Perfluorooctanoic acid (PFOA)	0.720	0.240 U	0.250 U	0.240 U	0.260 U
Perfluorotetradecanoic acid (PFTA)		0.370 U	0.380 U	0.360 U	0.390 U
Perfluorotridecanoic acid (PFTrDA)		0.240 U	0.250 U	0.240 U	0.260 U
Perfluoroundecanoic acid (PFUnA)		**0.140 J**	0.250 U	0.240 U	0.260 U

Notes:
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	Location	76SB-19-05	76SB-19-05	76SB-19-05	76SB-19-05
	Field Sample ID	76SB-19-05-0-1	76SB-19-05-3-7	A2-SB-DUP02-061819	76SB-19-05-17-19
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00	17.00 - 19.00
	Sampling Date	06/18/2019	06/18/2019	06/18/2019	06/18/2019
	SDG	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.50 U	**1.50 J**	**1.40 J**	2.50 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		**3.30**	**0.330 J**	1.10 U	1.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		**1.30 J**	0.990 U	1.10 U	1.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	0.990 U	1.10 U	1.30 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.180 U	0.200 U	0.230 U
Perfluorodecanoic acid (PFDA)	0.300	**3.20**	**0.250 J**	**0.220 J**	0.250 U
Perfluorododecanoic acid (PFDoA)		**0.680**	0.200 U	0.220 U	0.250 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.240 J**	**0.140 J**	**0.180 J**	0.250 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.480**	**0.430**	**0.460**	**0.0920 J**
Perfluorohexanoic acid (PFHxA)		**0.270 J**	**0.0710 J**	**0.0950 J**	0.250 U
Perfluorononanoic acid (PFNA)	0.320	**1.10**	**0.990**	**0.960**	0.250 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**8.40**	**130**	**130**	**4.20**
Perfluorooctanoic acid (PFOA)	0.720	**0.430**	**0.640**	**0.710**	**0.130 J**
Perfluorotetradecanoic acid (PFTA)		**0.140 J**	0.300 U	0.330 U	0.380 U
Perfluorotridecanoic acid (PFTrDA)		**0.190 J**	0.200 U	0.220 U	0.250 U
Perfluoroundecanoic acid (PFUnA)		**2.60**	0.200 U	0.220 U	0.250 U

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
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	Location	76SB-19-06	76SB-19-06	76SB-19-06	76SB-19-06
	Field Sample ID	76SB-19-06-0-1	76SB-19-06-3-7	A2-SB-DUP-061719	76SB-19-06-9-11
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	3.00 - 7.00	9.00 - 11.00
	Sampling Date	06/17/2019	06/17/2019	06/17/2019	06/17/2019
	SDG	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Field Duplicate	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.40 U	**2.50 J**	**3.60 J**	**1.90 J**
8:2 Fluorotelomer sulfonate (8:2 FTS)		**0.890 J**	**7.30**	**8.70**	**2.10 J**
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	0.980 U	1.10 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	0.980 U	1.10 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.180 U	0.200 U	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	**0.850**	**3.40**	**4.00**	**0.850**
Perfluorododecanoic acid (PFDoA)		**1.10**	**0.180 J**	**0.170 J**	0.230 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.140 J**	**0.330**	**0.310 J**	**0.400**
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.0950 J**	**0.210 J**	**0.230 J**	**0.180 J**
Perfluorohexanoic acid (PFHxA)		**0.110 J**	**0.0890 J**	**0.0940 J**	**0.140 J**
Perfluorononanoic acid (PFNA)	0.320	**0.300 J**	**1.90**	**2.20**	**1.00**
Perfluorooctanesulfonic acid (PFOS)	2.00	**0.890 J**	**15.0**	**17.0**	**4.30**
Perfluorooctanoic acid (PFOA)	0.720	**0.200 J**	**1.40**	**1.50**	**0.980**
Perfluorotetradecanoic acid (PFTA)		**0.430 J**	0.290 U	0.330 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		**0.310 J**	0.200 U	0.220 U	0.230 U
Perfluoroundecanoic acid (PFUnA)		**0.920**	**0.390**	**0.470**	**0.170 J**

Notes:
ug/kg = micrograms per kilogram; U = not detected; J = estimated
The LOQ value will be used to report non-detects when blank contamination occurs

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	Location	76SB-19-07	76SB-19-07	76SB-19-07	76SB-19-08	76SB-19-08
	Field Sample ID	76SB-19-07-0-1	76SB-19-07-3-7	76SB-19-07-8-10	76SB-19-08-0-1	76SB-19-08-1-2.5
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	8.00 - 10.00	0.00 - 1.00	1.00 - 2.50
	Sampling Date	06/17/2019	06/17/2019	06/17/2019	06/19/2019	06/19/2019
	SDG	320515251	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.30 U	**1.10 J**	**1.20 J**	2.90 U	2.70 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		**2.10 J**	1.20 U	1.30 U	1.50 U	1.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.20 U	1.30 U	1.50 U	1.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.20 U	1.30 U	1.50 U	1.40 U
Perfluorobutanesulfonic acid (PFBS)		0.210 U	0.220 U	0.230 U	0.260 U	0.240 U
Perfluorodecanoic acid (PFDA)	0.300	**0.350**	**0.140 J**	0.250 U	**0.420 J**	**0.350 J**
Perfluorododecanoic acid (PFDoA)		**2.70**	0.250 U	0.250 U	**0.400 J**	0.270 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.150 J**	**0.280 J**	**0.410**	0.290 U	0.270 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.190 J**	**0.0890 J**	**0.0960 J**	0.290 U	0.270 U
Perfluorohexanoic acid (PFHxA)		**0.140 J**	**0.0990 J**	**0.0970 J**	0.290 U	0.270 U
Perfluorononanoic acid (PFNA)	0.320	**0.110 J**	**1.30**	0.250 U	**0.190 J**	**0.120 J**
Perfluorooctanesulfonic acid (PFOS)	2.00	**0.490 J**	**1.10 J**	0.630 U	**0.420 J**	**0.630 J**
Perfluorooctanoic acid (PFOA)	0.720	**0.210 J**	**0.690**	**0.880**	0.290 U	0.270 U
Perfluorotetradecanoic acid (PFTA)		**0.760**	0.370 U	0.380 U	**0.190 J**	0.410 U
Perfluorotridecanoic acid (PFTrDA)		**0.630**	0.250 U	0.250 U	**0.190 J**	0.270 U
Perfluoroundecanoic acid (PFUnA)		**2.10**	0.250 U	0.250 U	**0.880**	0.270 U

Notes:
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	Location	76SB-19-09	76SB-19-09	76SB-19-09	76SB-19-10	76SB-19-10	76SB-19-10
	Field Sample ID	76SB-19-09-0-1	76SB-19-09-3-7	76SB-19-09-7-9	76SB-19-10-0-1	76SB-19-10-3-7	76SB-19-10-21-23
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	7.00 - 9.00	0.00 - 1.00	3.00 - 7.00	21.00 - 23.00
	Sampling Date	06/17/2019	06/17/2019	06/17/2019	06/19/2019	06/19/2019	06/19/2019
	SDG	320515251	320515251	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.00 U	2.40 U	2.30 U	2.40 U	3.40 U	2.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.00 U	1.20 U	1.20 U	1.20 U	1.70 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.00 U	1.20 U	1.20 U	1.20 U	1.70 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.00 U	1.20 U	1.20 U	1.20 U	1.70 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.180 U	0.220 U	0.210 U	0.210 U	0.310 U	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	**0.520**	0.240 U	0.230 U	0.240 U	0.340 U	0.220 U
Perfluorododecanoic acid (PFDoA)		**0.150 J**	0.240 U	0.230 U	0.240 U	0.340 U	0.220 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.160 J**	**0.0930 J**	0.230 U	**0.180 J**	0.340 U	0.220 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.160 J**	**0.0850 J**	**0.340 J**	**0.280 J**	**0.320 J**	0.220 U
Perfluorohexanoic acid (PFHxA)		**0.140 J**	0.240 U	**0.110 J**	**0.250 J**	0.340 U	0.220 U
Perfluorononanoic acid (PFNA)	0.320	**0.630**	0.240 U	0.230 U	**0.250 J**	0.340 U	0.220 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**1.20**	**5.00 J**	**3.50**	**3.70**	0.860 U	0.540 U
Perfluorooctanoic acid (PFOA)	0.720	**0.360**	**0.180 J**	**0.130 J**	**0.540**	**0.390 J**	0.220 U
Perfluorotetradecanoic acid (PFTA)		0.300 U	0.360 U	0.350 U	0.360 U	0.510 U	0.330 U
Perfluorotridecanoic acid (PFTrDA)		0.200 U	0.240 U	0.230 U	0.240 U	0.340 U	0.220 U
Perfluoroundecanoic acid (PFUnA)		**0.650**	0.240 U	0.230 U	0.240 U	0.340 U	0.220 U

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	Location	76SB-19-11	76SB-19-11	76SB-19-11	76SB-19-12	76SB-19-12	76SB-19-12
	Field Sample ID	76SB-19-11-0-1	76SB-19-11-3-7	76SB-19-11-7-9	76SB-19-12-0-1	76SB-19-12-3-7	76SB-19-12-10-12
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	7.00 - 9.00	0.00 - 1.00	3.00 - 7.00	10.00 - 12.00
	Sampling Date	06/17/2019	06/17/2019	06/17/2019	06/18/2019	06/18/2019	06/18/2019
	SDG	320515251	320515251	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		**0.800 J**	2.10 U	2.30 U	2.70 U	2.10 U	2.20 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		**2.20 J**	1.00 U	1.10 U	1.30 U	1.00 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.20 U	1.00 U	1.10 U	1.30 U	1.00 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.20 U	1.00 U	1.10 U	1.30 U	1.00 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		0.220 U	0.190 U	0.200 U	0.240 U	0.190 U	0.200 U
Perfluorodecanoic acid (PFDA)	0.300	**0.830**	0.210 U	0.230 U	**0.240 J**	0.210 U	0.220 U
Perfluorododecanoic acid (PFDoA)		**0.360**	0.210 U	0.230 U	0.270 U	0.210 U	0.220 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.260 J**	**0.140 J**	**0.130 J**	**0.170 J**	0.210 U	0.220 U
Perfluorohexanesulfonic acid (PFHxS)	0.300	**0.240 J**	**0.0750 J**	**0.100 J**	**0.360 J**	**0.180 J**	**0.190 J**
Perfluorohexanoic acid (PFHxA)		**0.250 J**	0.210 U	**0.0860 J**	**0.330 J**	**0.130 J**	0.220 U
Perfluorononanoic acid (PFNA)	0.320	**0.550**	0.210 U	0.230 U	**0.250 J**	0.210 U	0.220 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**2.20**	**0.370 J**	0.570 U	**19.0**	**0.650 J**	**1.10**
Perfluorooctanoic acid (PFOA)	0.720	**0.290 J**	**0.450**	0.230 U	**0.830**	**0.280 J**	**0.200 J**
Perfluorotetradecanoic acid (PFTA)		0.360 U	0.310 U	0.340 U	0.400 U	0.310 U	0.330 U
Perfluorotridecanoic acid (PFTrDA)		0.240 U	0.210 U	0.230 U	0.270 U	0.210 U	0.220 U
Perfluoroundecanoic acid (PFUnA)		**0.400**	0.210 U	0.230 U	0.270 U	0.210 U	0.220 U

Notes:
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AOC 76, Devens Fire Station

	Location	76SB-19-13	76SB-19-13	76SB-19-13	76SB-19-14	76SB-19-14	76SB-19-14
	Field Sample ID	76SB-19-13-0-1	76SB-19-13-3-7	76SB-19-13-10-12	76SB-19-14-0-1	76SB-19-14-3-7	76SB-19-14-7-9
	Sampling Depth	0.00 - 1.00	3.00 - 7.00	10.00 - 12.00	0.00 - 1.00	3.00 - 7.00	7.00 - 9.00
	Sampling Date	06/17/2019	06/17/2019	06/17/2019	06/18/2019	06/18/2019	06/18/2019
	SDG	320515251	320515251	320515251	320515251	320515251	320515251
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.20 U	2.60 U	2.30 U	2.20 U	2.00 U	2.10 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.10 U	1.30 U	1.20 U	1.10 U	0.990 U	1.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.10 U	1.30 U	1.20 U	1.10 U	0.990 U	1.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.10 U	1.30 U	1.20 U	1.10 U	0.990 U	1.10 U
Perfluorobutanesulfonic acid (PFBS)		**0.200 J**	0.230 U	0.210 U	0.200 U	0.180 U	0.190 U
Perfluorodecanoic acid (PFDA)	0.300	0.220 U	0.260 U	0.230 U	**0.840**	0.200 U	0.210 U
Perfluorododecanoic acid (PFDoA)		0.220 U	0.260 U	0.230 U	**0.130 J**	0.200 U	0.210 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.310 J**	**1.50**	**0.220 J**	**0.390**	**0.370**	**0.160 J**
Perfluorohexanesulfonic acid (PFHxS)	0.300	**4.40**	**26.0**	**2.00**	**0.0780 J**	**0.350**	**0.0840 J**
Perfluorohexanoic acid (PFHxA)		**0.430**	**0.940**	**0.230 J**	**0.260 J**	**0.230 J**	**0.130 J**
Perfluorononanoic acid (PFNA)	0.320	**0.150 J**	**0.130 J**	0.230 U	**1.50**	**0.210 J**	0.210 U
Perfluorooctanesulfonic acid (PFOS)	2.00	**26.0**	**11.0**	**2.70**	**0.990 J**	**0.670 J**	**0.340 J**
Perfluorooctanoic acid (PFOA)	0.720	**0.480**	**0.640**	**0.130 J**	**0.800**	**0.630**	**0.220 J**
Perfluorotetradecanoic acid (PFTA)		0.340 U	0.390 U	0.350 U	0.340 U	0.300 U	0.320 U
Perfluorotridecanoic acid (PFTrDA)		0.220 U	0.260 U	0.230 U	0.220 U	0.200 U	0.210 U
Perfluoroundecanoic acid (PFUnA)		0.220 U	0.260 U	0.230 U	**0.540**	0.200 U	0.210 U

Notes:
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	Location	76SB-19-15	76SB-19-15	76SB-19-15
	Field Sample ID	76SB-19-15-0-1	76SB-19-15-1.5-3.5	A2-SB-DUP-061819
	Sampling Depth	0.00 - 1.00	1.50 - 3.50	1.50 - 3.50
	Sampling Date	06/18/2019	06/18/2019	06/18/2019
	SDG	320515251	320515251	320515251
	Sample Type	Normal	Normal	Field Duplicate
PFAS Isotope Dilution	**Limits (ug/kg)**	Results (µg/kg)	Results (µg/kg)	Results (µg/kg)
6:2 Fluorotelomer sulfonate (6:2 FTS)		2.50 U	2.30 U	2.40 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		1.30 U	1.20 U	1.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		1.30 U	1.20 U	1.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		1.30 U	1.20 U	1.20 U
Perfluorobutanesulfonic acid (PFBS)		0.230 U	0.210 U	0.210 U
Perfluorodecanoic acid (PFDA)	0.300	**0.880**	0.230 U	**0.130 J**
Perfluorododecanoic acid (PFDoA)		**0.150 J**	0.230 U	0.240 U
Perfluoroheptanoic acid (PFHpA)	0.500	**0.600**	**0.310 J**	**0.350**
Perfluorohexanesulfonic acid (PFHxS)	0.300	**3.10**	**1.00**	**1.20**
Perfluorohexanoic acid (PFHxA)		**1.10**	**0.410**	**0.480**
Perfluorononanoic acid (PFNA)	0.320	**1.80**	**0.310 J**	**0.350**
Perfluorooctanesulfonic acid (PFOS)	2.00	**13.0**	**2.80**	**3.60**
Perfluorooctanoic acid (PFOA)	0.720	**1.50**	**0.630**	**0.690**
Perfluorotetradecanoic acid (PFTA)		0.380 U	0.350 U	0.350 U
Perfluorotridecanoic acid (PFTrDA)		0.250 U	0.230 U	0.240 U
Perfluoroundecanoic acid (PFUnA)		**0.560**	0.230 U	0.240 U

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