



ACTION MEMORANDUM
for
TIME-CRITICAL REMOVAL
ACTION

For

FORMER FORT DEVENS, DEVENS MASSACHUSETTS

Prepared By

United States Army Corps of Engineers
New England District
Concord, MA

15 March 2019

ACTION MEMORANDUM FOR A TIME-CRITICAL REMOVAL ACTION

I. PURPOSE

The purpose of this Action Memorandum is to document approval and decision by the U.S. Army Base Realignment and Closure (BRAC) Environmental Restoration Program to conduct a Time-Critical Removal Action (TCRA) in response to the release of perfluorooctanesulfonic acid (PFOS), also known as perfluorooctane sulfonate, and perfluorooctanoic acid (PFOA) from operations associated with the former Fort Devens (*see* Figure 1).

While conducting its Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial investigation (RI) pursuant to the Federal Facility Agreement (FFA) between the Army and the U.S. Environmental Protection Agency (EPA), the Army recently received the results of sampling for an area designated as Area 1 of the RI (*see* Figure 2). Area 1 includes locations adjacent to the Town of Ayer Grove Pond supply wells, which had detections of PFOS/PFOA in their system in 2016. Based on the new sampling results, the Army has concluded that PFOS/PFOA from historical Army operations at former Fort Devens is impacting the Town of Ayer's Well 8. PFOS and/or PFOA attributable to Army operations have been detected in groundwater near the Town of Ayer's public water supply wells, and site characterization indicates that groundwater is migrating or likely migrating toward the Town's public drinking water wells at an unacceptable risk level (*i.e.*, levels above 400 ppt); therefore, the Army will take removal actions identified herein under CERCLA to protect human health.

In February 2018, the Town of Ayer removed Well 8 from service in response to correspondence from the Massachusetts Department of Environmental Protection (MassDEP) recommending that concentrations in the water supply wells should be reduced out of an abundance of caution (levels of PFOS/PFOA in Well 8 exceeded EPA's Lifetime Health Advisory Level of 70 ppt, but did not exceed unacceptable risk levels, and sampling results for finished water had not exceeded the LHA). Additionally, based on the Town of Ayer's understanding that the pumping of Grove Pond Well 8 hydrologically protects Ayer's other Grove Pond supply wells, the Town began pumping and discharging water from Well 8 into Grove Pond. Based on the new RI sampling data, the Army agrees that pumping Well 8 is hydrologically protecting the other Grove Pond drinking water supply wells, and agrees with Ayer that it is necessary to keep Well 8 pumping to protect other supply wells, which will also prevent the potential spread of PFOS/PFOA from the pumping of groundwater into surface waters

This action memorandum is issued in accordance with, and satisfies the requirements of, CERCLA, Title 42 United States Code (USC) § 9601 et seq., as further implemented by the National Contingency Plan (NCP), Title 40 Code of Federal Regulations (CFR) Part 300. The BRAC Environmental Restoration Program is authorized by the Defense Environmental Restoration Program (DERP) (10 USC 2701 et seq.). The DERP is the environmental restoration program the military services use to conduct CERCLA response actions and satisfy CERCLA lead agency functions as delegated by Executive Order 12580.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Physical Location and Description

Former Fort Devens is located approximately 35 miles northwest of Boston within the towns of Devens, Ayer and Shirley, in Middlesex County and in the towns of Harvard and Lancaster in Worcester County, Massachusetts (Figure 1). Prior to base closure in March 1996, the installation occupied approximately 9,260 acres and was divided into the North Post, Main Post, and South Post (Figure 2).

As part of the Devens BRAC program, the U.S. Army (Army) retained portions of Main Post and South Post (approximately 5,181 acres) for reserve forces training which was later named the Devens Reserve Forces Training Area (DRFTA) and in 2009 the U.S. Army Garrison Fort Devens. Areas not retained by the Army were transferred to new owners including 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. Approximately, 4,000 acres have been transferred. The areas formerly owned by the Army have largely been redeveloped for light industry or commercial development. Portions of the former facility near the former airfield were transferred to U.S. Fish and Wildlife as part of the Oxbow National Wildlife Refuge. The areas surrounding the boundaries of the former facility are largely rural residential.

The Town of Ayer Grove Pond Wellfield and Treatment Plant is located at 99 Barnum Road (See Figure 3). The area surrounding the Grove Pond Wellfield is generally light industry. The Massachusetts State National Guard property is located immediately upgradient of the property. Historically, this general area along Barnum Road was used by the Army for logistics, warehouse storage, and vehicle and equipment maintenance.

2. Site Operations History

Camp Devens was established in 1917 as a temporary training area for soldiers during World War I. Prior to 1917, the area was occupied by residential homes and farmland. 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. The installation also supported the Army Readiness Regional and National Guard units in New England. Fort Devens was used for a variety of training missions between 1917 and 1990.

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 discussed in Section 1, portions of the property formerly occupied by Devens were retained by the U.S. Army (Army) for reserve forces training and the remaining land was transferred to new owners.

Fort Devens was placed on the National Priorities List on November 21, 1989, due to environmental contamination at several sites. The contamination was primarily related to releases from underground storage tanks and fuel depots and industrial activities associated with the use of chemicals and petroleum products. A total of 325 environmental investigation sites have been

addressed at Devens under CERCLA. The Army continues to conduct remedial action operations at the Former Moore Army Airfield and Shepley's Hill Landfill as well as long-term monitoring at the Devens Consolidated Landfill, AOC 32/42A, AOC 43G and J, AOC 69W, and AOC 57. In 2016, the Army added several areas of concern related to potential releases of PFOS/PFOA to the Fort Devens FFA and began the process of evaluating and investigating these emerging contaminants as described in Section 3.

3. Grove Pond Drinking Water Wells

The Town of Ayer has modified their system to reduce concentration of PFOS/PFOA in the finished water. Well 8, which has the highest concentrations of PFOS/PFOA, was taken off-line and replaced with Well 1. Water from Wells 1, 6, and 7 are blended and the finished water is provided as drinking water to the Town of Ayer. Well 8 is pumped to Grove Pond as authorized on an emergency basis pending permanent authorization under the Massachusetts Remediation General Permit (NPDES Permit No. MAG910000). The well is pumped to the pond to prevent PFOS/PFOA from reaching the other Grove Pond drinking water supply wells.

The Town of Ayer is supplied by two groundwater supply sources: the Spectacle Pond Wells and the Grove Pond Wells. The Grove Pond well site is located near the southern border of Ayer off Barnum Road. Each well site consists of gravel packed wells and a water treatment facility for the removal of iron and manganese. (Metals removal is accomplished by adding sodium hypochlorite (chlorine) and potassium permanganate to the water to oxidize and precipitate the metals followed by greensand filtration to remove the particulate metal oxides.) This treatment process does not remove PFOS/PFOA compounds from the water. The treated water is pumped into the distribution system and stored in the water tanks. The Grove Pond Wellfield provides approximately 60% of the Town's water supply.

4. Removal Site Evaluation

4.1 Source Areas

Remedial Investigation (RI)

In 2018, in coordination with USEPA and MADEP, the Army prepared a remedial investigation work plan including field sampling and analysis plan for three areas at Former Fort Devens to evaluate the nature and extent of sources of PFOS/PFOA at former Fort Devens. The three Areas include multiple areas of contamination (AOCs) where PFOS and PFOA were previously detected (Figure 2). The Final Field Sampling Plans (FSPs) for Area 1 was submitted on September 22, 2018. The AOCs that were identified as potentially impacting the Grove Pond Wellfield were grouped as Area 1 and are shown on Figure 3.

In September 2018 following approval of the FSP, the Army began conducting the RI field investigation focusing sampling efforts in potential source areas upgradient of the Grove Pond Wellfield.

Sampling completed through 8 Feb 2019 includes:

- 66 groundwater vertical profile locations with samples collected every 10 feet from the water table to refusal (average of 9 samples per location)
- 36 existing monitoring wells

- 14 surface water and sediment locations
- 25 soil borings with five samples per boring

Concentrations of PFOS/PFOA above the unacceptable risk level of 400 ppt have been detected in groundwater at all of the AOCs within Area 1 with the maximum concentrations listed below.

AOC or Site Area	Maximum PFOS (ng/L)	Maximum PFOA (ng/L)
Grove Pond (GPVP-18-12)	880	39
AOC 57	490	3,900
AOC 74	non-detect	2,270
AOC 75	1,160	300

The Army continues to delineate the extent of PFOS/PFOA in groundwater within Area 1. Additional groundwater vertical profile locations, and new piezometers and monitoring wells will be installed to obtain stratigraphy, refine/confirm groundwater flow directions, and identify source areas.

5. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

At Devens, based on the recent RI work, the presence of PFOS/PFOA in groundwater confirms a release of a pollutant or contaminant has occurred. Although delineation of PFOS/PFOA in groundwater has not been completed, results of groundwater investigations indicate that PFOS and/or PFOA attributable to historical operations at former Fort Devens have been detected in groundwater and is migrating or likely migrating toward the Town of Ayer public drinking water supply wells in the Grove Pond Wellfield at an unacceptable risk level (i.e. 400 ppt), and therefore, the Army will take appropriate removal action under CERCLA to protect human health. Additionally, based on the recent RI results, Well 8 is hydrologically protecting the other Grove Pond Wellfield drinking water supply wells and should remain pumping.

6. National Priorities List Status

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) number for the Former Fort Devens site is MA7210025154. Former Fort Devens was added to the National Priorities List (NPL) in 1989. An FFA was signed by the United States Department of the Army and United States Environment Protection Agency in November 1991. In March 1996, the FFA was amended to provide additional detail regarding property transfer and preparation of SI data packages. The United States Department of the Army is the lead agency for cleanup and required to implement CERCLA requirements at Former Fort Devens. The Army BRAC Program is managing the soil and groundwater contamination sites in accordance with CERCLA as required by the Defense Environmental Restoration Program. The MassDEP is not a signatory to the FFA, but is an active participant in the cleanup process and provides input at all stages of the CERCLA process.

B. Other Actions to Date

1. Previous Actions

Previous CERCLA actions related to PFOS/PFOA are described in Section 4.1.

2. Current Actions

Current actions related to PFOS/PFOA RI include:

- Determine nature, extent, and source of PFOS/PFOA related to historical DoD operations at Former Fort Devens
- Continue quarterly sampling of the Town of Ayer Water Supply System
- Continue outreach efforts to communicate the status of PFOS/PFOA investigation and sampling of Town of Ayer's Drinking Water Supply System

3. Planned CERCLA Response Actions

Planned PFOS/PFOA actions include:

- Continue quarterly or more frequent sampling of public drinking water supply systems
- Complete the RI and feasibility study to identify unacceptable risks and evaluate alternatives to address PFOS and PFOA that pose an unacceptable risk to human health
- Conduct required remedial actions pursuant to future decision documents

C. Federal, State and Local Roles

1. Federal Agencies

Pursuant to the addition of PFOS/PFOA AOCs to the FFA by the Army, EPA Region 1 staff was involved in development of and schedule for the PA, SI, and RI scope of work, as well as the off-base private and municipal water supply well sampling. The EPA also continues to provide input on "step-outs" (i.e., additional investigation boring locations based on data obtained from previous borings) conducted as part of the RI and is providing input for ongoing and planned sampling events. The EPA will continue to be involved in Devens RI and remediation activities under the FFA.

2. State Agencies

The Army has and will continue to coordinate with Massachusetts Department of Environmental Protection (MassDEP). MassDEP was involved in the development of the PA/SI and RI activities and will continue to be involved in cleanup of the Former Fort Devens.

3. Local Authorities

Local authorities have been notified of PFOS/PFOA sampling results and include the towns of Devens, Ayer, Shirley, Lancaster, and Harvard. The Army is collaborating with the Town of Ayer on response actions appropriate to address unacceptable risks identified by the Army.

III. THREATS TO HUMAN HEALTH, STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Human Health

The U.S. Army identified a potential threat to human health due to the presence of PFOS/PFOA from historic operations at former Fort Devens above an unacceptable risk level in groundwater that is migrating or likely migrating to a public drinking water system at unacceptable risk levels. In Area 1, one sampling location identified as GPVP-18-12 that is approximately 1000 feet to the west of Grove Pond Well 8 contained levels of PFOS/PFOA at 919 ppt and is migrating or likely migrating toward Grove Pond Well 8 at levels that exceed an unacceptable risk of 400 ppt. Additionally, Grove Pond Well 8 is hydrologically protecting other Grove Pond drinking water supply wells and therefore it is necessary to continue pumping of Well 8, while preventing the spread of PFOS/PFOA from groundwater to surface waters.

The U.S. Army is continuing to work with the Town of Ayer to monitor their water supply and, as part of this time critical removal action, to take action to mitigate or prevent the migrating or likely migrating of PFOS/PFOA to Grove Pond Well 8 and other Grove Pond drinking water supply wells at unacceptable risk levels. The Army has concluded that under these site-specific circumstances a TCRA is warranted to address the public drinking water supply well systems based on the following factors listed in 40 CFR 300.415(b)(2) of the NCP:

- “Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;” and
- “Actual or potential contamination of drinking water supplies or sensitive ecosystems.”

B. Statutory and Regulatory Authorities

PFOS/PFOA are not identified as hazardous substances as determined by CERCLA; however, they may be addressed under CERCLA and the NCP as pollutants and/or contaminants. The concentrations of PFOS/PFOA detected in the groundwater migrating or likely migrating to Grove Pond drinking water supply wells at unacceptable risk levels pose a potential threat to human health based on concentrations in surrounding groundwater and need for continued pumping. The TCRA presented in this action memorandum is taken in accordance with 40 CFR §300.1, 300.2(2), and 415(b)(1), (b)(2)(i) & (ii), and (b)(3).

IV. PROPOSED REMOVAL ACTION AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

The Removal Action Objective (RAO) of the TCRA is to prevent unacceptable risk to human health posed by PFOS/PFOA in groundwater migrating or likely migrating toward public drinking water supply wells through removal of PFOS/PFOA from water pumped by the Town of Ayer Grove Pond Public Water Supply Wells. The proposed actions are:

- Eliminate the current discharge of extracted groundwater with PFOS/PFOA from Grove Pond Well 8 into Grove Pond by installing a temporary treatment system that will reduce

PFOS/PFOA from the extracted water. The treated water from Grove Pond Well 8 will then be returned to the Town of Ayer Grove Pond Treatment Facility.

- Install a drinking water treatment system to address PFOS/PFOA in Grove Pond public drinking water supply wells to ensure combined PFOS/PFOA levels in drinking water are below 70 ppt.

2. Contribution to Remedial Performance

Former Fort Devens is listed on the NPL of Federal Superfund sites by the EPA. The United States Department of the Army and the EPA entered into the FFA for Former Fort Devens under CERCLA Section 120, which was signed in 1991. The FFA established a procedural framework and schedule for developing, implementing, and monitoring CERCLA response actions. The United States Department of Army anticipates additional CERCLA related response actions and is in the process of implementing an RI. The planned removal actions shall, to the extent practicable, contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned. Data collected during the course of this TCRA will be included in the overall analysis and ultimately used in determining a long-term solution.

3. Project Schedule

Discharge from Well 8 will be diverted from Grove Pond through a temporary treatment system in Spring/Summer 2019. This temporary system is expected to operate until a treatment system to remove PFOS/PFOA at the Grove Pond Treatment Facility is installed and operations commenced.

Construction of the treatment system to reduce PFOS/PFOA levels below 70 ppt in Grove Pond public drinking water supply wells is expected to commence in Summer 2019, and system installation is expected to be completed by the end of 2019 and operational by early 2020.

B. Costs

This TCRA applies to activities associated with eliminating discharge of extracted groundwater with PFOS and PFOA from Grove Pond Well 8 into Grove Pond (approximately \$400,000). Costs associated with installation of a drinking water treatment system to reduce levels of PFOS/PFOA to below 70 ppt in the Grove Pond drinking water supply wells are unknown at this time and will be based on anticipated agreement with the Town of Ayer that reflect costs associated with DoD CERCLA responsibilities under this removal action.

V. PUBLIC PARTICIPATION

The Army is maintaining close communications with the local community and regulators. Several public meetings have been conducted including quarterly Restoration Advisory Board meetings since 2016 and ongoing discussions with stakeholders. As part of the outreach and investigation activities, Army personnel have also met with individuals to explain the on-going work.

The Army also established a website where meeting slides, information, and data results from the PFOS/PFOA investigation can be accessed by the public (www.ftdvens.org). The Community Involvement Plan for Devens is currently being updated and community interviews will be

performed this spring. A public comment period of not less than 30 days will be held for this TCRA in accordance with 40 CFR §300.820(b)(2).

VI. APPROVALS

This Action Memorandum documents the decision for the TCRA to address PFOS/PFOA in the Town of Ayers Public Drinking Water Supply Wells at Grove Pond Wellfield. The decision is developed in accordance with CERCLA as amended and is not inconsistent with the National Contingency Plan.

This decision is based on the Administrative Record file for the site. Conditions at the site meet the NCP section 300.415(b)(2) criteria for determining that the proposed removal action is appropriate.

VII. REFERENCES

- 2017 (May). *Final Site Inspection Work Plan for Per- and Polyfluoroalkylated Substances at the Former Fort Devens Army Installation, Devens, MA*. Prepared by KOMAN Government Solutions for the U.S. Army Corps of Engineers.
- 2017 (September). *Final Base-Wide Preliminary Assessment for Perfluoroalkyl Substances, Former Fort Devens Army Installation, BRAC Legacy Sites*. Prepared by Koman Government Solutions for the U.S. Army Corps of Engineers.
- 2017 (September). *Addendum to the Final Site Inspection Work Plan for Per- and Polyfluoroalkylated Substances at the Former Fort Devens Army Installation, Devens, MA*. Prepared by KOMAN Government Solutions for the U.S. Army Corps of Engineers.
- 2018 (March). *Sampling Results for PFAS (Per- and Polyfluoroalkyl substances in Drinking Water)*. Letter Prepared by the Massachusetts Department of Environmental Protection to the Town of Ayer Department of Public Works.
- 2018 (March). *Sampling Results for PFAS (Per- and Polyfluoroalkyl substances in Drinking Water)*. Letter Prepared by the Massachusetts Department of Environmental Protection to Mass Development.
- 2018 (May). *Final Site Inspection Report for PFAS at Former Devens Army Installation, Devens, Massachusetts*. Prepared by BERS-Weston JV for the U.S. Army Corps of Engineers.
- 2018 (June). *Draft Remedial Investigation Work Plan and Area 1 Field Sampling Plan for Per- and Polyfluoroalkyl Substances, Former Fort Devens Army Installation, Devens, MA*. Prepared by Koman Government Solutions for the U.S. Army Corps of Engineers.
- 2018 (July). *The Final Work Plan for PFAS Sampling of Selected Community and Private Wells Former Fort Devens Army Installation, Devens MA*. Prepared by Koman Government Solutions for the U.S. Army Corps of Engineers.
- 2018 (August). *Final Site Inspection Addendum for Additional PFAS Sampling at Area of Contamination AOC 76 and Long-term Monitoring Wells at AOC 57, AOC 43G, AOC 43J, AOC 32, AOC 43A, AOC 50 and Shepley's Hill Landfill*. Prepared by BERS-Weston JV for the U.S. Army Corps of Engineers.

2018 (September). *Final Area 1 Field Sampling Plan Addendum to the Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances, Former Fort Devens Army Installation, Devens, MA.* Prepared by Koman Government Solutions for the U.S. Army Corps of Engineers.

2018 (November). *Draft Area 3 Field Sampling Plan Addendum to Remedial Investigation Work Plan for PFAS Former Fort Devens Army Installation, Devens, MA.* Prepared by Koman Government Solutions for the U.S. Army Corps of Engineers.

2018 (December). *Final Area 2 Field Sampling Plan Addendum to the Remedial Investigation Work Plan for Per- and Polyfluoroalkyl Substances, Former Fort Devens, Army Installation, Devens, MA.* Prepared by Koman Government Solutions for the U.S. Army Corps of Engineers.

2019 (January). *Town of Ayer, Ayer Massachusetts, Grove Pond Water Treatment Plant PFAS Treatment Facilities – 60% Design Submittal.* Prepared by CDM Smith for the Town of Ayer.

VIII. SIGNATURES

The signature documents the decision made to conduct the TCRA. The decision may be reviewed and modified in the future if new information becomes available that indicates the presence of pollutants or contaminants or exposures that may cause unacceptable risk to human health.

Time-Critical Removal Action Memorandum Approval

15 MARCH 2019 
DATE

Figures



Figure 1
Site Location
Former Fort Devens
Army Installation

References: HGL. LTMMP 2012.
 Aerial Sources: 2011, Esri, DigitalGlobe,
 GeoEye, i-cubed, USDA FSA, USGS, AEX,
 Getmapping, Aerogrid, IGN, IGP,
 swisstopo, and the GIS User Community

Legend

-  Highway
-  Major Road
-  County Line
-  Former Fort Devens Boundary

Preliminary Assessment

Former Fort Devens Army Installation Devens,
 Massachusetts

KOMAN Government Solutions, LLC
 160 East Main Street, Suite 2F, Westborough, MA 01581

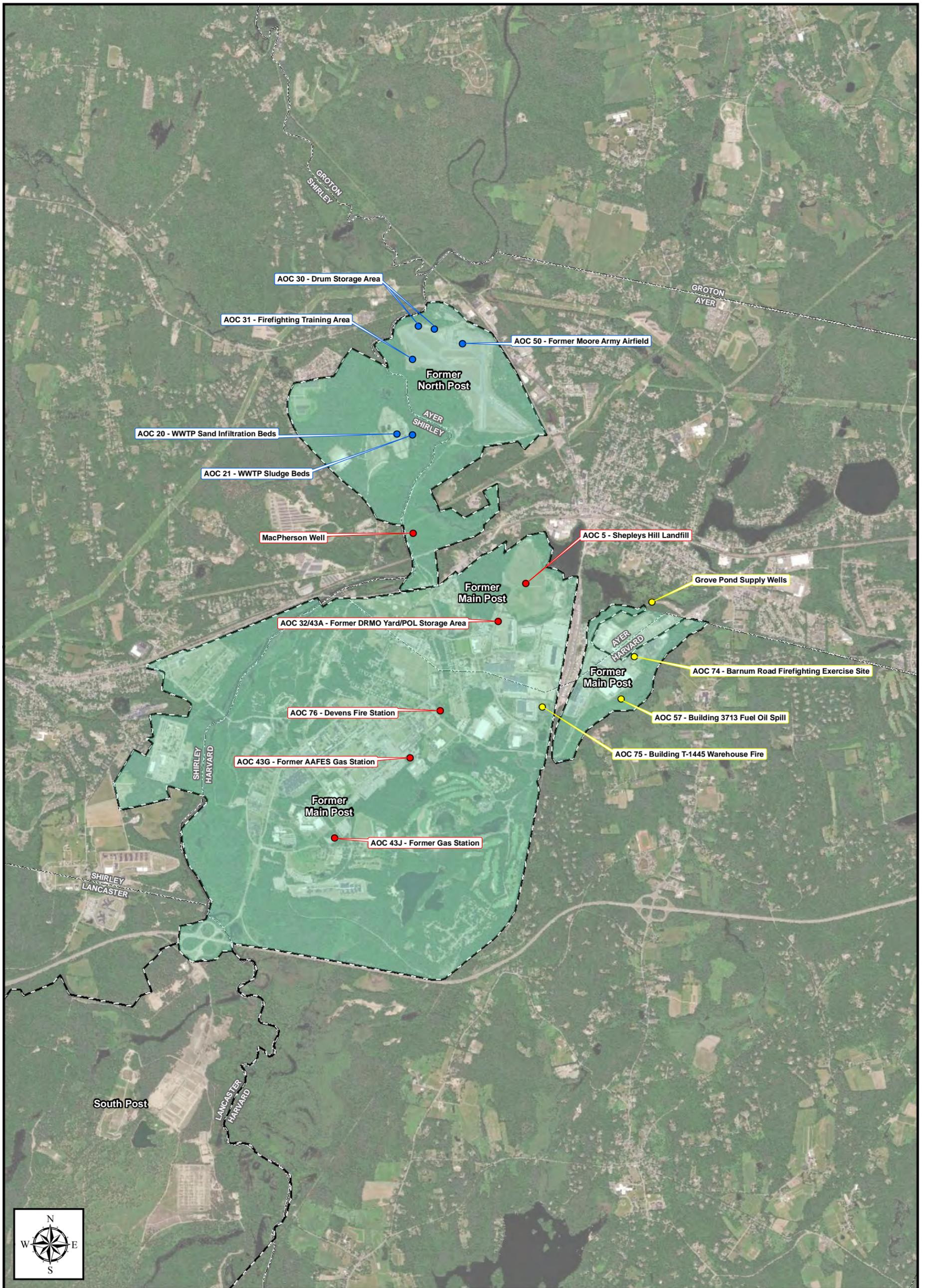
0 1,750 3,500

 Feet

Date:
 09/16/2016

Figure
 1

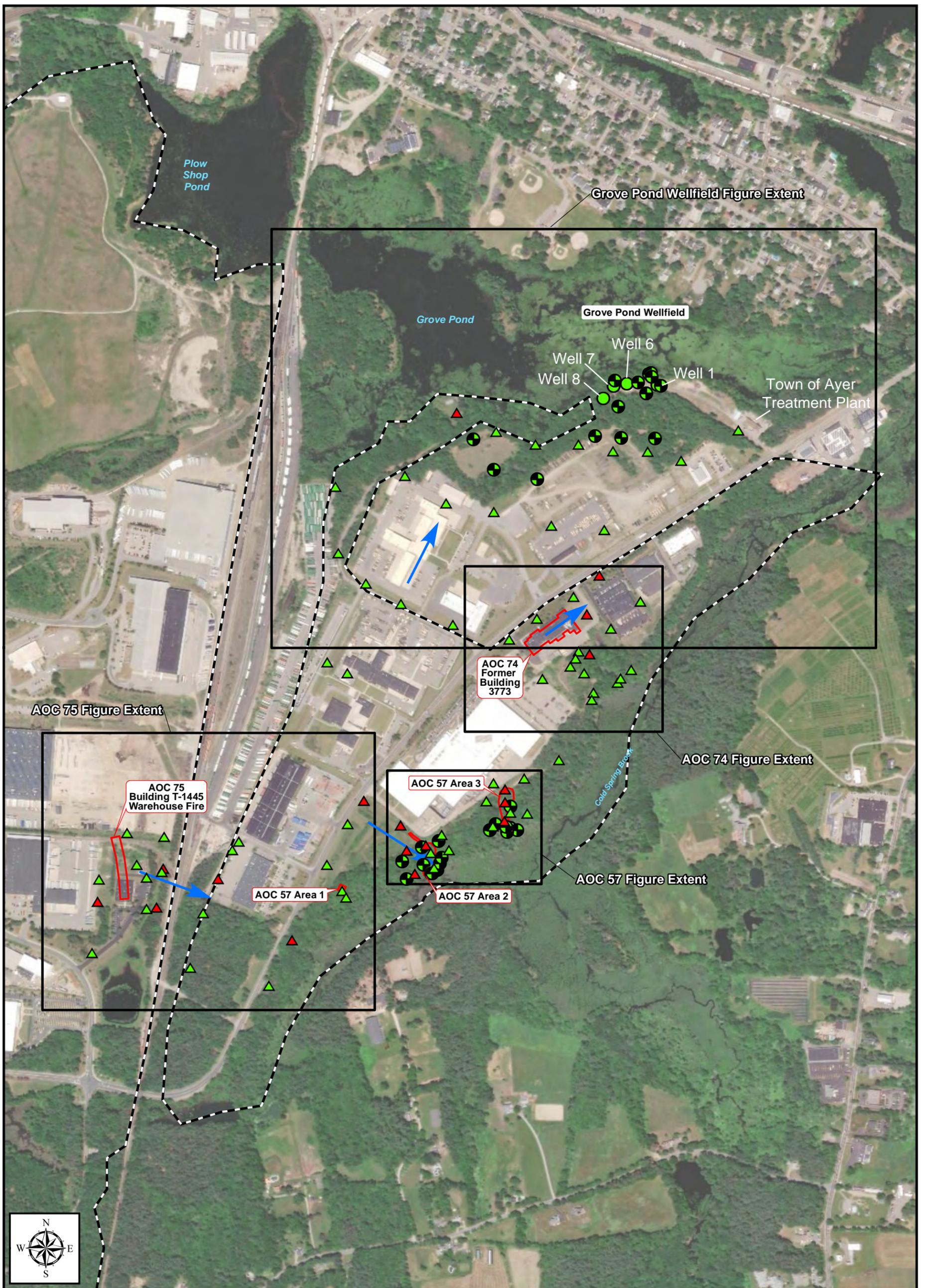




Legend <ul style="list-style-type: none"> ● Area 1 - Grove Pond Supply Wells, AOCs 57, 74, and 75 ● Area 2 - MacPherson Water Supply Well, SHL, AOCs 32, 76, 43G and 43J ● Area 3 - AOCs 20, 21, 30, 31, and 50 Devens Regional Enterprise Zone City/Town Boundary Former Fort Devens Boundary 	
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Devens PFAS Remedial Investigation Areas Devens PFAS Remedial Investigation Work Plan		
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: 06/28/2018	Figure 2

File: PFAS2018_RL_WP_F1-2_Areas.mxd



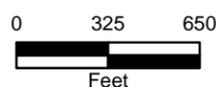
Legend

- PFOA + PFOS > 400 ng/l
- PFOA + PFOS < 400 ng/l
- △ Vertical Profiling Location
- Monitoring Well
- Water Supply Well
- Groundwater Flow Direction
- Former Fort Devens Boundary

PFOA and PFOS Concentrations Area 1

Former Fort Devens Army Installation
Devens, Massachusetts

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



Date:
03/01/2019

Figure
3

