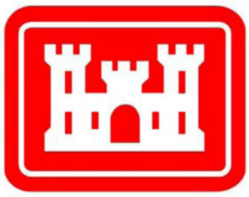
FINAL
SITE INSPECTION WORK PLAN
FOR 34 SUSPECTED PFAS SITES AT

FORMER SENECA ARMY DEPOT ACTIVITY
ROMULUS, SENECA COUNTY, NEW YORK

Contract: W912DY-20-D-0017
Delivery Order: W912DY21F0310

Prepared for:



U.S. Army Engineering and Support Center, Huntsville

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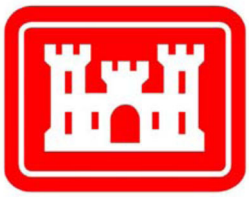

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LIST OF ACRONYMS AND ABBREVIATIONS

ft	feet/foot
gpd	gallons per day
kg	kilograms
mg	milligram
ml	milliliter
mm	millimeter
AFFF	aqueous film-forming foam
AOC	area of concern
ASD	Assistant Secretary of Defense
ASR	Archives Search Report
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CoC	chain of custody
COC	contaminant of concern
CSM	conceptual site model
DoD	Department of Defense
DQO	data quality objective
EOD	explosive ordnance disposal
EPA	U.S. Environmental Protection Agency
ES	Engineering-Science, Inc.
ESI	Expanded Site Inspection
HDPE	high-density polyethylene
HGL	HydroGeoLogic, Inc.
IRFNA	Inhibited Red-Fuming Nitric Acid
MEC	munitions and explosives of concern
NCFL	Non-Combustible Fill Landfill
NFA	No Further Action
No.	number
NTU	nephelometric turbidity unit
NYSDEC	New York State Department of Environmental Conservation
OB	open burning
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PFAS	per- and polyfluoroalkyl substances

RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SCO	soil cleanup objective
SEAD	Seneca Army Depot
SEDA	Seneca Army Depot Activity
SI	Site Inspection
SOP	standard operating procedure
STP	Sewage Treatment Plant
SVOC	semi-volatile organic compound
SWMU	Solid Waste Management Unit
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound

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1.0 SITE INSPECTION OBJECTIVES

HydroGeoLogic, Inc. (HGL) has prepared this Site Inspection (SI) Work Plan to supplement the Programmatic Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) (HGL, 2023). It outlines the process of evaluating if per- and polyfluoroalkyl substances (PFAS) are present in various media (soil, groundwater, sediment, and surface water) at 34 former Seneca Army Depot Activity (SEDA) sites at concentrations that exceed applicable screening levels (Figure 1). The four Areas of Concern (AOCs) that were identified during a preliminary assessment by the U.S. Army Corps of Engineers (USACE) as having possible historical use or disposal of PFAS or PFAS containing materials and recommended for further investigation include the following:

- Munitions and explosives of concern (MEC) sites (9);
- Ash landfill sites (5);
- Disposal and spill-related sites (16); and
- Sewage-related sites (4).

This Work Plan describes the methods that will be used to determine the presence or absence of PFAS at each AOC. SEDA has been included on the Federal facilities National Priorities List since 1989. AOCs within SEDA are subject to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. The U.S. Army Base Realignment and Closure branch of the Deputy Chief of Staff G9, in coordination with the USACE [U.S. Army Engineering and Support Center - Huntsville and New York District], is the lead agency responsible for environmental responses actions at the former SEDA. As the former SEDA is on the National Priorities List, the U.S. Environmental Protection Agency (EPA) is the lead regulatory support agency. The project decision structure also includes support from the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health.

The Army identified locations where there is a reasonable expectation that there may have been a release of PFAS associated with former Department of Defense (DoD) mission-related actions in accordance with CERCLA and the following guidance documents:

- Department of the Army Memorandum *Army Guidance for Addressing Releases of Per- and Polyfluoroalkyl Substances* (Army, 2018);
- Department of the Army Memorandum *Army Environmental Per- and Polyfluoroalkyl Substances (PFAS) Policy* (Army, 2021);
- Office of the Assistant Secretary of Defense (ASD) Memorandum *Addressing Per- and Polyfluoroalkyl Substances at Base Realignment and Closure Locations, 11 May 2022* (ASD, 2022a); and,

- Office of the Assistant Secretary of Defense (ASD) Memorandum, Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program, 06 July 2022 (ASD, 2022b).

The 34 sites subject to investigation in this SI were confirmed as potential PFAS source areas in July 2022 while conducting the Historical Records Review (HRR) and Preliminary Assessment (PA) for other potential PFAS sites at SEDA. Note that the firehouse building at the airfield was added to the RI, however firehouse building 729 was not funded under this SI.

The objectives of this SI are to determine the presence or absence of PFAS in environmental media at each site and could pose a risk to human health and the environment if PFAS concentrations are present above the respective screening levels (SLs) (defined in the following paragraph). Through this evaluation, a determination will be made for each site of either no further investigation is needed, or, if there is a reasonable expectation that the source of PFAS is related to former Army mission-related actions, further investigation is warranted (e.g., expanded site inspection or remedial investigation). These determinations will be accomplished through the installation of new monitoring wells, sampling of new and existing monitoring wells, to collect groundwater samples, collection of surface and subsurface soil, and collocated surface water and sediment samples. The locations of monitoring wells were determined based on existing site knowledge/history and anticipated groundwater flow direction and by locating wells up and down gradient of potential historical PFAS source areas. Surface (0.0’ to 0.5’) and subsurface soils (0.5’-2.0’) will be collected at each new well and surface soils only at all existing well locations where groundwater samples will be collected. Surface water and sediment (0.0’-0.5’) samples were located to determine if PFAS is present in SW on a SEAD or in some cases, in close proximity.

The DoD has adopted a policy within the CERCLA process to compare analytical results for PFAS to risk-based human health screening levels (SLs) for soil and groundwater, as described in a memorandum from the ASD dated 06 July 2022 (ASD, 2022b). The 2022 ASD memorandum recommends using the May 2022 EPA RSLs for screening soil and groundwater to be protective of human receptors and to determine if further investigation in the remedial investigation (RI) phase is warranted or if no further action is required. The EPA RSLs were updated in November 2022, but there were no changes to the PFAS RSLs. The program under which this SI is being performed follows this DoD policy. The EPA RSLs are consistent with the EPA RSL table format rather than the values as presented in the memorandum. The SLs established in the ASD memorandum apply to six compounds: perfluorooctanesulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexane sulfonic acid (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA, Gen-X). Risk-based human health screening levels for surface water and sediment also were calculated using the May 2022 RSL calculator (EPA, 2022). The SLs and derived project action levels (PALs) are intended for screening purposes only; an exceedance of an SL/PAL is not an indication of unacceptable risk. PALs are presented in Worksheet #15 of the Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP) (HGL, 2023).

2.0 SITE DESCRIPTION

SEDA is a 10,587-acre former military facility located approximately 40 miles south of Lake Ontario in Seneca County, New York (Figure 1). The facility is located between Seneca Lake and Cayuga Lake and is bordered by New York State Highway 96 to the east, New York State Highway 96A to the west, and sparsely populated farmland to the north and south. The facility was wholly owned by the U.S. Government and was operated by the Department of the Army between 1941 and 2000 with the primary mission to receive, store, maintain, and supply military items. In 1995, SEDA was designated for closure under DoD's Base Realignment and Closure process.

While there is limited background information available describing historical activities at SEDA, it is likely that PFAS-containing products were used throughout its history. A main source of PFAS contamination in the environment is the use of aqueous film-forming foam (AFFF). Developed in the mid-1960s, AFFF is a type of fluorinated Class B firefighting foam designed and used to combat Class B flammable fuel fires. AFFF is typically formed by combining hydrocarbon surfactants, organic solvents, fluorosurfactants, polymers, and other additives. In addition to AFFF, a variety of potential PFAS sources have been found on military installations, including wastewater treatment plants (and associated biosolids), metal plating and finishing shops, paint shops, car and vehicle wash/wax facilities, open burning/detonation areas, munitions disposal areas, and land disposal areas. A Historical Records Review was conducted by HGL/Parsons team in 2022 and reviewed the 34 SI sites and an evaluation of 78 that were identified as part of previous environmental investigations and a review of former building uses (HGL, 2022). In addition, a PFAS Background Study is being conducted by Parsons under a separate contract.

Brief descriptions of the 34 sites that make up each of the four AOCs at the former SEDA are presented in the subsections that follow. An installation-wide conceptual site model (CSM) was presented in Worksheet #10 of the UFP-QAPP (HGL, 2023), which lists the 34 suspected PFAS sites within the four AOCs. Each of those suspected PFAS sites also are listed by AOC below and presented on Figures 1A through 1F. This document does not address the four known PFAS contamination sites that were presented by HGL and Parsons in a separate remedial investigation work plan.

2.1 MUNITIONS AND EXPLOSIVES OF CONCERN SITES

The nine sites that make up the MEC Site AOC include properties located in the northwestern, western, northeastern, and southeastern perimeters of SEDA (Figures 1A, 1B, 1C, and 1F). The sites were largely used for the detonation, disposal, burning, and demilitarization of munitions and/or explosive ordnance. Fluoropolymers are used within ammunition to make the product rubbery to reduce the occurrence of an unplanned explosion (EPA, 2021; Glüge et al., 2020). Several former munitions sites were advanced to SI by the Army as areas that may have the potential for the presence of PFAS. During the HRR (HGL, 2022), AFFF firefighting foams, munition filling areas including the fillers and binders used in munitions and munitions components, and open burning/open detonation areas were all identified as potential PFAS sources; therefore, these sites were added to the SI list. AFFF may have been used in response to fires that were part of some of these activities. Brief summaries of site history are included below.

2.1.1 SEAD-002-R-01, Explosive Ordnance Disposal Areas #2 and #3-Operable Unit (OU) 11

Seneca Army Depot (SEAD) site SEAD-002-R-01 includes two separate Explosive Ordnance Disposal (EOD) areas, EOD-2 and EOD-3, which are located in the northeastern portion of SEDA in the vicinity of Duck Pond and SEAD-46 (Figure 1B). EOD-2 portion of SEAD-002-R-01 encompasses approximately 3 acres of land on the southwestern shore of Duck Pond. This area is west-northwest of SEAD-46 and southeast of the intersection of Fayette Road and East-West Baseline Road. The 1998 Archives Search Report (ASR) states that explosive devices were used in EOD-2 and that non-explosive projectiles were disposed near Duck Pond. EOD-3 portion of SEAD-002-R-01 encompasses approximately 4 acres of land approximately 250 feet (ft) north of the earthen protective barrier berm in SEAD-46. EOD-3 was a former EOD disposal area. Contaminants of concern (COCs) are related to the former disposal of munitions-related items and other debris associated with the historic explosive usage within the AOC (Parsons, 2021).

2.1.2 SEAD 003-R-01, Explosive Ordnance Disposal #1 (SEAD-57)-OU11

SEAD-003-R-01 (SEAD-57), formerly referred to as EOD-1, is a rectangular parcel of land that encompasses approximately 72 acres in the west/-northwest portion of SEDA. SEAD-003-R-01 is adjacent to the southernmost portion of the Open Burning/Open Detonation Grounds that occupy most of the land in the northwestern corner of the former SEDA (Figure 1A). For more than 20 years, the 143rd Ordnance Detachment, a Department of the Army tenant organization at SEDA, performed ordnance and explosives disposal and training at SEAD 003-R-01. The area was used by EOD personnel for disposing of and training with conventional ammunition or explosives weighing less than 5 pounds. The contaminant sources at SEAD 003-R-01 were the military-related items and other debris associated with the explosive disposal within the AOC (Parsons, 2021). An ESI was conducted in 1994 and RI in 1999 and 2000 and metals were the principal hazardous substances detected at the SEAD 003, but detected concentrations were generally consistent with the approved background soil concentration dataset values. A munitions response action was conducted in 2006 removing 1-ft of soils from top of the protective berm.

2.1.3 SEAD-16, Building S311, Abandoned Deactivation Furnace-OU4

The former Abandoned Deactivation Furnace (SEAD-16) is located in the east-central portion of SEDA (Figure 1C). SEAD-16 consists of 2.6 acres of fenced land with grasslands in the north, east, and west; a former storage area for empty boxes and wooden debris; and an unpaved roadway in the south. The building that housed the deactivation furnace, a smaller abandoned building known as the Process Support Building, two sets of SEDA railroad tracks, and some utilities also were previously located on site. Two underground storage tanks were removed from SEAD-16 and documented in a Final Closure Report for the Underground Storage Tank Removal (Parsons, 2021).

SEAD-16 was used for the demilitarization of various small arms munitions. The process of deactivation of munitions involved heating the munitions within a rotating steel kiln, which caused the munitions to detonate. The byproducts produced during this detonation were then swept out of the kiln through the stack. SEAD-16 has been inactive and abandoned since the 1960s (Parsons, 2021).

The primary COCs at SEAD-16 were four metals (arsenic, copper, lead, and zinc), polycyclic aromatic hydrocarbons (PAHs), and nitroaromatics. The COCs are believed to have been released to

the environment during the former deactivation furnace's period of operation (approximately 1945 to the mid-1960s). The most impacted soil was adjacent to the abandoned deactivation furnace, possibly from airborne deposition that could have included PFAS.

2.1.4 SEAD-17, Building 367, Active Deactivation Furnace-OU4

The former Active Deactivation Furnace (SEAD-17) is located in the east-central portion of SEDA (Figure 1C). SEAD-17 consisted of a deactivation furnace building that was surrounded by a crushed shale road. Beyond the perimeter of the crushed shale road was grassland. Two small sheds were located in the eastern portion of SEAD-17, and there is vehicular access to SEAD-17 from an unpaved road to the northeast (Parsons, 2021).

SEAD-17 was constructed to replace the operation of SEAD-16 and also was used for the demilitarization of various small arms munitions. The process of deactivation of munitions involved heating the munitions within a rotating steel kiln, which caused the munitions to detonate. The byproducts produced during this detonation were then swept out of the kiln through the stack. SEAD-17 operated prior to the establishment of the Resource Conservation and Recovery Act (RCRA) and then under RCRA, interim status until the early 1990s. During the 1990s, the Army upgraded the incinerator; however, the upgrades did not meet incinerator requirements for temperature and residence time and the incinerator was not subsequently operated to dispose of hazardous materials. SEAD-17 was closed under RCRA in approximately 2005 (Parsons, 2021).

2.1.5 SEAD-23, Open Burning Grounds-OU2

The Open Burning (OB) Grounds (SEAD-23) site occupies approximately 30 acres on gently sloping terrain in the northwest corner of SEDA (Figure 1A). The OB Grounds is bounded to the northeast by Reeder Creek, which is a perennial creek that is generally less than 1-ft deep and eventually flows into Seneca Lake. Seneca Lake is located approximately 3 miles downstream to the west of the site and is used as a source of drinking water for SEDA and surrounding communities (Parsons, 2021).

The land at the OB Grounds has been used for demilitarization of munitions for approximately 40 years. The open burning procedure involved the preparation of combustible beds of pallets and wooden boxes on the pads followed by the placement of ammunition or the components to be demilitarized on the beds. A trail of propellant was placed on the ground leading to the combustible bed. Once ignited, the energetic material was allowed to burn until only ash and casing residues remained. Items burned included various military munitions such as propellants and projectiles that may have contained PFAS or may have been extinguished by AFFF (Parsons, 2021).

The primary media investigated at the OB Grounds included soil, surface water and sediment (from Reeder Creek, on-site areas and drainage swales), and groundwater. On-site soil and sediment in Reeder Creek were the media that had been impacted. Lead was found at a maximum concentration of 56,700 milligram/kilogram (mg/kg) in soil.

2.1.6 SEAD-24, Abandoned Powder Burning Pit-OU13

The Abandoned Powder Burning Pit (SEAD-24) is located in the west-central portion of SEDA and is characterized by a vegetated U-shaped berm area with surrounding grassland and low brush (Figure

1F). SEAD-24 is bounded by West Kendaia Road to the north and by open grassland and low brush to the east, south, and west. SEDA railroad tracks are located approximately 400 ft east of the U-shaped berm. Kendaia Creek is located approximately 150 ft north of West Kendaia Road. The topography on site slopes gently to the west; north of West Kendaia Road the land slopes more steeply to the north-northwest toward the creek (Parsons, 1995).

SEAD-24 was active during the 1940s and 1950s. Formerly, the pit area was surrounded by a U-shaped, 4-ft high berm, which is approximately 150 ft across and 325 ft long. There is an adjacent shale-covered area that also may have been used (Parsons, 1995).

2.1.7 SEAD-006-R-01, Open Detonation Grounds (SEAD-45)-OU17

SEAD 006-R-01 (aka SEAD-45) is the nonagonal-shaped area that surrounds, and includes, SEAD-23 in the northwestern corner of SEDA (Figure 1A). This OU is currently under assessment and did not have a signed record of decision (ROD) as of the date of the August 2021 Final Five-Year Review Report (Parsons, 2021). As reported for SEAD-23, the primary COCs identified in the Open Detonation Grounds include metals, PAHs, explosive compounds, and phthalates, which were likely released to the environment during the historic open detonation activities.

2.1.8 SEAD-46, Small Arms Range (aka 3.5-inch Rocket Range)-OU11

The Small Arms Range (SEAD-46), also known as the 3.5-inch Rocket Range, is a trapezoidal-shaped parcel of land that encompasses approximately 68 acres (Figure 1B). From the 1940s to the 1960s, SEAD-46 was used as a function test range for 3.5-inch rocket motors. Based on the findings of the Ordnance and Explosives (OE) Engineering Evaluation/Cost Analysis (EE/CA), the likely use of the AOC was as a rocket motor function testing range and as such was suspected to contain munitions related debris (Parsons, 2021). The AOC's southern boundary is located approximately 6,000 ft north-northwest of the former Depot's main gate off State Highway 96. The predominant feature in the area is a man-made earthen berm that is situated near the northwest corner of the AOC; the berm served as a protective barrier during range operations (Parsons, 2021).

The contaminant sources at SEAD-46 were the military-related items and other debris associated with munitions testing and disposal activities within the AOC. A munitions response action was conducted in 2006 removing 1-ft of soil from exterior surfaces of the protective berm.

2.1.9 SEAD 007-R-01, Rifle Grenade Range-OU11

The Grenade Range, which was constructed in the mid-1980s, encompasses approximately 28 acres of land in the northwestern portion of the former Depot, to the west and southwest of SEAD 003-R-01 (Figure 1A). Security forces' training at the Grenade Range included the use of 40 millimeter (mm) M781 (40mm Low Velocity Practice Cartridge) and 35mm M73 sub-caliber practice rockets. There is no record (or indication at the targets) that high explosive rounds were used (Parsons, 2021).

The contaminant sources at SEAD 007-R-01 were the military-related items and other debris associated with the historic rifle grenade usage within the AOC. The range also contained wooden and armored vehicle targets, distance and boundary markers, and the range control tower. The ASR states that 40mm M781 and 35mm M73 sub-caliber practice rockets were used at the AOC for

security forces training. Based on the findings of the Ordnance and Explosives (OE) Engineering Evaluation/Cost Analysis (EE/CA), the likely use of the AOC was as a rocket motor function testing range and as such was suspected to contain munitions related debris (Parsons, 2021). There is no record (or indication at the targets) that high explosive rounds were used. Small arms (blanks) casings were reported to be present at the time of the ASR in 1998 (Parsons, 2021).

2.2 ASH LANDFILL SITES

The Ash Landfill sites are comprised of five separate SEADs, collectively referred to herein as "The Ash Landfill Sites" (Figure 1F). The five areas are located along the western boundary within an area encompassing approximately 23 acres and include the following SEADs:

- SEAD-3, Incinerator Cooling Water Pond-OU1;
- SEAD-6, Abandoned Ash Landfill-OU1;
- SEAD-8, Non-Combustible Fill Area-OU1;
- SEAD-14, Refuse Burning Pit (2 Units)-OU1; and
- SEAD-15, Abandoned Solid Waste Incinerator (Building 2207)-OU1.

The Ash Landfill sites are bounded on the north by Cemetery Road, on the east by a SEDA railroad line, on the south by open grassland and brush, and on the west by the SEDA boundary. The Ash Landfill sites were initially estimated to encompass an area of approximately 130 acres. This larger area was investigated to ensure no previously unknown waste disposal areas were overlooked. Following the RI, the Ash Landfill was refocused to an area of approximately 23 acres (Parsons, 2021).

From 1941 to 1974, household trash and depot refuse were burned in a series of Refuse Burning Pits near the Abandoned Solid Waste Incinerator (Building 2207). During this same period (1941 until the late 1950s or early 1960s), the ash from the Refuse Burning Pits (SEAD-14) was buried in the Ash Landfill. The Incinerator Building was built in 1974. Between 1974 and 1979, materials intended for disposal were transported to the incinerator. The source for the refuse was domestic waste from SEDA and family housing. Large items that could not be burned were disposed of at the Non-Combustible Fill Landfill (NCFL). The NCFL is located southeast of the Incinerator Building (immediately south of the SEDA railroad line). The NCFL was used as a disposal site for non-combustible materials, including construction debris, from 1969 until 1977. Ash and other residues from the incinerator were temporarily disposed of in the Incinerator Cooling Water Pond (SEAD-3) immediately north of the Incinerator Building. About every 18 months, when the pond filled, the fly ash and residues were removed, transported, and buried in the adjacent Ash Landfill, east of the Cooling Pond. A fire destroyed the incinerator in May 1979, and the landfill was subsequently closed. A vegetative cover, comprised of native soils and grasses, was installed over the Ash Landfill during the 1994 SI (Parsons, 2021).

The primary COCs at the Ash Landfill site are VOCs, including chlorinated and aromatic compounds, SVOCs (mainly PAHs), and, to a lesser degree, metals. The COCs are believed to have been released to the environment during former activities conducted at the Ash Landfill sites. The source of the VOCs was most likely the three alleged solvent dump areas located at the "Bend in the Road" area

northwest of the Ash Landfill. The source of the VOCs that were allegedly disposed in this area is unknown.

Landfills were identified by USACE and confirmed during the HRR (HGL, 2022) to have the potential to contain PFAS containing materials.

2.3 DISPOSAL AND SPILL-RELATED SITES

The 16 Disposal and Spill-Related sites are distributed across the entire SEDA footprint (Figures 1A, 1B, 1C, 1D, 1E, and 1F). Known uses of these sites include the disposal of construction debris, wood and wood products, sludge, metal, industrial products, pesticides, and household waste. A former fire house (Building 722) also is included in this group of sites. Brief site history summaries are included below. During the HRR (HGL, 2022) disposal areas and spills were identified as potential sources of PFAS and included in the SI list of sites.

2.3.1 SEAD-7, Shale Pit-OU14

SEAD-7 (the Shale Pit) is an approximate 2-acre excavation located on a 185-acre parcel north of the North Patrol Road in the northwestern corner of SEDA (Figure 1A). It was created when the Army excavated it to obtain shale that was used for road surfaces at SEDA. Once the excavation was opened, it was used for disposal of construction debris from SEDA building and demolition activities and contained concrete, asphalt, and wood debris. No other wastes were reportedly placed in the Shale Pit during its time of use. The base of the excavation pit was terminated above the regional groundwater table. No cover material was applied to the debris subsequent to its placement in the pit. The Army managed disposal at the site, and only construction debris, which was inert and free of chemical contamination and therefore exempt from regulation under New York State Hazardous Waste Regulations, 6 New York Codes, Rules, and Regulations Section 360-7.1 (b)(i), was placed into the pit (Parsons, 2003).

The Army proposed SEAD-7 as a No Action Solid Waste Management Unit (SWMU). This recommendation was documented in the Final SWMU Classification Report (ES, 1994), and both EPA and NYSDEC concurred with this recommendation. A visual site inspection was conducted at the Shale Pit (SEAD-7) on September 13, 1990, and it indicated that approximately 50 percent of the pit was filled with construction debris. All materials disposed of in the Shale Pit were visually inspected prior to disposal to ensure only uncontaminated construction debris or clean fill were placed in the pit. No environmental sampling was performed at SEAD-7. The Army's remedy for this SWMU is "No Action" under CERCLA (Parsons, 2003).

2.3.2 SEAD-9, Old Scrap Wood Site-OU14

The Old Scrap Wood Site (SEAD-9) is located in the eastern-central portion of SEDA about 400 ft north of the intersection of East Kendaia Road and East Patrol Road (Figure 1C). This SWMU is located in a portion of SEDA where the future land use was designated for planned industrial development. A dirt road leads to a cul-de-sac, at the end of which debris is present at the ground surface. The debris consists of numerous piles of scrap wood, tree stumps, and other miscellaneous items. There are no buildings or structures near this site other than a cell tower located approximately 3,000 ft to the northeast of SEAD-9.

Construction debris was disposed of at this site from 1977 to 1984, and scrap wood was deposited here from 1984 to 1986. Periodically between 1985 and 1992, the fire department used this area for fire training when they burned scrap wood that could not be sold. SEAD-9 was designated as an AOC, and investigations were subsequently conducted. The analytical results of soil samples collected indicated the presence of VOCs, SVOCs, pesticides, PCBs, and metals. Concentrations of several PAHs and metals exceeded their respective NYSDEC-recommended soil cleanup objectives, and total petroleum hydrocarbons and metals were detected in groundwater samples collected from SEAD-9; however, following a risk assessment for SEAD-9, the Army's remedy for the SWMU was No Further Action (NFA) under CERCLA.

2.3.3 SEAD-10, Scrap Wood Site-OU14

SEAD-10 was used for storing scrap wood generated from SEDA activities. The Scrap Wood Pile encompassed an area measuring approximately 250 ft long by 185 ft wide on the south side of East Kendaia Road near Building 113 (Figure 1C). The storage area was divided into sections for scrap wood, wooden pallets, and pressure-treated wood and poles. SEDA's fire department periodically used wood from the scrap woodpile as fuel for fire training exercises at other locations.

The Army proposed SEAD-10 as a No Action SWMU. This recommendation was documented in the Final SWMU Classification Report (ES, 1994), and EPA and NYSDEC concurred with this recommendation. Samples of the ash produced by the combustion of scrap wood from fire training exercises in SEAD-10 were collected on September 29, 1992, and analyzed for toxicity characteristic leaching procedure constituents prior to their disposal, the results of which indicated that concentrations did not exceed the Toxicity Characteristic levels defined in 40 CFR 5261.24. The Army's remedy for the SWMU was "No Action" under CERCLA.

2.3.4 SEAD-11, Old Construction Debris Landfill-OU8

SEAD-11 was a construction debris landfill in use between approximately 1946 and 1949 and comprised of approximately 4 acres (590 ft by 300 ft) (Figure 1E). The *Final SMWU Classification Study Report, Seneca Army Depot Activity* (Engineering-Science, Inc. [ES], 1994) noted the area was abandoned, vegetated with grasses and weeds, and contained no evidence of a release; however, given the uncertainty of the landfill contents, it was characterized as a “Moderate Priority Area of Concern” and recommended for soil and groundwater sampling as part of an SI (ES, 1994).

2.3.5 SEAD-58, Debris Area Near Booster Station 213-OU14

SEAD-58 was a debris disposal and fill area located east of Booster Station 2131 with an unknown usage and disposal time frame; however, it was reportedly used for the disposal of barrels containing the insecticide dichloro-diphenyl-trichloroethane (Figure 1F). The specific debris area could not be located during a visual inspection in November 1990. Given the uncertainty of the contents of the debris area, it was characterized as a “Moderately-Low Priority Area of Concern” and recommended for soil and groundwater sampling as part of an SI (ES, 1994).

2.3.6 SEAD-59, Fill Area West of Building 315-OU6

SEAD-59 (Fill Area West of Building 135) is a vacant property approximately 4 acres in size and encompasses an area located along both sides of an unnamed east-west dirt road that provides access to Building 311 and terminates at Building 311 (Figure 1C). The entire western border of SEAD-59 is defined by a north-south trending drainage ditch. An east-west oriented drainage swale that parallels the SEDA railroad tracks forms the northern boundary of SEAD-59. Drainage ditches also are located on each side of the dirt access road to Building 311 (Parsons, 2009).
SEAD-59 was used for the disposal of construction debris and oily sludge. SEDA personnel have indicated that a large quantity of miscellaneous "roads and grounds" waste may have been buried at the AOC. It is not known whether any disposal occurred or when any disposal took place (Parsons, 2009).

2.3.7 SEAD-64A, Garbage Disposal Area South of Storage Pad-OU12

SEAD-64A is located in the east-central portion of SEDA (Figure 1D). The site is bounded to the north by a square storage pad, to the east by the SEDA railroad tracks beyond which is the elevated fire training pad (SEAD-26), and to the south and west by undeveloped grassland. This SWMU is located on land that is designated for warehouse use. SEAD-64A was used during the period from 1974 to 1979 when the on-site solid waste incinerator was not in operation. The types of wastes disposed at the site are suspected to be primarily household items, although according to the Final SWMU Classification Report (ES, 1994), metal drums and other industrial items were reportedly disposed at this site. Test pits were conducted as part of the 1995 Expanded Site Inspection (ESI) (Parsons, 1995), and no evidence of metal drums or industrial waste was found. SEDA personnel also reported the operation of small burning pits within this area when it was being landfilled. Debris (asphalt, wooden boards, concrete slabs, and corrugated drainpipe) was visible on the surface, although SEAD-64A is mostly covered with dense vegetation (Parsons, 2004).

2.3.8 SEAD-64B, Garbage Disposal Area South of Classification Area-OU14

The Garbage Disposal Area at SEAD-64B is located immediately north of Ovid Road near Building 2086 in the southern end of SEDA (Figure 1D). SEAD-64B was used for garbage disposal from 1974 to 1979, which corresponds to a period when SEDA's solid waste incinerator was not in operation. It appears that one or two truckloads of household waste were disposed at SEAD-64B based on the size of the fill area and the amount of debris observed. The Five-Year Review Report conducted by Parsons in 2011 indicated an ESI was performed at 64B in 1994. Soil, groundwater, surface water, and sediment samples were collected. VOCs, SVOCs, pesticides, and metals were detected in the soils. One metal, magnesium, exceeded its TAGM cleanup value in one sample. All other parameters were detected below their respective TAGM values. Three pesticides (4,4'-DDE, endosulfan I, and heptachlor) exceeded their sediment criteria in one sample. Arsenic, copper, iron, manganese, mercury, and nickel were detected at concentrations exceeding criteria in one or more of the sediment samples (Parsons, July 2011).

2.3.9 SEAD-64C, Garbage Disposal Area-OU14

SEAD-64C is the location of a proposed landfill near the intersection of East Patrol Road and South Patrol Road in the southeastern corner of SEDA (Figure 1D). This former AOC is located within the

bounds of the New York State Department of Correctional Service's Five Points Correctional Facility. An Army Pollution Abatement report concluded that the proposed site could be used for a sanitary landfill; however, no available information indicates that a formal landfill was established on site. Information presented in the SWMU classification report suggests limited dumping may have occurred at the site and that transmission power lines may be buried throughout the site; however, the Army notified the NYSDEC that the area designated as SEAD-64C was misidentified as a historic landfill site and no waste was ever identified during the Army's investigations (Parsons, 2021).

2.3.10 SEAD-64D, Garbage Disposal Area West of Building 2203-OU14

SEAD-64D covers an area located between West Patrol Road and the railroad tracks located to the west along North-South Baseline Road in the southwestern portion of SEDA (Figure 1E). Portions of SEAD-64D were used for garbage disposal from 1974 to 1979 when the SEDA solid waste incinerator was not in operation. The type of waste disposed at SEAD-64D was primarily household waste, although according to information contained in the Final SWMU Classification Report (ES, 1994) and conditions observed during test pitting, construction debris also was disposed of at SEAD-64D. The Five-Year Review Report conducted by Parsons in 2011 indicated an ESI was performed at 64D in 1994. Soil, groundwater, surface water, and sediment samples were collected. The findings were presented in a Final Decision Document – Mini Risk Assessment completed by Parsons in 2002. Three SVOCs, [Benzo(a)pyrene, dibenz(a,h)anthracene, and phenol] exceeded their respective TAGM cleanup objective values at least once. Six metals (aluminum, iron, lead, manganese, nickel, and thallium) exceeded their respective groundwater standards in at least one of the five groundwater samples collected. Aluminum, iron, and manganese exceeded their GA standard or Secondary Drinking Water Regulation values in all five samples. Lead exceeded its GA standard of 25 micrograms/liter in one sample with a concentration of 71.6 micrograms/liter.

2.3.11 SEAD-67, Dump Site East of Sewage Treatment Plant #4-OU14

SEAD-67 (Dump Site East of Sewage Treatment Plant No. 4) is located in the central eastern portion of SEDA (Figure 1B), immediately south of West Romulus Road and east of Sewage Treatment Plant No. 4 (SEAD-20). Five waste soil piles and two soil berms were formerly staged at SEAD-67. The origin of the berms and waste piles is unknown (Parsons, 2021).

Samples collected as part of the ESI were analyzed for VOCs, SVOCs, pesticides/PCBs, metals, and cyanide. Fifty target compound list/target analyte list compounds were detected in the soil samples, and 10 compounds, including five carcinogenic polycyclic aromatic hydrocarbons and five metals, were detected at concentrations that exceeded the NYSDEC Remedial Program Soil Cleanup Objectives (SCOs) outlined in Subpart 375-6. Compounds found at concentrations above applicable SCOs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene, calcium, lead, manganese, mercury, and potassium. Surface water results indicated that the unnamed stream near SEAD-67 has not been significantly impacted by contaminants. Available data indicated that the groundwater has not been significantly impacted by historic operations at SEAD-67 (Parsons, 2021).

2.3.12 SEAD-68, Old Pest Control Shop (Building S-335)-OU14

SEAD-68 is located in the east-central portion of SEDA (Figure 1C) and contains Building S-335 that is described as a white clapboard building, approximately 30 ft wide by 20 ft long, with a garage on the south end of the building that was used for fire training exercises. During the visual site inspection in 1990, firefighting training equipment was observed in the south end of the building. A pest control shop was once located in Building S-335 and a review of the site history suggests that pesticides may have been disposed of there. It was classified as an SWMU by NYSDEC and SEDA was in agreement.

2.3.13 SEAD-69, Building 606 Disposal Area-OU14

SEAD-69 is located in the southeastern corner of SEDA on property that currently is associated with the New York State Department of Correctional Service's Five Points Correctional Facility (Figure 1D). SEAD-69 is a disposal area in an open field that is located southeast of Building 606, which was previously suspected of receiving wastes from the two other SWMUs.

Inhibited Red-Fuming Nitric Acid (IRFNA) was used in and stored at or near Building 606 prior to its disposal at SEAD-13. It is suspected that waste from the IRFNA storage and pesticide/herbicide mixing was disposed at SEAD-69. SEAD-69 measures approximately 100 ft by 100 ft in size and contains various types of construction debris, including bricks and concrete blocks that are visible at the surface.

2.3.14 SEAD-70, Former Building T-2110, Filled Area-OU11

SEAD-70 is a historic fill area encompassing approximately 4.5 acres of land adjacent to the former Building T-2110 in the northwestern portion of SEDA (Figure 1A). SEAD-70 is located south of East-West Baseline Road approximately 1,000 ft west of its intersection with North-South Baseline Road and approximately 15,000 ft northwest of the former SEDA main gate off State Highway 96. Prior to 2006, a wooden barn (Building T-2110) was located at this AOC, but it was demolished due to safety concerns about the aged, dilapidated structure. Building T-2110 was identified as a potential ordnance, ammunition, explosives, and other warfare materials storage shed at the time of the 1998 ASR effort, but once site inspections and interviews were completed, this area was dismissed from further consideration for munitions response action (Parson, 2017).

SEAD-70 currently is vacant and undeveloped. The most noticeable feature in the undeveloped portion of the AOC is a kidney-shaped landfill that forms a flat topographic high area. The landfill appears to originate near the former barn and expands in a southeasterly direction. A mound is located near the southeastern corner of the former barn, and an elongated vegetated mound is present along the southern perimeter of the landfill. Immediately east of the landfill is a wet area beyond which is a large stand of deciduous trees (Parsons, 2017).

An interim soil removal action, followed by a focused confirmatory environmental sampling and analysis program, was conducted at SEAD-70 to eliminate hazardous substances, pollutants, and contaminants identified during an earlier ESI and risk assessment characterization of the AOC. Munitions and ordnance removal operations were not needed at SEAD-70 because historic review of available records and information and inspections of the AOC did not indicate or suggest that

munitions were ever handled or stored at the site. The March 2017 Final Record of Decision documented that the selected remedy for SEAD-70 was NFA.

2.3.15 SEAD-122D, Airfield Hot Pad Spill

SEAD-122D is comprised of an approximately 600-ft by 60-ft rectangular concrete pad located at the southern end of the SEDA airfield. The pad is bounded on the north, east, and south by grass, and a small asphalt roadway connects to the southern end of the pad. On the west side is a 400-ft by 400-ft grassy area with a central drainage area. Asphalt taxiways on the northern and southern sides of this square grassy area provide access to the refueling pad from the runway.

While this site was originally included in the list of 34 sites where SI services would be conducted, it has since been determined by USACE that since it was surrounded by sites being investigated under the RI, it will be included with the RI sites; however, for the purposes of this document, references to the 34 sites will remain when only 33 are addressed in this document.

2.3.16 Fire House Building 722

Fire House Building 722 is an approximately 4,700 square foot structure that was built in 1956, and is located in the northwestern portion of SEDA, located east and upgradient of SEAD-21 and SEAD-7 (Figure 1A). There has been no environmental investigation of the property; however, given that it operated as a fire station and likely stored and/or used AFFF, it has been included in the list of SI sites.

2.4 SEWAGE-RELATED SITES

The Sewage-Related Sites are comprised of four separate treatment systems or pump stations located in the northwestern, south, southeastern, and central portions of SEDA (Figures 1A, 1B, and 1C). The sites were used for the disposal of sludge, sewage, and sewage treatment wastes. Wastewater treatment plants were identified in the HRR (HGL, 2022) as having the potential to contain PFAS. Additional details are presented in the subsections below.

2.4.1 SEAD-5, Sewage Sludge Storage Pile-OU13

SEAD-5 is located in the east-central portion of SEDA, approximately 3,000 ft west-southwest of SEDA's main entrance off State Route 96 (Figure 1C). SEAD-5 encompasses an area measuring approximately 150 ft by 250 ft in size. Between 1980 and roughly June 1992, sewage sludge from two Army wastewater treatment plants was stockpiled at this AOC. This area also was used by SEDA's Department of Public Works as a storage and staging area for heavy equipment, materials, and supplies (Parsons, 2021).

Data presented in the ROD for SEAD-5 (Parsons, 2009) indicated that hazardous substances and constituents were present at levels that exceed Federal and state soil guidance values and at levels that pose potential risks to future industrial and commercial users or occupants of the land.

2.4.2 SEAD-20, Sewage Treatment Plant #4-OU14

Sewage Treatment Plant (STP) No. 4 received domestic wastewater between at least 1942 and 1994 and was designed for a maximum flow of 250,000 gallons per day (gpd). Flow was received from the administration area, the warehouse area, the Military Elliot Acres Housing Complex, and the adjacent civilian communities of Romulus and Varick. Sludges periodically were removed from two 35-ft by 35-ft sludge drying beds and stored in the sewage sludge waste piles at SEAD-5.

2.4.3 SEAD-21, Sewage Treatment Plant #715-OU14

SEAD-21 is located in the north-central to northwestern portion of SEDA, west of SEDA's former north gate where the perimeter fence and the North Patrol Road separate (Figure 1A). When the Army operated SEAD-21, it had a permitted wastewater capacity of 300,000 gpd. The design capacity of the facility is 750,000 gpd. The treatment plant began operations in 1956, and the Army ceased operation of the plant on January 1, 1996, when the troop barracks located in the northern portion of SEDA were closed. During the period of its operation, the wastewater treatment plant only received wastewater from domestic sources.

Permitted sewage treatment plants are exempted from RCRA regulations and, therefore, should not be classified as SWMUs. The Army proposed SEAD-21 as an NFA SWMU. This recommendation was documented in the Final SWMU Classification Report (ES, 1994), and both EPA and NYSDEC concurred with this recommendation. No site investigations have been conducted in the immediate vicinity of SEAD-21.

2.4.4 SEAD-22, Sewage Treatment Plant #314-OU14

SEAD-22 is located in the east-central part of SEDA where the land's future use is designated as planned industrial development (Figure 1C). The historic treatment plant was constructed in 1941 and continued to operate until October 1978. In 1978, STP No. 314 was converted to a lift station that serviced STP No. 4 (SEAD-20). The lift station currently continues to occupy the site of the former STP facility. All components of the original STP No. 314 facility were removed or filled and covered with shale and soil subsequent to the shutdown of the plant. The area is grassy, but several pieces of the former facility's foundation are still evident at the site.

The Army proposed SEAD-22 as an NFA SWMU. This recommendation was documented in the Final SWMU Classification Report (ES, 1994), and both EPA and NYSDEC concurred with this recommendation. No site investigations have been conducted within or in the immediate vicinity of SEAD-22.

3.0 CONCEPTUAL SITE MODEL

A CSM integrates existing information and working assumptions about the physical site conditions; the nature, occurrence, and distribution of chemicals; fate and transport processes; and the possibility of subsequent human and ecological exposure to the chemicals at, or potentially released from, the sites. The CSM for the SI sites is based on the current understanding of site history and conditions presented in Section 2 and will be updated based on input from field investigations.

Handling and/or use of AFFF has been inferred from former site history and the confirmed presence of PFAS in the environment in previous investigations (e.g., PFAS SI and ESI) at the former Firehouse, SEAD-25, SEAD-26, and the Airfield (SEAD-122D and -122E). A generalized CSM regarding AFFF release to the ground surface (including during fire training exercises or by accidental spills) is presented in Worksheet #10 of the UFP-QAPP (HGL, 2022).

The area surrounding the former SEDA is underlain by a thin, shallow water bearing zone within a low hydraulic conductivity glacial till and weathered shale formation. The thickness of the glacial till unit is variable across SEDA and can be absent where bedrock is shallow or up to approximately 15 ft thick. Typically, a zone of grey weathered shale of variable thickness is present and is described as a fissile shale with a large amount of brown interstitial silt and clay. The weathered shale can be absent or up to 12 ft thick, but is generally 1 to 2 ft thick. The depth of competent shale is variable across SEDA and can be within a few ft of the surface or as deep as 20 ft bgs at some locations; however, the depth to competent shale is typically between 7 and 12 ft bgs (Parsons, 1994).

The bulk of groundwater flow is interpreted to occur along the till-weathered bedrock interface above the competent shale. Due to slow recharge and low yield, the groundwater conditions are poor and would not support use as a drinking water aquifer source. PFAS compounds typically found in the environment are not considered to be volatile, and transport of PFAS impacts through vapor transport (e.g., impacts to indoor air related to soil gas or airborne particles) are unlikely. However, PFAS compounds are highly soluble in water and as a result are easily transported in surface water and groundwater, potentially resulting in the transport and distribution of PFAS impacts downgradient of source areas. In addition, PFAS-contaminated sediment may be suspended in stormwater runoff and transported during storm events.

Based on the thin saturated thickness observed during groundwater gauging at the RI sites, excessive drawdown during sampling at minimal pumping rates (100-200 milliliters [ml]/minute) and poor recharge, the shallow water zone is not expected to be a productive water supply for drinking water. While there is likely to be some regional recharge of precipitation through the till/weathered bedrock shallow groundwater zone to the underlying shallow bedrock groundwater, vertical groundwater interaction between the upper and lower water bearing zones is not expected to be as significant as preferential groundwater flow within the shallow fractured and weathered bedrock zone along the top of the shale bedrock.

3.1 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) are pre-established goals that help monitor and assess project progress and provide benchmarks against which the quality of fieldwork and the resultant analytical data are evaluated. DQOs specify the type, quality, quantity, and uses of the data necessary to support investigation objectives. Program-level DQOs are presented in Worksheet #11 of the UFP-QAPP (HGL, 2022).

The sample designs that will be employed at the SI sites to fill data gaps associated with these DQOs are based on the investigation model for PFAS surface release sites, as described in Worksheets #17 and #18 of the UFP-QAPP (HGL, 2022) and in Section 2 and Section 4 of this Work Plan. Because the sites are on the SI pathway, the extent Project Action Limits described in Worksheet #15 will be

used to evaluate the nature and extent of contamination in soil, groundwater, surface water, and sediment. The sample design specific to each site is presented in Section 4 below.

4.0 DESCRIPTION OF SITE INSPECTION WORK

4.1 KEY ELEMENTS

A summary of the key elements of the PFAS SI approach is presented below. Detailed sampling approaches for each medium by SI AOC are addressed in Section 5. Details on sampling and field procedures are presented in Attachment 2 of the UFP-QAPP (HGL, 2022). The UFP-QAPP is presented under separate cover.

- **Field Sampling PFAS-Specific Procedures and Decontamination.** To avoid PFAS contamination, sources of contamination in the field and lab environments shall be identified and avoided. To ensure PFAS are not introduced by field personnel, strict PFAS cross-contamination- avoidance procedures and considerations will be followed in accordance with HGL Standard Operating Procedure 411.01, included in Attachment 2 of the UFP-QAPP, and the NYDEC *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS)* guidance document (NYSDEC, 2022).
- **Monitoring Well Installation.** New 2-inch diameter monitoring wells will be installed using hollow stem auger and air hammer/air rotary techniques. Based on HGL's historical knowledge of conducting SIs at SEDA, all wells will be installed using hollow stem auger techniques to a maximum depth of 20 ft below ground surface (bgs) or practical refusal, whichever comes first, to target the upper water bearing zone. A roller bit may be used at each location to advance the borehole approximately 2 to 3 ft into the weathered bedrock to allow for better groundwater recovery and proper well construction. The decision to use a roller bit will be made by the field geologist in consultation with the technical manager. Continuous split spoon or macro core soil sampling will be conducted to the desired depth of each borehole.

  All new wells will be constructed of 2-inch diameter polyvinyl chloride with 5 to 10 ft of 0.010-inch well screen and a riser to 3 ft above grade with a stickup protective casing installed at each location, unless field conditions necessitate otherwise (e.g., installation in an area where there is vehicular traffic). A clean filter sand will be added to the annular space around the well screen to a depth of at least 2-ft above the top of the well screen, and a minimum 1-ft-thick bentonite seal will be installed above the sand pack. The remainder of the borehole will be backfilled with a concrete-bentonite grout to a depth of approximately 1 ft bgs.
- **Monitoring Well Development.** The new monitoring wells will be developed no sooner than 24 hours following the completion of well construction. Development will be performed by surging and pumping the well, as appropriate, using either a bailer or pump. Groundwater parameters such as depth to water, temperature, pH, conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity will be recorded before, during, and after well development. Following development, the monitoring wells will be allowed to equilibrate for a minimum of 72 hours prior to groundwater sampling.

- **Low-Flow Groundwater Sampling.** Sampling of all overburden wells will be conducted using a peristaltic pump with new clean high-density polyethylene (HDPE) tubing. Low-flow sampling techniques, modified to avoid PFAS cross-contamination, will be used to collect groundwater samples. Water quality parameters will be monitored during purging of the well and before sampling. All materials related to PFAS sampling, including sample bottles, will be PFAS-free or tested prior to use.
- **Soil Sampling.** Surface and subsurface soil sampling will be conducted at new well locations. At SEADs where existing wells are proposed for groundwater sampling and no new wells will be installed, only surface soil will be collected. The surface soil will be collected from an undisturbed area approximately 20-ft away from the existing well to avoid any potential contamination associated with the former use of the well. Surface soils will be collected using disposable PFAS-free scoops or a decontaminated stainless-steel hand auger and subsurface will be collected directly from a clean 2-inch diameter split-spoons used during drilling and well installation. Surface soil samples will be collected from depths of 0.0 to 0.5 ft bgs, and subsurface soil will be collected from a depth of 0.5 to 2.0 ft bgs. Soil will be placed in laboratory-provided PFAS-free containers.
- **Surface Water Sampling.** Surface water samples will be collected from a variety of surface water bodies including streams, drainage ditches, and ponds to evaluate a range of surface water conditions at the SI AOCs.
- **Sediment Sampling.** Sediment samples will be co-located with surface water samples from a variety of surface water bodies including streams, drainage ditches, and ponds to evaluate a range of sediment conditions at the SI AOCs. Sediment will be collected from the top 0.5 ft of sediment, where available.

4.2 ANALYTICAL METHOD

Analytical methods are fully defined in the UFP-QAPP (HGL, 2023). All media will be analyzed for PFAS using EPA Draft Method 1633 in accordance with DoD Quality Systems Manual 5.4. The targeted list of PFAS includes 40 analytes, which are presented in Worksheet #15 of the UFP-QAPP. Samples will be shipped to Eurofins Lancaster Laboratories Environment Testing, LLC, which is Environmental Laboratory Approval Program-certified for PFAS analyses.

4.3 DATA VALIDATION

Data verification will be performed on 100 percent of the analytical data produced for this project and in accordance with DoD Data Validation Guidance Module 6. Data verification consists of checking laboratory reports for completeness to ensure all samples submitted were analyzed for the methods requested on the chain of custody (CoC) and that all required target analytes were reported. A detailed summary of data verification procedures can be found in Worksheets #34 and #35 of the UFP-QAPP (HGL, 2023). Validation of the data collected will be performed in accordance with the UFP-QAPP. A detailed summary of data validation procedures can be found in Worksheets #36 and #37 of the UFP-QAPP (HGL, 2023). Data Validation Reports will be produced for each laboratory data package.

5.0 SITE INSPECTION MONITORING WELL INSTALLATION AND SAMPLING STRATEGIES BY AREA OF CONCERN

5.1 GENERAL SAMPLING APPROACH

The SI consists of site preparation activities, including the mobilization/demobilization of field team personnel and equipment, utility clearance, and surface/subsurface soil, groundwater, surface/stormwater, and sediment sampling for PFAS analysis. This section provides an overview of the SI approach during the field investigation. Specific sampling methodology and analytical methods, including specific procedures for PFAS-related investigations, are presented in the UFP-QAPP (HGL, 2023) along with field standard operating procedures (SOPs) included in Attachment 2 of the UFP-QAPP. The proposed sample locations for each SEAD are presented in Figures 1A through 1F, and Tables 1 through 4 summarize the proposed number of samples for each media and sample ID.

5.1.1 Soil Sampling

SI soil samples will be collected to determine if PFAS is present. To accomplish this, surface soil samples (0-0.5 ft bgs) and subsurface samples (0.5 to 2.0 ft bgs) will be collected from within each SEAD collocated with new monitoring well locations. Surface soils also will be collected in an undisturbed location approximately 20-ft from existing monitoring wells being sampled as part of this SI. All surface soils will be collected using disposable PFAS-free scoops and soil placed directly in the sample containers. Subsurface soils will be collected using a stainless-steel split spoon sampler and soil will be placed from the spoon into the sample container. Split spoons will be decontaminated between each sample location. Soil sampling SOPs are presented in Attachment 2 of the UFP-QAPP (HGL, 2023).

5.1.2 Monitoring Well Installation and Development

Groundwater monitoring wells will be installed to determine the presence or absence of PFAS contamination in groundwater at each SEAD being investigated under this SI. The proposed monitoring well locations are presented in Figures 1A through 1F. Proposed well construction details and development techniques are presented in Section 4 and in Attachment 2 of the UFP-QAPP (HGL, 2023) and will be conducted using surging and pumping techniques.

Existing wells that are being sampled as part of this SI will have any existing tubing that is in the well removed and the well will be redeveloped by similar methods to the new wells before sampling. The wells will recover a minimum of 24-hours after development before sampling.

5.1.3 Groundwater Sampling

Groundwater samples will be collected no sooner than one-weeks after well development is complete from each newly installed groundwater monitoring well and any existing wells as outlined below, to determine if PFAS contamination is present at each SEAD based on past operations. One round of groundwater sampling will be performed from all newly installed monitoring wells and the 18 existing monitoring wells at SEAD-16 (three), SEAD-17 (three), SEAD-23 (four), SEAD-45 (five), and SEAD-6 (four). Table 5 provides a summary of the well construction details for the existing wells

being sampled. If there is not sufficient groundwater in a new or existing well being samples as part of the SI, efforts will be made during future RI sampling events to gauge the well and determine if a sample can be collected when seasonal groundwater variations are potentially at the highest levels, i.e., spring and fall. Groundwater gauging will be performed prior to sampling to determine groundwater elevations.

Care will be taken while collecting groundwater samples to minimize the presence of suspended particulates. Solids can accumulate high concentrations of PFAS and specifically some of the longer-chain PFAS (ITRC, 2022). Groundwater samples will be collected when turbidity values are less than 10 nephelometric turbidity units (NTUs). If the groundwater parameters are greater than 10 NTUs and there is not a means of collecting something with lower NTUs, then the sample will be collected, and the laboratory will be notified on the CoC.

According to Draft Method 1633, aqueous samples containing less than 50 mg of suspended solids per 500 ml, the sample may be processed without modification to the preparation protocol. Through the regular course of Draft Method 1633, the laboratory will determine if an aqueous sample contains more than 50 mg/500 ml of TSS and should a groundwater sample produce a total suspended solids concentration greater than 50 mg/500 ml, the project team will be notified immediately for direction on how to proceed. If resampling is not an option and at the concurrence of the USACE chemist, the lab will be instructed to centrifuge the sample and decant the aqueous portion for processing separately from the solid pellet. The aqueous and solid phases will be extracted and analyzed according to the appropriate matrix protocol specified within Draft Method 1633, with the aqueous phase results considered as the dissolved PFAS concentrations and the PFAS results from the solids pellet completing the measurement for each groundwater sample to yield "total" PFAS concentrations.

The proposed new and existing monitoring well locations, and existing wells to be sampled, are presented in Figures 1A through 1F. Groundwater samples will be collected in accordance with the SOPs presented in Attachment 2 of the UFP-QAPP (HGL, 2023). Each sample will be placed in laboratory-supplied HDPE bottle ware and submitted to the contract laboratory for analysis. All sample containers will be PFAS-free. Field quality assurance/quality control samples will be collected in accordance with Worksheet #20 of the UFP-QAPP (HGL, 2023).

5.1.4 Surface Water and Sediment Sampling

Surface water and sediment samples will be collected to determine if PFAS exists in surface water and sediments located at certain SEADs. To accomplish this, co-located surface and sediment samples will be collected along permanent surface water flow paths (e.g., streams, lakes, ponds, rivers, etc.).

At each sample location, the surface water samples will be collected using the sample container and before the sediment sample to minimize the presence of suspended particulates and from downstream to upstream where surface water flow is observed. Solids accumulate high concentrations of PFAS and specifically some of the longer-chain PFAS (ITRC, 2022). Surface water samples will be collected when turbidity values are less than 10 NTUs. If the surface water parameters are greater than 10 NTUs and there is no means of collecting something with lower NTUs, then the sample will be collected and the laboratory will be notified on the CoC. Turbidity during analysis will be addressed as described above in Section 5.1.3.

The collection of one sediment sample will follow that of the surface water sample at each location. Sediment will only be collected from locations where there is an adequate amount of aliquot available for the purposes of containerizing a representative sample for laboratory analysis. The direct-grab samples will be collected from the top 6-inches of sediment using a disposable PFAS-free sample scoop or stainless-steel sediment sampler that is decontaminated between sample locations.

The proposed surface water/sediment sampling locations are presented in Figures 1A through 1F. Surface water and sediment sampling SOPs are presented in Attachment 2 of the UFP-QAPP (HGL, 2023).

6.0 SCHEDULE

Fieldwork will begin in spring 2023, and the project schedule that includes the SI field activities is presented in Figure 2. Note that each work activity is connected to the next activity, and this schedule is subject to change if any delays are encountered.

7.0 REPORTING

The results of the SI field activities will be documented in four SI Reports, prepared in accordance with CERCLA and USACE guidance, which summarizes the sites within the four AOCs. The SI Reports will describe the scope and objectives of the project, field work performed, rationale, data analyzed, quality assurance/quality control procedures, conclusions, and recommendations. Depending on the findings of the SI field investigation, the SIs may advise that additional data collection is needed or the SEAD be moved to a recommended RI to evaluate the nature and extent of PFAS contamination at SEDA. The documents will be produced in a draft, draft-final, and final version.

8.0 REFERENCES

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TABLES

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Table 1
Munitions and Explosives of Concern Sites - Sample Identification
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Sample Location	Field Sample ID	Matrix	Depth (ft bgs)	PFAS (Draft Method 1633)[1]
SEAD-002-R-01 Explosive Ordnance Disposal (EOD) Area #2 and #3, OU11				
MW002-01 thru MW002-04	002SI20001 thru 002SI20004	Groundwater	TBD	X
SWSD002-01 thru SWSD002-03	002SI30001 thru 002SI30003	Surface Water	NA	X
SWSD002-01 thru SWSD002-03	002SI40001 thru 002SI40003	Sediment	0-0.5’	X
SB002-01 thru SB002-04	002SI10001-0.0-0.5 thru 002SI10004-0.0-0.5	Surface Soils	0-0.5’	X
SB002-01 thru SB002-04	002SI10001-0.5-2.0 thru 002SI10004-0.5-2.0	Subsurface Soils	1.5-2.0’	X
SEAD-003-R-01, SEAD- 57, EOD Area #1 (SEAD 57), OU11				
MW003-01 thru MW003-04	003SI20001 thru 003SI20004	Groundwater	TBD	X
SB003-01 thru SB003-04	003SI10001-0.0-0.5 thru 003SI10004-0.0-0.5	Surface Soils	0-0.5’	X
SB003-01 thru SB003-04	003SI10001-0.5-2.0-003SI10004-0.5-2.0	Subsurface Soils	0.5-2.0’	X
SEAD-16, Building S311, Abandoned Deactivation Furnace, OU4				
MW16-1, MW16-2, MW16-7 (existing)	16SI20001 thru 16SI20003	Groundwater	TBD	X
MW16-8 (new)	16SI20004	Groundwater	TBD	X
SWSD16-01 and SWSD16-02	16SI30001 and 16SI30002	Surface Water	NA	X
SWSD16-01 and SWSD16-02	16SI40001 and 16SI40002	Sediment	0-0.5’	X
SB16-01	16SI10001-0.5-2.0	Subsurface Soils	1.5-2.0’	X
SS16-01 thru SS16-04	16SI10001-0.0-0.5 16-1SI10001-0.0-0.5 16-2SI10002-0.0-0.5 16-7SI10003-0.0-0.5	Surface Soils	0-0.5’	X
SB16-01	16SI10001-0.5-2.0	Subsurface Soils	0.5-2.0’	X
SEAD-17, Building 367, Active Deactivation Furnace, OU4				
MW17-1, MW17-2, MW17-4 (existing)	17-1SI20001 17-2SI20002 17-4SI20003	Groundwater	TBD	X
SWSD17-01	17SI30001	Surface Water	NA	X
SWSD17-01	17SI40001	Sediment	0-0.5’	X
SB17-1 thru SB17-3	17-1SI10001-0.0-0.5 17-2SI10002-0.0-0.5 17-4SI10003-0.0-0.5	Surface Soils	0-0.5’	X
SEAD-23, Open Burning Grounds, OU2				
MW23-2R, MW23-4R, MW23-5R and MW23-6R	23-2RSI20001 23-4RSI20002 23-5RSI20003 23-6RSI20004	Groundwater	TBD	X
SWSD23-01 and SWSD23-02	23SI30001 thru 23SI30002	Surface Water	NA	X
SWSD23-01 and SWSD23-02	23SI40001 thru 23SI40002	Sediment	0-0.5’	X
SB23-1 thru SB23-4	23SI10001-0.0-0.5 thru 23SI10004-0.0-0.5	Surface Soils	0-0.5’	X
SEAD-24, Abandoned Powder Burning Pits, OU13				
MW24-4 thru MW24-6	24SI20001 thru 24SI20003	Groundwater	TBD	X

Table 1
Munitions and Explosives of Concern Sites - Sample Identification
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Sample Location	Field Sample ID	Matrix	Depth (ft bgs)	PFAS (Draft Method 1633)[1]
SWSD24-1	24SI30001	Surface Water	NA	X
SWSD24-1	24SI40001	Sediment	0-0.5'	X
SB24-1 thru SB24-3	24SI10001-0.0-0.5 thru 24SI10003-0.0-0.5	Surface Soils	0-0.5'	X
SB24-1 thru SB24-3	24SI10001-0.5-2.0 thru 24SI10003-0.5-2.0	Subsurface Soils	0.5-2.0'	X
SEAD-006-R-01 (aka SEAD-45), Open Detonation Grounds, OU17				
MW45-2R, MW45-4R, MW45-5, MW45-10 and MW45-13 (existing)	45-2RSI20001 45-4RSI20002 45-5SI20003 45-10SI20004 45-13SI20005	Groundwater	TBD	X
SWSD45-1 and SWSD45-2	45SI30001 and 45SI30002	Surface Water	NA	X
SD45-1 and SD45-2	45SI40001 and 45SI40002	Sediment	0-0.5'	X
SB45-1 thru SB45-5	45-2RSI10001-0.0-0.5 45-4RSI10002-0.0-0.5 45-5SI10003-0.0-0.5 45-10SI10004-0.0-0.5 45-13SI10005-0.0-0.5	Surface Soils	0-0.5'	X
SEAD-46, Small Arms Firing Range (aka Former 3.5" Rocket Range), OU11				
MW46-7 thru MW46-11	46SI20001 thru 46SI20005	Groundwater	TBD	X
SWSD46-1 and SWSD46-2	46SI30001 and 46SI30002	Surface Water	NA	X
SWSD46-1 and SWSD46-2	46SI40001 and SI40002	Sediment	0-0.5'	X
SB46-1 thru SB46-5	46SI10001-0.0-0.5 thru 46SI10005-0.0-0.5	Surface Soils	0-0.5'	X
SB46-1 thru SB46-5	46SI10001-0.5-2.0 thru 46SI10005-0.5-2.0	Subsurface Soils	0.5-2.0'	X
SEAD-007-R-01, Grenade Range, OU11				
MW007-1 thru MW007-4	007SI20001 thru 007SI20004	Groundwater	TBD	X
SWSD007-1	007SI30001	Surface Water	NA	X
SWSD007-1	007SI40001	Sediment	0-0.5'	X
SB007-1 thru SB007-4	007SI10001 thru 007SI10004	Surface Soils	0-0.5'	X
SB007-1 thru SB007-4	007SI10001-0.0-0.5 thru 007SI10004-0.0-0.5	Subsurface Soils	0.5-2.0'	X

Notes:
1.) PFAS analysis will be EPA Draft Method 1633 by Eurofins Lancaster compliant with the requirements in the Department of Defense (DoD) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.4 (Oct 2021), Table B-24.

Table 2
Ash Landfill Sites - Sample Identification
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Sample Location	Field Sample ID	Matrix	Depth (ft bgs)	PFAS (Draft Method 1633)
SEAD-3 Incinerator Cooling Water Pond, OU1 – No samples proposed as it is very small and surrounded by other sites.				
SEAD-6, Abandoned Ash Landfill, OU1				
MW-44A, MWT-25, PT-18A, and MWT-24	44ASI20001 T25SI20001 18ASI20001 T24SI20001	Groundwater	TBD	X
SB6-1 thru SB6-4	44ASI10001-0.0-0.5 T25SI10001-0.0-0.5 18ASI10001-0.0-0.5 T24SI10001-0.0-0.5	Surface Soils	0-0.5’	X
SEAD-8, Non-Combustible Fill Area, OU1				
MW8-1 thru MW8-3	8SI20001 thru 8SI20003	Groundwater	TBD	X
SB8-1 thru SB8-3	8SI10001-0.0-0.5 thru 8SI10003-0.0-0.5	Surface Soils	0-0.5’	X
SB8-1 thru SB8-3	8SI10001-0.5-2.5 thru 8SI10003-0.5-2.0	Subsurface Soils	0.5-2.0’	X
SEAD-14, Refuse Burning Pits (2 Units), OU1				
MW14-1	14SI20001	Groundwater	TBD	X
SWSD14-1 and SWSD14-2	14SI30001 and 14SI30002	Surface Water	NA	X
SWSD14-1 and SWSD14-2	14SI40001 and 14SI40002	Sediment	0-0.5’	X
SB14-1	14SI10001-0.0-0.5	Surface Soils	0-0.5'	X
SB14-1	14SI10001-0.5-2.0	Subsurface Soils	0.5-2.0'	X
SEAD-15, Abandoned Solid Waste Incinerator (Building 2207), OU1				
MW15-1	15SI20001	Groundwater	TBD	X
SB15-1	15SI10001-0.0-0.5	Surface Soils	0-0.5’	X
SB15-1	15SI10001-0.5-2.0	Subsurface Soils	0.5-2.0’	X

Notes:
1.) PFAS analysis will be EPA Draft Method 1633 by Eurofins Lancaster compliant with the requirements in the Department of Defense (DoD) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.4 (Oct 2021), Table B-24.

Table 3
Sewage Related Sites - Sample Identification
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Sample Location	Field Sample ID	Matrix	Depth (ft bgs)	PFAS (Draft Method 1633)[1]
SEAD-5, Sewage Sludge Storage Pile, OU13				
MW5-4 and MW5-5	5SI20001 and 5SI20002	Groundwater	TBD	X
SB5-1 thru SB5-2	5SI10001-0.0-0.5 and 5SI10002-0.0-0.5	Surface Soils	0-0.5’	X
SB5-1 thru SB5-2	5SI10001-0.5-2.0 and 5SI10002-0.5-2.0	Subsurface Soils	0.5-2.0’	X
SEAD-20, Sewage Treatment Plant #4, OU14				
MW20-1 thru MW20-3	5SI200001 thru 5SI200003	Groundwater	TBD	X
SWSD20-1 and SWSD20-2	20SI30001 and 20SI30002	Surface Water	NA	X
SWSD20-1 and SWSD20-2	20SI40001 and 20SI40002	Sediment	0-0.5’	X
SB20-1 thru SB20-3	20SI10001 thru 20SI10003	Surface Soils	0-0.5’	X
SB20-1 thru SB20-3	20SI10001 thru 20SI10003	Subsurface Soils	1.5-2.0’	X
SEAD-21, Sewage Treatment Plant # 715, OU14				
MW21-1	21SI20001	Groundwater	TBD	X
SWSD21-1 and SWSD21-2	21SI30001 and 21SI30002	Surface Water	NA	X
SWSD21-1 and SWSD21-2	21SI40001 and 21SI40002	Sediment	0-0.5’	X
SB21-1	21SI10001	Surface Soils	0-0.5’	X
SB21-1	21SI10001	Subsurface Soils	0.5-2.0’	X
SEAD-22, Sewage Treatment Plant # 314, OU14				
MW22-1	22SI20001	Groundwater	TBD	X
SB22-1	22SI10001	Surface Soils	0-0.5’	X
SB22-1	22SI10001	Subsurface Soils	0.5-2.0’	X

Notes:
1.) PFAS analysis will be EPA Draft Method 1633 by Eurofins Lancaster compliant with the requirements in the Department of Defense (DoD) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.4 (Oct 2021), Table B-24.

Table 4
Disposal and Spill Sites - Sample Identification
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Sample Location	Field Sample ID	Matrix	Depth (ft bgs)	PFAS (Draft Method 1633)[1]
SEAD-7, Shale Pit, OU14				
MW7-1	7SI20001	Groundwater	TBD	X
SWSD7-1 and SWSD7-2	7SI30001 and 7SI30002	Surface Water	NA	X
SWSD7-1 and SWSD7-2	7SI40001 and 7SI40002	Sediment	0-0.5’	X
SB7-1	7SI10001-0.0-0.5	Surface Soils	0-0.5’	X
SB7-1	7SI10001-0.0-0.5	Subsurface Soils	0.5-2.0’	X
SEAD-9, Old Scrap Wood Site, OU14				
MW9-4	9SI20001	Groundwater	TBD	X
SB9-1	9SI10001-0.0-0.5	Surface Soils	0-0.5’	X
SB9-1	9SI10001-0.5-2.0	Subsurface Soils	1.5-2.0’	X
SEAD-10, Scrap Wood Site, OU14				
MW10-1	10SI20001	Groundwater	TBD	X
SB10-1	10SI10001-0.0-0.5	Surface Soils	0-0.5’	X
SB10-1	10SI10001-0.5-2.0	Subsurface Soils	1.5-2.0’	X
SEAD-11, Old Construction Debris Landfill, OU8				
MW11-8 thru MW11-11	11SI20001 thru 11SI20004	Groundwater	TBD	X
SB11-1 thru SB11-4	11SI10001-0.0-0.5 thru 11SI10004-0.0-0.5	Surface Soils	0-0.5’	X
SB11-1 thru SB11-4	11SI10001-0.5-2.0 thru 11SI10004-0.5-2.0	Subsurface Soils	1.5-2.0’	X
SEAD-58, Debris Area Near Booster Station 2131, OU14				
MW58-5 thru MW58-8	58SI20001 thru 58SI20004	Groundwater	TBD	X
SW58-1	58SI30001	Surface Water		X
SD58-1	58SI40001	Sediment	NA	X
SS58-1 thru SS58-4	58SI10001-0.0-0.5 thru 58SI10004-0.5-2.0	Surface Soils	0-0.5’	X
SB58-1 thru SB58-4	58SI10001-0.5-2.0 thru 58SI10004-0.5-2.0	Subsurface Soils	0.5-2.0’	X
SEAD-59, Fill Area West of Building 315, OU6				
MW59-1 thru MW59-3	59SI20001 thru 59SI20003	Groundwater	TBD	X
SWSD59-1	59SI30001	Surface Water	NA	X
SWSD59-1	59SI40001	Sediment	0-0.5’	X
SB59-1 thru SB59-3	59SI10001-0.0-0.5 thru 58SI10003-0.0-0.5	Surface Soils	0-0.5’	X
SB59-1 thru SB59-3	59SI10001-0.5-2.0 thru 58SI10003-0.5-2.0	Subsurface Soils	1.5-2.0’	X

Table 4
Disposal and Spill Sites - Sample Identification
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Sample Location	Field Sample ID	Matrix	Depth (ft bgs)	PFAS (Draft Method 1633)[1]
SEAD-64A, Garbage Storage Area South of Classification Area, OU14				
MW64A-4	64ASI20001	Groundwater	TBD	X
SB64A-1	64ASI10001-0.0-0.5	Surface Soils	0-0.5'	X
SB64A-1	64ASI10001-0.5-2.0	Subsurface Soils	1.5-2.0'	X
SEAD-64B, Garbage Disposal Area South of Classification Area, OU14				
MW64B-4	64BSI20001	Groundwater	TBD	X
SWSD64B-1	64BSI30001	Surface Water	NA	X
SWSD64B-1	64BSI40001	Sediment	0-0.5'	X
SB64B-1	64BSI10001-0.0-0.5	Surface Soils	0-0.5'	X
SB64B-1	64BSI10001-0.0-0.5	Subsurface Soils	0.5-2.0'	X
SEAD 64C, Garbage Disposal Area, OU14				
MW64C-10 thru MW64C-14	64CSI20001 thru 64CSI20005	Groundwater	TBD	X
SWSD64C-1 and SWSD64C-2	64CSI30001 and 64CSI30002	Surface Water	NA	X
SWSD64C-1 and SWSD64C-2	64CSI40001 and 64CSI40002	Sediment	0-0.5'	X
SB64C-1 thru SB64C-5	64CSI10001-0.0-0.5 thru 64CSI10005-0.0-0.5	Surface Soils	0-0.5'	X
SB64C-1 thru SB64C-5	64CSI10001-0.5-2.0 thru 64CSI10005-0.5-2.0	Subsurface Soils	0.5-2.0'	X
SEAD 64D, Garbage Disposal Area West of Building 2203, OU14				
MW64D-6 and MW64D-7	64DSI20001 and 64DSI20002	Groundwater	TBD	X
SB64D-1 thru SB64D-2	64DSI10001-0.0-0.5 and 64DSI10002-0.0-0.5	Surface Soils	0-0.5'	X
SB64D-1 thru SB64D-2	64DSI10001-0.5-2.0 and 64DSI10002-0.5-2.0	Subsurface Soils	1.5-2.0'	X
SEAD-67, Dump Site East of Sewerage Treatment Plant #4, OU14				
MW67-4 and MW67-5	67SI20001 and 67SI20002	Groundwater	TBD	X
SWSD67-1 and SWSD67-2	67SI30001 and 67SI30002	Surface Water	NA	X
SD67-1 and SD67-2	67SI40001 and 67SI40002	Sediment	0-0.5'	X
SB67-1 and SB67-2	67SI10001-0.0-0.5 and 67SI0002-0.0-0.5	Surface Soils	0-0.5'	X
SB67-1 and SB67-2	67SI10001-0.5-2.0 and 67SI0002-0.5-2.0	Subsurface Soils	0.5-2.0'	X

Table 4
Disposal and Spill Sites - Sample Identification
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Sample Location	Field Sample ID	Matrix	Depth (ft bgs)	PFAS (Draft Method 1633)[1]
SEAD-68, Old Pest Control Shop (Building S-335), OU14				
MW68-1 and MW68-2	68SI20001 and 68SI20002	Groundwater	TBD	X
SB68-1 and SB68-2	68SI10001-0.0-0.5 and 68SI10002-0.5-2.0	Surface Soils	0-0.5’	X
SB68-1 and SB68-2	68SI10001-0.5-2.0 and 68SI10002-0.5-2.0	Subsurface Soils	0.5-2.0’	X
SEAD-69, Building 606 Disposal Area, OU14				
MW69-1 thru MW69-4	69SI20001 thru 69SI20004	Groundwater	TBD	X
SB69-1 thru SB69-4	69SI10001-0.0-0.5 thru 69SI10004-0.0-0.5	Surface Soils	0-0.5’	X
SB69-1 thru SB69-4	69SI10001-0.5-2.0 thru 69SI10004-0.5-2.0	Subsurface Soils	0.5-2.0’	X
SEAD-70, Former Building T-2110, Filled Area, OU11				
MW70-5 thru MW70-7	70SI20001 thru 70SI2003	Groundwater	TBD	X
SWSD70-1	70SI30001	Surface Water	NA	X
SWSD70-1	70SI40001	Sediment	0-0.5'	X
SB70-1 thru SB70-3	70SI10001-0.0-0.5 thru 70SI10003-0.0-0.5	Surface Soils	0-0.5’	X
SB70-1 thru SB70-3	70SI10001-0.5-2.0 thru 70SI10003-0.5-2.0	Subsurface Soils	1.5-2.0’	X
SEAD-122D, Airfield Hot Pad Spill (Site is now covered under SEAD 122E in RI)				
Fire House Building 722				
MW722-1 thru MW722-3	722SI20001 thru 722SI20003	Groundwater	TBD	X
SB722-1 thru SB722-3	722SI10001-0.0-0.5 thru 722SI10003-0.0-0.5	Surface Soils	0-0.5’	X
SB722-1 thru SB722-3	722SI10001-0.5-2.5 thru 722SI10003-0.5-2.5	Subsurface Soils	0.5-2.0’	X

Notes:
1.) PFAS analysis will be EPA Draft Method 1633 by Eurofins Lancaster compliant with the requirements in the Department of Defense (DoD) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.4 (Oct 2021), Table B-24.

Table 5
Existing Groundwater Wells to Be Sampled - Construction Details
PFAS Site Inspections
Seneca Army Depot Activity, Romulus, New York

Well ID	Completed Boring Depth (ft bgs)	Well Material / Dia	Bottom of Well (ft bgs)	Screen Length (ft bgs)	Screen Slot Size (inch)	Screened Interval (ft bgs)
MW45-2R	16.5	PVC, 2"	16	10	0.01	6-16
MW45-4R	10	PVC, 2"	10	5	0.01	4-9
MW45-5	17	PVC, 2"	17	10	0.01	7-17
MW45-10	17	PVC, 2"	17	10	0.01	7-17
MW45-13	16	PVC, 2"	16	10	0.01	6-16
MW23-2R	17	PVC, 2"	17	10	0.01	7-17
MW23-4R	15	PVC, 2"	15	10	0.01	5-15
MW23-5R	17	PVC, 2"	17	10	0.01	7-17
MW23-6R	17	PVC, 2"	17	10	0.01	7-17
MW-16-1	7.9	PVC, 2"	7.2	2	0.01	5.2-7.2
MW16-2	5.6	PVC, 2"	4.9	2	0.01	2.9-4.9
MW-16-7	6.8	PVC, 2"	6.1	2	0.01	4.1-6.1
MW17-1	10.35	PVC, 2"	9.25	4	0.01	5.25-9.25
MW17-2	8.1	PVC, 2"	7.4	2	0.01	5.4-7.4
MW17-4	8.13	PVC, 2"	7.23	2	0.01	5.23-7.23
MW-44A	No Data Available					
MWT-24	11	PVC, 2"	11	5	0.01	11-Jun
PT-18A	9.8	PVC, 2"	9.8	5	0.01	4.8-9.8
MWT-25	10	PVC, 2"	10	5	0.01	10-May

FIGURES

Figure 1
Index of SI AOCs

730000 735000 740000 745000 750000 755000

1020000 1015000 1010000 1005000 1000000 995000 990000 985000 980000 975000

N W E S

1A 1B 1C 1D 1E 1F

SEAD-21 SEAD-7 SEAD 006-R-01 SEAD-23 SEAD 003-R-01 SEAD 007-R-01 SEAD-70 SEAD 002-R-01 SEAD-46 SEAD-67 SEAD-20 SEAD-58 SEAD-24 SEAD-14 SEAD-6 SEAD-3 SEAD-15 SEAD-8 SEAD-9 SEAD-10 SEAD-59 SEAD-16 SEAD-5 SEAD-25 SEAD-17 SEAD-22 SEAD-68 SEAD-64A SEAD-26 SEAD-122E SEAD-64D SEAD-122E SEAD-122D SEAD-122E SEAD-11 SEAD-69 SEAD-64B SEAD-64C

Fire House Building 722 Fire House Building 103

Access Rd Yale Farm Rd Reeder Creek Silver Creek Habnet Rd Deal Rd E Lake Rd Wilcox Creek Kennedy Rd W Romulus Rd W Kendaia Rd Nimitz Rd Shooting Star Ln Sampson State Park Sabre Rd Vandenberg Rd Smith Vineyard Rd Willard Rd Bonavista Marsh Rd White Rd Cranberry Marsh Perimeter Rd E Patrol Rd W Patrol Rd Maintenance Rd North-South Baseline Rd East-West Base Line Rd Main Rd Fayette Rd Brady Rd US Government Rd Indian Creek Rd Seneca Rd Route 96A State Route 96 State Route 414 Cayuga St Romulus Yerkes

0 2,500 5,000 10,000 Feet

Legend

PFAS AOCs
- SI
- RI
- Index

Water Bodies
- Stream
- Drainage
- Former SEDA Boundary

Remedial Investigation at Four Known PFAS Sites and Preliminary Assessment/Site Inspection at Suspected PFAS Sites
HydroGeoLogic, Inc., January 2023

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Figure 1A
Proposed SI Sample Locations

735000
740000
1015000
1010000
1005000

N
W
E
S

SEAD-21
SEAD-7
Fire House
Building 722
MW45-5
MW45-13
SEAD 006-R-01
(SEAD-45)
MW45-2R
MW45-4R
MW23-2R
SEAD-23
MW23-4R
MW45-10
MW23-6R
MW23-5R
SEAD 003-R-01
SEAD 007-R-01
SEAD-70

Notes:
1) A surface soil sample (0-0.5 ft bgs) will be collected approximately 20ft from the existing well in an undisturbed area.
2) During well installation, surface (0-0.5 ft bgs) and subsurface (0.5-2 ft bgs) soil samples will be collected.

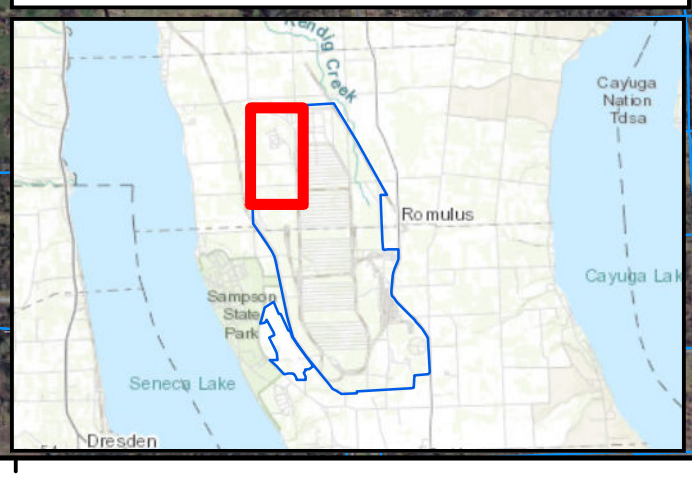
Legend

Proposed SI Locations
- Existing Well to Sample (see note 1)
- New Shallow Well (see note 2)
- Surface Water/Sediment
- Existing Wells
- General GW Flow Direction

PFAS AOCs
- PA/SI
- RI

Water Bodies
- Stream
- Drainage
- Former SEDA Boundary

0 600 1,200 2,400
Feet



Remedial Investigation at Four Known PFAS Sites and Preliminary Assessment/Site Inspection at Suspected PFAS Sites
HydroGeoLogic, Inc., August 2023

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Figure 1B
Proposed SI Sample Locations

750000

1005000

N
W
E
S

SEAD 002-R-01

SEAD 002-R-01

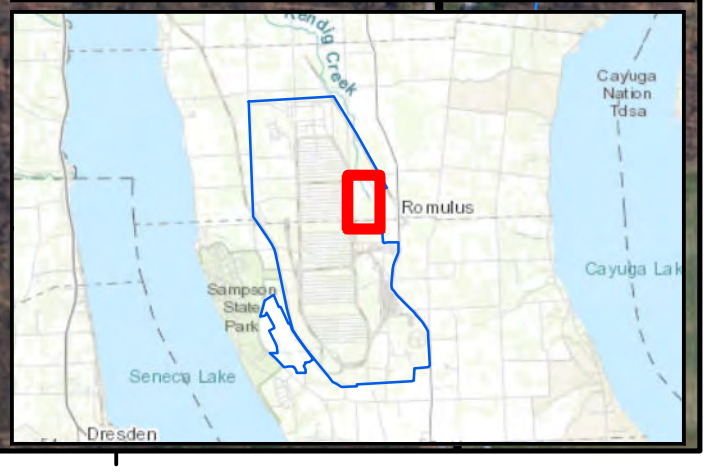
SEAD-46

SEAD-20

SEAD-67

Notes:
1) A surface soil sample (0-0.5 ft bgs) will be collected approximately 20ft from the existing well in an undisturbed area.
2) During well installation, surface (0-0.5 ft bgs) and subsurface (0.5-2 ft bgs) soil samples will be collected.

0 445 890 1,780
Feet



Legend

Proposed SI Locations
- Existing Well to Sample (see note 1)
- New Shallow Well (see note 2)
- Surface Water/Sediment
- Existing Wells
- General GW Flow Direction

PFAS AOCs
- PA/SI
- RI

Water Bodies
- Stream
- Drainage
- Former SEDA Boundary

Remedial Investigation at Four Known PFAS Sites and Preliminary Assessment/Site Inspection at Suspected PFAS Sites
HydroGeoLogic, Inc., August 2023

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Figure 1C
Proposed SI Sample Locations

750000

1000000

995000

SEAD-9

SEAD-10

Fire House
Building 103

RI details shown in
RI Work Plan

SEAD-59

SEAD-16

MW16-1

MW16-2

MW16-7

SEAD-5

SEAD-17

MW17-2

MW17-1

MW17-4

SEAD-25

SEAD-22

SEAD-68

N

W

E

S

0 350 700 1,400
Feet

Notes:
1) A surface soil sample (0-0.5 ft bgs) will be collected approximately 20ft from the existing well in an undisturbed area.
2) During well installation, surface (0-0.5 ft bgs) and subsurface (0.5-2 ft bgs) soil samples will be collected.

Legend

Proposed SI Locations
- Existing Well to Sample (see note 1)
- New Shallow Well (see note 2)
- Surface Water/Sediment
- Existing Wells
- General GW Flow Direction

PFAS AOCs
- PA/SI
- RI

Water Bodies
- Stream
- Drainage
- Former SEDA Boundary

Remedial Investigation at Four Known PFAS Sites and
Preliminary Assessment/Site Inspection at Suspected PFAS Sites
HydroGeoLogic, Inc., August 2023

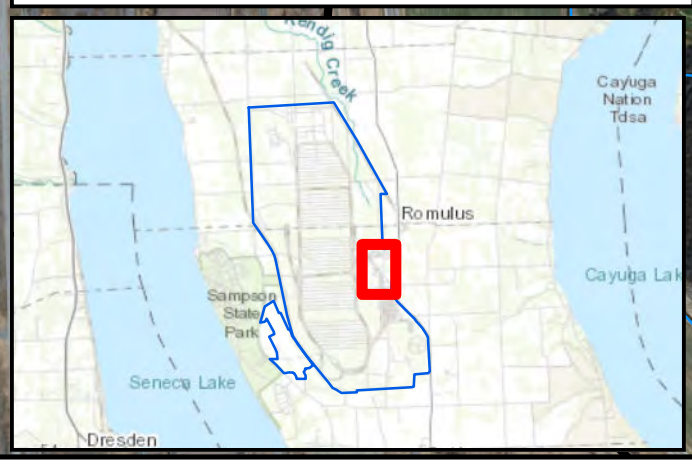

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Figure 1D
Proposed SI Sample Locations

750000

990000

985000

N
W
E
S

SEAD-64A

SEAD-26

RI details shown in RI Work Plan

SEAD-64B

SEAD-69

SEAD-64C

Notes:
1) A surface soil sample (0-0.5 ft bgs) will be collected approximately 20ft from the existing well in an undisturbed area.
2) During well installation, surface (0-0.5 ft bgs) and subsurface (0.5-2 ft bgs) soil samples will be collected.

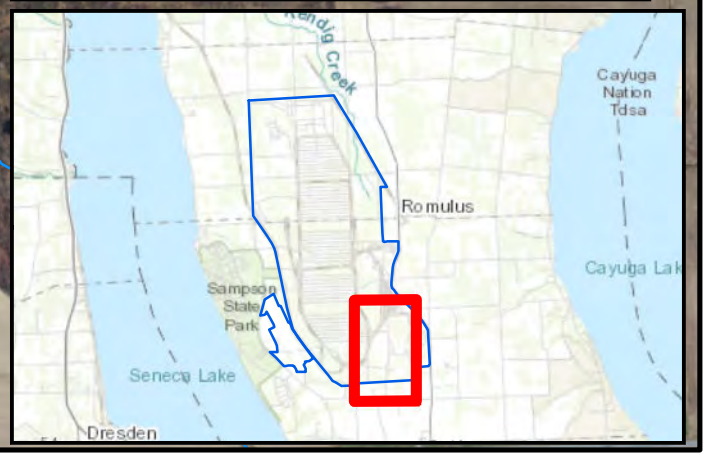
Legend

Proposed SI Locations
- Existing Well to Sample (see note 1)
- New Shallow Well (see note 2)
- Surface Water/Sediment
- Existing Wells
- General GW Flow Direction

PFAS AOCs
- PA/SI
- RI

Water Bodies
- Stream
- Drainage
- Former SEDA Boundary

0 500 1,000 2,000 Feet



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HydroGeoLogic, Inc., August 2023

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Figure 1E
Proposed SI Sample Locations

740000

990000

985000

N
W
E
S

SEAD-64D

RI details shown in RI Work Plan

SEAD-122E

SEAD-122D

SEAD-11

SEAD-122E

Notes:
1) A surface soil sample (0-0.5 ft bgs) will be collected approximately 20ft from the existing well in an undisturbed area.
2) During well installation, surface (0-0.5 ft bgs) and subsurface (0.5-2 ft bgs) soil samples will be collected.

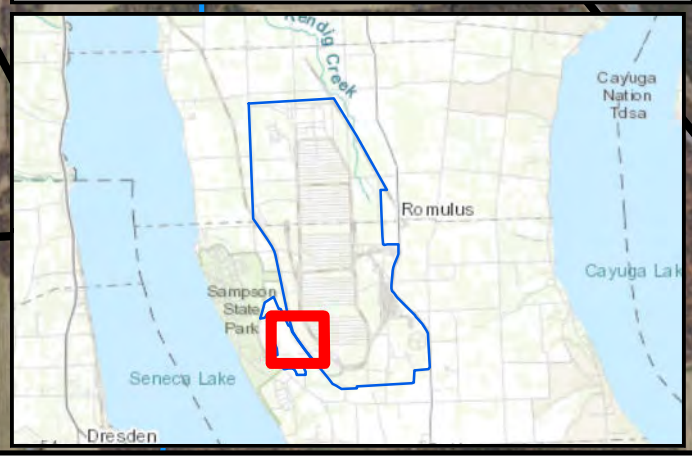
Legend

Proposed SI Locations
- Existing Well to Sample (see note 1)
- New Shallow Well (see note 2)
- Surface Water/Sediment
- Existing Wells
- General GW Flow Direction

PFAS AOCs
- PA/SI
- RI

Water Bodies
- Stream
- Drainage
- Former SEDA Boundary

0 445 890 1,780
Feet



Remedial Investigation at Four Known PFAS Sites and Preliminary Assessment/Site Inspection at Suspected PFAS Sites
HydroGeoLogic, Inc., August 2023

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740000

1000000

995000

Figure 1F
Proposed SI Sample Locations

N
W E
S

SEAD-58

SEAD-24

SEAD-14

MW-44A
SEAD-6
PT-18A
MWT-25
MWT-24
SEAD-3
SEAD-15
SEAD-8

Notes:
1) A surface soil sample (0-0.5 ft bgs) will be collected approximately 20ft from the existing well in an undisturbed area.
2) During well installation, surface (0-0.5 ft bgs) and subsurface (0.5-2 ft bgs) soil samples will be collected.

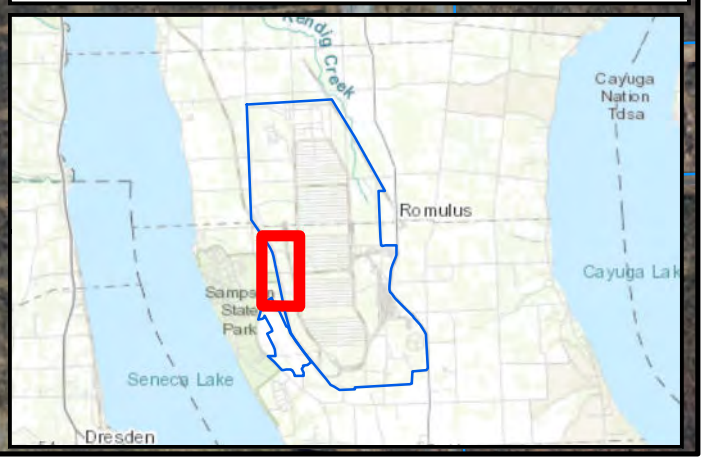
Legend

Proposed SI Locations
- Existing Well to Sample (see note 1)
- New Shallow Well (see note 2)
- Surface Water/Sediment
- Existing Wells
- General GW Flow Direction

PFAS AOCs
- PA/SI
- RI

Water Bodies
- Stream
- Drainage
- Former SEDA Boundary

0 475 950 1,900
Feet



Remedial Investigation at Four Known PFAS Sites and Preliminary Assessment/Site Inspection at Suspected PFAS Sites
HydroGeoLogic, Inc., August 2023

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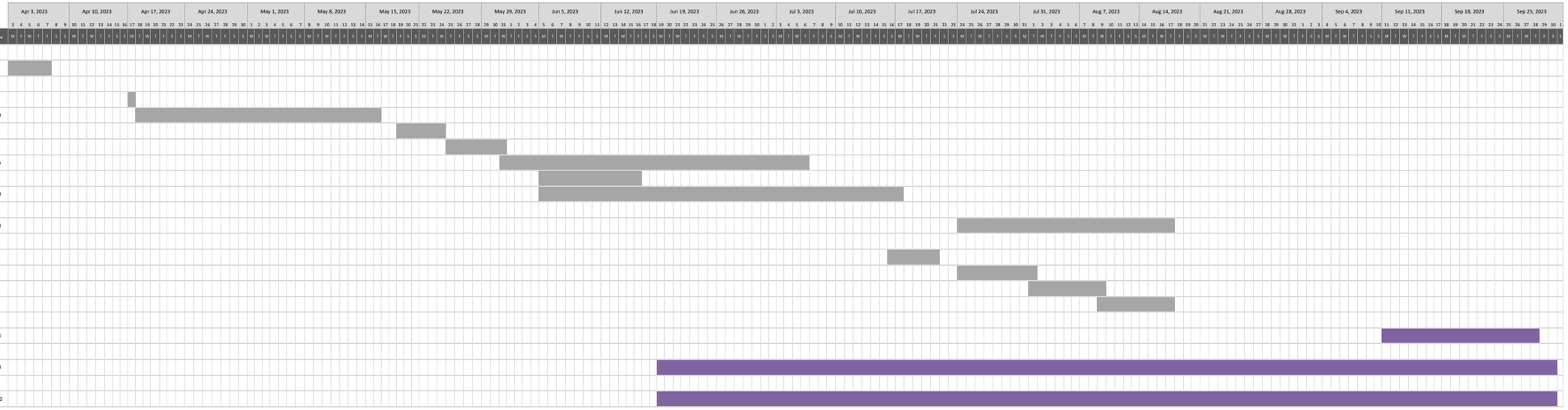
Figure 2
Seneca PFAS SI Work Plan - Project Schedule

Project Start: Mon, 4/3/2023

Display Week: 1

TASK (Assigned)	PROGRESS	START	END	Days
Misc				
Sample location markout and Clearing	100%	4/3/23	4/7/23	
SI Well Instllation, Well Devlopment and Soil Sampling				
Mob and setup (RI Drilling	100%	4/17/23	4/17/23	0
RI Well Installation (See RI Schedule for Additional Details)	100%	4/18/23	5/16/23	20
Ash Landfill Sites (1 Rig)	100%	5/19/23	5/24/23	3
Sewage Related Sites (2 Rigs)	100%	5/25/23	5/31/23	4
Disposal Sites and Non-OD MEC sites (2 Rigs)	100%	5/31/23	7/6/23	26
OD MEC Sites (2 Rigs)	100%	6/5/23	6/16/23	9
SI Well Development	100%	6/5/23	7/17/23	30
SI SW/SD Sampling				
Surface Water and Sediment Sampling SI Sites	100%	7/24/23	8/17/23	18
GW Sampling				
Ash Landfill Sites	100%	7/16/23	7/21/23	5
Sewage Related Sites	100%	7/24/23	8/1/23	6
Disposal Sites and Non-OD MEC sites	100%	8/1/23	8/9/23	6
OD MEC Sites	100%	8/9/23	8/17/23	6
Well Survey				
Survey of SI Wells	0%	9/11/23	9/28/23	13
Labaoratory Analysis and Data Validation				
All SI Data	0%	6/19/23	10/9/23	80
Data Management				
All SI Sites	0%	6/19/23	1/1/24	140

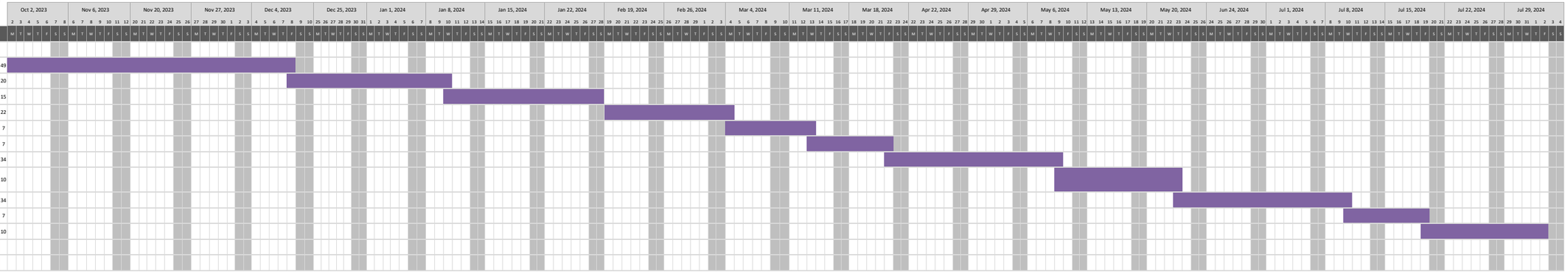


Seneca PFAS Sewage Related Sites - SI Report Schedule

HGL
John Blaum

Project Start: Sun, 10/1/2023
Display Week: 1

TASK (Assigned)	PROGRESS	START	END	
Sewage Related Sites - SI Report				
Prepare Internal Deliverable for Sewage Sites SI Report and Submit to USACE	0%	10/1/23	12/8/23	49
USACE Review of Internal Deliverable Sewage Sites SI Report and Submit Comments	0%	12/8/23	1/10/24	20
Prepare Comment Responses to USACE Comments, USACE Acceptance and Issue revised report for EM CX Review	0%	1/10/24	1/31/24	15
EM CX Review of Internal Deliverable Sewage Sites SI Report and Issue Comments	0%	2/1/24	3/4/24	22
Prepare Comment Responses to EM CX Comments and Issue revised report	0%	3/4/24	3/13/24	7
EM CX Acceptance of Comments and issue Draft Report for Regulatory Review	0%	3/13/24	3/22/24	7
Regulatory Review Draft Sewage Sites SI Report and Issue Comments	0%	3/22/24	5/9/24	34
Prepare Comment Responses to Regulatory Comments on Draft Sewage Sites SI Report and Issue Draft-Final Report	0%	5/9/24	5/23/24	10
Regulatory Review of Draft-Final Sewage Sites SI Report and Issue Comments	0%	5/23/24	7/10/24	34
Prepare Comment Responses to Regulatory Comments and Issue Final SI Report	0%	7/10/24	7/19/24	7
Regulatory Acceptance of Sewage Sites SI Report	0%	7/19/24	8/2/24	10



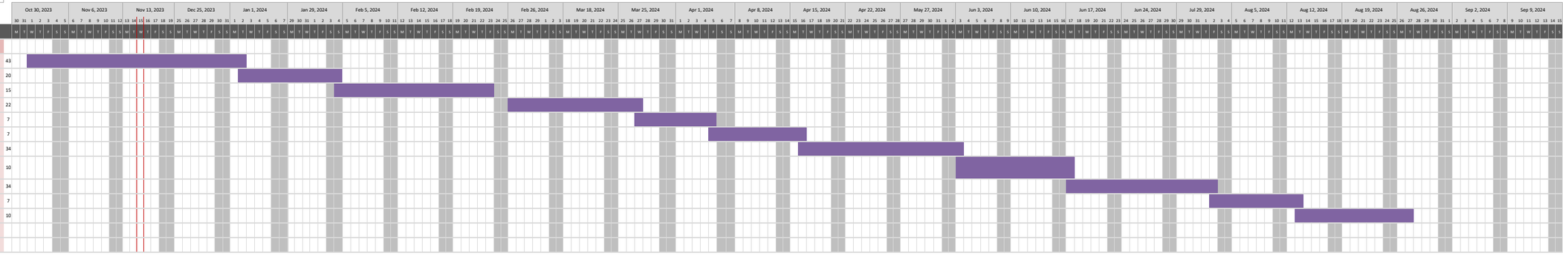
Seneca PFAS Ash Landfill Sites - SI Report Schedule

HGL
John Blaum

Project Start: Wed, 11/1/2023

Display Week: 1

TASK (Assigned)	PROGRESS	START	END	
Ash Landfill Sites - SI Report				
Prepare Internal Deliverable for Ash Landfill SI Report and Submit to USACE	0%	11/1/23	1/2/24	43
USACE Review of Internal Deliverable Ash Landfill SI Report and Submit Comments	0%	1/2/24	2/4/24	20
Prepare Comment Responses to USACE Comments and Issue revised report for EM CX review	0%	2/4/24	2/23/24	15
EM CX Review of Internal Deliverable Ash Landfill SI Report and Issue Comments	0%	2/26/24	3/27/24	22
Prepare Comment Responses to EM CX Comments and Issue revised report	0%	3/27/24	4/5/24	7
EM CX Acceptance of Comments and issue Draft Report for Regulatory Review	0%	4/5/24	4/16/24	7
Regulatory Review Draft Ash Landfill SI Report and Issue Comments	0%	4/16/24	6/3/24	34
Prepare Comment Responses to Regulatory Comments on Draft Ash Landfill SI Report and Issue Draft-Final Report	0%	6/3/24	6/17/24	10
Regulatory Review of Draft-Final Ash Landfill SI Report and Issue Comments	0%	6/17/24	8/2/24	34
Prepare Comment Responses to Regulatory Comments and Issue Final SI Report	0%	8/2/24	8/13/24	7
Regulatory Acceptance of Ash Landfill SI Report	0%	8/13/24	8/27/24	10



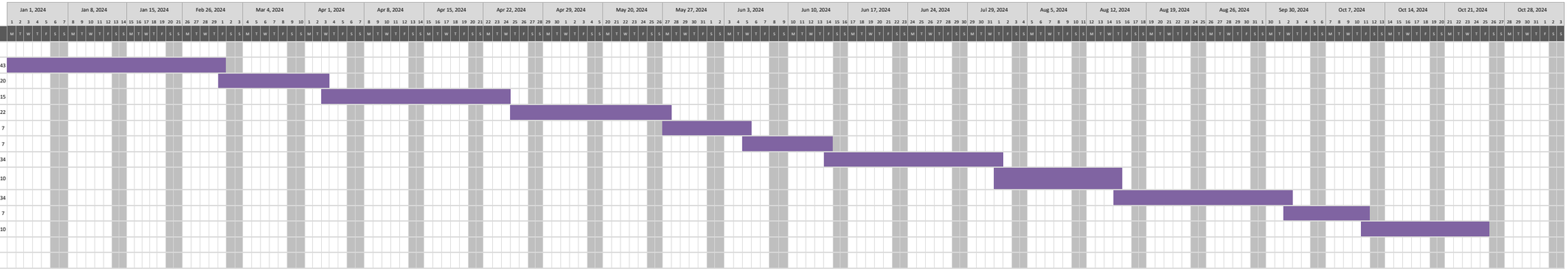
Seneca PFAS Dipsosal Sites - SI Report Schedule

HGL
John Blaum

Project Start: Mon, 1/1/2024

Display Week: 1

TASK (Assigned)	PROGRESS	START	END	
Ash Landfill Sites - SI Report				
Prepare Internal Deliverable for Disposal Sites SI Report and Submit to USACE	0%	1/1/24	3/1/24	43
USACE Review of Internal Deliverable for Disposal SI Report and Submit Comments	0%	3/1/24	4/3/24	20
Prepare Comment Responses to USACE Comments and Issue revised report for EM CX review	0%	4/3/24	4/24/24	15
EM CX Review of Internal Deliverable for Disposal SI Report and Issue Comments	0%	4/25/24	5/27/24	22
Prepare Comment Responses to EM CX Comments and Issue revised report	0%	5/27/24	6/5/24	7
EM CX Acceptance of Comments and issue Draft Report for Regulatory Review	0%	6/5/24	6/14/24	7
Regulatory Review Draft for Disposal Sites SI Report and Issue Comments	0%	6/14/24	8/1/24	34
Prepare Comment Responses to Regulatory Comments on Draft Disposal Sites SI Report and Issue Draft-Final Report	0%	8/1/24	8/15/24	10
Regulatory Review of Draft-Final Disposal Sites SI Report and Issue Comments	0%	8/15/24	10/2/24	34
Prepare Comment Responses to Regulatory Comments and Issue Final Disposal Sites SI Report	0%	10/2/24	10/11/24	7
Regulatory Acceptance of Disposal Sites SI Report	0%	10/11/24	10/25/24	10

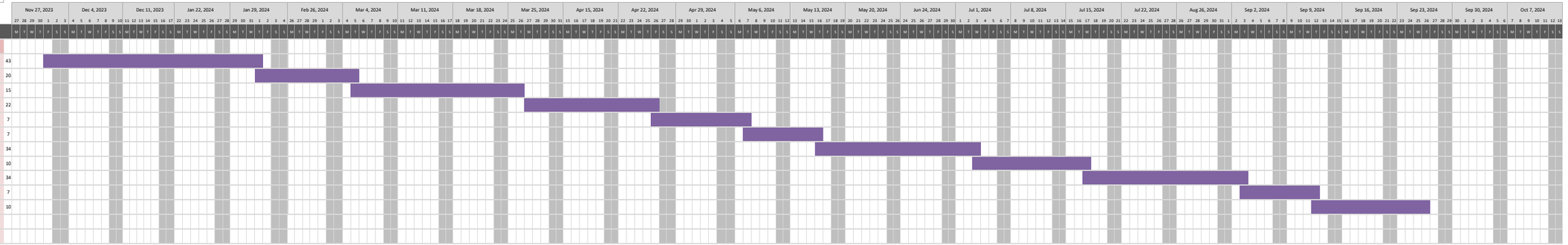


Seneca PFAS MEC Sites - SI Report Schedule

HGL
John Blaum

Project Start: Fri, 12/1/2023
Display Week: 1

TASK (Assigned)	PROGRESS	START	END	
Ash Landfill Sites - SI Report				
Prepare Internal Deliverable for MEC Sites SI Report and Submit to USACE	0%	12/1/23	2/1/24	43
USACE Review of Internal Deliverable for MEC SI Report and Submit Comments	0%	2/1/24	3/5/24	20
Prepare Comment Responses to USACE Comments and Issue revised report for EM CX review	0%	3/5/24	3/26/24	15
EM CX Review of Internal Deliverable for MEC SI Report and Issue Comments	0%	3/27/24	4/26/24	22
Prepare Comment Responses to EM CX Comments and Issue revised report	0%	4/26/24	5/7/24	7
EM CX Acceptance of Comments and issue Draft Report for Regulatory Review	0%	5/7/24	5/16/24	7
Regulatory Review Draft for MEC SI Report and Issue Comments	0%	5/16/24	7/3/24	34
Prepare Comment Responses to Regulatory Comments on Draft MEC SI Report and Issue Draft-Final Report	0%	7/3/24	7/17/24	10
Regulatory Review of Draft-Final MEC SI Report and Issue Comments	0%	7/17/24	9/3/24	34
Prepare Comment Responses to Regulatory Comments and Issue Final MEC SI Report	0%	9/3/24	9/12/24	7
Regulatory Acceptance of MEC SI Report	0%	9/12/24	9/26/24	10



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