FINAL

PFAS REMEDIAL INVESTIGATION WORK PLAN

Defense Fuel Support Point Verona
5449 West Main Street
Verona, New York

NYSDEC Site Code 633086

Prepared for:

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Defense Fuel Support Point Verona

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Brian A. Emery, PG (New Hampshire) Date: August 8, 2024
Senior Hydrogeologist

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Senior Hydrogeologist

I, Eric Blomberg, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this PFAS Remedial Investigation Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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Abbreviations/Acronyms

AFFF	Aqueous Film Forming Foam
ASTs	Aboveground Storage Tanks
bgs	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DFSP	Defense Fuel Support Point
DLA-E	Defense Logistics Agency - Energy
DO	Dissolved Oxygen
DoD	Department of Defense
EBS	Environmental Baseline Survey
EDR	Environmental Data Report
EDR	Environmental Database Report
GPS	Global Positioning System
GVs	Guidance Values
HAL	Health Advisory Level
HASP	Health and Safety Plan
HDPE	High Density Polyethylene
IDW	Investigation-Derived Waste
IRM	Interim Remedial Measure
LDPE	Low Density Polyethylene
MA	Massachusetts
MCL	Maximum Contaminant Level
mV	Microvolts
MS/MSD	Matrix Spike/Matrix Spike Duplicate
ND	Not Detected
ng/L	Nanograms Per Liter
NRI	National Resources Inventory
NTU	Nephelometric Turbidity Unit
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
ORP	Oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PFAS	Per and Polyfluoroalkyl
PFOA	Perfluoro-octanoic Acid
PFOS	Perfluoro-octane Sulfonate
pH	Potential Hydrogen
PID	Photoionization Detector
PPE	Personal Protection Equipment
PVC	Polyvinyl chloride
QA	Quality Assurance
QC	Quality Control
QAPP	Quality Assurance Project Plan
RSL	Regional Screening Levels
SC	Site Characterization
TK&K	TK&K Services
US	United States
USEPA	United States Environmental Protection Agency
USCS	Unified Soil Classification System

USGS	United States Geological Survey
µg/kg	Micrograms Per Kilogram

1.0 INTRODUCTION

This Final PFAS Remedial Investigation Work Plan (*Work Plan*) has been prepared by TK&K Services (TK&K) on behalf of the Defense Logistics Agency – Energy (DLA-E) for the former Defense Fuel Support Point (DFSP) Verona (Site), 5449 West Main Street, Verona, New York (**Figure 1**). The New York State Department of Environmental Conservation (NYSDEC) has assigned Site Code 633086 to this location. This *Work Plan* describes the proposed investigation and evaluation of potential human exposure pathways and impacts to the environment due to per- and polyfluoroalkyl substances (PFAS), specifically perfluoro-octanoic acid (PFOA) and perfluoro-octane sulfonate (PFOS), at the Site (**Figure 2**).

1.1 Objectives

The objective of this *Work Plan* is to satisfy the Remedial Investigation activities for PFAS compounds in accordance with NYSDEC's *DER Technical Guidance for Site Investigation and Remediation* (DER-10, May 2010), NYSDEC. *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs* (April 2023) and the letters from the NYSDEC dated September 4, 2019, September 1, 2022 September 5, 2023, and November 15, 2023 (**Appendix A**).

DFSP Verona has remained decommissioned and non-operational since August 2017. TK&K prepared a *Final Environmental Baseline Survey Report Update* (EBS) (October 2018) that concluded all thirteen Spill Numbers for the Site issued by the NYSDEC were limited to petroleum and have written documentation consisting of NYSDEC closure letters and/or NYSDEC Spill Report Forms that indicate no further action is required. The EBS identified no onsite compliance issues regarding pesticides, medical or biohazardous waste, ordnance, radioactive waste, solid waste, septic systems, pits or sumps, dry wells, wastewater, radon, asbestos, polychlorinated biphenyls (PCBs), air emissions, or lead based paint. The remaining environmental issue was the July 2017 groundwater sampling event that confirmed the presence of PFAS above the USEPA's health advisory levels (HAL) criteria of 70 nanograms per liter (ng/L) in groundwater samples collected from four monitoring wells.

The EBS (2018) documents that PFAS is the outstanding regulatory issue. A NYSDEC-led private well sampling program for PFAS has been performed in the surrounding community (site groundwater is not used for drinking water or irrigation) and the closest potable well is located approximately 0.5 miles to the north/northeast. Groundwater flows to the northwest. The identified PFAS impact is limited to soil, non-potable groundwater and potentially wetlands at a decommissioned, secured facility.

A separate Quality Assurance Project Plan (QAPP) per DER-10 (Section 2.4 (a)1 is also not necessary as the quality assurance procedures for the Remedial Investigation for PFAS are included in Section 9.0 of this *Work Plan*.

NYSDEC indicated in their letter dated September 5, 2023 that previous investigations should be evaluated, and a representative number of samples should be analyzed for the full target compound list per DER 10 Section 2.1.a.1. DLA has funding for the PFAS investigation, but not for the full list per Section 2.1.a.1. Per the conference on July 30, 2024, NYSDEC accepts that additional investigation for full target compound list will not to be included in this RI due to the separate funding for PFAS investigations.

A list of environmental reports that were available to TK&K for DFSP Verona is provided in the *Final Environmental Baseline Survey Report Update* (October 2018) and in Section 14.0 of this *Work Plan*.

2.0 SITE DESCRIPTION

2.1 Site Location

DFSP Verona is located at 5449 West Main Street, Verona, Oneida County, New York. The facility is situated between New York State Route 31 and Interstate 90, and immediately West of State Route 365; one half-mile southwest of the junction of Main Street and Route 31. The facility is approximately 25 miles east of Syracuse, New York.

2.2 Facility Description

DFSP Verona was constructed in 1959 as a fuel storage and transfer facility on previously undeveloped land. The facility consists of 35.16 acres. Approximately 13 acres comprise the fenced-in terminal with an additional 22 acres of field to the northeast and northwest.

Historically, there have been four Aboveground Storage Tanks (ASTs) on-site that covered a significant portion of the DFSP Verona service facility (Tanks 1, 2, 3, and 4) (**Figure 2**). Tank 4 was taken out of service and demolished in 2011 after it was determined that it did not meet specification and the upgrade was not cost effective. Each of the four ASTs, the fuel loading rack, and the fuel pump house were connected to an automated firefighting foam system. DLA-E has identified that aqueous film forming foam (AFFF) was stored and used at the DFSP from the mid-1980s through 2017.

DFSP Verona was supplied with jet fuel by the Buckeye Pipeline station, which adjoins the DFSP property to the southwest. Fueling operations ceased at the facility as of September 2014 and DLA-E permanently closed the DFSP in August 2017. AFFF decommissioning activities were documented in the *DFSP Verona Aqueous Firefighting Foam System Closure Report*, TK&K Services (November 2017).

3.0 ENVIRONMENTAL SETTING

3.1 Geology & Hydrogeology

Soil classification performed by TK&K during the Site Characterization confirmed there are three unconsolidated glacial units of variable composition, thickness, and extent at DFSP Verona. The first unit occurs across most of the Site and consists of silt and clay with a trace of sand and gravel (glacial till). The second unit occurs predominantly in the southern half of the Site and consists of silt, clay, sand, and trace amounts of gravel. The third unit is highly variable in extent and consists of sand and gravel (glacial outwash). A Soils Map is included in **Appendix B**.

Underlying the unconsolidated glacial deposits is gray shale (bedrock) of the Clinton Group which is a fine-grained rock characterized by low permeability and low groundwater yield. Bedrock at the Site is usually highly weathered for the upper few feet; below the weathered zone is massive shale with minimal fracturing. Bedrock was encountered at 20 feet below ground surface (bgs) in the southern part of the Site and within a few feet of the surface within the wetlands of Stony Creek. Per the Remedial Investigation Report by Engineering-Science, Inc., (January 1995), three bedrock monitoring wells (MW-20D, MW-21D,and MW-22D) were to be installed in 1994 to determine if facility-related contaminants were infiltrating the shallow (upper 20 feet) of bedrock. The locations of all three bedrock wells are shown on the 1995 Engineering-Science Site Plan and the legend describes all three as abandoned bedrock wells. The report explains during the installation of MW-21D, no groundwater was encountered in bedrock at 90 feet below grade (70 feet into bedrock) and no groundwater samples were available for analysis. Bedrock monitoring wells MW-20D,MW-21D, and MW-22D were abandoned due to a lack of groundwater in bedrock. The total depth of wells MW20D and MW-22D cannot be confirmed.

Groundwater contour maps have been prepared from elevation data collected from on-site monitoring wells during previous sampling events. Historically, the direction of groundwater flow in the overburden aquifer is to the northwest toward Stony Creek. Minor variances to the groundwater flow direction occur on Site, likely due to man-made surface features (tank berms, swales, and impervious surfaces) and subsurface utility lines. Stony Creek is classified as Class C by the NYSDEC, with best uses listed as fishing and is considered suitable for propagation and primary and secondary contact recreation.

3.2 Aquifer Classification

NYSDEC categorizes aquifer classification into two types, Primary Water Supply Aquifers and Principal Aquifers. Primary Water Supply Aquifers are defined as highly productive aquifers presently utilized as sources of water supply by major municipal systems. Principal aquifers are defined as aquifers known to be highly productive or consist of geology that suggests an abundant potential water supply but are not intensively used by major municipal systems at the

present time. The NYSDEC Aquifer Mapping Program does not provide the aquifer type utilized by the town of Verona and the area is shown as unmapped according to the United States Geological Survey (USGS) New York Aquifer Viewer online resource.

The Site is located in the Lake Oneida Watershed. Regionally, the principal supply of groundwater in Oneida County occurs in glacial outwash deposits. Only about one third of county residents rely on groundwater and those residents are primarily in the western part of the County. The EBS, which included an Environmental Data Report (EDR) Radius Map (October 2017), ten water supply wells were identified in the EDR Map within one mile of DFSP Verona including one public water supply well. One private well was identified 0.5 miles northeast of the Site. There are no water supply wells on DFSP Verona, and the property is supplied with potable water from the Verona Water Authority.

3.3 Surface Water

There are two small wetland areas with surface water located along the western property boundary adjacent to the railroad line. These wetlands have two unnamed tributaries. One of the unnamed tributaries flows from the wetland area southwest and parallel to the railroad line, passes underneath in a culvert and joins the main branch of Stony Creek; the other tributary flows northeast approximately 250 feet, passes underneath the railroad line and flows into the Stony Creek wetland. A third unnamed tributary flows northwest from the Buckeye Pipeline property and joins Stony Creek south of the railroad line. All three unnamed tributaries contribute to Stony Creek. Stony Creek flows north/northeast into a large wetland located west of the railroad tracks (**Figure 1 and Figure 2**).

Stony Creek meets the description of Class "C" waters by the NYSDEC. The best use of Class "C" waters is fishing, and it is suitable for propagation and primary and secondary contact recreation.

3.4 Wetlands

According to the National Wetlands Inventory (NWI) maps reviewed online by TK&K personnel on June 8, 2023, there are two wetlands located on DFSP Verona along the northwest property line and adjacent to the CSX railroad tracks. One is a 0.245-acre Freshwater Emergent Wetland, and the other is a 0.545-acre Freshwater Forested/Shrub Wetland **(Appendix C).** The surface water of these wetlands is sometimes connected as one shallow water body, especially during spring runoff and periods of high precipitation.

DFSP Verona is also within a State Regulated Wetland Check Zone which is defined by NYSDEC as "an area around the mapped wetland in which the actual wetland may occur."

3.5 Stormwater

Stormwater drainage from inside the fenced compound of DFSP Verona not controlled by the

berms around the ASTs is directed by ditches, drains, and lines to areas outside the fenced compound to the northwest. There is a wide grassy ditch that begins near monitoring well MW-51 and runs west of MW-32 which carries surface water to the northwest that infiltrates to groundwater via rip rap located southeast of MW-41.

Prior to 1993, stormwater from the berms passed through two drains in the northwest berm for Tank 3 and the former Tank 4 and discharged to separate ditches that flowed overland to the Emergent and the Forested/Shrub wetlands adjacent to the railroad tracks (**Appendix D**). These wetlands have two unnamed tributaries that flow under the railroad track to Stony Creek and the associated wetland.

Beginning in 1993, stormwater from the berms no longer flowed overland but was piped to a permitted oil/water separator. The discharge from the oil/water separator was piped to a man-made rip-rap outfall located near the northwest property line. Discharge from the permitted oil/water separator joined the wetlands and the unnamed tributaries that eventually discharged to Stony Creek. The location of the former overland drainage from the berm area prior to the operation of the oil/water separator and the former discharge point for the oil/water separator (**Appendix D**) has been included for soil sampling in this *Work Plan.*

3.6 Floodplains

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Panel 360561 0025 B (4 May 1989), DFSP Verona is in Zone X, which FEMA defines as "areas determined to be outside the 500-year floodplain."

3.7 Natural Resources Inventory

There are two nearby areas within the Natural Resources Inventory (NRI). The Verona Swamp wetlands near the facility, and the Rome Sand Plains ecosystem five miles to the north, are considered environmentally sensitive areas. The Rome Sand Plains has a unique ecosystem, and there is a wildlife management area associated with it. DFSP Verona is not included in the NRI.

3.8 Threatened, Endangered, and Other Sensitive Species

According to the US Fish and Wildlife Service, no federally listed or proposed endangered or threatened species are known to concentrate in the immediate area around DFSP Verona. Occasional transient species have been observed at or near the facility. Bald Eagles, Golden Eagles, and Peregrine Falcons, which are listed species, have been observed in and around the Verona Swamp. The Common Loon and Least Bideron, which are of special concern to the State of New York, are also present at Oneida Lake, eight miles from the facility. The Small Whorled Pogonia is a Federally listed endangered species that resides throughout the State. This species may exist in the environs near DFSP Verona.

In August 2014, a wildlife biologist was subcontracted by DFSP Verona to inspect the facility and identify bird species using the fuel silos. No threatened, endangered, and other sensitive species were identified.

3.9 Cultural Resources

There are no documented natural heritage elemental occurrences near the facility. No historic or archeological sites are known to exist in the vicinity of DFSP Verona. Stony Creek flows into the Erie Canal 5.5 miles downstream of the facility. There are no historic sites, federal or state historic areas, or federal natural areas on or adjoining DFSP Verona.

4.0 RELEASE HISTORY

The EBS prepared for the Site by TK&K (October 2018) included a comprehensive review of the NYSDEC Spills Database and historical environmental reports that were available for the Site; interviews with the DFSP Site Maintenance Supervisor; and an environmental records search by EDR. Thirteen Spill Numbers for the Site were issued by the NYSDEC for releases of petroleum to soil and/or groundwater. All thirteen NYSDEC Spill Numbers related to petroleum releases to soil and groundwater have written documentation consisting of NYSDEC closure letters and/or NYSDEC Spill Report Forms that indicate no further action is required. The facility has not stored or used petroleum or hazardous material and has been non-operational and vacant since its decommissioning in August 2017.

The presence of PFAS in soil and groundwater at the Site is directly related to the storage and use of AFFF. Historically, 55-gallon drums containing AFFF concentrate were used to fill two 200-gallon bladder tanks located in the Fire Foam Pump Building, which were integral to the fire suppression system. In the event of a fire, AFFF would be combined with water in the AFFF pumphouse piping before application to the fire. AFFF concentrate onsite was tested annually and if found to be degraded, it was removed and resupplied by the vendor. As part of the decommissioning of DFSP Verona, all bulk fuel storage vessels and piping have been closed and the facility no longer needs an automated fire suppression system for the fuel system. Site work to remove the AFFF foam product material and residue was performed in August 2017.

There have been two reported historical releases of AFFF at DFSP Verona. Sometime between 1988 and 1993, lightening tripped the photonic eye on Tank 1 and AFFF was released into Tank 1, and subsequently drained into Berm 1. Tank 1 was emptied through fuel separators to remove water and AFFF. Residual dike water and AFFF liquid was recovered by vacuum truck for off-site disposal. Another AFFF release occurred in 2003 onto the concrete truck pad at the loading rack during a lightning event which tripped a sensor. Reportedly, AFFF was not recovered as it evaporated on the pad.

In addition to the noted releases above, periodic testing of the AFFF system by charging lines and draining the system to low point sumps or the ground surface surrounding the AFFF pump

house was common and may have been a significant source for releasing PFAS to the environment.

In November 2016, the Department of Defense (DoD) initiated an evaluation of the Site's drinking water for PFOA and PFOS due to prior storage and use of AFFF on site. Sampling drinking water at locations with AFFF storage has become common at DoD facilities in recent years to identify exposures to PFAS contamination. DFSP Verona groundwater is not a source of potable water or irrigation at the Site. The source of municipal water is Glenmore Reservoir on Florence Creek, located twenty miles from the facility. A drinking water sample was obtained by TK&K from the first faucet after the municipal supply line enters DFSP Verona's administrative building and analyzed via United States Environmental Protection Agency (USEPA) Method 537 for the determination of 14 PFAS compounds in drinking water. All results were below detectable laboratory limits for PFOA and PFOS at 9 and 15 nanograms per liter (ng/l), respectively. The drinking water results were provided in a report entitled *Analytical Report for Perfluorinated Compounds Sampling in Drinking Water DFSP Verona*, TK&K Services (December 2016).

In June and July 2017, TK&K collected groundwater samples from several site monitoring wells and one soil sample near the former SPDES discharge point for the oil/water separator for laboratory analysis of PFAS. Laboratory results indicated groundwater from monitoring wells at the facility were impacted by PFAS. The highest concentrations of PFAS in groundwater were detected in monitoring wells MW-10R (1,300 nanograms per Liter (ng/L) of PFOS and 62 ng/L of PFOA) and MW-27 (670 ng/L PFOS and 16 ng/L PFOA). Both wells are located downgradient of the loading rack. PFAS concentrations were detected further downgradient in wells MW-5 (6.2 ng/L of PFOS and 92 ng/L of PFOA) and MW-9 (190 ng/L of PFOS and 18 ng/L of PFOA), located near the western fence line. PFAS concentrations diminished upgradient of the loading rack at well MW-24 (61 ng/L of PFOS and 1.8 ng/L of PFOA), but increased significantly in the furthest upgradient well, MW-13 (1,000 ng/L PFOS and 15 ng/L of PFOA). The soil sample collected to evaluate the potential for the facility's stormwater to contact and transport PFAS (VER-SED-01) contained 6.2 micrograms per kilogram (µg/kg) of PFOS indicating that water passing through the stormwater system likely contacted PFAS although it does not appear to be a significant ongoing transport mechanism. The results of groundwater and soil testing were provided in a report entitled DFSP *Verona PFAS Groundwater Sampling Report*, TK&K Services, (September 2017).

On September 20, 2017, the New York State Department of Health (NYSDOH) sampled private wells from two mobile home developments. According to the NYSDEC, results were below the NYS MCL for drinking water of 10 micrograms per liter (µg/l) of PFOS or PFOA.

NYSDEC opened Spill Number 17-08575 and on February 22, 2018 conducted State-led private well sampling in the surrounding community for PFAS in groundwater. TK&K obtained

laboratory results but no narrative report of the NYSDEC private well sampling results. Using online imaging, TK&K mapped locations of the samples collected using addresses provided on the laboratory chain of custody. Laboratory results indicated there were no impacts of PFAS or PFOA detected above the NYSDEC groundwater quality standard of 10 nanograms per liter (ng/L). Of the eight private wells sampled, only one sample, located on New York Route 31 (approximately 2,400 feet to the northwest of the Site and across Stony Creek), had a detection of PFOA at 5.8 ng/L. All other private well results were Not Detected (ND) for PFAS.

A Site Characterization (SC) Work Plan for the investigation of PFAS was submitted to the NYSDEC and approved via a call with TK&K personnel on December 3, 2018. The Site Characterization was performed in December 2018 and January 2019 and the results were documented in the *Final Site Characterization Report*, TK&K Services, (July 2019). Fourteen of sixteen soil samples contained PFAS with the highest concentrations in soil sample SSPFAS-33 (0-2 ft.) and surface sample SSPFAS-38 (0-6 in.). These samples contained PFOS above the RSL at 185 and 184 ug/kg, respectively. SSPFAS-33 was collected adjacent to the pump house floor drain discharge pipe which daylights outside of the facility fence line. This area could have been exposed to AFFF during testing, cleaning, or refilling activities inside the AFFF Pump House. Sample SSPFAS-38 was collected immediately below the low point drain discharge pipe on the west exterior side of the AFFF pump house. This area would have received AFFF after system testing or any time system piping was charged and subsequently drained back to the AFFF pump house. Both samples have PFAS concentrations above the USEPA Regional Screening Level (RSL) calculated residential exposure limit of 126 ug/kg (185 ug/kg PFOS in SSPFAS-33 and 184 ug/kg PFOS in SSPFAS-38, respectively).

The groundwater sampling event performed in January 2019 confirmed the highest concentration of combined PFOA/PFOS was detected in monitoring well MW-33, which is in an area that accepts floor drain effluent from the AFFF Pump House. The elevated levels of PFAS in groundwater may have been related to the PFAS releases in soil near the AFFF pump house where the impacted soil was acting as a continuing source of PFAS contamination.

Other findings of the January 2019 sampling event confirmed the general groundwater flow direction as northwest toward Stony Creek. Migration of PFAS in groundwater in unconsolidated material from DFSP Verona is toward the northwest and Stony Creek.

The *Final Site Characterization Report*, TK&K Services, (July 2019) was approved by the NYSDEC in a letter to DLA-E dated September 4, 2019). The letter indicated that subsequent investigations should be performed to investigate the extent of soil and groundwater contamination and determine if groundwater contamination is impacting Stony Creek.

In October and November 2020, an Interim Remedial Measure (IRM) was performed by TK&K to reduce soil with PFAS concentrations above the calculated USEPA RSL of 126 ug/kg for

residential exposure in the area north of the AFFF pump house. This impacted soil may have been a source of contamination to groundwater. Approximately 1,213 tons of PFAS impacted soil was excavated and properly disposed off-site. IRM activities were documented in the *Final Interim Remedial Measure Report* by TK&K Services (October 2022) that has been submitted to the NYSDEC.

During the semi-annual groundwater monitoring event in April 2021, a total of 27 groundwater samples were collected from monitoring wells for analysis of PFAS compounds using USEPA Method 537M. The laboratory results indicated the highest PFOS and PFOA concentrations were in samples collected from MW-40 (PFOA at 238 ng/L and PFOS at 2,730 ng/L and MW-46 (PFOA at 202 ng/L and PFOS at 14,000 ng/L. Monitoring well MW-33R rebounded to 599 ng/L following the source removal in October 2020 but remained below the pre-IRM event level of 4,730 ng/L (November 2019). The results of this sampling event were included in the *Post Mitigation Performance Sampling Report*, TK&K Services, (September 2021) which has been provided to NYSDEC.

From October 27 through October 29, 2021, TK&K sampled 27 monitoring wells. Results were similar to previous monitoring events and were provided in the *Final Post Mitigation Performance Sampling Report* (February 2023).

During the post mitigation groundwater monitoring event performed from June 21 through June 23, 2022, a total of 27 monitoring wells were collected for the analysis of PFAS compounds using USEPA Method 537M. The two monitoring wells with the highest PFOS and PFOA concentrations were MW-46 (PFOS at 11,200 ng/L and PFOA at 144 ng/L) and MW-51 (PFOS at 4,230 ng/L and PFOA at 117 ng/L). Monitoring well MW-33R had reduced levels of PFOS to 675 ng/L from 1,010 ng/L from the October 2021 sampling event which was below the pre-Interim Remedial Measure event level of 4,730 ng/L. Results were provided in the *Draft Semi-Annual Groundwater Monitoring Report* (October 2022).

The latest post mitigation event was performed in May 2023 and the results are presented in the following tables and figures. The well gauging data is provided in **Table 1** and a Groundwater Elevation Contour Map is provided as **Figure 3**. Groundwater analytical results are in **Table 2** and depicted on **Figure 4** and **Figure 5**. The May 2023 analytical results are similar to previous sampling events.

5.0 CONCEPTUAL SITE MODEL

The letter from NYSDEC to DLA-E dated September 4, 2019 indicated subsequent investigations should be performed to assess the extent of soil and groundwater impact from PFAS and determine if PFAS in groundwater from DFSP Verona is impacting Stony Creek. The following Conceptual Site Model has been prepared to summarize the current understanding of the sources, extent of soil and groundwater impact, and the potential migration

pathways of PFAS to Stony Creek.

From the mid-1980's to 2017, AFFF was stored in drums and tank bladders within the AFFF pump house, located near the northwestern fence line of the facility, for use in the automated fire suppression system **(Appendix E)**. The pump house was connected to sprinklers located at each of the four above grade storage tanks and the truck loading rack by above- and below-grade fire suppression lines. Two low point sumps, one near the AFFF pump house and the other near well MW-32, located along these suppression lines allowed AFFF to gravity drain back into the sumps. The primary release points of AFFF directly to soil and groundwater include the AFFF pump house and surrounding ground surface, two low point sumps, and the truck loading rack.

Soil sample SSPFAS-32, collected on December 11, 2018 from 9 to 11 feet below grade from the soil boring advanced for MW-32, contained 2.26 ug/kg of PFOS and 0.342 ug/kg of perflourohexanesulfonic acid. All other PFAS compounds were not detected (ND) (Final Site Characterization Report, TK&K Services, July 2019).

Migration pathways from the primary release points include stormwater and shallow groundwater. Stormwater from release areas potentially carried impacted soil via overland flow within the ditches and drains that control stormwater on the non-bermed areas of the facility. Stormwater from these ditches and drains discharge into a small area of surface water located just prior to the railroad line. Stormwater migrates over the grassy area north of the loading rack to shallow groundwater via rip rap located southeast (upgradient) of well MW-41. Well MW-41, located over 400 feet downgradient of the AFFF pump house has contained high concentrations of PFAS. Groundwater flows northwest and discharges to the same surface water and wetlands located prior to the railroad track.

There are two unnamed tributaries that flow parallel to the railroad track. One tributary flows north approximately 200 feet and crosses the railroad tracks via a culvert and joins the Stony Creek wetland. The other tributary flows south approximately 650 feet and crosses the railroad tracks via a culvert and joins Stony Creek. A third unnamed tributary from the Buckeye Pipeline property joins the southern tributary prior to crossing the railroad tracks. All three unnamed tributaries contribute water to Stony Creek.

6.0 REMEDIAL INVESTIGATION

6.1 Resources and Project Organization

This Section details the responsibilities of the TK&K project team during the Remedial Investigation work at DFSP Verona.

6.2 Project Team

TK&K will mobilize operational personnel to perform on-Site activities based upon the nearest available resources. Field administrative support, project management, scheduling, and technical support for this Task Order will be based from TK&K's office located in Beverly, MA. TK&K subcontractors and vendors will be used to supply the specialty services and materials needed for project completion. The project team's contact information is provided below in **Table 6-2.**

Table 6-2
PROJECT TEAM MANAGEMENT PERSONNEL

Project Title	*Name*	*Contact Information*
DLA-E Program Manager	Anthony Sandoval, Jr.	Anthony.Sandoval@dla.mil 571.596.0769
TK&K Safety Officer	Ed Kurja	Edward.Kurja@tkandk.com 978.653.4138, ext. 103
TK&K Program Manager Senior Hydrogeologist	Eric Blomberg	Eric.Blomberg@tkandk.com 850-294-1233
TKK QA/QC Project Manager Senior Hydrogeologist	Brian Emery	Brian.Emery@tkandk.com 857.286.7634
TKK Field Engineer Field Safety Officer	Cameron Po	Cameron.Po@tkandk.com 978.653.4138 x114
Drilling Company	To Be Determined	
Spills Hotline	NYSDEC	1-(800)457-7362

6.2.1 Health and Safety Plan

A site-specific Health and Safety Plan (HASP) (**Appendix F**) per the requirements of the federal Occupational Safety and Health Administration (OSHA) has been prepared for this activity. All of the policies and procedures included in the HASP will be followed. Daily tailgate meetings will be performed to discuss the potential safety hazards for the day. The HASP will be available at the Site during well optimization activities.

6.2.2 Preparatory Activities

Pre-construction activities consist of pre-marking the drilling locations, retaining a private utility locating service to screen the drilling locations, obtaining off-site access to install one monitoring well in the right of way of West Main Street, performing environmental sampling on the railroad property, and submitting a locate request to UDIG New York 811.

6.2.3 Site Access

Most of the work is anticipated to occur on DFSP Verona property which is owned by the US

Air Force. DLA-E will manage obtaining permission to perform Remedial Investigation activities from the property owner. Access to the Site is directly off West Main Street. Traffic routes on the facility are not a concern since the facility was permanently closed in August 2017.

6.2.4 Off-Site Access

One monitoring well (MW-69) will be installed within the right of way of West Main Street. TK&K will submit permit requests to the Town of Verona Highway Department to obtain permission to install this monitoring well within the right of way.

Four off-site monitoring wells (MW-73, MW-74, MW-75, and MW-76) and surface water and sediment samples will be collected on the railroad property owned by CSX Transportation, Inc. (CSX). Per CSX's *Permitting Information Packet* (May 2020), TK&K will submit a request for a temporary Right of Entry permit for installation of monitoring wells and environmental sampling. The location of proposed sediment and surface water samples near the northwest property line in the Forested Wetlands and the Emergent Wetlands will require field verification to determine if they are on DFSP Verona or CSX property. TK&K already has a signed agreement to access the existing sampling locations on Stony Creek and the associated wetland.

6.2.5 Utility Mark Out

TK&K proposes to advance soil borings and install monitoring wells for the collection of soil and groundwater samples. Soil boring locations will be pre-marked in the field. Potential underground utilities in the vicinity of the work may include active electric, water, stormwater, sewer, natural gas and telephone. The Buckeye Pipeline is a petroleum pipeline that crosses DFSP Verona property northwest of the facility.

UDIG New York 811 will be contacted at least three working days prior to the initiation of the drilling operations to mark locations of subsurface utilities within and around the proposed work area. The locate tickets will be updated by TK&K as required by the project schedule. A general reconnaissance of site conditions for potential hazards, obstructions, debris, restrictions to equipment/personnel access, and overall condition of the ground surface will also be performed at the time of the soil boring location field mark-out. Additionally, TK&K will subcontract a utility locating service to identify previously unknown or private utilities and underground features within the proposed drilling areas. Actual soil boring locations will be verified in the field to avoid access restrictions such as underground utilities and overhead power lines.

6.2.6 Pre-Construction Meeting

Prior to mobilization, TK&K will coordinate pre-investigation meetings with DLA-E and subcontractors. TK&K will use the meeting to discuss the following topics:

- Site access/security requirements.

- Schedule with specific tasks included.
- Review of the Work Plan and associated documents.
- Utility mark out checks prior to intrusive activities.
- Site layout and logistics.
- Overall approach to Work Plan activities.

6.2.7 Mobilization and Site Preparation

Upon receiving approval for this Work Plan and a task order for implementation, TK&K will schedule a start date to implement the field activities. Site setup will include utility mark-out, securing well permits, and preparation for management of Investigation Derived Waste (IDW) material.

7.0 REMEDIAL INVESTIGATION SCOPE OF WORK

7.1 Monitoring Well Installation

Fifteen new monitoring wells are proposed to complete the delineation of PFAS contamination in overburden groundwater. Proposed monitoring wells MW-63, MW-65, MW-66, MW-67, and MW-68 will increase the delineation to the north. Existing monitoring well MW-54 has been obstructed making it difficult to collect groundwater samples and will be replaced with MW-64. Monitoring wells MW-33, MW-38 and MW-46 will be redeveloped or replaced to enhance groundwater recovery in the well for sampling. Well MW-69 will be located upgradient and within the right of way across West Main Street. This well will investigate PFAS concentrations upgradient of the facility property, as evidenced by the PFAS in samples from well MW-13. Wells MW-70 and MW-71 will improve delineation to the west of the facility, as existing well MW-57 has limited depth due to bedrock and has been dry when the water table is seasonally low. Proposed well MW-72 will improve delineation to the northwest by filling in the gap between existing wells MW-44 and MW-56. Wells MW-73, MW-74, MW-75, and MW-76 are proposed on CSX property since several of the existing wells in the wetland are either dry, inaccessible or below the standing water of the wetland. Well MW-77 is located downgradient of the loading rack, at the request of NYSDEC. A rationale for the proposed monitoring wells is included on the Remedial Investigation Sampling Plan (**Table 3)** and the locations are depicted on **Figure 6**. Sample Container Requirements and Sample Naming Convention is summarized in **Table 4** and **Table 5**. Monitoring wells to be replaced will be abandoned per CP-43, Groundwater Monitoring Well Decommissioning Policy.

Upon approval of well installation locations, TK&K will advance soil borings via the hollow stem auger method using a track-mounted drilling rig. Wells will be installed to a total depth of 8 feet into the water table or to bedrock refusal, whichever occurs first. Some discrete soil sampling via split spoons will be collected to fully classify the soils in areas not previously investigated via the split spoon method. A field geologist will oversee the drilling activities under the supervision of a Professional Geologist in accordance with State Regulations. The

"rig" geologist will have multiple duties including Health and Safety for quality control and technical oversight of all drilling activities. Since this is a former petroleum bulk storage facility, soil cuttings will be collected and screened on site by the jar headspace method using a photoionizer (PID). Soil cuttings will be segregated into drums, labeled, characterized, and stored at DFSP Verona prior to off-site disposal.

Augers will be transported between borings to an on-site location for decontamination. Decontamination will be achieved by pressure washing in a contained area to collect wash water and soil. Wash water and soil will be placed in 55-gallon drums, labelled, and characterized for off-site disposal.

Monitoring wells will be constructed of 5 or 10 feet of 2" schedule 40 polyvinyl chloride (PVC) factory-slotted screen (0.02-inch) and riser of variable length installed to intersect the top of the groundwater table. A 20/30 clean sand pack will be placed in the annular space between the well screen and borehole. This sand pack will extend 1' ft. above the well screen to account for any settling that may occur. A bentonite pellet seal will be placed immediately above the sand pack and the remainder of the boring will be sealed with a cement/bentonite slurry to prevent the downward migration of surface water.

Wells installed in unpaved areas will be provided with standpipes and locking caps, and with sealed curb boxes in paved areas. The rig geologist will prepare a standard well construction diagram for each new monitoring well.

Soil classification per the Unified Soil Classification System (USCS) will be recorded in the field on soil boring logs. Newly installed monitoring wells will be photographed and developed for a minimum of 30 minutes or until water is clear to restore the natural permeability of the surrounding formation adjacent to the borehole prior to sampling. Development will be performed using either surge block or over-pumping. Development water will be containerized and disposed off-site. GPS coordinates will be used to locate each new monitoring well location on the Site Plan and the elevation will be determined by a Professional Land Surveyor with +/- 0.01 feet of accuracy.

7.2 Field Precautions For PFAS Sampling

The following Field Precautions will be taken during the sampling process to avoid sample cross-contamination during PFOS and PFOA sample collection:
Unacceptable Items

- No Teflon®, Gore-Tex™, Tyvek®, Blue ice, or Post-it ® products
- No waterproof or water-resistant logbooks, field books, or pens
- No plastic clipboards, binders, spiral-bound, or other plastic-containing record-keeping products

- No waterproof, water-resistant, or stain-resistant clothing or rain gear
- No cosmetics, moisturizers, creams, or other cleaning and showering products
- No glass or LDPE sample containers
- No Decon 90® decontamination fluid
- No food or drinks (other than as specified below)
- No new clothing (less than 6 washings)

Acceptable Items

- HDPE materials (other than sample containers)
- Acetate liners, silicon tubing, non-waterproof paper
- Water-based ice (not Blue ice)
- Cotton clothing (more than 6 washings old)
- PVC boots
- Sunscreens, insect repellents (other than Skin-so-Soft®)
- Alconox® decontamination fluid
- Bottled water, bottled Gatorade®, bottled PowerAde®, and similar bottled hydration drinks.

7.3 Groundwater Sampling

The new monitoring wells will be allowed to stabilize for at least two weeks prior to groundwater sampling activities. All wells that currently exist on Site and all newly installed wells will be purged and sampled via low flow sampling methodology per the USEPA Region 2 Low Stress (low flow) Purging and Sampling for the Collection of Groundwater Samples from Monitoring Wells (EPASOP-GW 001). Wells to be sampled along with well construction information are included on **Table 3**. Groundwater monitoring well samples submitted for analysis will be analyzed for PFAS via USEPA Draft Method 1633 Version 4 by a laboratory with Department of Defense (DoD) and New York State Department of Health Environmental Laboratory Approval Program (ELAP) certification. Results of groundwater sampling will be compared to the NYSDEC guidance values of 6.7 ng/L for PFOA and 2.7 ng/L for PFOS.

7.3.1 Groundwater Sampling Methodology

Groundwater sampling will be conducted via low flow sampling techniques utilizing the following equipment:

- Adjustable rate peristaltic or submersible pumps.
- Water level measuring device (i.e., water level meter or oil/water interface probe).
- Groundwater multi-meter (YSI 560/650 or similar) with flow cell to measure temperature, specific conductance, pH, oxidation/reduction potential (ORP), dissolved oxygen (DO) for determination of well stabilization.
- Turbidity meter.

- Flow rate measurement supplies.
- Personal protective equipment (PPE) as defined in the Site HASP.
- Appropriate pre-preserved sample containers.
- Field logbook.
- Sample cooler with ice.

Depth to groundwater measurements will be collected from the wells prior to sampling. The following steps will be followed when purging monitoring wells and collecting and preserving groundwater and QA/QC samples:

- The previously decontaminated pump, multi-meter, and associated equipment will be assembled for operation with new HDPE or silicon tubing.
- The monitoring well will be purged at a rate no greater than 0.2 liters per minute (L/min) and no less than 0.05 L/min. Groundwater drawdown should be measured and kept to less than 0.3 feet wherever possible.
- Groundwater field parameters (specific conductance, pH, OPR, and DO) will be monitored incrementally after a minimum of one flow through cell volume of groundwater has been purged through the flow through cell (every 5 minutes).
- The purging of the monitoring well will be considered stable after three consecutive readings of all parameters stabilize per the specifications in the USEPA Region 2 Guidance. More specifically, stabilization will be achieved when turbidity variance is within 10% for values greater than 5 Nephelometric turbidity units (NTU), DO variance is within 10% for values greater than 0.5 milligrams per liter (mg/L), specific conductance variance is within 3%, temperature variance is within 3%, pH variance is within 0.1 units, and ORP variance is within 10 millivolts (mV). If stabilization criteria are not met, wells will be purged a maximum of 1 hour prior to sampling.
- Following stabilization of groundwater parameters sample containers shall be filled.
- All sample containers will be labeled and stored in accordance with the sample management specifications defined in this Work Plan.

7.4 Soil Sampling

The Site Conceptual Model identifies migration pathways in soil from the primary release points to areas downslope toward Stony Creek. Stormwater from release areas potentially carried impacted soil via overland flow within the ditches and drains that control stormwater on the non-bermed areas of the facility. This includes the grassy areas north and west of the loading rack downslope and the vegetated area located near the Buckeye Pipeline and well MW-41.

Therefore, to investigate PFAS in soil that may have migrated in stormwater, soil samples will be collected from 0-2” or 0-6” and 6-24” bg along Transects A, B, C, D, E, and F, two locations

at the former NPDES discharge (NQ-1, NQ-2), five locations (BK-1 through BK-5) that will be considered background samples, and five locations at the request of the NYSDEC (IRM-1 through IRM-5) near the IRM area, per the following:

- Transects A and B follow the overland flow of the former berm drain stormwater from Tanks 3 and 4.
- Transects C and D follow the flow of stormwater through rip rap areas located beside the utility road.
- Transect E follows the ditch that extends across the grassy area and abuts Transect F near the northern property fence line.
- Transect F runs along the northern fence line and terminates prior to well MW-41.
- Two sample locations at the former NPDES discharge point.
- Five background soil samples (BK-1 through BK-5) will be collected from the DFSP property and analyzed for PFAS via USEPA Draft Method 1633 Version April, 2023. Two background locations are proposed for the open field to the north of the DFSP, two are located to the south adjacent to the property line with the Buckeye Pipeline facility, and one is located to the west. These locations were selected to determine the concentration of PFAS in soil as if the DFSP had never existed.
- Five soil samples (IRM-1 through IRM-5) to investigate a portion of the IRM area that was not excavated.
- Three soil samples (TR-1 through TR-3) to investigate the area downgradient of the Truck Rack.

Results of soil sampling will be compared to RSLs and NYSDEC guidance values (Protection of Groundwater). . Additional step-out borings will be advanced as needed and soil samples will be collected from the Transects (at 0-2” or 0-6” and 6-24” inches bg) five feet from either side of each soil sampling location that exceeds either the RSLs or the NYSDEC guidance values (Protection of Groundwater). Additional step-out borings for existing soil samples with exceedances of NYSDEC guidance values (Protection of Groundwater) will be performed during the second round of the RI soil sampling activities. No soil samples will be collected during monitoring well installation as these locations are intended to delineate groundwater. Proposed soil samples are summarized on **Table 3** and depicted on **Figure 6**.

TK&K reviewed the current soil sample results from the Supplemental Site Characterization Report (TK&K, 2022) in respect to the protection of groundwater guidance value for PFOS at 1 ug/kg and the Residential and Restricted Residential soil guidance values. This was done to determine if the current soil data set was sufficient to define the extent of PFOS and PFOA contamination to support the Feasibility Study and evaluation of remedial action alternatives. The Supplemental Site Characterization Report summarized the results of 72 soil samples from 50 soil boring locations. This data set was adequate to identify several source areas and perform a source removal as an Interim Remedial Measure (IRM) with reasonable success. This Work

Plan proposes another 103 soil samples in addition to "step out" soil samples that will be collected as needed.

The results from another 100-plus soil samples added to the existing data set in addition to "step out" samples performed to define soil concentrations per the NYSDEC guidance values (Groundwater Protection) will be sufficient to support a Feasibility Study and evaluation of remedial action alternatives. Some data gaps in the extent may exist which will be better understood and can be filled in once the soil samples in this Work Plan are analyzed. These gaps, including those noted in NYSDEC's RI Work Plan Comments 21 and 38, and recent comments in the NYSDEC email dated July 30, 2024 that values for PFOS in soil exceed Residential Guidance Values (SSPFAS-11, 21, 45 and SSPFAS-07) and consideration for stepping out from SSPFAS-29 and SSPFAS-40 if the nearby proposed borings/depths will not delineate those Residential Guidance Value exceedances will be resolved during the second "step out" event of the investigative effort.

The extent of site soils exceeding NYSDEC guidance values (Groundwater Protection) is needed to define the extent of soil contamination to provide the alternative of removing all contamination at the site. The areas with higher concentrations of PFOS in soils (exceeding Residential Guidance Values (GVs) & Restricted Residential GVs), north of the truck loading rack and north of the former AFFF Pump House/IRM location will be further investigated during RI via the installation of soil borings (TR samples and IRM samples). The other areas investigated during the Site Characterization do not exceed the Residential GVs, are generally well defined and if needed, may be investigated in the future to close out any data gaps. Additional future soil borings/samples will be collected as "step outs" from SSPFAS-11, 21, and 45 to define the extent of soil contamination exceeding Residential GVs for PFOS and similarly for SSPFAS-07, since no additional soil borings are proposed in these areas in this Work Plan. Consideration will be given to stepping out from SSPFAS-29 and SSPFAS-40 if the nearby proposed borings/depths will not delineate those Residential GV exceedances.

The approach is to complete this round of RI sampling, followed by a subsequent round of sampling to fill in data gaps which includes step outs. The rationale behind this includes:

- Significant soil sampling has already been performed during the Site Characterization and IRM.
- Source area soils were removed from the Site during the IRM.
- The Site is decommissioned, vacant, and has a security fence.
- The soil sampling proposed in this Work Plan is considered to be fairly comprehensive, including several potential stormwater pathways that have not been previously investigated. Given the significant costs for analyzing PFAS samples, the Work Plan data as proposed should be evaluated prior to stepping out to minimize the total number of samples needed to define the Site.

- Background samples are included in the Work Plan, and the evaluation of these samples may help reduce the total number of soil samples needed to define the Site.

7.4.1 Soil Sampling Methodology

Soil samples will be collected at each location, using stainless steel trowels, spoons, or hand augers that will be decontaminated between each sample with Alconox detergent and rinsed with PFAS-free water. One sample will be collected from 0 to 2 inches and a second sample from 6 to 24 inches below grade. Soil samples will be homogenized in a stainless-steel or PFAS-free disposable bowl prior to being placed into the sample bottle. All samples will be collected in pre-cleaned and preserved bottles provided by the laboratory and packed in ice with a chain of custody record for transportation to the laboratory for analysis of PFAS via USEPA Method 1633. All sample locations will be surveyed by a Global Positioning System (GPS) method and the results will be summarized in a Table and depicted on a Figure.

7.5 Sediment and Surface Water Sampling

Sediment and surface water samples will be collected at the following locations:

- Four sediment and surface water samples will be collected at the small wetland area located on the south side of the railroad tracks (EW-1, EW-2, FW-1, FW-2).
- One sediment and surface water sample will be collected from the unnamed tributary that flows to the north of the small wetland (UT-6).
- Five sediment and surface water samples will be collected from the unnamed tributary that flows to the south of the small wetland (UT-1, UT-2, UT-3, UT-4, and UT-5).
- One sediment and surface water sample will be collected from the unnamed tributary that flows from the Buckeye Pipeline (BP-1).
- One upstream sediment and surface water sample will be collected from Stony Creek (SC-3).
- Two downstream sediment and surface water samples from Stony Creek (SC-4 and SC-5).

Sediment samples will be homogenized in a stainless-steel or disposable PFAS-free bowl prior to being placed in the sample bottle. Sediment and surface water sample locations are summarized on **Table 3** and depicted on **Figure 5** (SC-5 only) and **Figure 6**.

7.5.1 Sediment and Surface Water Sampling Methodology

The following step will be followed when collecting and preserving surface water and QA/QC samples:

- Where conditions permit, previously decontaminated sampling devices (e.g., stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point, the sample can be collected with the stainless-steel cup and poured

into the sample container. Surface water samples will be collected only after 3 days of no precipitation.

Sediment samples will be collected from near the bottom middle of the ditch, or the side closest to the groundwater plume, where applicable. Samples will be collected using a steel hand auger with a closed bottom without any coatings and a stainless-steel spoon and bowl. The depth of the sample will be documented.

The following steps will be followed when collecting and preserving sediment and QA/QC samples:

- Standard two-step decontamination using detergent (Alconox) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.
- When the sample is collected it will be deposited into a stainless-steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized.

All samples will be collected in pre-cleaned and preserved bottles provided by the laboratory and packed in ice with a chain of custody record for transportation to the laboratory for analysis of PFAS via USEPA Draft Method 1633. Per NYSDEC's April 2023 "Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl substances (PFAS)", all sediment samples and select soil samples will be analyzed for Total Organic Carbon (TOC) via USEPA Method 9060. All laboratory results will be summarized in Tables and depicted on Figures.

8.0 IDW DISPOSAL

The following Investigation Derived Waste (IDW) is anticipated to be generated during Remedial Investigation activities and will be managed in the following manner:

- Soil cuttings from drilling activities, well development water, well sampling purge water, and water used to decontaminate augers and field sampling equipment will be placed in 55-gallon drums, labelled, stored at DFSP Verona, and disposed off-Site at an approved facility as determined by hazardous waste characterization.

9.0 SAMPLE MANAGEMENT

The sample identification system to be used during this investigation will assign a unique sample identifier to each sample collected. Data management will be consistent with this sample identification system. The protocols for assigning field sample numbers are described in **Table 5.**

9.1 Sample Packing and Shipping

Samples for off-site laboratory analysis will be hand delivered to the laboratory or shipped via a courier provided by the laboratory for overnight delivery in waterproof coolers using the procedures outlined below. The samples taken for this project shall be considered low-level or environmental samples for packaging and shipping purposes. The sample packing procedures are as follows:

- Fill out the pertinent information on the sample label and ensure agreement with the chain of custody (COC).
- Place about three inches of cushioning material, such as vermiculite or bubble pack, in the bottom of the cooler.
- Wrap the sample containers in bubble pack. Place containers in the cooler so they will not touch during shipment.
- Put in additional vermiculite or bubble pack packing material to partially cover sample containers (more than halfway).
- Place ice, sealed in plastic bags, around and on top of the containers. The temperature of the samples should be maintained at 4°C +/- 2°C during shipment to the laboratory.
- Fill the cooler with cushioning material.
- Close cooler and place signed custody seals on both ends of the cooler.

If a laboratory courier picks up the cooler, the cooler may be closed and transferred to the courier. The courier will sign the COC as a record of receipt, returning one signed copy to the sampler. If samples are to be shipped via a delivery service, the following steps will be taken:

- Put COC record in a waterproof plastic bag and tape it to the inside lid of the cooler.
- Tape the drain shut.
- Secure the lid by wrapping the cooler completely with nylon strapping tape or duct tape at a minimum of two locations.
- Attach the completed shipping label to top of the cooler and place signed custody seals on both ends of the cooler.
- Cover custody seals with clear nylon strapping tape to prevent tampering or undue breakage.

From the time of sample collection, samples for off-site analysis will be stored on ice. The laboratory will record the temperature of the samples upon arrival at the facility. Sample container information is included in **Table 4**.

9.2 Sample Chain of Custody

To maintain and document sample possession, COC records will be kept. These procedures are necessary to ensure sample integrity from the collection time through data reporting. The

COC protocol provides the ability to trace sample possession and handling. A sample is considered under custody if it is:

- In a person's possession;
- In a person's view after being in possession;
- In a person's possession and locked up; or
- In a designated secure area.

Personnel collecting samples are responsible for sample care and integrity until the samples are properly transferred or dispatched. The number of people managing a sample will be kept to a minimum.

The sampler(s) will initially complete the COC records, which shall accompany the samples. The following information shall be indicated on the COC record:

- Project identification;
- Signature of samplers;
- Sample identification, sample matrix, date, and time of collection, grab or composite sample designation, number of containers corresponding to that sample identification, analyses required, remarks or sample location (if applicable), and preservation method(s);
- Signature of the individual relinquishing the samples; and
- Name of the individual(s) receiving the samples and air bill number, if applicable.

The COC preparer will check the sample label and COC record for accuracy and completeness.

9.3 Sample Quality Assurance/Quality Control

Appropriate Quality Assurance/Quality Control (QA/QC) procedures compliant with USEPA Draft Method 1633 will be implemented throughout the sampling and analyses programs. All laboratory certifications are required to remain current throughout the duration of the project. All QA/QC samples will be indicated as such on the COC. A qualified independent party who has direct involvement with the project will perform the data review and prepare a Data Usability Summary Report. The resume of this individual is included in **Appendix G**.

Per the NYSDEC PFAS guidance document, one soil, groundwater, sediment, and surface water duplicate sample will be collected for every twenty sample locations. One equipment blank will be collected from one of the soil sampling tools. Matrix spike/matrix spike duplicates (MS/MSD) will also be collected per NYSDEC's PFAS guidance document. QA/QC samples for all samples will be analyzed via US EPA Method 1633. QA/QC sampling is shown on **Table 3**.

9.4 Data Review

The laboratory will be under contract to provide results and a QC summary package (Level B) within 30 business days of sample receipt. The data elements that will be evaluated during data review include:

- Data completeness
- Preservation and holding times
- Blanks
- Laboratory control
- Sample and sample duplicate
- Spike sample
- Quantitation limits

Final sampling data and laboratory analytical reports will be included in the PFAS Remedial Investigation Report.

10.0 QUALITATIVE EXPOSURE ASSESSMENT

A qualitative exposure assessment will be completed in accordance with DER-10 Sections 3.3(c) 3 & 4. The assessment will include what impacts site contaminants may have, if any, on media that could be impacted (groundwater, sediment, surface water, soil, and biota). Groundwater, sediment, surface water, and soil samples will be collected as part of the RI to assess the impacts. Human health and ecological exposure impacts will be assessed as outlined in DER-10 Appendix 3B Qualitative Human Health Exposure Assessment and Appendix 3C Fish and Wildlife Resources Impact Analysis Decision Key.

11.0 REPORTING

Upon completion of all field activities, TK&K will prepare a PFAS Remedial Investigation Report documenting relevant field activities. The report will be prepared summarizing the procedures used to conduct the scope of work and will include text, tables, and figures to present the results of the Remedial Investigation. This report will also include the analytical reports for all sampling and analyses, disposal documentation and manifests. All daily reports from field activities, a description of each project task, any problems encountered along with corrective measures, photographs, soil boring and monitoring well completion logs, and an updated Site Plan and Well Inventory Log will be submitted with the report.

12.0 COMMUNITY AIR MONITORING PLAN

A Community Air Monitoring Plan (CAMP) prepared in accordance with the New York State Department of Health (NYSDOH) Generic CAMP (Appendix 1A) is included **(Appendix H)**. A CAMP Status Report that includes dust monitoring results will be provided to the NYSDEC weekly during site activities. Exceedances of the CAMP standards or corrective action taken will be reported within 24 hours.

Visual observations including dust originating from activities on or off site, not related to site activities, weather conditions, etc., and operation of meters, which will help to understand VOC and dust readings recorded in the field will be recorded on daily CAMP forms and submitted to the Department weekly.

13.0 SCHEDULE

TK&K anticipates scheduling the Remedial Investigation field activities within two weeks of receiving approval of the Work Plan from the NYSDEC and authorization to proceed from DLA-E.

14.0 REFERENCES

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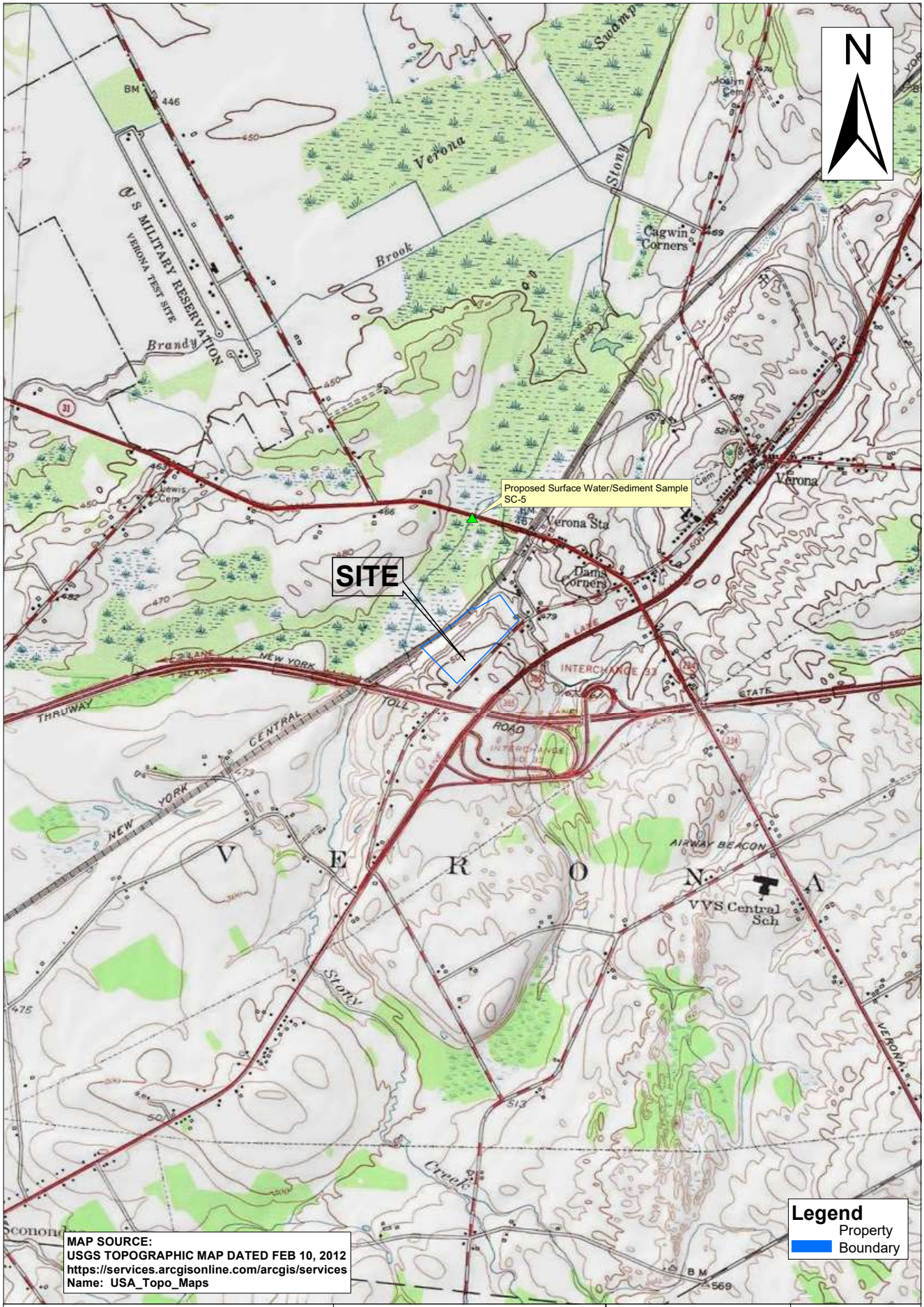
FIGURES



TK&K SERVICES

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DEFENSE FUEL SUPPLY POINT VERONA

FIGURE 1
LOCUS MAP

REMEDIAL INVESTIGATION WORK PLAN

DESIGNED BY: CP
CHECKED BY: BE
APPROVED BY: EB
DRAWN BY: SC
SCALE: AS SHOWN
DATE: 6/13/23

PROJECT No.: 14003

N

Unnamed Tributaries
Flow Direction Diverges to North and South

STONY CREEK
FLOW DIRECTION

BUCKEYE PIPELINE
APPROXIMATE LOCATION
NOT FIELD VERIFIED

Tributary from Buckeye Pipeline

MW-62
MW-60
MW-61
MW-59
MW-58
MW-46
MW-47
MW-55
MW-54
MW-45
MW-41
MW-48
MW-42
MW-40
MW-44
MW-49
MW-39
MW-32
MW-38
MW-43
MW-30
MW-37
SW/SED3
MW-57
MW-56
MW-9
MW-33R
MW-5
MW-10R
MW-50
MW-35
MW-2R
MW-27
MW-51
SW/SED2
MW-36
MW-24
MW-53
MW-29
MW-13

TANK 1
TANK 3
TANK 2

Legend

- Monitoring Wells
- Low Sump Point
- Property Boundary
- Existing Aboveground AFFF Lines
- Existing Underground AFFF Lines
- Former Aboveground AFFF Lines (Removed)
- Site Boundary

Feet
0 40 80 160 240 320 400

AFFF SYSTEM SOURCE: US ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS OMAHA DISTRICT JUNE 2012 (NOT FIELD VERIFIED)

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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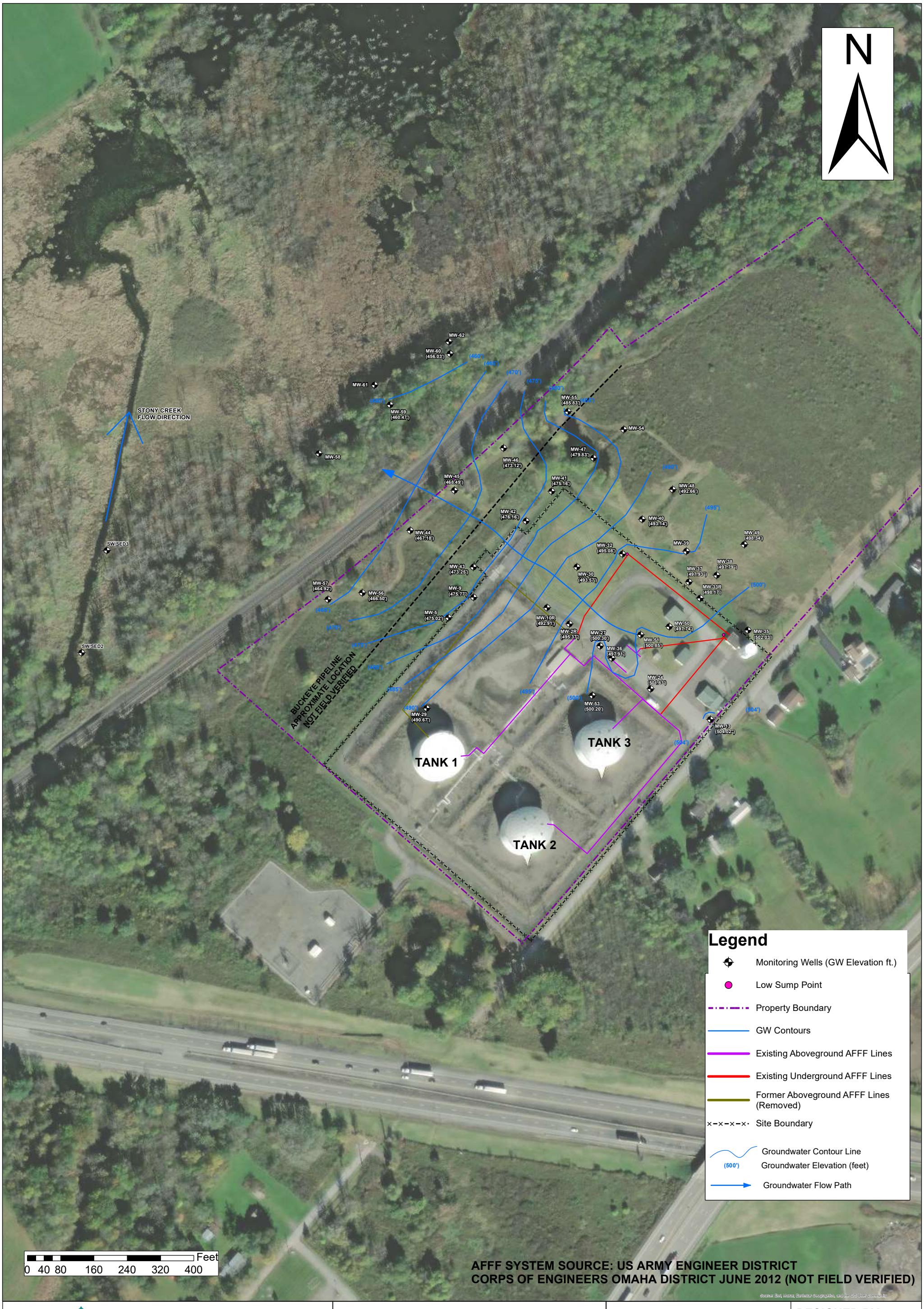
DEFENSE FUEL SUPPLY POINT
VERONA

FIGURE 2
SITE PLAN

REMEDIAL INVESTIGATION
WORK PLAN

DESIGNED BY: CP
CHECKED BY: EB
APPROVED BY: EB
DRAWN BY: CP
SCALE: AS SHOWN
DATE: 6/8/2023

PROJECT No.:
14003.0008



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DEFENSE FUEL SUPPLY POINT
VERONA

FIGURE 3
GROUNDWATER ELEVATION CONTOUR MAP
MAY 2023

REMEDIAL INVESTIGATION
WORK PLAN

DESIGNED BY: CP
CHECKED BY: EB
APPROVED BY: EB
DRAWN BY: CP
SCALE: AS SHOWN
DATE: 6/8/2023

PROJECT No.: 14003.0008

N

MW-62
5/8/23 Below Standing Water
PFOS-1.5 J
MW-60
5/8/23 Below Standing Water
MW-61
PFOS-1.1 J
MW-59
STONY CREEK
FLOW DIRECTION
PFOS-8.6
MW-55
MW-54
PFOS-2.0 U
5/8/23 Below Standing Water
MW-58
PFOS-14600
MW-46
PFOS-408
MW-47
PFOS-217
MW-45
PFOS-2990
MW-41
MW-48
PFOS-5.2 J
PFOS-3050
MW-40
PFOS-5390
MW-44
PFOS-1660
MW-42
5/8/23 Obstructed
MW-49
SW/SED3
PFOS-1150
MW-39
PFOS-968
MW-43
PFOS-423
MW30
MW-32
PFOA-136
PFOS-2.2 U
MW-56
MW-57
MW-38
PFOS-43.3
MW-37
MW-9
MW-33R
PFOS-835
MW-10R
PFOS-5200
MW-2R
MW-5
PFOS-4.9
MW-50
MW-35
MW-51
PFOS-1.9 U
SW/SED2
MW-27
MW-36
PFOS-5110
BUCKEYE PIPELINE
APPROXIMATE LOCATION
NOT FIELD VERIFIED
MW-53
MW-24
MW-29
PFOS-4.9
PFOS-15.6
MW-13
PFOS-30.7
PFOS-108
TANK 1
TANK 3
TANK 2

Legend

- Monitoring Wells
- Property Boundary
- 2.7 ng/L PFOS Plume
- 2.7 ng/L PFOS Plume Inferred
- Existing Aboveground AFFF
- Existing Underground AFFF Lines
- Former Aboveground AFFF Lines (Removed)
- Site Boundary
- PFOS Detection Results (ng/l)
- Exceeds NYSDEC COC Guidance Value For PFOS ≥ 2.7 ng/l
- Naming Convention: PFOS - Concentration (ng/L)

Note:
J: Indicates a lab estimated value
ND: Non-detect

Feet
0 37.575 150 225 300 375

AFFF SYSTEM SOURCE: US ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA DISTRICT JUNE 2012 (NOT FIELD VERIFIED)

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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DEFENSE FUEL SUPPLY POINT VERONA

FIGURE 4

PFOS GROUNDWATER SAMPLING DETECTIONS MAP (MAY 2023)

REMEDIAL INVESTIGATION WORK PLAN

DESIGNED BY:	CP
CHECKED BY:	EB
APPROVED BY:	EB
DRAWN BY:	CP
SCALE:	AS SHOWN
DATE:	6/8/2023
PROJECT No.:	14003.0008

N

MW-62
5/8/23 Below Standing Water
PFOA- 2.0 U
MW-60
5/8/23 Below Standing Water
MW-61
STONY CREEK
FLOW DIRECTION
PFOA-2.0 U
MW-59
PFOA-1.4 J
MW-55
MW-54
5/8/23 Below Standing Water
MW-58
PFOA-198
MW-46
PFOA-35.2
PFOA-2.0 U
MW-47
PFOA-19.1
MW-45
PFOA-101
MW-41
MW-48
PFOA-50.2
PFOA-216
MW-40
PFOA-79.4
MW-44
PFOA-108
MW-42
5/8/23 Obstructed
MW-49
SW/SED3
PFOA-88.9
MW-43
PFOA-14.2
MW30
MW-32
PFOA-42.0
MW-39
PFOA-51.6
MW-56
MW-38
PFOA-10.3
PFOA-2.2 U
MW-57
MW-9
MW-37
MW-33R
PFOA-70.9
MW-10R
PFOA-152
MW-2R
MW-50
MW-5
MW-35
PFOA-76
MW-51
PFOA-1.9 U
SW/SED2
MW-27
MW-36
PFOA-55.7
BUCKEYE PIPELINE
APPROXIMATE LOCATION
NOT FIELD VERIFIED
MW-53
MW-24
MW-29
PFOA-1.9 U
PFOA-2.3 J
MW-13
PFOA-3.9 J
PFOA-3.0 J
TANK 1
TANK 3
TANK 2

Legend

- Monitoring Wells
- Property Boundary
- 6.7 ng/L PFOA Plume
- 6.7 ng/L PFOA Plume Inferred
- Existing Aboveground AFFF Lines
- Existing Underground AFFF Lines
- Former Aboveground AFFF Lines (Removed)
- Site Boundary
- PFOA/PFOS Detection Results (ng/l)
- Exceeds NYSDEC COC For Guidance Value For PFOA ≥ 6.7 ng/l
- Naming Convention: PFOA - Concentration (ng/L)

Note:
J: Indicates a lab estimated value
ND: Non-detect

Feet
0 37.575 150 225 300 375

AFFF SYSTEM SOURCE: US ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA DISTRICT JUNE 2012 (NOT FIELD VERIFIED)

Sources: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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DEFENSE FUEL SUPPLY
POINT VERONA

FIGURE 5
PFOA GROUNDWATER SAMPLING DETECTIONS MAP (MAY 2023)

REMEDIAL INVESTIGATION
WORK PLAN

DESIGNED BY: CP
CHECKED BY: EB
APPROVED BY: EB
DRAWN BY: CP
SCALE: AS SHOWN
DATE: 6/8/2023
PROJECT No.: 14003.0008

N

Fow Direction Diverges to North and South

STONY CREEK FLOW DIRECTION

TANK 1

TANK 2

TANK 3

Legend

- Proposed Background Sample
- Proposed Monitoring Well
- Proposed Surface Water/Sediment Sample
- Proposed Soil Boring
- Monitoring Wells
- Low Sump Point
- Property Boundary
- Tributary
- Drainage Swale
- Existing Aboveground AFFF Lines
- Existing Underground AFFF Lines
- Former Aboveground AFFF Lines (Removed)
- Site Boundary
- Buckeye Pipeline
- 10 ng/ GW Contour Inferred
- NYS_Tax_Parcels_Public_Footprint
- NYS_Tax_Parcels_Public
- 10 ng/l GW Contour

Note:
The locations of MW-73, MW-74, MW-75, MW-76, FW-1, FW-2. EW-1, and EW-2 need to be field verified before installation.

Feet
0 40 80 160 240 320 400

AFFF SYSTEM SOURCE: US ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS OMAHA DISTRICT JUNE 2012 (NOT FIELD VERIFIED)

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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DEFENSE FUEL SUPPLY POINT
VERONA

FIGURE 6
PROPOSED SAMPLING LOCATION PLAN

REMEDIAL INVESTIGATION
WORK PLAN

DESIGNED BY: CP
CHECKED BY: EB
APPROVED BY: EB
DRAWN BY: CP
SCALE: AS SHOWN
DATE: 6/11/2023

PROJECT No.: 14003.0008

TABLES

Table 1 - Well Gauging Data (May 1, 2023)
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

Monitoring Well	Date	TOW Elevation (ft.)	DTW from TOW (ft.)	Groundwater Elevation (ft.)
MW-2R	5/1/2023	500.926	5.56	495.37
MW-05	5/1/2023	488.518	13.50	475.02
MW-09	5/1/2023	488.714	12.94	475.77
MW-10R	5/1/2023	495.909	3.00	492.91
MW-13	5/1/2023	509.620	5.60	504.02
MW-24	5/1/2023	503.007	1.18	501.83
MW-27	5/1/2023	501.119	0.82	500.30
MW-29	5/1/2023	497.202	6.53	490.67
MW-30	5/1/2023	498.331	4.76	493.57
MW-32	5/1/2023	499.599	4.52	495.08
MW-33R	5/1/2023	502.156	3.99	498.17
MW-35	5/1/2023	504.860	2.83	502.03
MW-36	5/1/2023	501.524	3.61	497.91
MW-37	5/1/2023	502.141	4.21	497.93
MW-38	5/1/2023	502.677	4.87	497.81
MW-39	5/1/2023	-	3.91	-
MW-40	5/1/2023	495.763	2.62	493.14
MW-41	5/1/2023	482.944	7.78	475.16
MW-42	5/1/2023	482.800	6.64	476.16
MW-43	5/1/2023	484.553	11.30	473.25
MW-44	5/1/2023	470.402	3.22	467.18
MW-45	5/1/2023	472.096	3.61	468.49
MW-46	5/1/2023	476.560	3.44	473.12
MW-47	5/1/2023	485.746	5.92	479.83
MW-48	5/1/2023	495.534	2.87	492.66
MW-51	5/1/2023	504.947	4.10	500.85
MW-53	5/1/2023	503.595	3.40	500.20
MW-54	5/1/2023	486.496	Obstructed	-
MW-55	5/1/2023	488.993	3.16	485.83
MW-56	5/1/2023	469.727	3.23	466.50
MW-57	5/1/2023	468.216	3.3	464.92
MW-58	5/1/2023	456.774	Not Measured	-
MW-59	5/1/2023	463.105	2.64	460.47
MW-60	5/1/2023	459.160	2.45	456.03
MW-61	5/1/2023	-	Below Standing Water	-
MW-62	5/1/2023	456.565	Below Standing Water	-

Notes:
1. Elevations based on the NAD 1983 Central New York State Plane
2. TOW = Top of Monitoring Well
3. DTW = Depth to Water

Table 2: PFAS Compounds in Groundwater
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

Monitoring Well	Sample Designation	Date Collected	Units	Perfluorooctanesulfonic Acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorononanoic Acid (PFNA)	Perfluorobutanesulfonic Acid (PFBS)	Perfluorohexanesulfonic Acid (PFHxS)	Perfluorobutanoic Acid (PFBA)	Perfluoropentanoic Acid (PFPeA)	Perfluorohexanoic Acid (PFHxA)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUdA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTrDA)	Perfluorotetradecanoic Acid (PFTeDA)	Perfluoroheptanesulfonic Acid (PFHps)	Perfluorodecanesulfonic Acid (PFDS)	PFOSA	MeFOSAA	EtFOSAA	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate
	NYSDEC COC Guidance Values[14]		ng/l	2.7	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MW-2R*	1/10/2019	ng/l	**171**	**24**	36.2	5.23 J	2.46 J	14.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-2R (D)*	1/10/2019	ng/l	**144**	**20.4**	30.6	3.97 J	2.05 J	12.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-2R	11/5/2019	ng/l	**143**	**45.9**	99.8	4.39 J	7.51 J	4.46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-2R	MW-2R	10/30/2020	ng/l	**156**	**84.6**	240	6.8 J	25.3	107	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-2R	4/27/2021	ng/l	**159**	**32.3**	60.4	5.1 J	7.6 J	22.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-2R	10/28/2021	ng/l	**162**	**53.7**	128	5.5	32.1	81.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-2R	6/22/2022	ng/l	**187**	**37.1**	71.8	6.8	7.9	38.3	69.6	223	107	2.0 J	2.1 U	2.1 U	2.1 U	2.1 U	2.6 J	2.1 U	2.1 U	4.3 U	4.3 U	4.3 U	4.3 U
MW-3R	MW-3R	11/5/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	2.49 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	MW-4	11/6/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-5	11/6/2019	ng/l	**7.22 J**	**47.1**	118	4.67 J	3.8 U	4.46 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-5	10/30/2020	ng/l	**17.7**	**76.5**	156	8.1	4.0 U	7.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	MW-5	4/28/2021	ng/l	**8.7**	**100**	189	11.9	4.0 U	6.7 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-5	10/27/2021	ng/l	**7.8**	**63.3**	126	6.2	1.0 J	7.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-5	6/23/2022	ng/l	**8.6**	**103**	188	10.4	1.9 U	6.3	97.9	356	219	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	3.8 U	75.9	48.2 B
	MW-5	5/2/2023	ng/l	**4.9**	**76**	172	6.4	1.1 J	5	92	285	191	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.6 U	3.6 U	111	29.7
MW-7R	MW-7R*	1/9/2019	ng/l	**4.52 J**	4.0 U	4.0 U	4.0 U	4.0 U	6.65 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-7R	11/5/2019	ng/l	**3.37 J**	3.8 U	3.8 U	3.8 U	1.92 J	11.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8R	MW-8R	11/5/2019	ng/l	**3.8 U**	3.8 U	3.8 U	3.8 U	3.8 U	6.22 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-9	MW-9	11/6/2019	ng/l	**124**	**13.7**	25.8	3.8 U	47.1	108	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-10R	1/10/2019	ng/l	**1080**	**68.6**	74.2	4.0 U	330	778	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-10R	MW-10R	11/5/2019	ng/l	**978a**	**65.9**	62.6	3.8 U	297	835a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-10R	6/22/2022	ng/l	**868**	**36.6**	38.1	1.9 U	164	459	64.1	122	183	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	29.7	1.9 U	1.9 U	3.8 U	3.8 U	67.8	3.8 U
	MW-13*	1/8/2019	ng/l	**229**	5.49 J	4.32 J	3.8 U	10.7	78.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-13	11/5/2019	ng/l	**213**	**7.38 J**	5.02 J	3.8 U	9.58	85.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-13	10/30/2020	ng/l	**173**	4.2 J	4.1 J	4.0 U	11.8	76	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-13	MW-13	4/27/2021	ng/l	**117**	4.5 J	3.4 J	4.0 U	6.6 J	44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-13	10/28/2021	ng/l	**150**	**7.8**	6.3	1.9 U	6.5	55.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-13	6/22/2022	ng/l	**179**	**7.3**	4.0	1.9 U	5.4	47.8	8.0	10.0	9.5	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	4.0	1.9 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U
	MW-13	5/2/2023	ng/l	**108**	3.0 J	1.9 J	1.9 U	3.8	27.2	5.8 J	5.2	4.7	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.0 J	1.9 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U
MW-16R	MW-16R	11/5/2019	ng/l	**9.3**	3.8 U	3.8 U	3.8 U	3.8 U	2.45 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-23R	MW-23R	11/5/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-24	11/5/2019	ng/l	**22.6**	3.8 U	3.8 U	3.8 U	6.67 J	15.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-24	10/28/2021	ng/l	**7.6**	1.9 U	1.9 U	1.9 U	2.5 J	5.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-24	MW-24	6/22/2022	ng/l	**27**	3.1 J	2.9 J	1.9 U	5.8	14.5	16	17.6	13.6	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U
	MW-24	5/2/2023	ng/l	**15.6**	2.3 J	2.6 J	1.8 U	5.2	16.4	14.9	14.3	10.4	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.6 U	3.6 U	3.6 U	3.6 U
	MW-24 (D)	5/2/2023	ng/l	**18.8**	2.6 J	2.7 J	1.8 U	6	17.3	15.7	15.9	11.4	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.6 U	3.6 U	3.6 U	3.6 U
MW-25	MW-25	11/5/2019	ng/l	**3.77 J**	2.07 J	3.8 U	3.8 U	3.8 U	11.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-27	MW-27	11/5/2019	ng/l	**268**	**7.6 J**	15.5	3.8 U	6.47 J	94.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-29*	1/9/2019	ng/l	**6.27 J**	4.0 U	4.0 U	4.0 U	4.0 U	2.27 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-29 (D)*	1/9/2019	ng/l	**7.62 J**	4.0 U	4.0 U	4.0 U	4.0 U	2.48 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-29	11/6/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-29	MW-29	10/30/2020	ng/l	**3.8 J**	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-29	4/28/2021	ng/l	**5.8 J**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-29	10/28/2021	ng/l	**4.8**	1.1 J	1.8 J	1.9 U	2.3 J	4.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-29	6/22/2022	ng/l	**9**	2.1 J	3.0 J	1.9 U	4.1	7.8	10	20.3	12.2	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	3.8 U	9.4	3.8 U
	MW-29	5/2/2023	ng/l	**30.7**	3.9 J	4.8	2.0 U	4.7	10.7	12.7	26.8	16.4	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	1.3 J	2.0 U	2.0 U	4.1 U	4.1 U	16.9	2.3 J
	MW-30*	1/9/2019	ng/l	**637**	**50.1**	50.1	3.59 J	14.8	255	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-30	11/6/2019	ng/l	**405**	**35.8**	61.2	2.58 J	15.6	350	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-30	10/30/2020	ng/l	**1690**	**121**	241	13.1	56.2	1010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-30	MW-30	4/27/2021	ng/l	**510**	**22.3**	31.8	2.9 J	11.5	231	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-30	10/28/2021	ng/l	**621**	**53.8**	81.6	5	20.3	433	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-30	6/22/2022	ng/l	**432**	**26.4**	46.0	2.7 J	15.2	278	52.9	236	153	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	11.5	1.9 U	1.9 U	3.8 U	3.8 U	177	3.8 U
	MW-30	5/2/2023	ng/l	**423**	**14.2**	19.8	2.0 J	8.6	167	15.6	71	56	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	8.3	1.8 U	1.8 U	3.6 U	3.6 U	51.5	1.9 J
MW-31	MW-31	1/9/2019	ng/l	**13.5**	3.8 U	3.8 U	3.8 U	2.56 J	11.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-31	11/6/2019	ng/l	**98.1**	4.99 J	4.94 J	3.8 U	6.91 J	44.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-32*	1/9/2019	ng/l	**647**	**109**	324	25.2	23	277	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-32	11/6/2019	ng/l	**378**	**66.5**	164	19.6	15	232	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-32	MW-32	4/28/2021	ng/l	**273**	**36**	92.5	7.0 J	15.1	225	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-32	10/28/2021	ng/l	**361**	**42.4**	119	9.2	13.3	298	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-32 (D)	10/28/2021	ng/l	**449**	**65.4**	191	14.9	15.5	323	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-32	6/22/2022	ng/l	**325**	**72.2**	187	14.4	14.8	209	144	700	330	1.6 J	1.9 U	1.9 U	1.9 U	1.9 U	6.9	1.9 U	1.9 U	3.8 U	3.8 U	249	27.7
	MW-33*	1/9/2019	ng/l	**5560**	**425**	539	154	46.5	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-33	11/7/2019	ng/l	**4500**[a]	**336**	487	116	41.9	662	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-33 (D)	11/7/2019	ng/l	**4730**[a]	**347**	499	118	44	691	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-33R	10/30/2020	ng/l	**19**	2.0 J	4.0 U	4.0 U	4.0 U	5.0 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-33/MW-33R	MW-33R	4/27/2021	ng/l	**599**	**42.3**	104	6.9 J	31.2	107	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-33R (D)	4/27/2021	ng/l	**610**	**42.8**	104	7.1 J	28.5	107	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-33R	10/28/2021	ng/l	**1010**	**59.1**	121	9.1	26.5	156	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-33R	6/23/2022	ng/l	**675**	**43**	62.9	5.9	24.6	95.2	143	404	170	2.4 J	1.9 U	1.9 U	1.9 U	1.9 U	11	1.9 U	1.9 U	3.8 U	3.8 U	708 J	21.8
	MW-33R	5/2/2023	ng/l	**835**	**70.9**	82.1	11.2	15.6	112	62.0 J	431	211	5.5	1.8 U	1.8 U	1.8 U	1.8 U	45.0 U	9.8	1.8 U	45.0 U	3.6 U	3.6 U	684 J	38.8

Table 2: PFAS Compounds in Groundwater
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

Monitoring Well	Sample Designation	Date Collected	Units	Perfluorooctanesulfonic Acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorononanoic Acid (PFNA)	Perfluorobutanesulfonic Acid (PFBS)	Perfluorohexanesulfonic Acid (PFHxS)	Perfluorobutanoic Acid (PFBA)	Perfluoropentanoic Acid (PFPeA)	Perfluorohexanoic Acid (PFHxA)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUdA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTrDA)	Perfluorotetradecanoic Acid (PFTeDA)	Perfluoroheptanesulfonic Acid (PFHps)	Perfluorodecanesulfonic Acid (PFDS)	PFOSA	MeFOSAA	EtFOSAA	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate
	NYSDEC COC Guidance Values[14]		ng/l	2.7	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-34	MW-34*	1/9/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-34	11/6/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-34 (D)	11/6/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-35	MW-35*	1/9/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-35	11/7/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-35	10/30/2020	ng/l	5.5 J	4.0 U	4.0 U	4.0 U	4.0 U	2.7 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-35	4/27/2021	ng/l	4.0 U[b]	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-35	10/28/2021	ng/l	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-35	6/21/2022	ng/l	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.3	1.1	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U
	MW-35	5/1/2023	ng/l	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	2.5 J	1.5 J	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.7 U	3.7 U	3.7 U	3.7 U
MW-36	MW-36*	1/9/2019	ng/l	2030	25.5	16.1	3.8 U	67.9	255	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-36	11/5/2019	ng/l	6070[a]	77.4	41.6	3.8 U	187	678	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-36	10/30/2020	ng/l	4100	83.1	31.8	4.0 U	169	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-36 (D)	10/30/2020	ng/l	7660	123	62.7	4.0 U	297	1040	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-36	4/27/2021	ng/l	13600	156	81.9	2.7 J	335	1480	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-36 (D)	4/27/2021	ng/l	14700	146	76.6	2.6 J	309	1580	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-36	10/28/2021	ng/l	3080	48.2	23.9	1.9 U	121	332	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-36	6/22/2022	ng/l	3690	44.6	26	1.9 U	134	356	49.3	72.7	158	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	78.4	1.9 U	4	3.8 U	3.8 U	117	3.8 U
	MW-36	5/2/2023	ng/l	5110	55.7	34.3	1.0 J	142	520	53.5 J	83.7	189	1.8 U	45.0 U	45.0 U	45.0 U	45.0 U	78.4 J	45.0 U	10.5	3.6 U	91.0 U	169	3.3 J
	MW-36 (D)	5/2/2023	ng/l	5460	56.7	34.5	0.96 J	152	526	53.5 J	86.2	192	1.8 U	45.0 U	1.8 U	1.8 U	45.0 U	96.8	45.0 U	10.5	3.6 U	3.6 U	167	3.5 J
MW-37	MW-37*	1/9/2019	ng/l	2360	320	655	16.7	450	3770	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-37	11/7/2019	ng/l	7360[a]	415	975[a]	37.7	368	4580[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-37 (D)	11/7/2019	ng/l	6540a	386	908a	34.5	334	4350a	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-37	6/22/2022	ng/l	2940	293	709	30.7	142	2930	486	2190	2150	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	267	1.9 U	1.9 U	3.8 U	3.8 U	2910	8.5
	MW-37 (D)	6/22/2022	ng/l	4630	292	631	0.0285	143	2600	442	3790	1930	1.9 U	1.9 U	1.9 U	1.9 U	94.0 U	184	1.9 U	1.9 U	3.8 U	3.8 U	4410	7.0 J
MW-38	MW-38	11/7/2019	ng/l	84.6	10.1	28.1	3.8 U	103	103	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-38	10/30/2020	ng/l	75.6	13.3	31.2	4.0 U	120	146	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-38	4/27/2021	ng/l	70	12.7	26.8	4.0 U	89.2	135	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-38	10/28/2021	ng/l	40.9	9.2	32.3	1.9 U	143	112	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-38	6/23/2022	ng/l	49.9	10.5	28	1.9 U	95.6	115	144	671	212	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	4.1	1.9 U	1.9 U	3.8 U	3.8 U	51.7	3.8 U
	MW-38	5/2/2023	ng/l	43.3	10.3	30.0	2.1 U	102	118	174	834	246	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	4.0 J	2.1 U	2.1 U	4.3 U	4.3 U	61.3	4.3 U
MW-39	MW-39	11/7/2019	ng/l	1630[a]	67	130	12.3	55.9	1250[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-39	4/27/2021	ng/l	929	47.6	100	5.0 J	45.2	900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-39	10/28/2021	ng/l	1310	81.9	177	8.5	70.7	1430	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-39	6/22/2022	ng/l	1130	52	68.7	5.4	52.9	1030	46.5	260	174	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	73.3	1.9 U	1.9 U	3.7 U	3.7 U	41.5	3.7 U
	MW-39	5/1/2023	ng/l	1150	42.0	69.8	4.9	41.8	876	56.7	304	194	1.8 U	9.1 U	9.1 U	9.1 U	9.1 U	53.8	9.1 U	9.1 U	18 U	18 U	19.6	3.6 U
MW-40	MW-40	11/7/2019	ng/l	2640[a]	193	449	25.4	86.1	1540[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-40	10/29/2020	ng/l	2620	224	446	26.8	88.6	1590	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-40 (D)	10/29/2020	ng/l	3590	293	641	37.4	123	2480	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-40	4/27/2021	ng/l	2730	238	496	32.1	107	1630	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-40	10/28/2021	ng/l	3090	251	507	34.5	91.8	1860	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-40	6/22/2022	ng/l	3820	202	268	34.4	81.5	1640	272	1940	955	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	172	1.9 U	1.9 U	3.8 U	3.8 U	1000	3.1 J
	MW-40	5/1/2023	ng/l	3050	216	410	31.1	89.9	1940	379	2200	1090	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	127	2.0 U	2.0 U	3.9 U	3.9 U	1020	3.9 U
MW-41	MW-41	11/6/2019	ng/l	4020[a]	107	166	16	41	1290[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-41	10/30/2020	ng/l	6140	175	281	27.3	66.9	1560	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-41 (D)	10/30/2020	ng/l	5420	176	264	2639	68.6	1560	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-41	4/26/2021	ng/l	3140	117	192	14.3	45.6	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-41	10/28/2021	ng/l	4110	135	201	21.5	60.3	1290	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-41 (D)	10/28/2021	ng/l	3970	129	193	21	58.1	1350	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-41	6/23/2022	ng/l	2700	115	162	17.4	51	1160	156	739	441	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	112	1.9 U	14.8	3.8 U	3.8 U	574	10.3
	MW-41	5/2/2023	ng/l	2990	101	169	15.8	46.2	1130	167	766	447	1.8 U	36 U	1.8 U	1.8 U	36 U	49.9 J	36 U	17.1	3.6 U	3.6 U	351	9.1
MW-42	MW-42	11/6/2019	ng/l	1460[a]	107	145	3.62 J	257	1510[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-42	10/30/2020	ng/l	1910	135	175	5.3 J	321	1770	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-42	4/26/2021	ng/l	1650	115	132	4.5 J	274	1400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-42	10/28/2021	ng/l	2080	120	135	5.4	280	1640	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-42	6/23/2022	ng/l	1660	94.3	108	4.5	196	1240	151	589	484	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	110	1.9 U	1.9 U	3.8 U	3.8 U	390	3.8 U
	MW-42	5/2/2023	ng/l	1660	108	121	4.7	249	1140	176	557	521	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	99.3	1.8 U	1.8 U	3.6 U	3.6 U	345	3.6 U
MW-43	MW-43	11/6/2019	ng/l	810[a]	33.1	55.9	3.23 J	32.8	291	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-43	10/30/2020	ng/l	665	33.9	47.9	3.4 J	38.3	281	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-43	4/26/2021	ng/l	455	32	57.1	2.7 J	55.5	357	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-43	10/27/2021	ng/l	2830	362	506	24.6	224	1980	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-43	6/23/2022	ng/l	473	27.6	45	2.4 J	31.7	232	60.9	216	147	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	9.7	0.98 J	1.5 J	3.8 U	3.8 U	144	8.9
	MW-43	5/2/2023	ng/l	968	88.9	130.0	8.7	76.9	474	154	615	405	3.1 J	2.3 U	2.3 U	2.3 U	2.3 U	22.1	2.3 U	2.3 U	4.5 U	4.5 U	581 J	46.3
MW-44	MW-44	1/8/2020	ng/l	3110[a]	69.6	85.5	13.4	56.8	739[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-44	10/29/2020	ng/l	3860	75.4	102	11.1	95.2	794	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-44	4/26/2021	ng/l	2760	71.1	108	12	89.1	1060	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-44	10/27/2021	ng/l	4000	102	142	16	103	1300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-44	6/22/2022	ng/l	3270	82.1	83.9	14.3	60	780	94	333	253	1.4 J	1.9 U	1.9 U	1.9 U	1.9 U	81.9	1.9 U	1.9 U	3.8 U	3.8 U	295	10.1
	MW-44	5/2/2023	ng/l	5390	79.4	111	13.1	78.5	1070	126	461	337	1.2 J	1.9 U	1.9 U	1.9 U	1.9 U	47	1.9 U	1.9 U	3.8 U	3.8 U	154	8.4

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DFSP Verona
Verona, NY

Monitoring Well	Sample Designation	Date Collected	Units	Perfluorooctanesulfonic Acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorononanoic Acid (PFNA)	Perfluorobutanesulfonic Acid (PFBS)	Perfluorohexanesulfonic Acid (PFHxS)	Perfluorobutanoic Acid (PFBA)	Perfluoropentanoic Acid (PFPeA)	Perfluorohexanoic Acid (PFHxA)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUdA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTrDA)	Perfluorotetradecanoic Acid (PFTeDA)	Perfluoroheptanesulfonic Acid (PFHps)	Perfluorodecanesulfonic Acid (PFDS)	PFOSA	MeFOSAA	EtFOSAA	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate
	NYSDEC COC Guidance Values[14]		ng/l	2.7	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-45	MW-45	1/8/2020	ng/l	**98.3**	**20.2**	40.6	2.0 J	76.9	490	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-45	10/29/2020	ng/l	**239**	**24**	45.4	4.0 U	48.7	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-45	4/26/2021	ng/l	**205**	**18.7**	35.1	4.0 U	61.1	432	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-45	10/28/2021	ng/l	**346**	**28.2**	54.3	1.6 J	65.8	442	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-45	6/23/2022	ng/l	**310**	**23.3**	45.4	2.2 U	60.4	413	56.7	229	175	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	11.3	2.2 U	2.2 U	4.4 U	4.4 U	44.5	4.4 U
	MW-45	5/3/2023	ng/l	**217**	**19.1**	33.8	2.0 U	54.7	376	47.7	176	126	2.0 U	2.0 U	2.0 U	2.0 U	9.8 U	10	2.0 U	2.0 U	3.9 U	3.9 U	13.9	3.9 U
MW-46	MW-46	1/8/2020	ng/l	**13600**[a]	**166**	289	21.3	97.9	6050[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-46	10/29/2020	ng/l	**6800**	**115**	202	10.4	145	2100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-46	4/26/2021	ng/l	**14000**	**202**	356	29.5	184	7690	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-46	10/28/2021	ng/l	**14900**	**236**	234 J	150 Ub	126	6540	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-46	6/23/2022	ng/l	**11200**	**144**	233	23.6	83.4	4420	236	1020	555	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	205	2.2 U	3.6 J	4.4 U	4.4 U	193	4.4 U
	MW-46	5/3/2023	ng/l	**14600**	**198**	290	33.3 J	114	5760	289	1360	737	1.1 J	2.0 U	2.0 U	2.0 U	2.0 U	228	2.0 U	2.0 U	4.1 U	4.1 U	170	4.1 U
MW-47	MW-47	1/9/2020	ng/l	**679**	**78.9**	206	3.5 J	36.0	540	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-47	10/29/2020	ng/l	**1770**	**158**	335	19.3	60.3	913	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-47	4/27/2021	ng/l	**852**	**77.7**	160	5.8 J	37.2	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-47	10/29/2021	ng/l	**637**	**63**	141	4.1	33.4	401	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-47	5/2/2023	ng/l	**408**	**35.2**	75.6	2.4 J	23.8	273	74.5	351	200	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	16	1.8 U	1.8 U	3.6 U	3.6 U	3.2 J	3.6 U
MW-48	MW-48	1/9/2020	ng/l	**7.0 J**	**32.3**	136	3.8 U	83.0	246	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-48 (D)	1/9/2020	ng/l	**3.0 J**	**31.8**	139	3.8 U	81.0	254	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-48	10/29/2020	ng/l	**10.5**	**44.9**	154	4.0 U	85.1	325	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-48	4/26/2021	ng/l	**3.9 J**	**45.2**	138	4.4 U	69.2	230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-48	10/28/2021	ng/l	**2.7 J**	**39.6**	115	1.9 U	64.2	293	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-48	6/22/2022	ng/l	2.3 J	**62.2**	184	2.2 U	76.9	338	167	866	528	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	4.7	2.2 U	2.2 U	4.4 U	4.4 U	22.8	4.4 U
	MW-48	5/1/2023	ng/l	**5.2 J**	**50.2**	146	2.1 U	62.5	256	141	646	414	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	4.5	2.1 U	2.1 U	4.2 U	4.2 U	22	4.2 U
MW-50	MW-50	1/8/2020	ng/l	**111**	**61.2**	234	3.8 U	13.6	260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-50	6/23/2022	ng/l	**196**	**67.2**	175	2.4 J	9.7	208	146	592	230	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	8.8	1.9 U	1.9 U	3.8 U	3.8 U	34.1	3.8 U
MW-51	MW-51	1/8/2020	ng/l	**2620**[a]	**88.5**	100	14.9	26.8	899[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-51	10/30/2020	ng/l	**2150**	**180**	227	20.5	50.3	1330	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-51	4/27/2021	ng/l	**2850**	**123**	98.6	22.3	31.9	1110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-51	10/28/2021	ng/l	**3280**	**146**	153	20.9	48.3	1290	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-51	6/22/2022	ng/l	**4230**	**117**	113	17.4	37.8	766	104	519	342	23.2	2.1 J	4.7	1.9 U	1.9 U	34.1	32.4	271	3.8 U	3.8 U	638	285
	MW-51	5/3/2023	ng/l	**5200**	**152**	143	27.7	28.1	2000	113	743	446	8.8	0.91 J	1.7 J	1.8 U	1.8 U	62.6	3.5 J	54.7	3.6 U	3.6 U	353	73.5
MW-52	MW-52	1/9/2020	ng/l	**7.0 J**	2.9 J	2.1 J	3.8 U	4.4 J	15.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-53	MW-53	1/8/2020	ng/l	**4.4 J**	3.8 U	3.8 U	3.8 U	3.8 U	2.4 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-53	10/29/2020	ng/l	**5.1 J**	4.2 U	4.2 U	4.2 U	4.2 U	3.6 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-53	4/28/2021	ng/l	**8**	4.0 U	2.4 J	4.0 U	4.0 U	3.6 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-53	10/28/2021	ng/l	**3.2 J**	1.9 U	1.9 U	1.9 U	1.9 U	2.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-53	5/2/2023	ng/l	**4.9**	1.9 U	1.9 U	1.9 U	1.9 U	1.9 J	3.3 J	1.6 J	1.2 J	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U
MW-54	MW-54	4/28/2021	ng/l	4.0 U[b]	4.0 U	4.0 U	4.0 U	5.5 J	3.7 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-54	6/23/2022	ng/l	**93.6**	2.4 U	1.7 J	2.4 U	4.6 J	12.2	7.8 J	15	7	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	4.8 U	4.8 U	4.8 U	4.8 U
	MW-54	5/3/2023	ng/l	2.0 U	2.0 U	2.0 U	2.0 U	4.2	5.4	6.3 J	9.1	4.2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.9 U	3.9 U	3.9 U	3.9 U
MW-55	MW-55	4/28/2021	ng/l	**10.5**	2.8 J	10	4.4 U	16.3	50.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-55	10/28/2021	ng/l	**9.8**	5.1	19.6	1.9 U	19.2	54.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-55	5/2/2023	ng/l	**8.6**	1.4 J	7.4	2.2 U	11.3	37.1	26.8	128	57.4	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	4.3U	4.3U	4.3U	4.3U
MW-56	MW-56	10/29/2020	ng/l	**226**	**72.9**	286	10.3	31.9	393	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-56	4/26/2021	ng/l	**187**	**59.4**	239	8.3	23.5	355	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-56	10/28/2021	ng/l	**13.4**	**3.7 J**	8	1.9 U	2.9 J	7.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-56	5/3/2023	ng/l	**136**	**51.6**	199	5.7	14.6	260	276	891	364	2.0 U	2.0 U	2.0 U	2.0 U	9.8 U	9.7	2.0 U	2.0 U	3.9 U	3.9 U	127	3.9 U
MW-57	MW-57	5/3/2023	ng/l	2.2 U	2.2 U	7.9	2.2 U	2.2 U	8.4	14.7	21.6	13	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
MW-58	MW-58	7/21/2020	ng/l	**7.2 J**	**9.1**	32.3	4.2 U	50.9	262	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-58	4/26/2021	ng/l	**29.7**	3.4 J	7.7 J	4.0 U	17.5	87.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-59	MW-59	10/27/2021	ng/l	1.8 J	1.5 J	3.2 J	1.9 U	5.6	13.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-59	6/22/2022	ng/l	**5.5**	2.2 U	2.2 J	2.2 U	4.9	15.1	5.4 J	6.9	4.2 J	2.2 U	2.2 U	2.2 U	2.2 U	11.0 U	2.2 U	2.2 U	2.2 U	4.4 U	4.4 U	4.4 U	4.4 U
	MW-59	5/1/2023	ng/l	1.1 J	2.0 U	1.9 J	2.0 U	3.5 J	10.7	4.9 J	6.1	4.2	2.0 U	2.0 U	2.0 U	2.0 U	1.9 U	2.0 U	2.0 U	2.0 U	4.1 U	4.1 U	4.1 U	4.1 U
MW-60	MW-60	7/21/2020	ng/l	4.5 U[b]	2.8 J	4.5 U	4.5 U	4.5 U	4.6 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-60	4/26/2021	ng/l	**4.9 J**	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-60	10/27/2021	ng/l	2.0 J	1.1 J	1.9 U	1.9 U	1.2 J	4.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-60	6/22/2022	ng/l	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.7 J	5.0 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	13 U	2.5U	2.5 U	13 U	5.0 U	5.0 U	5.0 U	5.0 U
	MW-60	5/1/2023	ng/l	1.5 J	2.0 U	2.0 U	2.0 U	2.0 U	2.7 J	4.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	4.0 U	4.0 U	4.0 U	4.0 U
MW-61	MW-61	7/21/2020	ng/l	**4.8 J**	4.5 U	3.6 J	4.5 U	16	12.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW-61	04/2021	ng/l	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-62	MW-62	04/2021	ng/l	NS	NS	NS	NS	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 2: PFAS Compounds in Groundwater
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

			Units	Perfluorooctanesulfonic Acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluoroheptanoic Acid (PFHpA)	Perfluorononanoic Acid (PFNA)	Perfluorobutanesulfonic Acid (PFBS)	Perfluorohexanesulfonic Acid (PFHxS)	Perfluorobutanoic Acid (PFBA)	Perfluoropentanoic Acid (PFPeA)	Perfluorohexanoic Acid (PFHxA)	Perfluorodecanoic Acid (PFDA)	Perfluoroundecanoic Acid (PFUdA)	Perfluorododecanoic Acid (PFDoA)	Perfluorotridecanoic Acid (PFTrDA)	Perfluorotetradecanoic Acid (PFTeDA)	Perfluoroheptanesulfonic Acid (PFHps)	Perfluorodecanesulfonic Acid (PFDS)	PFOSA	MeFOSAA	EtFOSAA	6:2 Fluorotelomer sulfonate	8:2 Fluorotelomer sulfonate
	NYSDEC COC Guidance Values[14]		ng/l	2.7	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitoring Well	**Sample Designation**	**Date Collected**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quality Control	E/MW-01	1/10/2019	ng/l	4.2 U[b]	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	FB/FBD-01	1/10/2019	ng/l	4.0 U[b]	4.0 U	4.0 U	4.0 U	4.0 U	4.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10-17-19 Equipment QC	10/17/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	11072019 EQUIPMENT BLANK	11/7/2019	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	121919 E/MW-01 (GW)	12/19/2019	ng/l	4 U[b]	4 U	4 U	4 U	4 U	4 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	01-09-2020 FB/FBD-01	1/9/2020	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	01-09-2020 E/MW-01 (GW)	1/9/2020	ng/l	3.8 U[b]	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	FIELD BLANK	10/30/2020	ng/l	4.2 U[b]	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	FIELD BLANK	6/23/2022	ng/l	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.1 J	3.8 U	3.8 U	3.8 U	3.8 U
	EQUIPMENT BLANK	10/30/2020	ng/l	4.2 U[b]	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	EQUIPMENT BLANK	4/26/2021	ng/l	4.0 U[b]	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	EQUIPMENT BLANK	10/28/2021	ng/l	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	EQUIPMENT BLANK	6/23/2022	ng/l	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U	3.8 U	3.8 U	3.8 U	3.8 U
	EQUIPMENT BLANK	5/3/2023	ng/l	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.6 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	3.6 U	3.6 U	3.6 U	3.6 U

Notes:

1. ng/l - nanograms per liter
2. U - Undetected at the Limit of Detection
3. J - Lab estimated Value
4. [a] - Result is from sample analysis run #2
5. (D) = duplicate sample
6. NS=Not Sampled
7. **Shaded and bolded concentrations indicating result exceeds the NYSDEC's COC Guidance Values for PFAS**
8. Samples analyzed by Method: MS Semi-volatiles (EPA 537M QSM5.1 B-15)
9. 10-17-19 Equipment QC, 121919 E/MW-01 (GW), 11072019 EQUIPMENT BLANK, 01-09-2020 E/MW-01 (GW), EQUIPMENT BLANK are equipment blank samples
10. 01-09-2020 FB/FBD-01, FIELD BLANK are field blank samples
11. COC - Contaminant of Concern
12. [b] - Lab detection limit above NYSDEC Screening Level
13. NA - Sample not analyzed for the compound
14. Taken from NYSDEC Sampling, Analysis, and Assessment of Per-and Polyfluoroalkyl Substances (PFAS) (April 2023)

Table 3 - Sample & Analysis Plan
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

				Sample Matrix/Laboratory Anaylsis						Construction	
Sample Location Designation	**Existing, Proposed, QA/QC**	**Location**	**Rationale**	**Sediment PFAS**	**Sediment TOC**	**Surface Water/PFAS**	**Soil PFAS**	**Soil TOC**	**Groundwater/PFAS**	**Boring/Well Depth (ft. bgs.)**	**Screen Length (ft.)**
MW-2R	Existing	see Site Plan	PFAS monitoring						1	6	3
MW-5	Existing	see Site Plan	PFAS monitoring						1	6	3
MW-9	Existing	see Site Plan	PFAS monitoring						1	6	3
MW-10R	Existing	see Site Plan	PFAS monitoring						1	15	10
MW-13	Existing	see Site Plan	PFAS monitoring						1	15	10
MW-24	Existing	see Site Plan	PFAS monitoring						1	15	10
MW-27	Existing	see Site Plan	PFAS monitoring						1	15	10
MW-29	Existing	see Site Plan	PFAS monitoring						1	15	10
MW-30	Existing	see Site Plan	PFAS monitoring						1	16	10
MW-32	Existing	see Site Plan	PFAS monitoring						1	15	10
MW-33R	Existing	see Site Plan	PFAS monitoring						1	10	8
MW-35	Existing	see Site Plan	PFAS monitoring						1	10	8
MW-36	Existing	see Site Plan	PFAS monitoring						1	10	8
MW-37	Existing	see Site Plan	PFAS monitoring						1	10	8
MW-38	Existing	see Site Plan	PFAS monitoring						1	10	8
MW-39	Existing	see Site Plan	PFAS monitoring						1		
MW-40	Existing	see Site Plan	PFAS monitoring						1		
MW-41	Existing	see Site Plan	PFAS monitoring						1		
MW-42	Existing	see Site Plan	PFAS monitoring						1		
MW-43	Existing	see Site Plan	PFAS monitoring						1		
MW-44	Existing	see Site Plan	PFAS monitoring						1		
MW-45	Existing	see Site Plan	PFAS monitoring						1		
MW-46	Existing	see Site Plan	PFAS monitoring						1		
MW-47	Existing	see Site Plan	PFAS monitoring						1		
MW-48	Existing	see Site Plan	PFAS monitoring						1		
MW-50	Existing	see Site Plan	PFAS monitoring						1		
MW-51	Existing	see Site Plan	PFAS monitoring						1		
MW-53	Existing	see Site Plan	PFAS monitoring						1		
MW-55	Existing	see Site Plan	PFAS monitoring						1		
MW-56	Existing	see Site Plan	PFAS monitoring						1		
MW-57	Existing	see Site Plan	PFAS monitoring						1		
MW-59	Existing	see Site Plan	PFAS monitoring						1		
MW-60	Existing	see Site Plan	PFAS monitoring						1		
MW-63	Proposed	southwest of MW-57	MW-57 sits on top of bedrock and is usually dry, this well will improve delineation to the southwest						1	6	3
MW-64	Proposed	between MW-44 and MW-56	MW-44 and MW-56 are over 100' apart						1	6	3
MW-65	Proposed	north of existing well MW-55	MW-55 contains low levels of PFAS in groundwater, this well increases delineation to the northwest						1	6	3
MW-66	Proposed	next to existing well MW-54	MW-54 is obstructed and difficult to sample						1	15	10
MW-67	Proposed	north of MW-54	improves downgradient delineation to the northwest, replaces MW-49						1	15	10
MW-68	Proposed	north o MW-48	improves downgradient delineation to the northwest						1	15	10
MW-69	Proposed	next to existing well MW-49	MW-49 is obstructed and difficult to sample						1	15	10
MW-70	Proposed	north of well MW-49	improves downgradient delineation to the northwest						1	15	10
MW-71	Proposed	across West Main Street near front gate	investigates gw upgradient of the facility						1	16	10
MW-72	Proposed	southeast of MW-5	improves delineation to the southwest						1	15	10
MW-73	Proposed	on CSX property	wetlands wells are often under standing water, this provides better downgradient delineation						1	10	8
MW-74	Proposed	on CSX property	wetlands wells are often under standing water, this provides better downgradient delineation						1	10	8

Table 3 - Sample & Analysis Plan
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

				Sample Matrix/Laboratory Anaylsis						Construction	
Sample Location Designation	**Existing, Proposed, QA/QC**	**Location**	**Rationale**	**Sediment PFAS**	**Sediment TOC**	**Surface Water/PFAS**	**Soil PFAS**	**Soil TOC**	**Groundwater/PFAS**	**Boring/Well Depth (ft. bgs.)**	**Screen Length (ft.)**
MW-75	Proposed	on CSX property	wetlands wells are often under standing water, this provides better downgradient delineation						1	10	8
MW-76	Proposed	on CSX property	wetlands wells are often under standing water, this provides better downgradient delineation						1	10	8
MW-77	Proposed	downgradient of truck loading rack	at request of NYSDEC						1	10	8
UT-1	Proposed	Unnamed Tributary	surface water and sediment sample from tributary flowing southwest	1	1	1					
UT-2	Proposed	Unnamed Tributary	surface water and sediment sample from tributary flowing southwest	1	1	1					
UT-3	Proposed	Unnamed Tributary	surface water and sediment sample from tributary flowing southwest	1	1	1					
UT-4	Proposed	Unnamed Tributary	surface water and sediment sample from tributary flowing southwest	1	1	1					
UT-5	Proposed	Unnamed Tributary	surface water and sediment sample from tributary flowing southwest	1	1	1					
UT-6	Proposed	Unnamed Tributary	surface water and sediment sample from tributary flowing northeast	1	1	1					
EW-1	Proposed	Emergent Wetland	surface water and sediment sample from Emergent Wetland	1	1	1					
EW-2	Proposed	Emergent Wetland	surface water and sediment sample from Emergent Wetland	1	1	1					
FW-1	Proposed	Forested Wetland	surface water and sediment sample from Forrested Wetland	1	1	1					
FW-2	Proposed	Forested Wetland	surface water and sediment sample from Forrested Wetland	1	1	1					
SC-3	Proposed	Stony Creek	upstream surface water and sediment sample from Stony Creek	1	1	1					
SC-4	Proposed	Stony Creek	downstream surface water and sediment sample from Stony Creek	1	1	1					
SC-5	Proposed	Stony Creek	downstream surface water and sediment sample from Stony Creek, shown on Figure 1, requested by NYSDEC	1	1	1					
BP-1	Proposed	Unnamed Tributary	surface water and sediment sample from Unnamed Tributary from Buckeye Pipeline property	1	1	1					
A-1	Proposed	Transect A	investigate soil along the ditch that carried stormwater from Tank 3 berm toward wetland (0-6" and 6-24")				2	1			
A-2	Proposed	Transect A	investigate soil along the ditch that carried stormwater from Tank 3 berm toward wetland (0-2" and 6-24")				2	1			
A-3	Proposed	Transect A	investigate soil along the ditch that carried stormwater from Tank 3 berm toward wetland (0-6" and 6-24")				2				
A-4	Proposed	Transect A	investigate soil along the ditch that carried stormwater from Tank 3 berm toward wetland (0-2" and 6-24")				2				
B-1	Proposed	Transect B	investigate soil along the ditch that carried stormwater from Tank 4 berm toward wetland (0-2" and 6-24")				2	1			
B-2	Proposed	Transect B	investigate soil along the ditch that carried stormwater from Tank 4 berm toward wetland (0-6" and 6-24")				2				
B-3	Proposed	Transect B	investigate soil along the ditch that carried stormwater from Tank 4 berm toward wetland (0-2" and 6-24")				2	1			
B-4	Proposed	Transect B	investigate soil along the ditch that carried stormwater from Tank 4 berm toward wetland (0-6" and 6-24")				2				

Table 3 - Sample & Analysis Plan
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

				Sample Matrix/Laboratory Anaylsis						Construction	
Sample Location Designation	**Existing, Proposed, QA/QC**	**Location**	**Rationale**	**Sediment PFAS**	**Sediment TOC**	**Surface Water/PFAS**	**Soil PFAS**	**Soil TOC**	**Groundwater/PFAS**	**Boring/Well Depth (ft. bgs.)**	**Screen Length (ft.)**
C-1	Proposed	Transect C	investigate soil along the ditch adjacent to the service road and former Tank 4 berm (0-2" and 6-24")				2				
C-2	Proposed	Transect C	investigate soil along the ditch adjacent to the service road and former Tank 4 berm (0-6" and 6-24")				2				
C-3	Proposed	Transect C	investigate soil along the ditch adjacent to the service road and former Tank 4 berm (0-2" and 6-24")				2				
C-4	Proposed	Transect C	investigate soil along the ditch adjacent to the service road and former Tank 4 berm (0-6" and 6-24")				2				
C-5	Proposed	Transect C	investigate soil along the ditch adjacent to the service road and former Tank 4 berm (0-2" and 6-24")				2				
D-1	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-6" and 6-24")				2	1			
D-2	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-2" and 6-24")				2				
D-3	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-6" and 6-24")				2				
D-4	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-6" and 6-24")				2	1			
D-5	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-2" and 6-24")				2				
D-6	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-6" and 6-24")				2				
D-7	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-6" and 6-24")				2				
D-8	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-2" and 6-24")				2				
D-9	Proposed	Transect D	investigate soil along the ditch adjacent to the service road and the grassy area (0-6" and 6-24")				2				
E-1	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-2" and 6-24")				2	1			
E-2	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-6" and 6-24")				2				
E-3	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-6" and 6-24")				2				
E-4	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-2" and 6-24")				2				
E-5	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-6" and 6-24")				2	1			
E-6	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-2" and 6-24")				2				
E-7	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-6" and 6-24")				2				
E-8	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-2" and 6-24")				2				
E-9	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-6" and 6-24")				2				
E-10	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-2" and 6-24")				2				

Table 3 - Sample & Analysis Plan
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

				Sample Matrix/Laboratory Anaylsis						Construction	
Sample Location Designation	**Existing, Proposed, QA/QC**	**Location**	**Rationale**	**Sediment PFAS**	**Sediment TOC**	**Surface Water/PFAS**	**Soil PFAS**	**Soil TOC**	**Groundwater/PFAS**	**Boring/Well Depth (ft. bgs.)**	**Screen Length (ft.)**
E-11	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-6" and 6-24")				2				
E-12	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-6" and 6-24")				2				
E-13	Proposed	Transect E	investigate soil along the grassy ditch located north of the loading rack (0-2" and 6-24")				2				
F-1	Proposed	Transect F	investigate soil downslope of the Interm Measure (0-6" and 6-24")				2	1			
F-2	Proposed	Transect F	investigate soil downslope of the Interm Measure (0-6" and 6-24")				2				
F-3	Proposed	Transect F	investigate soil downslope of the Interm Measure (0-6" and 6-24")				2				
F-4	Proposed	Transect F	investigate soil downslope of the Interm Measure (0-6" and 6-24")				2				
TR-1	Proposed		investigate soil downslope of the Truck Rack (0-2" and 6-24")				2				
TR-2	Proposed		investigate soil downslope of the Truck Rack (0-6" and 6-24")				2				
TR-3	Proposed		investigate soil downslope of the Truck Rack (0-6" and 6-24")				2				
NQ-1	Proposed	NPDES discharge point former oil/water seperator	investigate soil in the area of the discharge point for the former oil/water seperator (0-6" and 6-24")				2	1			
NQ-2	Proposed	NPDES discharge point former oil/water seperator	investigate soil in the area of the discharge point for the former oil/water seperator (0-6" and 6-24")				2				
BK-1	Proposed	open space north of compound area	background sample (0-2", 0-6")				2				
BK-2	Proposed	open space north of compound area	background sample (0-2", 0-6")				2				
BK-3	Proposed	adjacent to property line to south	background sample (0-2", 0-6")				2				
BK-4	Proposed	adjacent to property line to south	background sample (0-2", 0-6")				2				
BK-5	Proposed	adjacent to property line to south	background sample (0-2", 0-6")				2				
IRM-1	Proposed	step out soil sample from SSPFAS-21	sample requested by NYSDEC (1-2')				2				
IRM-2	Proposed	step out soil sample from SSPFAS-29	sample requested by NYSDEC (0-2')				1				
IRM-3	Proposed	step out soil sample from SSPFAS-39	sample requested by NYSDEC (0-1')				1				
IRM-4	Proposed	step out soil sample from SSPFAS-43	sample requested by NYSDEC (0-2')				1				
IRM-5	Proposed	step out soil sample from SSPFAS-44	sample requested by NYSDEC (0-2')				1				
QA/QC											
A-1 (D)	QA/QC	A-1 as shown on Figure 6	duplicate of A-1 soil sample (0-6")				1				
E-2 (D)	QA/QC	E-2 as shown on Figure 6	duplicate of E-2 soil sample (0-6")				1				
F-2 (D)	QA/QC	F-2 as shown on Figure 6	duplicate of F-2 soil sample (6-24")				1				
BK-1 (D)	QA/QC	at BK-1 (0-2")	duplicate of BK-1 (0-2")				1				
BK-4 (D)	QA/QC	at BK-4 (0-2")	duplicate of BK-4 (0-2")				1				
EW-6 (D)	QA/QC	Emergent Wetland	duplicate of EW-6 surface water and sediment samples	1	1	1					
MW-66 (D)	QA/QC	next to existing well MW-54	duplicate of MW-66						1		
MW-70 (D)	QA/QC	north of well MW-49	duplicate of MW-70						1		
MW-75 (D)	QA/QC	on CSX property	duplicate of MW-75						1		
A-1 (MS/MSD)	QA/QC	A-1 as shown on Figure 6	matrix spike and matrix spike duplicate of A-1				1				
C-3 (MS/MSD)	QA/QC	C-3 as shown on Figure 6	matrix spike and matrix spike duplicate of C-3				1				
D-9 (MS/MSD)	QA/QC	D-9 as shown on Figure 6	matrix spike and matrix spike duplicate of D-9				1				
E-11 (MS/MSD)	QA/QC	E-11 as shown on Figure 6	matrix spike and matrix spike duplicate of E-11				1				
BK-3 (MS/MSD)	QA/QC	BK-3 as shown on Figure 6	matrix spike and matrix spike duplicate of BK-3				1				
MW-43 (MS/MSD)	QA/QC	MW-43 as shown on Figure 6	matrix spike and matrix spike duplicate of MW-43						1		

Table 3 - Sample & Analysis Plan
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

				Sample Matrix/Laboratory Anaylsis						Construction	
Sample Location Designation	**Existing, Proposed, QA/QC**	**Location**	**Rationale**	**Sediment PFAS**	**Sediment TOC**	**Surface Water/PFAS**	**Soil PFAS**	**Soil TOC**	**Groundwater/PFAS**	**Boring/Well Depth (ft. bgs.)**	**Screen Length (ft.)**
MW-69 (MS/MSD)	QA/QC	MW-69 as shown on Figure 6	matrix spike and matrix spike duplicate of MW-69						1		
MW-77 (MS/MSD)	QA/QC	MW-77 as shown on Figure 6	matrix spike and matrix spike duplicate of MW-77						1		
UT-6 (MS/MSD)	QA/QC	UT-6 as shown on Figure 6	matrix spike and matrix spike duplicate of UT-6	1	1	1					
Equipment Blank	QA/QC	One per sampling collection tool	equipment rinsate blank and sample of PFAS free water for QA/QC purposes			1			3		

Notes:
Laboratory Analysis of PFAS per USEPA Draft Method 1633 for all matrix types

Table 4 - Anlytical Methods and Quality Assurance Summary
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

Matrix Type	Parameter	Method	Minimum Reporting Requirements	QA/QC Sample	Frequency	Container Type	Minumum Volume	Preservation	Holding Time
Subsurface Soil	PFAS	EPA 1633	Class B	Duplicate	1 per 20 samples	HDPE	1x4oz	4 ± 2º Celsius using ice	28 days
				MS/MSD	1 per 20 samples	HDPE	1x4oz	4 ± 2º Celsius using ice	28 days
Groundwater	PFAS	EPA 1633	Class B	Duplicate	1 Per 20 Samples	HDPE	2x500ml, 1x60ml	4 ± 2º Celsius using ice	28 days
				Equipment Blank	1 per 20 samples or 1 per day, whichever is greater	HDPE	2x500ml, 1x60ml	4 ± 2º Celsius using ice	28 days
				MS/MSD	1 Per 20 Samples	HDPE	2x500ml, 1x60ml	4 ± 2º Celsius using ice	28 days
Sediment	PFAS	EPA 1633	Class B	Duplicate	1 Per 20 Samples	HDPE	1x4oz	4 ± 2º Celsius using ice	28 days
				MS/MSD	1 Per 20 Samples	HDPE	1x4oz	4 ± 2º Celsius using ice	28 days
Surface Water	PFAS	EPA 1633	Class B	Duplicate	1 Per 20 Samples	HDPE	2x500ml, 1x60ml	4 ± 2º Celsius using ice	28 days
				Equipment Blank	1 per 20 samples or 1 per day, whichever is greater	HDPE	2x500ml, 1x60ml	4 ± 2º Celsius using ice	28 days
				MS/MSD	1 Per 20 Samples	HDPE	2x500ml, 1x60ml	4 ± 2º Celsius using ice	28 days

Table 5 - Sample Naming Convention
Remedial Investigation Work Plan
DFSP Verona
Verona, NY

Sample Type	Sample Location Designation	Example Sample ID	Description
Soil	A-1	YY-MM-DD SS-A-1 (0-6")	(YY-MM-DD) Sample Collection Date, (SS) Soil Sample, (A-1) Sample Location, (0-6") Sample Depth
Soil Duplicate	A-1	YY-MM-DD SS-A-1 (0-6")(D)	(YY-MM-DD) Sample Collection Date, (SS) Soil Sample, (A-1) Sample Location, (0-6") Sample Depth, (D) Duplicate Sample
Groundwater	MW-63	YY-MM-DD MW-63	(YY-MM-DD) Sample Collection Date, (MW-63) Sample Location
Groundwater Duplicate	MW-63	YY-MM-DD MW-63 (D)	(YY-MM-DD) Sample Collection Date, (MW-63) Sample Location, (D) Duplicate Sample
Groundwater Equipment Blank	N/A	YY-MM-DD E-01 (GW)	(YY-MM-DD) Sample Collection Date, (E-01) Equipment Blank-Sample Number, (GW) Groundwater Sampling Equipment
Sediment	UT-1	YY-MM-DD SED-UT-1	(YY-MM-DD) Sample Collection Date, (SED) Sediment Sample, (UT-1) Sample Location
Sediment Duplicate	UT-1	YY-MM-DD SED-UT-1 (D)	(YY-MM-DD) Sample Collection Date, (SED) Sediment Sample, (UT-1) Sample Location, (D) Duplicate Sample
Surface Water	UT-1	YY-MM-DD SW-UT-1	(YY-MM-DD) Sample Collection Date, (SW) Surface Water Sample, (UT-1) Sample Location
Surface Water Duplicate	UT-1	YY-MM-DD SW-UT-1 (D)	(YY-MM-DD) Sample Collection Date, (SW) Surface Water Sample, (UT-1) Sample Location, (D) Duplicate Sample
Surface Water Equipment Blank	N/A	YY-MM-DD E-01 (SW)	(YY-MM-DD) Sample Collection Date, (E-01) Equipment Blank-Sample Number, (SW) Surface Water Sampling Equipment

APPENDIX A

NYSDEC CORRESPONDENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau A
625 Broadway, 12th Floor, Albany, NY 12233-7015
P: (518) 402-9625 I F: (518) 402-9627
www.dec.ny.gov

Mr. William Potter, P.G.
Defense Logistics Agency
DLA Installation Management for Energy
8725 John J. Kingman Road, rm 2828
Fort Belvoir, VA 22060

SEP 0 4 2019

Re: DFSP Verona (633086)

Dear Mr. Potter:

The New York State Department of Environmental Conservation has reviewed the Final Site Characterization Report for Defense Fuel Support Point Verona, dated July 2019. The Department finds the report to be acceptable. The Department would like subsequent investigations to be performed to define the extents of soil and groundwater contamination identified and determine if groundwater contamination is impacting Stoney Creek. A work plan detailing the activities to be performed as part of the next phase of activities should be submitted for review and approval. Future figures should include the date of information being presented (e.g. Figures 3, 4, and 5). The Please contact me at (518) 402-9626 if you have any questions.

Regards,

Brian Jankauskas, P.E.
Project Manager
Remedial Bureau A, Section C

cc: J. Swartwout, DEC
E. O'Neil, DOH
file

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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September 1, 2022

Brian Schick
Environmental Protection Specialist
Defense Logistics Agency – Energy
Engineering, Environmental, Property Division
Environmental Branch – LEV
Restoration Section
8725 John J. Kingman Road
Rm. 2828

Re: DFSP Verona (633086)

Brian Schick,

The New York State Department of Environmental Conservation and New York State Department of Health have reviewed the revised Supplemental Site Characterization (SSC) Report, dated February 2022, revised Interim Remedial Measure (IRM) Report for Defense Fuel Support Verona, dated February 2022, and Draft Post Mitigation Performance Sampling Report, dated February 2022. The Department finds the reports to be acceptable, but do suggest that Figure 3 identify the SSPFAS33 and SSPFAS38 locations and a figure of be included in Appendix D that shows the location of the nine monitoring wells abandoned on October 23, 2020. These updates can be performed as part of issuing the document as final.

Significant activities have been performed to date, but the Departments have identified some additional future Remedial Investigation activities that are warranted, see below.

- Evaluate remaining soils that were not excavated during the IRM due to site conditions.
- Collect soil samples from topsoil backfill utilized during the IRM.
- Collect soil samples after the discharge of the oil/water separator located on the northern part of the site to evaluate surface runoff from the site (e.g., loading rack and storage tank areas) and better understand the elevated groundwater concentrations near MW-48.
- Surface water samples collected were up-gradient of the site, SSC Figure 5, which suggests an up-gradient PFAS source, but no data was provided down-gradient to determine if the site is impacting Stony Creek.

- Hydraulic evaluation that includes a stream gauge to better understand the movement of groundwater and surface water.
- Evaluate soils and groundwater in other areas of the site based on current criteria (e.g., EPA and DEC).
- Evaluate soil and groundwater for full Target Analyte List/Target Compound List to understand the nature of contamination.

Please contact me via email brian.jankauskas@dec.ny.gov if you have any questions and to setup a meeting to discuss next steps on the site.

Regards,

Brian Jankauskas

Brian Jankauskas, P.E.
Project Manager
Remedial Bureau A, Section C

ec: John Swartwout, DEC
Eamonn O'Neil, DOH
Edward Kurja, TK&K
Eric Blomberg, TK&K
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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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September 5, 2023

Anthony Sandoval
Environmental Protection Specialist
Defense Logistics Agency – Energy
Engineering, Environmental, Property Division
Environmental Branch – LEV
Restoration Section
8725 John J. Kingman Road
Rm. 2828

Re: Draft Remedial Investigation Work Plan
DFSP Verona (633086)

Brian Schick:

The New York State Department of Environmental Conservation and Department of Health (Departments) have reviewed the Draft Remedial Investigation Work Plan, dated July 2023. The Departments provide the enclosed comments. Please contact me via email brian.jankauskas@dec.ny.gov if you have any questions.

Regards,

Brian Jankauskas

Brian Jankauskas, P.E.
Project Manager
Remedial Bureau A, Section C

enclosure

ec: J. Swartwout, DEC
D. Storandt, P. Ouderkirk, DEC Region 6
S. Rushford, D. Tucholski, DOH
W. Potter, B. Schick, DLA
E. Blomberg, TK&K
File

1. Certification Page indicates that Qualified Environmental Professionals have prepared the work plan, which is acceptable and will be acceptable for submission of the report. The Feasibility Study or Remedy Selection document must be submitted by a New York State Professional Engineer per DER-10 Table 1.5.

2. Section 1.1, second and third paragraph, indicates that PFAS is the outstanding regulatory issue and additional site characterization is not necessary per DER-10 (Section 3.2.1). DER-10 Section 2.1.a.1 identifies that full target compound list and target analyte list are required. Results from previous investigations should be summarized and included in the work plan to justify reduced sampling activities that are currently focused to PFAS. Locations of previous investigations need to be evaluated to determine if the same locations as the PFAS contamination. The Remedial Investigation needs to determine the nature (VOCs, SVOCs, PCBs/pesticides, metals, PFAS, and 1,4-dioxane) and extent of contamination. At a minimum a representative number of samples need to be taken for full analytical. This information is required as the Record of Decision for the site will be comprehensive and needs to support future use determinations for the site and some contaminants may influence the proposed remedies for the site, see DER-10 Section 3.2.2.(b).

3. Section 3.1, second paragraph indicates that three bedrock wells were planned, but groundwater was not encountered at MW-21D so MW-20D and MW-21D were abandoned. Clarification is warranted regarding if groundwater was or was not present in MW-20D and if MW-22D was constructed or only planned.

4. Section 3.3 indicates two unnamed tributaries on page 3 but mentions a third tributary on page 4. The discussion also indicates that one of the tributaries flows from the wetland area southeast and parallel to the railroad line, which runs southwest to northeast. Verify discussion and include the approximate location of the tributaries on Figure 2, which is referenced at the end of this discussion.

5. Section 4, second paragraph, discusses the decommissioning of the AFFF system. Additional discussion regarding the removal of Tank 4 should be included in this section or another appropriate section.

6. Section 4, seventh paragraph discusses the eight private well samples collected on February 22, 2018. On September 20, 2017, New York State Department of Health collected private well samples from two mobile home developments located in the vicinity of the eight private wells. Mobile home results detected PFOS at one development and PFOA was detected at both developments. PFOA and PFOS concentrations were below the New York MCL for drinking water of 10 micrograms per liter for PFOA or PFOS.

7. Section 5 references Appendix G but should identify Appendix E. Additionally, a figure that identifies the key features discussed in this section should be referenced.

8. Section 6.2.5 discusses the Buckeye Pipeline that crosses the property. Suggest indicating what is within the pipeline and if it was previously connected to the site as part of historical operations.

9. Section 6.2.6 indicates Pre-Construction Meeting but would seem more appropriate to identify as Pre-Investigation Meeting.

10. Section 7.1, second paragraph indicates that soils from auger flights will be observed for soil classification. Some discrete soil sampling (e.g., split-spoons) should be collected to fully classify the soils as material from auger flights can be helpful, but due to the process of drilling the material is very disturbed and provides a general understanding of the soils. Appendix F, Section 1.4.3 discusses split-spoon soil sampling at surface and groundwater interface.

11. Section 7.1, last paragraph indicates that development water will be placed on the ground near the monitoring well location. Section 8.0 indicates that development water will be containerized in 55-gallon drums and disposed off-site. Suggest revising to match Section 8.0.

12. Section 7.1, last paragraph identifies GPS will be used to plot the location of the monitoring well on the Site Plan but does not indicate how the elevation will be recorded and the accuracy of this measurement, which will be used to determine groundwater flow direction. Update the plan to indicate how the top of casing elevation will be determined for each monitoring well.

13. Section 7.2 remove LDPE from the list of acceptable materials based on NYSDEC Sampling, Analysis, and Assessment of PFAS DER PFAS Guidance Document, dated April 2023. Additionally, liquinox should also be removed as known to contain 1,4-dioxane.

14. Section 7.3 indicates that a Department of Defense certificated laboratory will be utilized. This is acceptable, but the chosen laboratory should also be a New York State Department of Health Environmental Laboratory Approval Program (ELAP) certified as well as indicated in Section 2.4 of DER-10(d).

15. Section 7.3.1 second paragraph discusses sampling steps to be performed and the first bullet indicates that polyethylene tubing will be used. NYSDEC Sampling, Analysis, and Assessment of PFAS DER PFAS Guidance Document identifies HDPE and silicon as acceptable materials to be used.

16. Section 7.3.1 discusses sampling steps to be performed and the third bullet indicates readings will be recorded every 3 to 5 minutes. Based on the

anticipated low flow rate of 0.050 to 0.2 liters per minute, readings should be recorded every 5 minutes to permit water to change within the flow through cell.

17. Section 7.4 indicates sample intervals of 0 to 6 inches and 6 to 24 inches, which meets the requirements of DER-10 for assessing ecological exposures. Samples utilized to assess human exposure are collected from 0 – 2 inches per DER-10 Section 3.5.1(b)1.i. A representative number of samples from 0 – 2 inches should be planned to complete the human exposure assessment.

18. Section 7.4 last paragraph indicates that RSL or the screening level within the same sentence but should identify RSL or the guidance values.

19. Section 7.4 should indicate if any soil samples will be or will not be collected during the monitoring well installation.

20. Section 7.4/Figure 6 identifies soil sample locations with E-13 being the closest sample location to MW-46, which has a significant concentration of PFOS in groundwater. The E transect should extend further so an additional soil sample location can be completed near MW-46.

21. Section 7.4 should discuss the current soil sample results from the Supplemental Site Characterization Report to determine if sufficient to define the extents of PFOS and PFOA contamination to support the Feasibility Study and evaluation of remedial action alternatives. The Department's Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances document referenced in Sections 1.1 and 7.4, indicates that the protection of groundwater guidance value for PFOS is 1 ug/kg and should be applied to the site due to the groundwater impacts at the site. Additionally, the Residential and Restricted Residential soil guidance values indicated in this document are exceeded at multiple locations (e.g., SSPFAS-21, -29, -39, -43, -44).

22. Section 7.4.1 should identify that soil from each interval will be homogenized prior to placement within laboratory provided bottles similar to sediment samples as described in Section 7.5.1.

23. Section 7.5, last sentence references Figure 5, but should reference Figure 6.

24. Section 7.5/Figure 6 identifies upstream (SC-3) and downstream (SC-4) samples will be collected from Stony Creek. SC-4 appears to be collected approximately 150 feet downstream of SC-3 and near previous sample point SW/SED2. A sample location must be located near the anticipated groundwater discharge point of PFOS contamination to Stony Creek based on groundwater flow contours. This appears to be downstream of the text that indicates "Stony Creek Flow Direction" on Figure 3. The downstream sample location must be located further downstream from the site. This would be towards the top of Figure 3 or further downstream based on accessibility to Stony Creek. This will permit the

upstream, discharge point, and downstream results to be evaluated to determine if site contamination is impacting Stony Creek.

25. Section 7.5.1 discusses surface water collection but does not identify when surface water samples should be collected. Due to the potential for surface water to be impacted by runoff from rainfall events, surface water sampling should be performed after three days of negligible rainfall to appropriately assess groundwater impacts from the site to Stony Creek. Field staff should document weather conditions prior to collecting surface water samples.

26. Section 7.5.1 indicates that sediment samples will be collected of the ditch “Stony Creek” by utilizing a steel hand auger or shovel. The flow condition of Stony Creek should be considered as a sample material may be disturbed or lost during retrieval of the sample. A closed sampling device for sediment collection is recommended to maintain sample integrity. Equipment is available that can be connected to hand auger extensions and hand driven into the sediment or other sampling tools (e.g., ponar dredge sampler) can be used. The depth of the sample collection should be identified.

27. Table 9-1 identifies the sample naming convention to be used. Some of the examples include a date, but others do not. DEC recommends that the date be included as part of the naming convention as this eliminates issues with sample names that might overwrite a sample within the DEC EQuIS Data Base. Information regarding Electronic Data Deliverables to DEC is available at Environmental Data Submission - NYS Dept. of Environmental Conservation

28. Section 9.3 indicates that samples will be analyzed for PFAS via EPA Method 1633. This is acceptable, but other analysis should be included as previously indicated to determine the nature of contamination.

29. Section 9.3 must reference Table 4. Table 4 must be revised to include the number of samples to be collected, the QA/QC samples (e.g., trip blanks, equipment blanks, duplicates, matrix spikes/matrix spike duplicates) to be collected, the containers to be used (e.g., HDPE 500 ml), the preservation method (e.g., ice 4^{o}C) as indicated in DER-10 Section 2.4(a)2.v., which identifies this table as the Analytical Methods/Quality Assurance Summary Table. This table is very helpful for field staff conducting the sampling.

30. Section 9.4 indicates that a QC summary package (Level II) will be provided. Verify that this deliverable meets the Category B deliverable requirements and indicate Category B as part of the discussion.

31. Section 9.4 indicates that a data review will be performed. DER-10 Section 2.2(a)1.ii indicates that a Data Usability Summary Report must be included that is prepared by a party independent from the laboratory performing the analysis and

also from direct involvement with the project. A resume of the individual must be provided for DEC review and approval per DER-10 Appendix 2B Section 2(b).

32. Section 10 indicates Sections 3.39(c) 3 & 4 but should be Sections 3.3(c) 3 & 4.

33. Section 11 or Section 12 must include a discussion of reported within 24 hours of any Community Air Monitoring Plan (CAMP) exceedances occurring and corrective measures taken. Also, CAMP monitoring reports and daily reports from field activities need to be sent to the Departments for review daily, or at least weekly.

34. Section 12 indicates that a Community Air Monitoring Plan (CAMP) is included in Appendix G. This section or Appendix G should also indicate that visual observations shall be recorded on daily CAMP forms to document any visual dust that is originating from site activities, off-site activities not related to site investigations, weather conditions (e.g., rain, snow, wind direction, etc.), and operation of the meters (e.g., dust and VOC), which will help to understand VOC and dust readings recorded in the field.

35. Section 14 should include the Departments Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) document, dated April 2023.

36. Figures should identify the site boundary that covers the ~13 acres and the property boundary that consists of ~35 acres.

37. Table 3 Sampling & Analysis Plan table number should be revised from Table 2 to Table 3.

38. Appendix E identifies an AFFF low point drain that is discussed in Section 5 and is located near MW-32. Information regarding sampling at or near this low point drain location should be discussed in Section 5. A soil sample should be identified within the work plan as review of the Supplemental Site Characterization Report did not identify a sample at this location.

39. Appendix F should include signatures.

40. Appendix F, Section 1.4.3 discusses soil sampling and laboratory analysis. Suggest removing reference to “EPA Method 537” as not necessary for this discussion.

41. Appendix F, Section 3.3 discusses key personnel and references Table 4-1, but Table 3-1 appears to include the information.

42. Appendix F, Section 5.3 discusses contacting list in Section 3 of the Facility Response Plan and the Site Maintenance Supervisor. Suggest indicating the

contacts in this plan so information is easily accessible and can be performed efficiently. Verify that this includes the DEC spills hotline 1-800-457-7362.

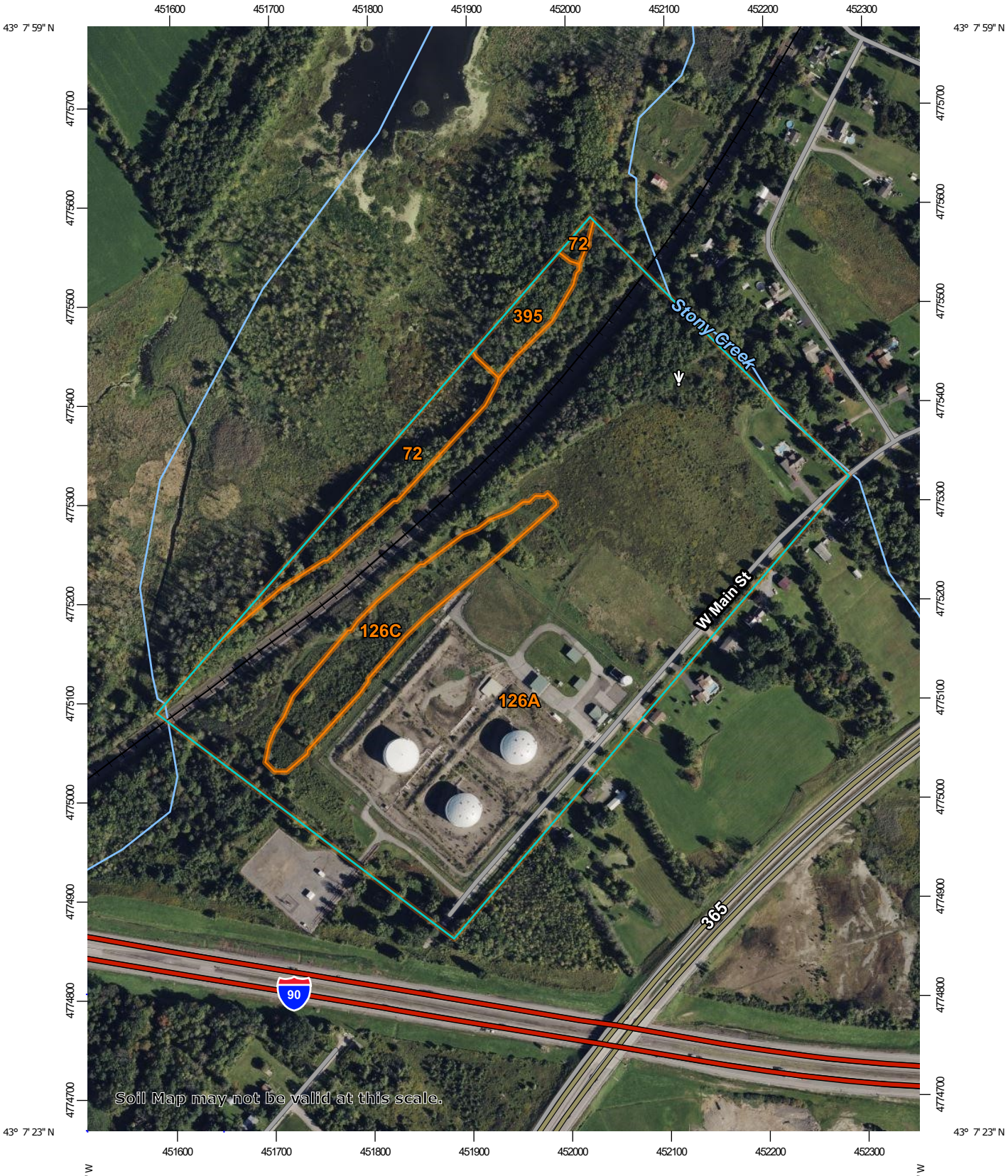
43. Appendix F, Section 6.2, first paragraph, last sentence needs to be revised as ends with “All inspection will.”

44. Appendix G, meteorological data discussion indicates “VOC monito1ing,” which should be revised to “VOC monitoring.”

45. Appendix G Documentation and Calibration section should be edited to indicate “…field measurements will be recorded and available **daily** for State (NYSDEC and NYSDOH) personnel to review.”, and will be sent daily along with daily field logs, for review by NYSDEC and NYSDOH project managers.

APPENDIX B

SOILS MAP



Map Scale: 1:5,430 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Oneida County, New York
Survey Area Data: Version 25, Sep 10, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 15, 2022—Oct 28, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

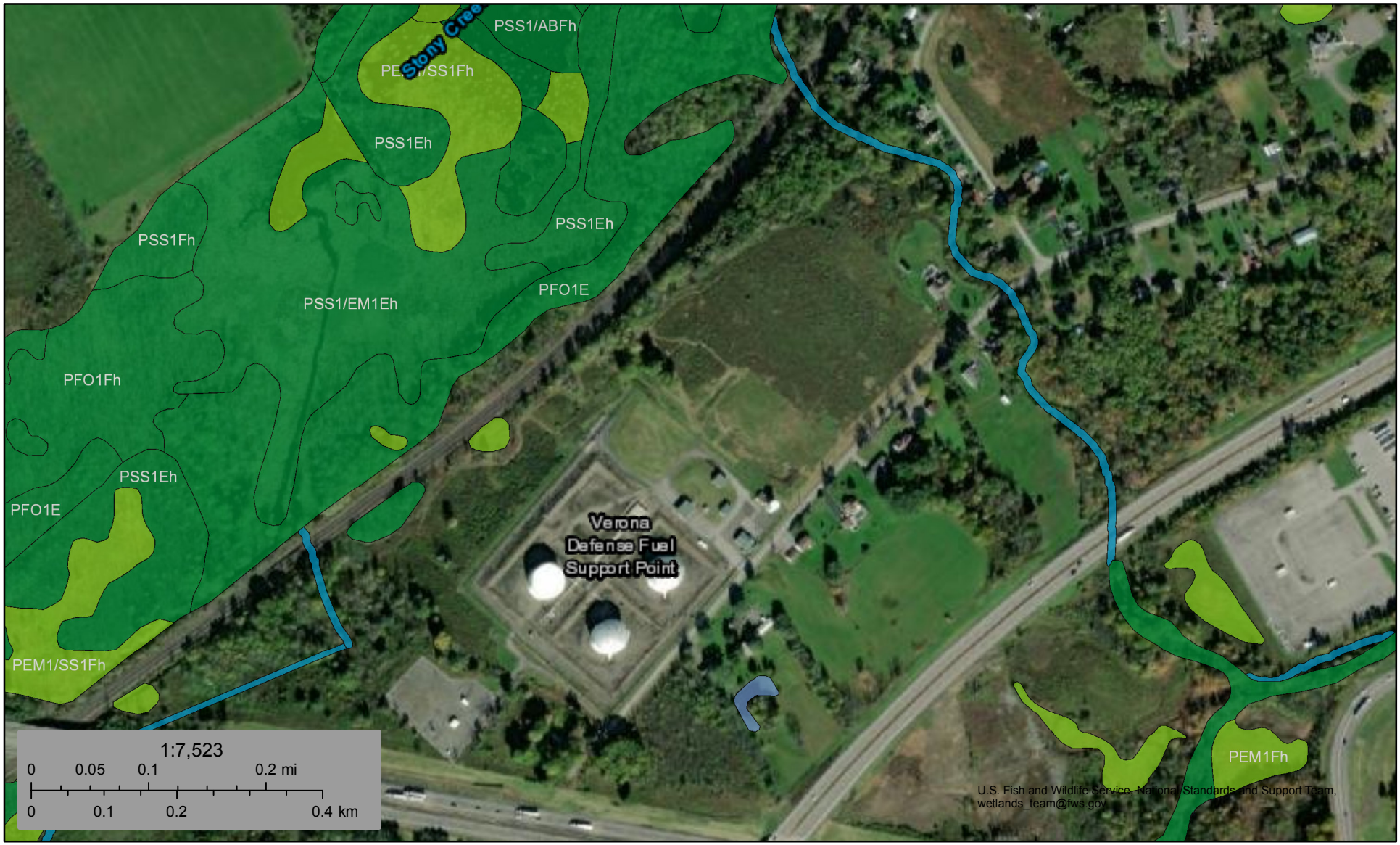
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
72	Canandaigua silt loam	3.0	5.1%
126A	Lima gravelly silt loam, 0 to 3 percent slopes	51.0	86.2%
126C	Lima gravelly silt loam, 8 to 15 percent slopes	3.9	6.6%
395	Palms muck	1.2	2.1%
Totals for Area of Interest		**59.2**	**100.0%**

APPENDIX C

NATIONAL WETLANDS INVENTORY MAP

U.S. Fish and Wildlife Service
National Wetlands Inventory

National Wetlands Inventory



June 12, 2023

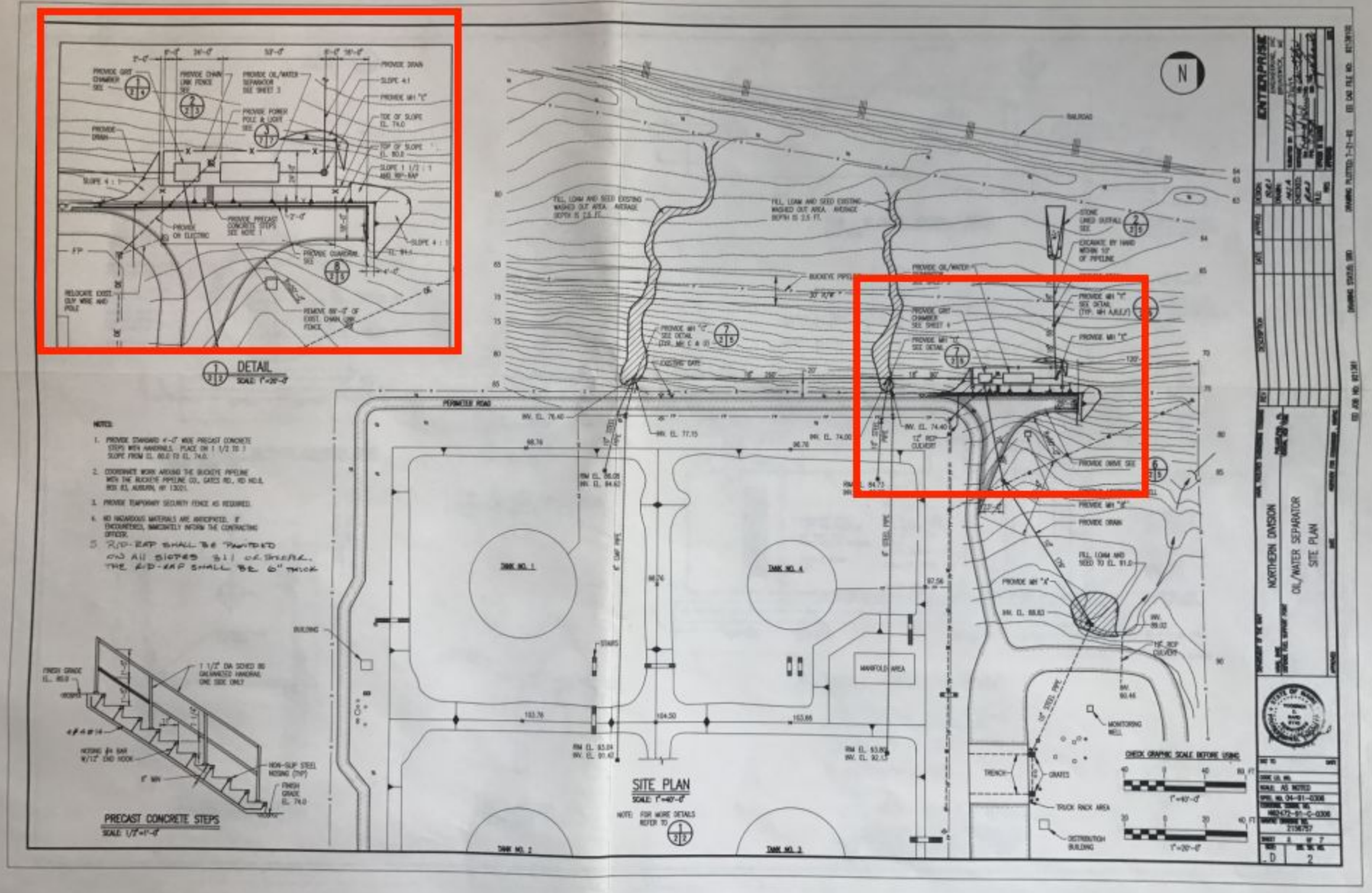
Wetlands_Alaska

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

APPENDIX D

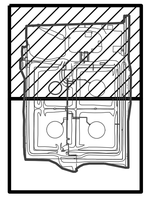
FORMER LOCATION OF TANK 3 AND TANK 4 BERM DRAINS AND OIL/WATER SEPERATOR OUTFALL


DETAIL
SCALE: 1"=20'-0"
SITE PLAN
SCALE: 1"=40'-0"
PRECAST CONCRETE STEPS
SCALE: 1/2"=1'-0"
NOTES:
1. PROVIDE STANDARD 4'-0" WIDE PRECAST CONCRETE STEPS WITH HANDRAILS. PLACE ON 1 1/2 TO 1 SLOPE FROM EL. 80.0 TO EL. 74.0.
2. COORDINATE WORK AROUND THE BUCKEYE PIPELINE WITH THE BUCKEYE PIPELINE CO., GATES RD., RD NO.8, BOX 83, AUBURN, NY 13021.
3. PROVIDE TEMPORARY SECURITY FENCE AS REQUIRED.
4. NO HAZARDOUS MATERIALS ARE ANTICIPATED. IF ENCOUNTERED, IMMEDIATELY INFORM THE CONTRACTING OFFICER.
5. RIP-RAP SHALL BE PLACED ON ALL SLOPES 3:1 OR STEEPER. THE RIP-RAP SHALL BE 6" THICK
PERIMETER ROAD
TANK NO. 1
TANK NO. 2
TANK NO. 3
TANK NO. 4
MANIFOLD AREA
BUILDING
TRENCH
GRATES
TRUCK RACK AREA
DISTRIBUTION BUILDING
MONITORING WELL
RAILROAD
CHECK GRAPHIC SCALE BEFORE USING
NORTHERN DIVISION
OIL/WATER SEPARATOR
SITE PLAN
ENTERPRISE

HALF SIZE

APPENDIX E

AFFF FIRE SUPPRESSION SYSTEM LAYOUT



SHEET VIEW

PIPE INFORMATION

PIPE DIAMETER INFORMATION FOR THE FUEL LINE AND FIRE SUPPRESSION LINES ARE FROM DRAWING REVIEW BY VERONA CONTRACTOR PERSONNEL. COMMENTS WERE FORWARDED TO USACE OMAHA DISTRICT BY NELSON PAYNE (DLA CIV ENERGY) ON 19 AUGUST 2011.

AFFF Low point drains

20' 10' 0 20'

SCALE: 1'' = 20'-0"

1085400 1141200

1084800 1141200

VEHICLE GATE

MAN GATE

7' CHAIN LINK FENCE

CABLE FENCE

FIRE FOAM PUMP BUILDING
FINISHED FLOOR ELEV. = 504.025

FIRE WATER STORAGE TANK

FIRE SUPPRESSION LINE RUN UNDERGROUND TO THE SOUTH

MAINTENANCE SHOP
FINISHED FLOOR ELEV. = 501.906

UNDERGROUND 4" DIA FIRE SUPPRESSION PIPE

UNDERGROUND 4" DIA FIRE SUPPRESSION PIPE

TRUCK OFFLOAD PIPE

TANK #112 COLLECTION PIPES

ELECTRICAL DISTRIBUTION BUILDING
FINISHED FLOOR ELEV. = 502.942

EMERGENCY EQUIPMENT STORAGE
FINISHED FLOOR ELEV. = 503.982

(UNDERGROUND FIRE SUPPRESSION LINES)

CABLE FENCE

7' CHAIN LINK FENCE

WEST MAIN STREET

ADMINISTRATION LAB BUILDING
FINISHED FLOOR ELEV. = 506.805

EMERGENCY GENERATOR BUILDING
FINISHED FLOOR ELEV. = 506.709

ELECTRONIC VEHICLE GATE

H.C.T. #112

F.V.T. #120

F.V.T. #119

D.F.T. #114

TRUCK RACK

CONCRETE

UNKNOWN DIA FIRE SUPPRESSION PIPES

FUEL LINE #8 8" DIA

FUEL LINE #7 8" DIA

FRE SUPPRESSION LINE EMERGE FROM UNDERGROUND AT CONTAINMENT DIKE

GLYCOL ETHER SUPPLY LINES

111A GLYCOL ETHER (FSII)

4" DIA PIPE

4" DIA PIPE

UNKNOWN SIZE TO 4" CONVERSION

PERIMETER ROAD

ABND 3" DIA PIPE

4" DIA PIPE

4" TO UNKNOWN SIZE CONVERSION

ABND 4" FIRE SUPPRESSION LINE

CONCRETE SIDEWALK

PUMP HOUSE

3" DIA PIPE

4" DIA PIPE

10" FUEL RETURN LINE

LEAK DETECTION TEST STATION TYP.

10" FUEL SUPPLY LINE

TANK #4 MANIFOLD 10" DIA

FORMER TANK 4 FOUNDATION (REMOVED)

FUEL LINE #5 12" DIA

FUEL LINE #4 12" DIA

ELECTRICAL PANEL SUPPORT

FUEL TANK 3

FUEL LINE #2 10" DIA

FUEL LINE #1 10" DIA

FUEL LINE #3 10" DIA

FUEL LINE #6 6" DIA

FULE PIPE SUPPORT TYP.

V-502
V-503

FIELD CONDITIONS NOT VERIFIED

US ARMY CORPS OF ENGINEERS
OMAHA DISTRICT

MARK	DESCRIPTION	DATE	APPR

DESIGNED BY: KRM/BCA
DRN BY: MKM
CKD BY:
SUBMITTED BY: JEK
DATE: JUNE 2012
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:
FILE NAME:
PLOT SCALE:
PLOT DATE:
SIZE: 33.1X22

U. S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA DISTRICT
http://www.usace.army.mil

TOPOGRAPHIC AND PLANIMETRIC SURVEY
DFSP VERONA NY

FIRE PROTECTION AND FUEL PIPE DETAIL
SHEET 1 OF 2

SHEET IDENTIFICATION NUMBER
V-502

APPENDIX F

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

Remedial Investigation Work Plan

Defense Fuel Support Point Verona
5449 West Main Street
Verona, New York

NYSDEC Site Code 633086

Prepared for:

Defense Logistics Agency – Energy
8725 John J. Kingman Road, Suite 2945
Fort Belvoir, VA 22060

Prepared by:

719 Hale Street
Beverly, MA 01915

June 2023

Plan Preparer: 
Cameron Po, SSHO TK&K Services (978) 471-2908

Plan Approval: 

Eric Blomberg, PG, Program Manager, TK&K Services (850) 294-1233

Team personnel assigned to this project shall be familiar with the possible hazards involved, the safety procedures, and other information outlined in this plan. Prior to the commencement of work, the Site Manager/Site Safety and Health Officer (SSHO) will discuss additional procedures to be implemented, addressing any other site-specific conditions that may arise. All on-site personnel of TK&K Services and all subcontractors must sign the Project Health and Safety Acknowledgement Form, Appendix A.

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND INFORMATION

1.1 Contractor

TK&K Services
719 Hale Street
Beverly, MA 01915

1.2 Contract Number

SPE603-21-D-5000

1.3 Project Name

DFSP Verona Remedial Investigation Work Plan

1.4 Project Description

Defense Fuel Support Point (DFSP) Verona (site/facility) is located at 5449 West Main Street, Verona, Oneida County, New York. The facility is situated between New York Highway 31 and Interstate 90, and just west of State Route 365. The facility is approximately 25 miles east of Syracuse, NY. The facility property consists of approximately 35 acres of land. Of this, approximately 13 acres comprises the fenced in terminal area with an additional 22 acres of open field to the northeast and northwest. DFSP Verona's primary function was to receive, store, distribute and maintain inventory control of bulk jet fuel JP-4 (1959-1992) and JP-8 (1992-2014). The facility is currently in the closure. Terminal operations ceased in September 2014.

The project tasks include:

- Mobilization/Demobilization and Site Preparation for Environmental Drilling/Sampling
- Utility Survey/Clearance
- Soil Boring/ Monitoring Well Installation
- Soil and Groundwater Sampling

1.4.1 Task 1: Site Preparation, Mobilization, and Demobilization

As part of site preparation, TK&K will file a utility clearance ticket with Dig Safely New York and coordinate with DFSP personnel for locating underground utilities.

During mobilization, heavy equipment (i.e. hollow stem auger drilling rig and support vehicles) will be delivered to the site, and temporary construction barricades will be set-up to demarcate the work areas and staging areas.

1.4.2 Task 2: Utility Survey/Clearance

TK&K will advance soil borings and install monitoring wells for the collection of soil and groundwater samples. Soil boring locations will be pre-marked in the field. Utility locating contractor will be retained to identify previously unknown or private utilities on the Site. A general reconnaissance of site conditions for potential hazards, obstructions, debris, restrictions to equipment/personnel access, and overall condition of the ground surface will also be performed at the time of the soil boring location field mark- out.

1.4.3 Task 3: Soil Boring/ Monitoring Well Installation

TK&K will advance soil borings using the hollow stem auger techniques using a ATV-track drilling rig. Depending upon the type of drill rig used, split- spoon samples will be collected at five foot intervals for soil classification. Otherwise, soil will be classified from materials from the augers. Soil borings will be advanced to a depth of 8 feet into the water table or to refusal if the refusal depth is less than 15 feet bgs. A field geologist will oversee the drilling activities under the supervision of a Professional Geologist and in accordance with State Regulations. The site "rig" geologist will have multiple duties including Health and Safety for drilling operations, quality control, and technical oversight of all drilling activities. Soil samples will be collected as described above and analyzed on site by jar headspace method using a Flame Ionizing Detector. Following completion of each borehole, soil cuttings depicting no Flame Ionizing Detector readings will be spread in the area of the borehole. Contaminated soils will be segregated into drums, sampled, and labeled appropriately.

Monitoring wells will be constructed of 2" schedule 40 polyvinyl chloride (PVC) factory-slotted screen and riser installed to intersect the top of the groundwater table. A clean sand pack will be placed in the annular space between the well screen and borehole. This sand pack will extend 1' ft. above the well screen to account for any settling that may occur. A bentonite pellet seal will be placed immediately above the sand pack and the remainder of the boring will be sealed with a cement/bentonite slurry to prevent the downward migration of surface water.

Wells installed in unpaved areas will be provided with standpipes and locking caps, and with sealed curb boxes in paved areas. Soil samples will be collected and submitted for laboratory analysis via EPA Method 1663. The rig geologist will prepare a standard well construction diagram to include the well details and collect representative groundwater samples from monitoring wells.

Soil classification will be recorded in the field on soil boring logs. Newly installed monitoring wells will be developed to restore the natural permeability of the surrounding formation adjacent to the borehole prior to sampling.

Development will be performed using either surge block or over-pumping, using the drill rig pump. Development water will be discharged to the ground surface local to the well.

GPS coordinates will be used to locate each soil boring and sample location.

1.4.4 Task 4: Soil and Groundwater Sampling

Groundwater purging and sampling will be conducted utilizing low flow sampling methodology per the USEPA Region 1 Low Stress (low flow) Purging and Sampling for the

Collection of Groundwater Samples from Monitoring Wells (EPASOP-GW 001).

Groundwater sampling will be conducted via low flow sampling techniques utilizing the following equipment:

- Adjustable rate peristaltic or submersible pumps.
- Water level measuring device (i.e. water level meter or oil/water interface probe).
- Groundwater multi-meter (YSI 560/650 or similar) with flow cell to measure temperature, specific conductance, pH, oxidation/reduction potential (ORP), dissolved oxygen (DO) for determination of well stabilization.
- Turbidity meter.
- Flow rate measurement supplies.
- Personal protective equipment (PPE) as defined in the Site HASP.
- Appropriate pre-preserved sample containers.
- Field logbook.
- Sample cooler with ice.

Depth to groundwater measurements will be collected from the wells prior to sampling. The following steps will be followed when purging monitoring wells and collecting and preserving groundwater and QA/QC samples:

- The previously decontaminated pump, multi-meter, and associated equipment will be assembled for operation with new polyethylene tubing.
- The monitoring well will be purged at a rate no greater than 0.2 liters per minute (L/min) and no less than 0.05 L/min. Groundwater drawdown should be measured and kept to less than 0.3 feet wherever possible.
- Groundwater field parameters (specific conductance, pH, OPR, and DO) will be monitored incrementally after a minimum of one flow through cell volume of groundwater has been purged through the flow through cell (typically every 3 to 5 minutes).
- The purging of the monitoring well will be considered stable after three consecutive readings of all parameters stabilize per the specifications in the USEPA Region 1 Guidance. More specifically, stabilization will be achieved when turbidity variance is within 10% for values greater than 5 Nephelometric turbidity units (NTU), DO variance is within 10% for values greater than 0.5 milligrams per liter (mg/L), specific conductance variance is within 3%, temperature variance is within 3%, pH variance is within 0.1 units, and ORP variance is within 10 millivolts (mV). If stabilization criteria are not met, wells will be purged a maximum of 1 hour prior to sampling.
- Following stabilization of groundwater parameters sample containers shall be filled. Containers used for this sampling event will require two 250 ml HDPE containers for water and one 8-ounce HDPE jar for soils.
- All sample containers will be labeled and stored in accordance with the sample management specifications defined in Section 3.

1.5 Contractor Accident Experience

TK&K's Experience Modification Rates for 2017 and 2018 were 0.73 and 0.90, respectively,

below the national average of 1.0 for companies performing the same type of work. TK&K's Occupational Safety and Health Administration (OSHA) Recordable Incidence Rates for 2017 and 2016 were 2 and 3 respectively.

1.6 Hazard and Risk Analysis

TK&K will mobilize all necessary personnel, equipment, materials, and subcontractors in order to implement specific tasks as outlined in this Health and Safety Plan (HASP).

All personnel performing the above-mentioned tasks will be required to use Level D, or Modified Level D. Potential hazards associated with the tasks are included in the Activity Hazard Analysis (AHA) tables located in Section 14 of this HASP.

2.0 STATEMENT OF SAFETY AND HEALTH POLICY

The TK&K Service's Environmental Health and Safety (EHS) Program is established to be proactive in assessing current EHS Programs and setting strategies for years ahead. Emphasis is directed toward continuous compliance, continual improvement, and pollution prevention strategies. Due to the nature of TK&K's work, it is essential that EHS needs be considered from starting points/planning to work execution, and completion. TK&K utilizes integrated EHS management systems to implement its corporate goal for Zero Accidents involving personnel and the environment. Regulators, industry, and clients are learning that integrated EHS management systems provide a positive approach to compliance assurance and elevate opportunities for performance improvement. For these reasons, TK&K Services embraces the key elements common to many strong EHS management systems as standard work practice for every job.

In performing its mission, TK&K will conduct activities in a manner protecting human health and the environment: with commitment to zero incident/accidents and zero release(s) to the environment; with commitment to regulatory compliance and applicable requirements, in a manner protective of the worker, the public, and the environment; with pollution reduction goals and continual improvement targets in the foreground, communicating EHS awareness and policy to all personnel, with incentives for positive EHS performance, making EHS policy available to the public, seeking performance improvement input from stakeholders, identifying environmental aspects with potential for significant impact, and prescribing remedies to offset impact potential.

Additional information relative to TK&K's EHS policy or specific programs can be found within the TK&K Health and Safety Policy.

2.1 Purpose and Objectives

The purpose of this document is to establish standard safety and health procedures for TK&K and subcontractor personnel in the performance of their work. Any project activity is to be carried out in accordance with this HASP.

These documents are considered living documents and are subject to change based on review and the implementation of additional tasks.

This HASP establishes the work practices necessary to help ensure protection of site personnel, the local community, and client personnel during site activities. The objective of this EHS Program is to provide a mechanism for the establishment of safe working conditions. Specific hazard control methodologies have been evaluated and selected in an effort to minimize the potential of incident or injury.

All site activities will be performed in accordance with this HASP, applicable local and TK&K policies and procedures, OSHA, and client requirements. The levels of personal protection and the procedures specified in this plan are based on the best information available from reference documents and current site data. Therefore, these recommendations represent the minimum safety and health requirements to be observed by all personnel engaged in this project.

Unforeseeable site conditions or changes in the Scope of Work (SOW) may warrant a reassessment of protection levels and controls stated. All adjustments to the EHS Program must have prior approval by the Program Safety Manager (PSM) and the client.

All TK&K, client, and subcontractor personnel involved in this project shall review and understand this document prior to the start of work. Any questions or concerns shall be directed to the Site Safety Officer. All on-site personnel shall follow the designated safety and health procedures, be alert to the hazards associated with working on-site, and exercise reasonable caution at all times.

The regulations and guidelines listed in these documents provide employers (including the client) and employees with the information and training necessary to improve workplace safety and health, thereby minimizing the potential for injury and illness.

These documents are designed to anticipate, identify, evaluate, and control safety and health hazards, in addition to providing emergency response procedures relative to operations conducted at the Site.

TK&K's Health and Safety Program for field activities requires preparation and compliance with the following documents:

- This HASP, which is a standard document outlining criteria necessary for any field activity conducted in accordance with 29 Code of Federal Regulations (CFR) 1910.120 and/or USACE Safety and Health Requirements Manual (EM 385-1-1).

Additional plans (as referenced in Section 11) and appendices to the HASP complete necessary regulatory and policy requirements.

2.2 Regulations and Guidelines

Compliance with all applicable requirements and regulations that are listed in the following publications will ensure the safety and health of on-site personnel, visitors, client, regulatory personnel, and the local community:

- 29 CFR 1910
- 29 CFR 1926
- USACE EM 385-1-1
- TK&K Corporate Health and Safety Program

Should additional guidelines or regulatory criteria prove necessary for worker or environmental safety, said materials will be referenced.

2.3 Drug Awareness and Drug-Free Workplace

TK&K supports all aspects of the Drug-Free Workplace Act of 1988. As such, TK&K has implemented Operating Practices for 1) Drug-Free Workplace and 2) Drug and Alcohol testing. Disciplinary actions are enforced for any violation of these policies. All TK&K employees, as a condition of employment, document understanding and receipt of these policies.

In the event that employee drug testing is required in the performance of individual task order work under this contract, those affected employees will be notified and actions taken in accordance with applicable rules and policies prior to initiation of site work activities.

3.0 Responsibilities and Lines of Authority

3.1 Roles and Responsibilities

Table 4-1 is an identification and accountability of personnel responsible for safety at both corporate and project level. Descriptions of each position are provided in the following subsections.

3.1.1 Program Manager

The Program Manager's responsibilities include:

- Executing program administrative matters.
- Executing program-specific controls.
- Executing program-related policy matters.
- Executing program levels of authority, responsibility, and communication

3.1.2 Project Manager

The Project Manager is responsible for the site-specific planning, coordination, and administration of task-specific activities in accordance with the SOW. The Project Manager duties also include:

- Overseeing task performance.
- Identifying task planning and resource requirements.
- Review of all technical and safety documents.
- Managing project controls, administration, and finances.
- Project level authority responsibility and communication.

3.2 Safety and Health Management

3.2.1 Program Safety Manager

- Development and review of the Safety Program.
- Coordinating with the SSHO for implementation of the Safety Program.
- Providing technical direction to the SSHO and the Site Management.
- Maintaining frequent communication with the SSHO and Site Management regarding site activities and implementation of the Safety Program.
- Assisting in training of site personnel in the site-specific hazards.
- Ensuring site and personnel compliance with TK& K's and the client's Safety Program via mechanisms such as, but not limited to, audits, inspections, and periodic and routine communications.

3.2.2 Site Safety and Health Officer

The SSHO is responsible for ensuring that project activities conform to the requirements of the Safety Program. In this capacity, the SSHO will perform the following duties relative to implementation of the Safety Program:

- Ensure that all tasks and construction activities are performed in compliance with the Safety Program and applicable regulations.
- Process and prepare health and safety related documentation, reports, and submittals.
- Provide periodic health and safety audits.
- Update, maintain, and perform all site-specific monitoring requirements.

3.2.3 Site Manager/Supervisor

The Site Manager will supervise and direct all field activities as described in the SOW. The Site Manager's responsibilities include:

- Ensuring that the remedial actions conform to the requirements of the Safety Program.
- Confirming the location of all utilities and structures.
- Procuring all required permits.
- Conformance to all site safety, security, and government guidance documents and regulations.
- Coordinate and direct field activities and manage all field personnel, vendors, and subcontractors.

The Site Manager will delegate responsibility, as necessary, to the SSHO and members of the field team.

3.2.4 Field Team and Subcontractors

TK&K's field team and subcontractors are responsible for complying with the requirements of the Safety Program. All are encouraged to notify Site Management or SSHO in the event safety or health issues not identified in the Safety Program are encountered.

3.3 Organization

All personnel having the potential for exposure to site hazards are subject to the requirements of this HASP. Project contact information for key personnel is presented in Table 3-1. Table

Table 3-1 Key Project Personnel

Name	Company	Phone
Program Manager – Eric Blomberg	TK&K Services	850-294-1233
Task Manager – Brian Emery	TK&K Services	857-286-7634
Site Manager, SSHO- Cameron Po	TK&K Services	978-471-2908

3.4 Competent/Qualified Persons

A competent or qualified person will be onsite at all times during the completion of fieldwork. A list of competent/qualified persons are listed below. If additional competent or qualified persons are to be used during completion of the work, their qualifications will be provided at that time. Below is Table 3-2 which includes the name, company, and tasks of the qualified persons for this project. No work will be completed onsite unless a designated qualified person is present.

Table 3-2 Designated Competent/Qualified Persons

Name	Company	Task
Brian Emery	TK&K Services	Drilling, soil & groundwater sampling, monitoring well installation, surface water and sediment sampling
Cameron Po	TK&K Services	Drilling, soil & groundwater sampling, monitoring well installation, surface water and sediment sampling

3.5 Pre-Task Safety and Health Analysis

At a minimum, safety briefings (typically prior to start of work for the day) will be given daily by the SSHO. Topics will include proposed work scheduled, any special activities, requirements for PPE, and other topics pertinent to the SOW. Daily briefings will be documented as to topic, employees attending, and persons presenting. At the start of each work period, which is normally Monday, a site- specific safety topic will be selected and discussed in detail. All TK&K, client, and subcontractor personnel are required to attend the training, which will be documented by the SSHO on the attached Daily Briefing Form, see Appendix C. The training will consist of site-specific hazards and/or appropriate safety-related concerns.

3.6 Lines of Authority

Subcontractors are required to report to the SSHO or a designated competent person, who reports directly to the Program Manager.

3.7 Non-Compliance

TK&K will maintain procedures to monitor and measure on regular basis key characteristics of its operations and activities. This will include the information to track performance, relevant operational controls, and conformance with the organization's EHS objectives and milestones.

Management systems audits, surveillance, and inspections will be conducted as well as compliance audits on an established schedule. TK&K will maintain procedures for defining responsibility and authority for handling and investigating nonconformance, taking action to mitigate impacts, and for initiating compiling corrective action.

TK&K typically uses a tiered approach to disciplinary action. This approach utilizes prescriptive measures such as verbal warnings and letters to file for initial infractions. Subsequent measures include removal from the Site or termination.

3.8 Accountability

Health and safety is everyone's responsibility. Each TK&K employee has been entrusted with the responsibility to ensure that the policies and procedures outlined in our Company Health and Safety Program and this HASP are followed to the letter. Each supervisor is held responsible for the health and safety of those he or she supervises.

In addition to the project team members listed above, an Emergency Contact List has also been prepared. A copy of this list is provided as Table 11-1.

4.0 Subcontractors and Suppliers

TK&K will provide oversight and coordinate on-site/field activities to ensure the successful execution of tasks described within this HASP. Each subcontractor is responsible for providing supervision of its employees (as defined by 29 CFR 1910) and will provide qualified personnel and/or competent persons as, and where, required by law or regulation. Unless otherwise agreed to and documented in writing, each subcontractor will be responsible for managing and recording any injury or incident involving its employees as required by OSHA or other applicable laws and regulations.

4.1 Identification

Table 4-1 lists the subcontractors TK&K will retain to conduct tasks at the Site.

Table 4-1 Project Subcontractors

Subcontractor	Materials/Service
To Be Determined	Drilling, Monitoring Well Installation
To Be Determined	Utility Locator
To Be Determined	Laboratory
To Be Determined	Sampling
To Be Determined	Waste Disposal

4.2 Subcontractor Control and Responsibilities

All subcontractors will be provided a copy of this HASP. Subcontractors will review the HASP with their employees and supervisors and each individual is expected to sign the signature sheet identified as Appendix A of this HASP, certifying that they understand and will comply with the requirements of this plan. Subcontractors will provide Company Specific Programs and AHAs to TK&K for inclusion in the HASP. Applicable subcontractor personnel are expected to participate in all daily health and safety briefings. In accordance with contract requirements, all subcontractors are expected to comply with necessary plans and procedures. Deviation is cause for dismissal.

4.3 Safety Responsibilities

TK&K requires its subcontractors to work in a responsible and safe manner. Subcontractors for this project will be required to adhere to applicable requirements set forth in the USACE EM 385-1-1, (2008) in their work and safety plans. Joint safety inspections will be performed by acting Site Manager and SSHO and the various subcontractor representatives weekly, at a minimum.

5.0 Training

5.1 Site-Specific Training

All components of the HASP will be discussed with team members during the project safety indoctrination training. Specific concentration will be provided for the following components:

- Emergency response/notification
- Hypothermia (cold stress)/hyperthermia (heat stress) control and prevention
- PPE
- First Aid/CPR procedures
- Client-specific requirements
- Hazard Communication and Contaminant Information
- EHS expectations

5.2 Site Training and Certification Requirements

All personnel assigned to or regularly entering the project site will have received the required training. In accordance with 29 CFR 1910.120 and other OSHA Regulations, applicable required training for all site workers shall be in accordance with the following subsections.

5.2.1 Occupational Safety and Health Administration Training

Where necessary and applicable by regulation, all general site workers must have completed the 40- hour Hazardous Waste Operations and Emergency Response training course and 3 days field experience under the direct supervision of a trained experienced supervisor. The SSHO must have an additional 8 hours of specialized safety supervisory training. All workers must have annual refresher training. All training will be documented.

Workers on construction sites will receive training as required by 29 CFR 1926.

5.2.2 First Aid and Cardiopulmonary Resuscitation Training

At least one site employee will be certified in First Aid and CPR. The training shall be equivalent to that provided by the American Red Cross.

5.2.3 Bloodborne Pathogen Training

The SSHO will primarily be responsible for administering First Aid in the event of injury or incident. Therefore, the SSHO will receive training in controlling exposures to Bloodborne Pathogens (BBP).

5.2.4 Hearing Conservation Training

All site personnel exposed to noise levels exceeding 85-decibel 8-hour time-weighted average will be provided with training that addresses the following topics:

- Physical and psychological effects of high noise exposure
- Noise exposure limits
- Elements of the Hearing Conservation Program
- Selection, use, and limitations of hearing protection devices

5.2.5 Respiratory Protection Training

In accordance with 29 CFR 1910.134, all site personnel required to use respiratory protection devices will have received medical clearance and equipment-specific training. This training covers the use, limitations, inspection, maintenance, cleaning, and storage of respiratory protection devices required for use under the conditions of this Safety Program. Site-specific briefing/training will reinforce knowledge as necessary.

5.2.6 Personal Protective Equipment Training

In accordance with OSHA 29 CFR 1910, Subpart I (PPE), all PPE will be provided, used, and maintained in a sanitary and reliable condition. All PPE will be of construction, design, and material to provide employees protection against known or anticipated hazards. Personal protective equipment will be selected which properly and appropriately fits the employee. Site specific PPE is discussed in Section 11.

TK&K employees have been provided with training in accordance with the standard. Any concerns regarding the use of appropriate PPE will be brought to the attention of the SSHO.

5.2.7 Buddy System Training

Workers shall be instructed that all site work will be performed using the buddy system. Team members will keep in visual contact with each other at all times.

Team members will be made aware of any slip, trip, and lifting hazards along with any potential exposure to chemical substances, heat or cold stress, and general hazards within their work area.

5.2.8 Other

TK&K will assure that additional training or certification required by either TK&K or subcontracted employees is verified. These training topics or certifications may include: equipment / crane operator, diving, confined space, and others.

Supplemental training may be required for site-specific contaminants or as required due to changes in site conditions. Supplemental training may include Confined Space, additional Hazard Communication, and OSHA chemical-specific requirements. In the event supplemental training is required, documentation will be noted.

5.3 Emergency Response Training

All site personnel will be briefed in emergency response actions. Site personnel will be briefed on roles and responsibilities during an emergency as well as notification, potential emergency situations, rally points, and location of emergency equipment.

In the event of a general emergency at the work site, the work crew will follow the facility's evacuation procedures. These procedures will be reviewed on the first day of the project. In the event of a medical emergency, 9-1-1 will be called immediately for emergency response. The inspection team personnel will notify EMS using all necessary means (landline telephone or cell phone) and will remain at the scene until emergency medical services arrive. Evacuation procedures and emergency assistance contact information will be reviewed on the first day of

the project.

If a spill occurs during work at the site, TK&K will notify the Site Maintenance Supervisor immediately. Additional notifications will be made following the contact list located in section 3 of the Facility Response Plan (FRP). Table 6-2 in Section 6.0 of the Work Plan identifies the contacts in the Plan and the NYSDEC Spills Hotline telephone number.

5.4 Safety Meetings

At a minimum, safety briefings (typically prior to start of work for the day) will be given daily by the Site Manager and/or the SSHO. Topics will include proposed work scheduled, any special activities, requirements for PPE, and other topics pertinent to the SOW. Daily briefings will be documented as to topic, employees attending, and persons presenting. At the start of each work period, which is normally Monday, a site-specific safety topic will be selected and discussed in detail. All TK&K, client, and subcontractor personnel are required to attend the training, which will be documented by the SSHO. The training will consist of site-specific hazards and/or appropriate safety-related concerned and be documented on the attached Daily Briefing Form, see Appendix C.

5.5 Visitor Coordination and Training

Site visitors are defined as persons who are not employed at the project site, who do not routinely enter restricted work areas or, and whose presence is of short duration (i.e., 1 to 2 days at one time or per month).

Visitors who do not enter the work zone are required to meet the general requirements specified below. These visitors may include client personnel, TK&K personnel, commercial vendors, political representatives, and auditors or inspectors from local, district, or federal agencies.

5.5.1 General Requirements

The following requirements apply to visitors whose purpose is to observe site conditions or field activities with TK&K engineering personnel.

- The senior TK&K on-site representative and the SSHO will be notified of the nature and duration of the visit before visitors are permitted to enter the Site.
- The visitor's log will be completed, including the individual's name, date, and the name of the company or agency represented.
- A TK&K representative will escort the site visitor at all times while in the area. The SSHO, or designee, will be a member of the escorting party.
- Visitors will comply with specific safety and health requirements described below

5.5.2 Training Requirements

All visitors will receive site-specific training to ensure potential hazards and risks are identified. This training will consist of a safety briefing by the SSHO that will include:

- Location and description of potential hazards and risks
- Required PPE
- Areas of the Site that are closed to visitors
- The site evacuation plan and emergency procedures

- Other topics as deemed appropriate

6.0 Safety and Health Inspections

6.1 Task Logs and Inspections

6.1.1 Safety Log

The SSHO will maintain a Safety Log of all safety-related activities. The SSHO is responsible for ensuring that health and safety activities for the day, as well as Safety Meeting minutes, are included within the log or filed appropriately.

6.1.2 Training Log

The SSHO is responsible for ensuring that all training conducted relative to job site activities is documented appropriately. Documentation of training for all site workers will be available on- site.

6.1.3 Visitor Log

The SSHO is responsible for ensuring that all training conducted relative to job site activities is documented appropriately. Documentation of training for all site workers will be available on- site.

6.1.4 Site Inspection and Forms

Daily safety and health inspections will be conducted by the SSHO with the results recorded in the Safety Log or files appropriately.

Drilling operations will be inspected in accordance with OSHA and EM 385-1-1 requirements by a competent person.

The PSM will conduct periodic safety and health audits (at a minimum frequency of once per quarter) to ensure site personnel are performing the tasks in accordance with the Work Plan, HASP, and the Safety Program.

6.2 Equipment Inspections

Any piece of heavy equipment utilized will undergo initial inspection by both the operator and the SSHO and will undergo daily inspections at the beginning of each work day prior to commencing work by a competent person as per EM 385-1-1, Section 16.A.01. All inspections will be documented and records maintained in the project file. Should the unit fail a substantive safety part of the inspection, the unit will be repaired and re-inspected before being returned to service.

6.3 External Inspections and Certifications

Not applicable for these activities.

7.0 Safety and Health Expectations, Incentive Program, and Compliance

7.1 Goals and Objectives

In performing its mission, TK&K will conduct activities in a manner protecting human health and the environment:

- With commitment to zero incident/accidents and zero releases to the environment.
- With commitment to assuring employees and others work "safe every minute of every day".
- With commitment to regulatory compliance and other applicable requirements.
- In a manner protective of the worker, the public, and the environment.
- With pollution reduction goals and continual improvement targets in the foreground.
- Communicating EHS awareness and policy to all personnel.
- Seeking performance improvement input from involved or affected personnel.
- Identifying environmental aspects with potential for significant impact.
- Prescribing remedies to offset impact potential.

As indicated in TK&K's Statement of Safety and Health Policy, our program is established to be proactive in assuring safe work conditions. We fully expect all workers and visitors to comply with the requirements of this HASP and all applicable rules, policies, and regulations associated with the Site.

7.2 Site Incentive Program

Each site will be authorized to conduct appropriate incentives programs; however, an incentive program is not a requirement for any site. Safety incentives for the successful completion of site activities may include such things as employee lunches and clothing. The appropriateness of any proposed program must be approved by the PSM.

7.3 Non-Compliance

TK&K will maintain procedures to monitor and measure on regular basis key characteristics of its operations and activities. This will include the information to track performance, relevant operational controls, and conformance with the organization's EHS objectives and milestones.

Management systems audits, surveillance, and inspections will be conducted as well as compliance audits on an established schedule. TK&K will maintain procedures for defining responsibility and authority for handling and investigating nonconformance, taking action to mitigate impacts, and for initiating compiling corrective action.

TK&K typically uses a tiered approach to disciplinary action. This approach utilizes prescriptive measures such as verbal warnings and letters to file for initial infractions. Subsequent measures include removal from the Site or termination.

7.4 Accountability

Health and safety is everyone's responsibility. Each TK&K employee has been entrusted with the responsibility to ensure that the policies and procedures outlined in our Company Health

and Safety Program and this HASP are followed to the letter. Each supervisor is held responsible for the health and safety of those he or she supervises.

8.0 Accident Reporting

8.1 Exposure Data

Not anticipated on this project

8.2 Accident Investigations, Reports, and Logs

In the event that an accident or incident occurs at the job site, the PSM will be immediately notified (within 8 hours). The TK&K Notification of Incident Form, included as Appendix D, will be completed and forwarded within 24 hours to TK& K Management and the client's representative.

All work-related recordable injuries, illnesses and property damage accidents (excluding on-the-road vehicle accidents), in which the property damage exceeds $2,000 will be reported to the Engineer in Charge (EIC) verbally within 24 hours and a written report of the accident/incident submitted on ENG Form 3394, Accident Investigation Form, within 5 working days of the incident.

Emergency situations can be minimized through proper implementation of the HASP. If an emergency situation develops, the initial response will be to handle it in a calm, deliberate manner so that it is controlled, and the health and safety of the site workers and surrounding community are not jeopardized.

Should an incident occur resulting in a fatality, $100,000 or more in property damage, three or more persons being hospitalized, or any incident which would result in adverse publicity to the client, the client's representative will be immediately notified with regulatory (e.g., OSHA) contacts made as necessary.

9.0 Medical Support

For on-site medical support, there will be a First Aid and BBP kit available for use. At least one person trained in First Aid and CPR will be on-site; on-site personnel trained in CPR and First Aid are included in Appendix C. Any personnel with major injuries requiring emergency care CALL 911 if ambulance is required, the nearest hospital is Oneida Healthcare, 321 Genesee Street, Oneida, NY 13421, (315) 363-6000.

10.0 Personal Protective Equipment

All personnel performing operations on-site shall be required to use the appropriate level of PPE. This HASP makes provisions for the use of Level D for the hazards associated with a given task, operation, or expected contaminant level. The PPE expected to be required for the different project tasks are included in the AHA tables in Section 14. It is anticipated that workers will perform site activities in Level D. All personnel performing operations on-site will be required to wear Level D PPE at a minimum. Level D PPE requirements are listed below.

10.1 Level D Personal Protective Equipment

Level D PPE will be worn during non-intrusive site activities. Level D PPE consists of the following:

- Work clothes, e.g., coveralls (cotton) or long pants.
- Work gloves - leather or cotton, as necessary, for physical hazards; nitrile or latex inner and nitrile outer during activities when contact with potentially contaminated material is possible.
- Boots (Safety Toe Meeting ASTM F2412 and F2413).
- Safety glasses (Meet or Exceed ANSI (ASSE) Z87.1 Standard). Face Shields and/or Goggles shall be worn if the task requires.
- Hard hat (ANSI approved) if overhead hazards are present.
- High Visibility Apparel shall be worn (Meeting ANSI/ISEA 07-2004 Performance Class 2)

11.0 Plans, Programs, or Information Required

The following plans, programs, and other information are provided in the locations indicated:

- Health Hazard Control Program – see Section 14 (AHAs) of this HASP.

11.1 Emergency Response

Emergencies happen unexpectedly and quickly and require an immediate response; therefore, contingency planning and advanced training of staff are essential. Specific elements of emergency support procedures which are addressed in the following subsections include communications, preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures.

11.1.1 Communication

A variety of communication systems may be utilized during emergency situations. These are discussed in the following sections. The primary form of communication for onsite field crews will be cellular telephones. At least one person in each field crew will have a telephone for contacting appropriate authorities in an emergency. In addition, the use of portable 2-way radios may be used for communications within the field crew as well as hand signals.

11.1.2 Emergency Site Evacuation Routes and Procedures

Due to the mobile nature of the activity, site evacuation routes and rally points will change depending on the location of the work. During the daily site safety meeting, procedures and rally points to be used in the case of a site evacuation will be reviewed.

11.1.3 Spill Control and Response

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS should be consulted to assist in determining the best means of containment and cleanup. For small spills sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed as hazardous waste. An exclusion zone of 50-100 feet around the spill area should be established depending on the size of the spill.

The following steps should be taken by the Emergency Coordinator:

1. Determine the nature, identify and amounts of major spill components.
2. Make sure all unnecessary persons are removed from the spill area.
3. Notify appropriate response teams and authorities.
4. Use proper PPE in consultation with the ESS.
5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.)
6. If possible, try to stop the leak with appropriate material.

7. Remove all surrounding materials that can react or compound with the spill.

11.1.4 Fire Fighting

If a fire at the site is observed, the local fire department will be notified immediately (911). No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

11.1.5 Emergency Contact Numbers

Table 11-1 lists the emergency contact numbers to be used for this project. This table will also be posted in all site vehicles for use during the project.

Table 11-1 Emergency Contact Numbers

Contact	Firm or Agency	Telephone Number
Police	Local	911
Fire	Local	911
Rescue	Local	911
Hospital	Oneida Healthcare	315-363-6000
SSHO-Cameron Po	TK&K Services	978-816-8665
Program Manager-Eric Blomberg	TK&K Services	850-294-1233

11.1.6 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on-site:

- Industrial first aid kit
- Portable eye washes
- Communication devices, cell phone or two way radio
- Fire Extinguisher

11.1.7 Accident and Incident Reporting

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

- Cameron Po, Site Health and Safety Manger – 978-816-8665
- Eric Blomberg, Program Manager – 850-294-1233
- The employer of any injured worker if not a TK&K Services employee

Written confirmation of verbal reports are to be submitted within 24 hours. The accident/incident report is found in the TK&K Services Corporate Environmental, Health and Safety Program Manual. If the employee involved is not a TK&K Services employee, his employer shall receive a copy of the report.

12.0 Contractor Information

TK&K will assure compliance with the requirements of EM 385-1-1, OSHA (29 CFR 1910 and 1926), and TK&K policy requirements through formal and site-specific training programs, as well as routine inspections with follow-up compliance. Specific criteria for this Site are included in the following subsections.

12.1 Preliminary Evaluation

Prior to work or specific tasks/activities, qualified personnel will perform a preliminary evaluation of the site's characteristics. This preliminary evaluation includes the completion of the AHA tables, which identify hazardous conditions, and aid in the selection of appropriate employee protection methods and PPE.

All known or potential physical and chemical hazards that may pose a threat to the safety and health of site workers must be identified to ensure workers are adequately protected. Emphasis is placed on identifying conditions that may cause death or serious harm. All site workers must be vigilant in identifying hazards in the workplace and bringing them to the attention of supervisory personnel. Evaluation of work site characteristics and hazards will continue throughout the duration of the project.

While all personnel share responsibility in understanding and advising on-site hazards, the SSHO is responsible for thoroughly evaluating field operations with respect to potential hazards to personnel. These potential hazards and the specific procedures to be followed to help prevent or reduce exposure shall be reviewed and documented during the daily safety briefing.

Hazards due to normal site activities can be reduced by using common sense and following safe practices. The following practices are expressly forbidden:

- Running and horseplay.
- Use of tobacco products, eating, drinking, applying cosmetics, or chewing gum within the work zone.
- Ignition of flammable materials in the work zone without the proper Hot-Work Permit. Equipment will be bonded, grounded, and explosion resistant, as appropriate.
- Performance of tasks in the restricted area individually (i.e., working alone) Personnel must keep the following guidelines in mind when conducting field activities:
- Hazard assessment is a continuous process, personnel must be aware of their surroundings and constantly aware of the chemical and physical hazards that are or may potentially be present.
- Team members will be familiar with the physical characteristics of each site including wind direction, site access, and the location of communication devices and safety equipment.
- The location of overhead power lines and underground utilities must be established prior to conducting drilling activities

Team members will be familiar with emergency hand signals:

- Hand Gripping Throat: "Respirator or breathing problems, can't breathe."
- Thumbs up: "OK, I'm all right, I understand."
- Thumbs down: "No, negative."
- Hand(s) on top of head: "Need assistance."
- Grab buddy's wrist: "Evacuate site now, ask no questions."

12.2 Chemical Hazard Identification

The presence of chemical hazards creates potential personnel exposure via inhalation, ingestion, absorption, or contact with contaminants present in liquids, soil, or air. The list of chemicals to which workers may be exposed will be developed through the use of several information sources.

12.2.1 Hazard Communication

In order to comply with the OSHA Hazard Communication Standard (HCS) 29 CFR 1910.1200, the following shall apply to all commercial products containing hazardous substances, which are brought on-site:

- A written Hazard Communication Program will be made available to site personnel.
- Material Safety Data Sheets (MSDS) will be maintained for each product containing a hazardous substance, which is used on-site, and which meets the regulatory requirements of the HCS.
- All containers not supplied with adequate hazard labeling shall have a hazard communication label affixed to the container that communicates the health and physical hazards associated with working with the material.
- Employees working with hazardous substances shall be trained in accordance with the requirements of 29 CFR 1910.1200.
- An inventory of all hazardous substances used on-site will be maintained.
- Personnel, to include subcontractors, affected by hazardous substances use shall he informed of the hazards and of the location of appropriate MSDS.

12.3 Physical Hazard Identification

Physical hazards that may be encountered during field activities include, but are not limited to: cold stress, heat stress, flammable materials, hazards related to equipment handling, uneven/unstable surfaces, excessive noise, and heavy equipment operation. Those physical hazards specifically applicable to this Site are identified in the HASP.

12.3.1 Drilling Operations

Prior to drilling or performing any intrusive subsurface work a private utility locating service will be contracted to identify underground utilities within the work area to ensure all underground utilities have been reviewed and addressed. Any available drawings will also be reviewed to locate any underground utilities prior to intrusive work. Physical hazards that could potentially be encountered during drilling activities include being struck by heavy equipment. Personnel will not enter approach operating heavy equipment or enter an area outside of the direct view of the equipment operator prior to confirmed acknowledgement by the operator. Ground personnel shall not position themselves between equipment and stationary objects.

For drilling required in ecologically sensitive areas (i.e., wetlands), work will be conducted using heavy equipment modified to disperse weight to the greatest extent possible. Crawler-type dump trucks and low ground pressure, track-mounted equipment will be utilized. Crane mats will also be used, as necessary, to facilitate mitigation of impact to native soil and sediments.

12.3.2 Heavy Equipment Operation

Heavy equipment will be operated under the following conditions according to OSHA Regulations.

- The operation of heavy equipment will be limited to authorized personnel specifically trained for this task.
- The operator will use the safety devices provided with the equipment, including seatbelts. Backup warning indicators and horns will be operable at all times or a trained spotter will direct equipment operations.
- While heavy equipment is in operation, all personnel not directly required in the area will keep a safe distance from the equipment.
- Personnel will avoid moving into the path of operating equipment, and areas blinded from the operator's vision will be avoided.
- Additional riders will not be allowed on equipment unless it is specifically designed for that purpose, i.e., there is an additional seat with a seat belt.
- The operator will document inspection of heavy equipment daily prior to operation.

12.3.3 Mechanical Equipment Operation

Operation of mechanical equipment includes the following requirements, in addition to OSHA Regulations:

- Operation will be conducted by authorized personnel familiar with the machine, its operation, and safety provisions.
- Mechanical equipment will be inspected prior to use.
- Any equipment found to be defective in any manner will be removed from service and repaired prior to use.
- Hands, feet, etc. will be kept away from all moving parts.
- Maintenance and/or adjustments to machinery will not be conducted while in operation. Power will be disconnected prior to maintenance activities.
- An adequate operating area will be provided, allowing sufficient clearance and access for operation.
- Good housekeeping practices will be followed.

12.3.4 Material Lifting

Many types of objects are handled in normal day-to-day operations. Care should be taken in lifting and handling heavy or bulky items because they arc the cause of many back injuries. The following fundamentals address the proper lifting of materials to avoid back injuries:

- The size, shape, and weight of the object to be lifted must be considered. A worker shall not lift more than one person can handle comfortably.

- A firm grip on the object is essential; gloves shall be used if necessary, to protect the hands.
- The hands and object shall be free of oil, grease, and water, which might prevent a firm grip, and the fingers shall be kept away from any points that cause them to be pinched or crushed, especially when setting the object down.
- The item shall be inspected for metal slivers, jagged edges, burrs, rough or slippery surfaces, and pinch points.
- The feet shall be place far enough apart for good balance and stability. The footing surface should be firm.
- The worker shall get as close to the load as possible. The legs shall he bent at the knees.
- The back shall be kept as straight as possible.
- To lift the object, the legs are straightened from their bending position.
- A worker shall never carry a load that cannot be seen over or around.
- When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees, back straight, and the object lowered.

When two or more workers are required to handle an object, coordination is essential to ensure that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each worker, if possible, shall face the direction in which the object is being carried.

12.3.5 Electrical Hazards

Electrical wiring and apparatus safety procedures will be conducted in accordance with OSHA Regulations. These requirements include, but are not limited to:

- All electrical wiring and equipment will be of a type listed by Underwriters Laboratories (UL) or Factory Mutual Engineering Corp. (FM) for the specific application.
- All installations will comply with the National Electrical Code (NEC).
- All work will be accomplished by personnel familiar with and qualified for the class of work to be performed.
- Live parts of wiring or equipment will be guarded to protect all individuals or objects from harm
- Electric wire or flexible cord passing through work areas will be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, or pinching.
- Temporary power lines, switch boxes, receptacle boxes, metal cabinets, and enclosures around equipment will be marked to indicate the maximum operating voltage.
- Patched, oil-soaked, worn, or frayed electric cords or cables will not be used.
- Extension cords or cables will not be fastened with staples, hung from nails, or suspended by wire.
- All electrical circuits will be grounded in accordance with the NEC.
- Portable and semi-portable electrical tools and equipment will be grounded by a multi-conductor cord having an identified grounding conductor and a multi-contact polarized plug- in receptacle.
- Semi-portable equipment, floodlights, and work lights will be grounded. The protective ground of such equipment should be maintained during moving unless supply circuits

are de- energized.

- Double insulated tools will be distinctly marked and listed by UL or FM.
- Ground fault circuit interrupters (GFCI) are required in all circuits used for portable electric tools. All GFCIs will he UL listed and installed in accordance with the most recent edition of the NEC. Ground fault circuit interrupters may be sensitive to some equipment such as concrete vibrators.
- Flexible cord will be of a type listed by the UL. Flexible cord sets will contain the number of conductors required for the services plus an equipment ground wire. The cords will be hard usage or extra hard usage as specified in the NEC.
- Bulbs attached to festoon lighting strings and extension cords will be protected by wire guards or equivalent.
- Temporary wiring will be guarded, buried, or isolated by elevation to prevent accidental contact by workers or equipment.

12.3.6 Ladders

The following guidelines will be employed when using ladders:

- Manufactured ladders will be constructed of heavy-duty grade; Type II minimum, conforming to applicable ANSI standards.
- Ladders will not be spliced together to make a longer ladder.
- Straight ladders for egress will extend at least 3 ft. above the landing and, when possible, secured.
- Ladders will be inspected prior to use and defective ladders will be removed from service and repaired.
- The base of straight ladders will be set back a safe distance from the vertical, approximately one-fourth the working length of the ladder from the vertical plane of the top of support.
- Stepladders will be fully opened to permit the spreader to lock. Stepladders will not be closed and leaned against an object for access.
- Metal ladders will not be used for electrical work or in areas where they could contactenergized wiring.
- "Job-made" ladders (if allowed) will be constructed in accordance with OSHA 1926 Subpart X.

12.3.7 Scaffolds

Scaffolding is not anticipated to be required during the performance of the SOW. However, the following guidelines will be employed when using scaffolding:

- All scaffolds will be erected and maintained in accordance with OSHA (29 CFR 1910Subpart L) and the manufacturer's recommendations.
- Guardrails, mid-rails, and toe boards will be installed on all open sides of scaffolds as required.
- Access ladders will be provided unless the scaffold design incorporates an approved ladder.

12.3.8 Pressurized Hoses

Observe the following rules when using hoses:

- Before use, inspect hoses for defects, cuts, loose clamps, improper fittings, etc.
- Never apply air from an air hose to any part of the body or clothing.
- Use only standard Fittings for all hoses.
- All quick make up connections must be secured with safety lashing.

12.3.9 Explosive Atmosphere and Ignition Sources

Explosions and fires may arise spontaneously. However, more commonly, they result from site activities, such as moving drums, accidentally mixing incompatible chemicals, or introducing an ignition source (such as a spark from equipment) into an explosive or flammable environment.

Explosions and fires not only pose the obvious hazards of intense heat, open flames, smoke inhalation, and flying objects, but may also cause the release of toxic chemicals into the environment. Such releases can threaten both personnel on-site and members of the general public.

TK&K performs the following activities to protect against these hazards: monitoring for explosive atmospheres and flammable vapors using a combustible gas indicator; separation of all potential ignition sources from an explosive or flammable environment; use of non-sparking, explosion-proof equipment; and following safe practices when performing any task that might result in the agitation or release of chemicals. Some potential causes of explosions and fires include:

- Chemical reactions that produce explosion, fire, or heat
- Ignition of explosive or flammable chemical gases or vapors
- Ignition of materials due to oxygen enrichment
- Agitation of shock or friction-sensitive compounds
- Sudden release of materials under pressure

12.3.10 Hand Tools

Hand tools will be used according to OSHA Regulations and TK&K FLDs. Only tools that are in good condition shall be used. Improper and defective tools contribute to incidents. The following safe practices shall be observed when using hand tools:

- Use tools in the manner for which they were designed.
- Be sure of footing before using any tool.
- Do not use tools that have split handles, mushroom heads, worn jaws, or other defects.
- Do not use makeshift tools or other improper tools.

12.3.11 Sanitation

Applicable sanitation requirements are contained in OSHA Regulations and include the following unless otherwise approved.

- Field office/break trailers will be equipped with power and water. At a minimum, washing facilities will be set up using handi-wipes or a suitable equivalent.
- Appropriate numbers of portable sanitation facilities will be obtained. The units will be serviced as necessary.
- All work areas, to include the office/break trailer, will have trash receptacles. Areas will be kept free of trash and any equipment not being used will be removed and stored in the office/break trailer.

12.3.12 Illumination

Most work will be conducted during daylight hours. If field activities will be conducted between dusk and dawn, appropriate lighting will be supplied to allow illumination according to OSHA Regulations.

12.3.13 Heat Stress

One of the most common types of stress that can affect field personnel is heat stress. Heat stress may be one of the most serious hazards to workers at waste sites due to the PPE required. Engineering controls should be considered as the first measure to be taken to reduce hazards rather than the donning of PPE.

12.3.14 Cold Stress

Persons working in temperatures at or below freezing may become frostbitten. Experiencing extreme cold for a short time may cause severe injury to exposed body surfaces or result in profound generalized cooling, causing death. Areas of the body that have high surface area-to-volume ratios, such as fingers, toes, and ears, are the most susceptible. Response measures are presented in the illustration in the attached Figures.

12.3.15 Noise

Excessive noise during the performance of the scope of work is not anticipated, however, personnel will be provided, as a minimum, protection against the effects of hazardous noise exposure whenever the sound-pressure level exceeds 85 dB(A). In the event activities are modified and are anticipated

to exceed this limit, personnel will be provided training in accordance with Section 6.2.4.

Hearing protection may be in the form of ear insert devices to include disposable, preformed, or custom molded earplugs shall be fitted to the exposed individual by an individual trained in such fitting and able to recognize the difference between a good and a poor fit.

12.4 Biological Hazard Identification

Biological hazards which may be encountered in the field include poisonous plants, wild and/or rabid animals, snakes, ticks, and insects. The degree of hazard can range from annoyance to death from bites or anaphylactic shock. Recognition and avoidance are critical in maintaining a safe work site.

12.4.1 Tick Bites

The Center for Disease Control has noted the increase of Lyme disease and Rocky Mountain

Spotted Fever (RMSF), which are caused by bites from infected ticks that live in and near wooded areas, tall grass, and brush. Ticks are small, ranging from the size of a comma up to about one-quarter inch. They are sometimes difficult to see. The tick season extends from spring through summer.

Lyme disease has occurred in almost all states and is caused by ticks infected with a type of spirochete bacteria. Deer ticks are about one-quarter inch in size, and black or brick red in color. Male deer ticks are smaller and all black. The deer tick larva are extremely small, approximately the size of a period (.).
Rocky Mountain Spotted Fever has occurred in over one-half of the states, with the heaviest concentrations in Oklahoma, North Carolina, South Carolina, and Virginia. It is caused by Rocky Mountain wood ticks and dog ticks that have become infected with rickettsia bacteria. Both are black or tan in color.

Standard field gear (work boots, socks, and light-colored coveralls) provides good protection against tick bites, particularly if the joints arc taped. However, even when wearing appropriate field gear, the following precautions should be taken when working in areas that might he infested with ticks:

- When in the field, check yourself often for ticks, particularly on your lower legs and areas covered with hair. Look for "a freckle that moves".
- Spray outer clothing, particularly your pant legs, crotch, boots, and socks, but not your skin, with an insect repellent that contains permethrin or permanone.
- Follow manufacturer's instructions if using an insect repellant on the skin. For sampling activities be aware of potential cross contamination of samples.
- When walking in wooded areas, avoid contact with bushes, tall grass, or brush as much as possible.
- If you suspect that a tick is present, remove it with tweezers only, and not with matches or a lit cigarette. Grasp the tick near the head with the tweezers and pull gently. Do not use nail polish or any other type of chemical. Be sure to remove all parts of the tick's body. Once removed, disinfect the area with alcohol or a similar antiseptic. Report the incident to the SSHO.
- Look for signs of the onset of Lyme disease, such as a rash that looks like a bull’s-eye or an expanding red circle surrounding a light area, frequently with a small welt in the center. This rash can appear from several days to several weeks after the tick bite.
- Also look for signs of the onset of RMSF, an inflammation that is visible in the form of a rash comprised of many red spots under the skin, which appears 3 to 10 days after the tick bite. The rash frequently occurs on the ankles and wrists.
- The first symptoms of either disease are flu like chills, fever, headache, dizziness, fatigue, stiff neck, and bone pain. If immediately treated by a physician, most individuals recover fully in a short period of time. If not treated, more serious symptoms can occur.

If any of the signs and symptoms noted above appears, contact the SSHO.

12.4.2 Snakes

If bitten by a snake, remain calm and keep the affected area below the level of the heart and walk, do not run, to the nearest aid station for assistance. The SSHO will immediately transport the victim to the closest medical facility for treatment or send for appropriate medical assistance, whichever is faster.

The use of snakebite kits is not authorized. If at all possible, the snake should be identified to assure prompt medical treatment by the physician.

12.4.3 Poisonous Plants

Site personnel will need to be alert to the presence of poisonous plants. The most common types of poisonous plant are poison ivy, poison oak, and poison sumac. Skin contact with these plants can cause skin sensitization resulting in reddening, swelling, and itching of the affected areas. Skin exposure can result from either direct contact with the plant or contact with clothing or equipment previously exposed to the plant.

Site personnel will receive training in the recognition of poisonous plants and methods for preventing exposure during the site-specific safety briefing.

12.4.4 Animal or Insect Bites

Animal bites or stings are usually nuisances (localized swelling, itching, and minor pain) that can be handled by First Aid treatment. The bites of certain snakes, lizards, spiders, and scorpions contain sufficient poison to warrant medical attention. In addition, there are several species of caterpillars that contain stinging hairs that may cause a rash on contact or respiratory distress if the hairs arc inhaled.

There are diseases that can be transmitted by insect and animal bites (e.g., RMSF, Lyme disease [tick], rabies [mainly dogs, skunks, raccoons, and foxes], malaria, and equine encephalitis [mosquitoes]). The greatest hazard and most-common cause of fatalities from animal bites, particularly bees, wasps, and spiders is from a sensitivity reaction. Shock due to stings can lead to severe reactions in the circulatory, respiratory, and central nervous systems, which also can result in death.

If an assigned employee has a history of allergic reactions to bites, they will he required to have their prescribed treatment with them, and the SSHO personnel will know where it is located. All stings or bites will be taken seriously. Anyone stung or bitten will be required to stop work while that person is observed for signs of severe swelling, shortness of breath, nausea, or shock. If there is any doubt, medical attention will be obtained.

All wild animals are to be avoided, particularly wild animals that are unusually passive or aggressive. Any such animals will be reported to appropriate site personnel. Skunks, raccoons, foxes, and bats are wild animals most frequently found to be infected with rabies; however, any warm-blooded animal could be infected. If an individual is bitten by an animal suspected of rabies infection, an attempt will be made to keep the animal under surveillance until appropriate assistance is called to take care of the animal. The animal should then be tested. A dead animal suspected of infection should also be preserved and tested. Health departments are often sources

of testing or obtaining information about where testing can be done.

The bite area should be washed with soap and water and disinfected with 70% alcohol as quickly as possible, followed by treatment by a doctor or emergency room.

Rabies is preventable, even after being bitten, if treatment is begun soon enough. Hence, prompt medical attention and determining whether the animal that has bitten you is infected are very important. Rabies is not curable once symptoms or signs appear.

13.0 Site Specific Hazards and Controls

This section presents information and suspected chemical and physical hazards associated with the work areas, tasks, and operations described in Section 2. As new data becomes available, this HASP may need to be modified accordingly. An AHA for each task is presented in Table 14-1.

TABLE 14-1. ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

Date Prepared: 12/4/2018
AHA No.:
Project Name: Verona AFFF Investigation
Activity/Work Task: DFSP Verona NY Soil Boring, Soil Sampling MW Install
Dept. / Div. / Section: Defense Logistics Agency Installation Support for Energy
Activity Location(s): DFSP Verona, NY
Prepared By: Seth Crowell
Task Start Date: 12/10/2018
Task Duration: Est. 3 Days
Task Supervisor: Seth Crowell
Reviewed By: Edward Kurja

Overall Risk Assessment Code (RAC): L

Risk Assessment Code Matrix

E=Extremely High Risk H=High Risk M=Moderate Risk L=Low Risk		Probability				
		Frequent	Likely	Occasional	Seldom	Unlikely
Severity	Catastrophic	E	E	H	H	M
	Critical	E	H	H	M	L
	Marginal	H	M	M	L	L
	Negligible	M	L	L	L	L

Job Steps	Hazards	Actions to Eliminate or Minimize Hazards	RAC
1. Site Mobilization	- Automobiles and light trucks - Overhead obstacles (power lines or pipelines, block and tackle, lights, structures) - Utilities - aboveground (power, natural gas, water, etc.) - Utilities - overhead (power, natural gas, water, etc.) - Utilities - underground (power, natural gas, water, etc.) - Slip/Trip - Laceration - Puncture - Noise - Lifted, strained by - Struck by moving equipment - Caught between - Contacted by - Electric shock - Equipment rollover - Inclement weather - lightning, high wind	1. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques. 2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards. 3. Spotters will be used when backing up trucks and heavy equipment and moving equipment 4. Personnel will be required to wear hard hats that meet ANSI Standards 5. Hard toed boots meeting ASTM F2413 will be worn 6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers 7. Safety Glasses will be worn while on the worksite. 8. Equipment will have rollover protective structures and seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; all slings chains and ropes will be rated for the load in which it is expected to lift;	L

		9. Absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; avoid equipment swing areas; know hand signals; all equipment will be equipped with backup alarms. 10· Cut resistant work gloves will be worn. All hand and power tools will be maintained in safe condition. First aid kits will be available by work area. 11 All electricity will be locked and tagged out until the workers are not actively in the area where there are exposed energized lines. Once the system has been set up and all exposed electrical lines covered, the equipment may then be energized 12. Personnel will wear reflective safety vests.	
2. Soil Borings by Hollow Stem Auger, Surface and Split Spoon Sampling, Monitoring Well Installation	- Automobiles and light trucks - Hand tools - Power tools (electric, gas, hydraulic, pneumatic) - Utilities - aboveground (power, natural gas, water, etc.) - Utilities - overhead (power, natural gas, water, etc.) - Utilities - underground (power, natural gas, water, etc.) - Slip/Trip - Laceration - Puncture - Noise - Lifted, strained by - Struck by moving equipment - Caught between - Contacted by - Electric shock - Inclement weather - lightning, high wind, snow, rain, sleet - Cold Stress - Exposure to hazardous chemicals/contaminants -Contact with underground utilities	1. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques. 2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards. 3. Spotters will be used when backing up trucks and heavy equipment and moving equipment 4. Personnel will be required to wear hard hats that meet ANSI Standards 5. Hard toed boots meeting ASTM F2413 will be worn 6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers 7. Safety Glasses will be worn while on the worksite. 8. Equipment will have rollover protective structures and seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; all slings chains and ropes will be rated for the load in which it is expected to lift; spills and absorbent materials will be readily available; drip pans, polyethylene sheeting or other means will be used for secondary containment; eye contact with operators will be made before approaching equipment; equipment will not be approached on blind sides; avoid equipment swing areas; know hand signals; all equipment will be equipped with backup alarms. 9.· Cut resistant work gloves will be worn. All hand and power tools will be maintained in safe condition. First aid kits will be available by work	L

		area. 10. Private Utility Clearance services will be utilized to mark out buried utilities in the work areas. 11. All electricity will be locked and tagged out until the workers are not actively in the area where there are exposed energized lines. Once the system has been set up and all exposed electrical lines covered, the equipment may then be energized 12. Personnel will wear reflective safety vests. 13. Identify overhead utilities prior to beginning work with heavy equipment. 14. Personnel shall be aware of and avoid pinch point hazards. 15. Personnel shall take required breaks to warm-up as needed. 16. Personnel shall wear insulated clothing based the ambient temperature and wind chill conditions. 17. PID measurements over 5 ppm will be the action level to assess the source and allow the area to ventilate naturally. 18. Review all available “as-built” drawings.	
3. Demobilization	- Automobiles and light trucks - Overhead obstacles (power lines or pipelines, block and tackle, lights, structures) - Utilities - aboveground (power, natural gas, water, etc.) - Utilities - overhead (power, natural gas, water, etc.) - Utilities - underground (power, natural gas, water, etc.) - Slip/Trip - Laceration - Puncture - Noise - Lifted, strained by - Struck by moving equipment - Caught between - Contacted by - Electric shock - Equipment rollover - Inclement weather - lightning, high wind,	1. Site personnel will be instructed on proper lifting techniques; Mechanical devices should be used to reduce manual handling of materials; team lifting should be utilized if mechanical devices are not available; Instruct personnel on proper lifting techniques. 2. Maintain work areas safe and orderly; unloading areas should be on even terrain; mark and repair if possible tripping hazards. 3. Spotters will be used when backing up trucks and heavy equipment and moving equipment 4. Personnel will be required to wear hard hats that meet ANSI Standards 5. Hard toed boots meeting ASTM F2413 will be worn 6. Hearing protection will be worn with a noise reduction rating capable of maintaining personal exposure below 85 dBA (ear muffs or plugs); SHSO will determine the need for hearing protection; all equipment will be equipped with manufacturer's required mufflers 7. Safety Glasses will be worn while on the worksite. 8. Equipment will have rollover protective structures and seat belts; operators shall wear seat belts when operating equipment; do not operate equipment on grades which exceed manufacturer's recommendations; equipment will have guards, canopies or grills to protect from flying objects; ground personnel will stay clear of all suspended loads; all slings chains and ropes will be rated for the load in which it is expected to lift;	L

Equipment	Inspection	Training
- Compressor - Power Cord Sets	- SSHO/QC Daily Site Inspections - Monthly First Aid Kits	- First Aid/CPR - Qualified Heavy Equipment Operator

- Power tools - First Aid Kit - Eye Wash Station - Safety Shoes - Safety Glasses - Hardhat - Geoprobe equipped for Hollow Stem Auger - Hand Auger - Fire Extinguisher - Flame Ionizing Detector (FID)	- Power Cord Sets (Daily) - All Heavy Equipment	- Hazard Communication

Involved Personnel: Seth Crowell

APPENDIX A PLAN ACKNOWLEDGEMENT

ALL SITE PERSONNEL MUST REVIEW AND SIGN THIS FORM

This form serves as documentation that field personnel have read, or have been informed of, and understand the provisions of the SHSP. All field personnel shall sign this section after site-specific training is completed and before being permitted to work onsite.

I have read, or have been informed of, the Site-Specific Health and Safety Plan for this project and understand the information presented. I will comply with the provisions contained therein.

Name (Print and Sign)	Date

Name (Print and Sign)	Date

APPENDIX B FIRST AID TRAINED INDIVIDUALS

First Aid Trained Site Personnel

Name	Company	Training Expiration Date
Cameron Po	TK&K Services	
Brian Emery	TK&K Services	
Eric Blomberg	TK&K Services	

APPENDIX C DAILY BREIFING FORM

DAILY SAFETY BRIEFING

CLIENT: _____ JOB LOCATION: _____
ADDRESS: _____ H & S REP: _____
CLIENT CONTACT NAME: _____ TK&K JOB #: _____
CLIENT CONTACT PHONE #: _____ TK&K LOCATION: _____
DATE: _____ TK&K PHONE #: _____

DESCRIPTION OF WORK: _____

_____

REQUIRED PPE: _____

EMERGENCY TELEPHONE NUMBERS

FIRE _____ POLICE _____ AMBULANCE RESCUE ____
HOSPITAL NAME & LOCATION: ____

TOPICS COVERED

☐ TOXIC SUBSTANCE	☐ DRAINS / SUMPS	☐ PROPER LIFTING	☐ PNEUMATIC TOOLS
☐ CORROSIVE SUBSTANCE	☐ SHARP OBJECTS	☐ RESPIRATORY PROTECTION	☐ HEAT/COLD STRESS
☐ FLAMMABLE SUBSTANCE	☐ DRILLING	☐ WORKING ON/NEAR WATER	☐ LADDERS
☐ COMBUSTILE SUBSTANCE	☐ LIGHTING	☐ VEHICLE TRAFFIC	☐ HEAVY EQUIPMENT/NOISE
☐ REACTIVE SUBSTANCE	☐ SLIPS / TRIPS / FALLS	☐ HOT WORK	☐ DRUM HANDLING
☐ STRUCK/CONTACT/CAUGHT BY	☐ AIR MONITORING (SEE PAGE 2)	☐ ASBESTOS	☐ SPLASH/SPRAY
☐ EXCAVATION/TRENCHING	☐ UNDERGROUND UTILITIES	☐ OVERHEAD UTILITIES	☐ EMERGENCY/FIRST-AID
☐ CONFINED SPACE (SEE PLAN)	☐ EVACUATION PLAN	☐ ANIMALS/INSECTS/PLANTS	☐ LOCKOUT / TAGOUT

WEATHER _____ OTHER _____

COMMENTS _____

_____

I have read, or have been informed of, the Site-Specific Health and Safety Plan for this project and understand the information presented. I will comply with the provisions contained therein.

Name (Print)	Signature	Organization	Date

This form serves as documentation that field personnel have attended and/or been informed of the ongoing and daily health and safety concerns of the designated project. All field personnel shall sign this log after each daily site-specific health and safety

APPENDIX D INCIDENT FORM

TK&K SERVICES

INCIDENT/NEAR MISS REPORT AND INVESTIGATION

TYPE OF INCIDENT - CHECK ALL THAT APPLY

☐ INJURY/ILLNESS	☐ VEHICLE DAMAGE	☐ PROPERTY DAMAGE	☐ FIRE
☐ SPILL/RELEASE	☐ PERMIT EXCEEDENCE	☐ HIGH LOSS POTENTIAL (NEAR MISS)	☐ OTHER

GENERAL INFORMATION

PROJECT/OFFICE:	REPORT #:	**DATE OF REPORT**:
DATE OF INCIDENT:	**MILITARY TIME**:	DAY OF WEEK:
SUPERVISOR ON DUTY:	AT SCENE OF INCIDENT: ☐ YES	☐ NO
LOCATION OF INCIDENT:		
WEATHER CONDITIONS:	ADEQUATE LIGHTING AT SCENE: ☐ YES ☐ NO	☐ N/A

DESCRIBE WHAT HAPPENED (STEP BY STEP - use additional pages if necessary)

1. ***What was the employee doing, or what was happening, just before the incident occurred?*** **Describe the activity, as well as the equipment, tools, or material in use.**

2. ***What happened?*** **What was the contact or event and how did it occur?**

AFFECTED EMPLOYEE INFORMATION

(Include injured person, driver/operator, or employee whose activities resulted in the incident. Use another page to provide information for additional employees)

NAME:	EMPLOYEE: X YES	☐ NO
☐ **MALE** ☐ **FEMALE**		
JOB CLASSIFICATION:	YEARS IN JOB CLASSIFICATION:	
TIME EMPLOYEE BEGAN WORK: AM/PM	**DATE OF HIRE** :	AGE:
DID INCIDENT RELATE TO ROUTINE TASK FOR JOB CLASSIFICATION:	☐ YES	☐ NO

INJURY/ILLNESS INFORMATION

NATURE OF INJURY OR ILLNESS: ***Body part affected and how it was affected. Be more specific than "hurt", "pain", or "sore". e.g. "strained back"***

OBJECT/EQUIPMENT/SUBSTANCE CAUSING HARM:

FIRST AID PROVIDED: ☐ YES ☐ NO

IF YES, WHERE WAS IT GIVEN: ☐ ON SITE ☐ OFF SITE

IF YES, WHO PROVIDED FIRST AID:

WILL THE INJURY/ILLNESS RESULT IN: ☐ RESTRICTED DUTY ☐ LOST TIME ☐ UNKNOWN

IF EMPLOYEE DIED, DATE OF DEATH:

MEDICAL TREATMENT INFORMATION

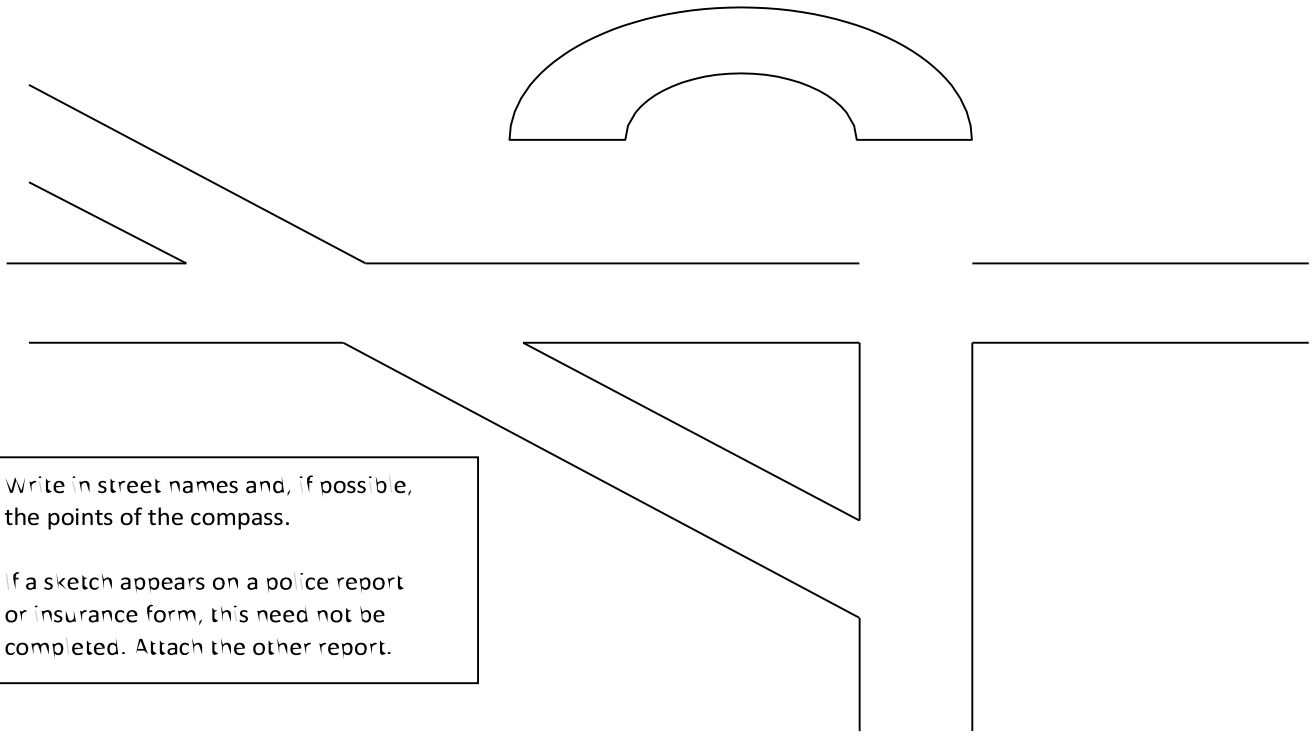
WAS MEDICAL TREATMENT PROVIDED?:	☐ YES	☐ NO	
IF YES, WAS MEDICAL TREATMENT PROVIDED:	☐ ON SITE	☐ DR.'S OFFICE	☐ HOSPITAL ER

HOSPITALIZED OVERNIGHT AS IN-PATIENT?	☐YES	☐NO	
NAME OF PERSON(S) PROVIDING TREATMENT:			
ADDRESS WHERE TREATMENT WAS PROVIDED:			
TYPE OF TREATMENT:			
VEHICLE AND PROPERTY DAMAGE INFORMATION			
VEHICLE/PROPERTY DAMAGED:			
DESCRIPTION OF DAMAGE:			
SPILL AND AIR EMISSIONS INFORMATION			
SUBSTANCE SPILLED OR RELEASED:	FROM WHERE:	TO WHERE:	
ESTIMATED QUANTITY/DURATION:			
CERCLA HAZARDOUS SUBSTANCE? YES ☐NO ☐	RQ EXCEEDED? YES ☐NO ☐SPECIFY RQ: _____		
REPORTABLE TO AGENCY? YES ☐NO ☐	SPECIFY:_____(place report of telecon in project file)		
WRITTEN REPORT? YES ☐NO ☐TIME FRAME:_____	(place report in project file)		
RESPONSE ACTION TAKEN			
PERMIT EXCEEDENCE			
TYPE OF PERMIT:	PERMIT #:		
DATE OF EXCEEDENCE:	DATE FIRST KNOWLEDGE OF EXCEEDENCE:		
PERMITTED LEVEL OR CRITERIA (e.g., Water quality):			
EXCEEDENCE LEVEL OR CRITERIA:	EXCEEDENCE DURATION:		
REPORTABLE TO AGENCY? YES ☐NO ☐	SPECIFY:_____(place telecon in project file)		
WRITTEN REPORT?	YES ☐NO ☐TIME FRAME:_____(place report in project file)		
RESPONSE ACTION TAKEN:			
NOTIFICATIONS			
NAME(S) OF PERSONNEL NOTIFIED:	DATE/TIME:		
CLIENT NOTIFIED:	DATE/TIME:	BY WHOM:	
AGENCY NOTIFIED:	DATE/TIME:	BY WHOM:	☐N/A
CONTACT NAME:			
PERSONS PREPARING REPORT			
EMPLOYEE'S NAME: (PRINT) Paul Anderson	SIGN:		
EMPLOYEE'S NAME (PRINT)	SIGN:		
SUPERVISOR'S NAME: (PRINT) **PHONE NUMBER:**	SIGN: **DATE:**		
NOTE: Supervisor to forward a copy of Incident Report to immediate supervisor ASAP, but no later then 24 hours after incident.			

INCIDENT SKETCH

CORPORATE INCIDENT REPORT # _____

VEHICLE INCIDENTS



Write in street names and, if possible, the points of the compass.

If a sketch appears on a police report or insurance form, this need not be completed. Attach the other report.

TK&K SERVICES

CORPORATE INCIDENT REPORT #

INVESTIGATIVE REPORT _____

DATE OF INCIDENT:_____ DATE OF INVESTIGATION REPORT:_____

INCIDENT COST:	ESTIMATED: $_____		ACTUAL: $_____
OSHA RECORDABLE(S):	☐YES	☐NO	# RESTRICTED DAYS_____ # DAYS AWAY FROM WORK_____

CAUSE ANALYSIS

Was the activity addressed in a procedure?	☐YES (Attach a copy)	x☐NO

IMMEDIATE CAUSES – WHAT ACTIONS AND CONDITIONS CONTRIBUTED TO THIS EVENT? (USE NEXT PAGE)

BASIC CAUSES - WHAT SPECIFIC PERSONAL OR JOB FACTORS CONTRIBUTED TO THIS EVENT? (USE NEXT PAGE)

ACTION PLAN

REMEDIAL ACTIONS - WHAT HAS AND OR SHOULD BE DONE TO CONTROL EACH OF THE CAUSES LISTED? INCLUDE MANAGEMENT PROGRAMS (SEE ATTACHED LIST) FOR CONTROL OF INCIDENTS IF APPLICABLE.

ACTION	PERSON RESPONSIBLE	TARGET DATE	COMPLETION DATE

PERSONS PERFORMING INVESTIGATION

INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:

MANAGEMENT REVIEW

PROJECT/OFFICE MANAGER (PRINT)	SIGN:
COMMENTS:	
CORPORATE HEALTH AND SAFETY OFFICER (PRINT)	SIGN:
COMMENTS:	

NOTE: Attach additional information as necessary. Supervisor to forward copy of Investigative Report no later then 72 hours after the incident. A copy shall be sent to the Corporate Health and Safety Officer within 24 hours of completion of the report.

TK&K SERVICES

EXAMPLES OF IMMEDIATE CAUSES	
SUBSTANDARD ACTIONS	SUBSTANDARD CONDITIONS
1. OPERATING EQUIPMENT WITHOUT AUTHORITY 2. FAILURE TO WARN 3. FAILURE TO SECURE 4. OPERATING AT IMPROPER SPEED 5. MAKING SAFETY DEVICES INOPERABLE 6. REMOVING SAFETY DEVICES 7. USING DEFECTIVE EQUIPMENT 8. FAILURE TO USE PPE PROPERLY 9. IMPROPER LOADING 10. IMPROPER PLACEMENT 11. IMPROPER LIFTING 12. IMPROPER POSITION FOR TASK 13. SERVICING EQUIPMENT IN OPERATION 14. UNDER INFLUENCE OF ALCOHOL/DRUGS 15. HORSEPLAY	1. GUARDS OR BARRIERS 2. PROTECTIVE EQUIPMENT 3. TOOLS, EQUIPMENT, OR MATERIALS 4. CONGESTION 5. WARNING SYSTEM 6. FIRE AND EXPLOSION HAZARDS 7. POOR HOUSEKEEPING 8. NOISE EXPOSURE 9. EXPOSURE TO HAZARDOUS MATERIALS 10. EXTREME TEMPERATURE EXPOSURE 11. ILLUMINATION 12. VENTILATION 13. VISIBILITY

EXAMPLES OF BASIC CAUSES	
PERSONAL FACTORS	JOB FACTORS
1. CAPABILITY 2. KNOWLEDGE 3. SKILL 4. STRESS 5. MOTIVATION	1. SUPERVISION 2. ENGINEERING 3. PURCHASING 4. MAINTENANCE 5. TOOLS/EQUIPMENT 6. WORK STANDARDS 7. WEAR AND TEAR 8. ABUSE OR MISUSE 9. CHANGE (Conditions, scope, work methods, personnel)

MANAGEMENT PROGRAMS FOR CONTROL OF INCIDENTS	
1. LEADERSHIP AND ADMINISTRATION 2. MANAGEMENT TRAINING 3. PLANNED INSPECTIONS 4. TASK ANALYSIS AND PROCEDURES 5. TASK OBSERVATION 6. EMERGENCY PREPAREDNESS 7. ORGANIZATIONAL RULES 8. ACCIDENT/INCIDENT ANALYSIS 9. PERSONAL PROTECTIVE EQUIPMENT	10. HEALTH CONTROL 11. PROGRAM AUDITS 12. ENGINEERING CONTROLS 13. PERSONAL COMMUNICATIONS 14. GROUP MEETINGS 15. GENERAL PROMOTION 16. HIRING AND PLACEMENT 17. PURCHASING CONTROLS

NOTIFICATION REMINDER

Fatalities or hospitalization (admittance) of three or more individuals requires notification to OSHA within 8 hours. Contact the Corporate Health and Safety Officer to make the notification. If unavailable, the senior operations person on site should make the notification.

APPENDIX E EQUIPMENT INSPECTION FORM

TK&K SERVICES

DAILY EQUIPMENT INSPECTION

EQUIP. NO. _____ TYPE _____

MANUFACTURER _____ MODEL _____

PROJECT _____ DATE _____

ENGINE HRS/MILEAGE _____ SHIFT _____

Check appropriate column and describe correction needed.

	Condition Good	Correction Needed
Steering	_____	_____
Service Brakes	_____	_____
Emergency Brakes	_____	_____
Retarder	_____	_____
Transmission	_____	_____
Controls	_____	_____
Hydraulic Leaks	_____	_____
Exhaust System	_____	_____
Warning Gauges	_____	_____
Windshield	_____	_____
Lights	_____	_____
Mirrors	_____	_____
Seat and Seat Belts	_____	_____
Tires/Tread	_____	_____
Regular Horn	_____	_____
Back-up Alarm	_____	_____
Steps, Hand-holds	_____	_____
Fire Extinguisher	_____	_____
Rollover Cage	_____	_____
Other	_____	_____

Remarks: _____

_____

_____

Signed _____
Operator

Repairs or adjustments completed:

Date: _____ Signed _____
Equipment Supervisor/Mechanic

APPENDIX F INFECTOUS DISEASE SAFETY AND PREVENTION GUIDELINES

Infectious Disease Safety and Prevention Guidelines

The following guidance is intended to reduce workplace exposure to infectious respiratory and other viruses such as COVID-19 and Influenza. This effort to decrease the spread of disease during the current 2020 COVID-19 pandemic also offers us the opportunity to reevaluate the impact to our workplace at all times from infectious diseases and to strive for a healthier workplace. Specific outbreaks and guidance by local (facility, governmental) bodies take precedence over these minimum requirements.

The goal of this guidance is to:

- Reduce transmission among employees
- Maintain healthy business operations
- Maintain a healthy work environment

Preventive Measures for Person-to-Person Spread:

- Maintain good social distance (about 6 feet) is very important in preventing the spread of infectious disease
- Avoid touching your eyes, nose, and mouth with unwashed hands
- Cover your mouth
    - Remember to always cover your mouth and nose with a tissue when you cough or sneeze or use the inside of your elbow
    - Throw used tissues in the trash
    - Immediately wash your hands with soap and water for at least 20 seconds. If soap and water are not readily available, clean your hands with a hand sanitizer that contains at least 60% alcohol
- Separating sick employees
    - Employees who appear to have symptoms (i.e., fever, cough, or shortness of breath) upon arrival at work or who become sick during the day should immediately be separated from other employees, customers, and visitors and sent home. Employees are expected to self-assess and not come to work symptomatic in the first place.
    - If an employee is confirmed to have COVID-19 infection, Influenza or other infectious disease, it is their responsibility to notify their immediate supervisor if they have exposed others in the workplace. The Company will inform fellow employees of their possible exposure in the workplace but maintain confidentiality as required by the Americans with Disabilities Act (ADA). The Company will instruct fellow employees about how to proceed based on the CDC Public Health Recommendations for Community-Related Exposure.
- Be alert for symptoms
    - Watch for fever*, cough, or shortness of breath
    - Take temperature if symptoms develop
- Be alert for emergency warning signs (COVID-19 specifically) including:
    - Difficulty breathing or shortness of breath
    - Persistent pain or pressure in the chest
    - Becoming confused and disoriented
    - Bluish lips or face

* For the purpose of this guidance, fever is defined as subjective fever (feeling feverish) or a measured temperature of 100.4oF (38oC) or higher. Note that fever may be intermittent or may not be present in some people, such as those who are elderly, immunosuppressed, or taking certain medications (e.g., NSAIDs).

Reducing Contact with Contaminated Surfaces or Objects:

It may be possible that a person can spread an infectious virus (such as COVID-19) by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. **For this reason, good housekeeping and regular cleaning is essential.**

Workplace settings should practice routine cleaning (between shifts or at a minimum daily) of frequently touched hard surfaces, soft surfaces and electronics. Frequently touched surfaces may include but are not limited to tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, sinks, steering wheels, etc. Additional recommended safe practices in the workplace include:

- Washing your hands often with soap and water. If soap and water are not available, use an alcohol-based hand rub. Also, routinely clean frequently touched surfaces.
- Avoiding using other employees' phones, desks, offices, or other work tools and equipment, when possible. If necessary, clean and disinfect them before and after use.
- For electronics, such as tablets, keyboards, touch screens and remote controls employees should consider utilizing wipeable cover and cleaning and disinfecting. Electronics can be cleaned and disinfected using alcohol-based wipes or sprays containing at least 70% alcohol. Shared electronic equipment should be disinfected before and after each shift or change in personnel.

The EPA has provided guidance on which disinfectant is effective per commonly known viruses and can be found by following this link:

https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2

Washing hands can keep you healthy and prevent the spread of respiratory and other infections from one person to the next. Germs can spread from other people or surfaces when you:

- Touch your eyes, nose, and mouth with unwashed hands
- Prepare or eat food and drinks with unwashed hands
- Touch a contaminated surface or objects
- Blow your nose, cough, or sneeze into hands and then touch other people's hands or common objects

You can help yourself and your fellow coworkers stay healthy by washing your hands often, especially during these key times when you are likely to get and spread germs:

- **Before, during,** and **after** preparing food
- **Before** eating food
- **Before** and **after** caring for someone at home who is sick with vomiting or diarrhea
- **Before** and **after** treating a cut or wound
- **After** using the toilet
- **After** blowing your nose, coughing, or sneezing
- **After** touching an animal, animal feed, or animal waste

- **After** handling pet food or pet treats
- **After** touching garbage

Using Hand Sanitizer When You Can't Use Soap and Water:

If soap and water are not readily available, you can use an alcohol-based hand sanitizer that contains at least 60% alcohol. Washing hands with soap and water is the best way to get rid of germs in most situations. You can tell if the sanitizer contains at least 60% alcohol by looking at the product label. Sanitizers can quickly reduce the number of germs on hands in many situations. However, the following should be noted:

- Sanitizers do **not** get rid of all types of germs
- Hand sanitizers may not be as effective when hands are visibly dirty or greasy
- Hand sanitizers might not remove harmful chemicals from hands like pesticides and heavy metals

Preventive Measures at the Jobsite

Construction sites and other non-office locations can be challenging to maintain protective measures due to the nature of activities, the presence of subcontractors and non-Company employees, and other hazards present (physical and chemical) requiring PPE.

- Increasing physical space between employees and clients to 6 feet, if this is not possible masks should be worn for essential work, if social distancing is mandated
- Break meetings into groups of less than 10 individuals, consider moving health and safety briefings outdoors, or provide briefing electronically. Discontinue sharing pens and administrative forms including paperwork where possible. Have supervisors conduct roll calls and confirm attendance at meetings
- Designate areas for meetings that have good ventilation and space to allow for social distancing. Office trailers should have signage designating access. (i.e., delivery drivers do not enter, etc.)
- Implementing flexible meeting and travel options (e.g., postpone non-essential meetings or events)
- Downsizing operations
- Delivering services remotely (e.g. phone, video, or web)
- Do not share PPE, including hardhats, hearing protection, face shields etc. without disinfecting between uses

Respiratory etiquette and hand hygiene for employees, customers, and worksite visitors:

- Provide tissues and no-touch disposal receptacles.
- Provide soap and water in the workplace. If soap and water are not readily available, use alcohol-based hand sanitizer that is at least 60% alcohol. If hands are visibly dirty, soap and water should be chosen over hand sanitizer. Ensure that adequate supplies are maintained.
- Place hand sanitizers in multiple locations to encourage hand hygiene
- Place posters that encourage hand hygiene to help stop the spread at the entrance to your workplace and in other workplace areas where they are likely to be seen
- Discourage handshaking – encourage the use of other noncontact methods of greeting

Take care when attending meetings and gatherings:

- Carefully consider whether travel is necessary
- Consider using videoconferencing or teleconferencing when possible for work-related meetings and gatherings.
- Consider canceling, adjusting, or postponing large work-related meetings or gatherings that can only occur in-person.
- When videoconferencing or teleconferencing is not possible, hold meetings in open, well-ventilated spaces.

Medical Personal Protective Equipment (MPPE)

While engineering and administrative controls are considered more effective in minimizing exposure to SARS-CoV-2, MPPE may also be needed to prevent certain exposures when essential work is performed. While correctly using MPPE can help prevent some exposures, it should not take the place of other prevention strategies. Examples of MPPE include the following:

- Gloves
- Goggles
- Face-shields
- Face masks or cloth face covering
- Respiratory protection, when appropriate or directed

During an outbreak of an infectious disease, such as COVID-19, recommendations for MPPE specific to occupations or job tasks may change depending on geographic location, updated risk assessments for workers, and information on MPPE effectiveness in preventing the spread of disease. Managers should consult with TK&K Operations Leads and check the OSHA and CDC websites regularly for updates about recommended MPPE.

All PPE must be:

- Selected based upon the hazard to the worker
- Properly fitted and periodically refitted, as applicable (e.g., respirators)
- Consistently and properly worn when required
- Regularly inspected, maintained, and replaced, as necessary
- Properly removed, cleaned, and stored or disposed of, as applicable, to avoid contamination of self, others, or the environment

We learned from the COVID 19 crisis that PPE and essential cleaning supplies will be harder to obtain especially due to panic-buying. Therefore, it is essential that Managers prepare a emergency preparedness kit consisting of nitrile gloves, tissues, disinfectant, hand-soap, sanitizer, thermal thermometer and so forth (even toilet paper!) to ensure the shop is able to sustain operations at the outset of a pandemic event. Employees are encouraged to maintain an emergency preparedness kit for their residence as well (and don't forget about pet supplies, medications etc. if applicable).

Department of Defense Health Protection Condition (HPCON) Levels

The Department of Defense (DoD) implements protocols in response to public health emergencies which are referred to as HPCON levels. The following table contains DoD's five HPCON levels and an example of what actions are required for each level:

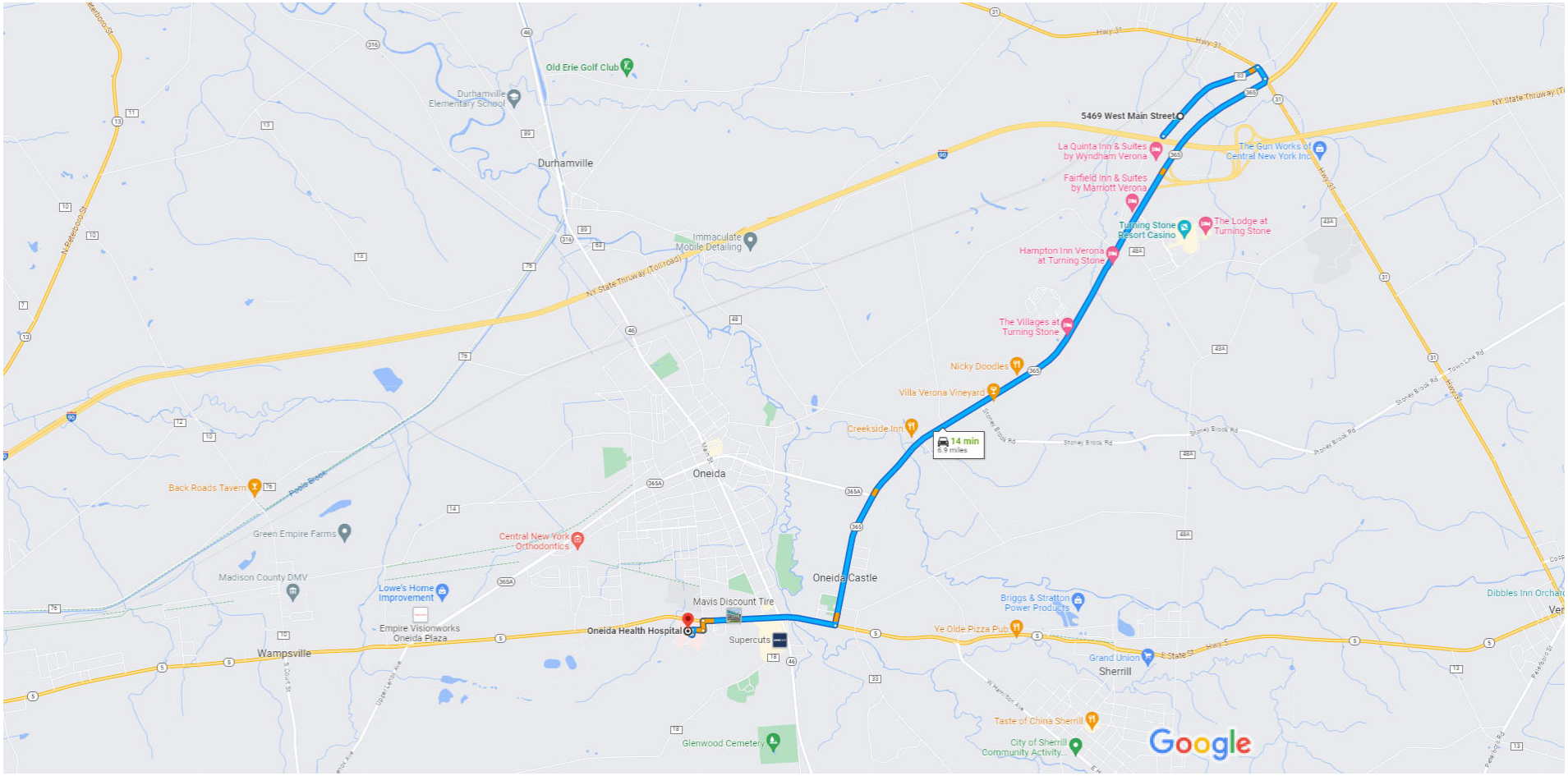
HEALTH PROTECTION MEASURES		
Situation	**HPCON**	**Example Health Protection Measures**
Normal baseline	0	Routine: Standard precautions such as routine hand washing, cough on sleeve, diet, exercise, vaccinations, education, stockpiling, planning, routine health alerts, etc.
Report of unusual health risk or disease	A	Limited: Health alert, communicate risk and symptoms, review plans, verify preparation: training, stocks, posture, prepare to diagnose, isolate and report new cases
Outbreak or heightened exposure risk	B	Moderate: Strict hygiene (no handshaking, wipe common use items); if exposed, self-isolate (wear mask or remain home); avoid contaminated water/food or risk area; vector control
High morbidity epidemic or contamination	C	Substantial: Social distance (limit meetings, socials, TDYs); shelter in place indoors; or if directed, don respirators, mass distribution of medical countermeasures, if applicable
High mortality epidemic or containment	D	Severe: Restrict movement (quarantine), mass evacuation, mass decontamination, subsist on secure food/water sources

APPENDIX G Route to Hospital

Google Maps

5469 W Main St, Verona, NY 13478 to Oneida Health Hospital, 321 Genesee St, Oneida, NY 13421

Drive 6.9 miles, 14 min



Map data ©2023 Google 2000 ft

5469 W Main St
Verona, NY 13478

Follow W Main St to NY-365 W in Verona

3 min (1.1 mi)

1. Head southwest on W Main St

0.2 mi

2. Make a U-turn

0.8 mi

3. Turn right onto NY-31 E

476 ft

Continue on NY-365 W to Oneida

9 min (5.7 mi)

4. Turn right onto NY-365 W

4.8 mi

5. Turn right onto NY-5 W/Seneca Ave

Continue to follow NY-5 W

Pass by Wendy's (on the left in 0.4 mi)

0.9 mi

Continue on Seneca St/Seneca Street Exn to your destination

1 min (0.2 mi)

6. Turn left onto Seneca St/Seneca Street Exn

328 ft

7. Turn right onto Wayland Smith Dr

374 ft

8. Turn left onto Fields Dr

180 ft

9. Turn right

62 ft

10. Turn right

Destination will be on the right

56 ft

Oneida Health Hospital

321 Genesee St, Oneida, NY 13421

APPENDIX G

Resumes

Jodi R. Zimmerman
20 Hickory Grove Spur
Fulton, NY 13069
716-289-0926

EDUCATION:

B.S. Chemistry, William Smith College, Geneva, NY
Graduated June 1990
Chemistry GPA 3.41, Overall GPA 2.94
Research Topic: 'Kinetics and Mechanism of Electrophilic Substitution Reactions Involving Fe, Co, Ni, Cu and Zn Ions in Meso-tetraphenylporphyrins.'

PhD Candidate in Chemistry, Pennsylvania State University,
University Park, PS
June 1990 – August 1991
Bioinorganic Chemistry
Research Topic: Energy Transfer of Europium Chelates Using Lanthanide Luminescence

PROFESSIONAL EXPERIENCE:

Owner/Data Validator – Vali-Data of WNY, LLC, West Falls, NY (February 2008 to present)

Formed a Limited Liability Corporation and became a Woman-Owned Business in September 2009.

Responsibilities include the assessment of project data, determination of its usability and documentation of the findings in accordance with project requirements. Have completed several projects for consulting firms and/or laboratories requiring the preparation of Data Usability Summary Reports (DUSRs) for NYSDEC projects. Analytical suites validated have included, but are not limited to, Volatile Organics, Semi-Volatile Organics, Pesticides/PCBs, Metals, PFA, Wet Chemistry for soil and water samples, and TO-15 and TO-17 Volatile Organics analysis for soil gas/vapor intrusion samples.

Analytical Chemist – Elf Atochem North America, Inc., King of Prussia, PA (1992 to 1994).

Responsibilities included chemical analysis of process samples via NMR Spectroscopy and the formulation of analytical methodologies. Performed analyses and provided QA/QC of process intermediates and products to manufacturing and research facilities.

GC Analyst/Laboratory Technician – Centre Analytical Laboratories, Start College, PA (1991 to 1992)

Analytical chemist performing analyses of environmental samples.

HONORS:

Honors in Chemistry

Bioinorganic chemistry research conducted from June 1988 – June 1990. Requirements included: one year of research, written and oral examinations and a written thesis.

Data Usability Summary Report

Vali-Data of WNY, LLC
20 Hickory Grove Spur
Fulton, NY 13069

Manhattan, NY
Pace/Con-test SDG#
December 6, 2023
Sampling date: 7/13/2023

Prepared by:
Jodi Zimmerman
Vali-Data of WNY, LLC
20 Hickory Grove Spur
Fulton, NY 13069

DELIVERABLES

This Data Usability Summary Report (DUSR) was prepared by evaluating the analytical data package for Engineers, Inc., project located at Manhattan, NY, Pace/Con-test # submitted to Vali-Data of WNY, LLC on October 10, 2023. This DUSR has been prepared in general compliance with USEPA National Functional Guidelines(NFG), NYSDEC; 'Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS)' (4/2023) and NYSDEC Analytical Services Protocols. The laboratory performed the analyses using the USEPA method Perfluorinated Hydrocarbons (1633 (12/2022)) and in accordance with wet chemistry methods.

ID	Sample ID	Laboratory ID
1		
2		
3		
4		
5		

PFAA

The following items/criteria were reviewed for this analytical suite:

- Data Completeness
- Narrative and Data Reporting Forms
- Chain of Custody and Traffic Reports
- Holding Times
- Internal Standard (IS)
- Surrogate Spike Recoveries
- Blanks
- Field Duplicate Sample Precision
- Laboratory Control Samples
- MS/MSD
- Compound Quantitation
- Initial Calibration
- Continuing Calibration

The items listed above were technically in compliance with the method and SOP criteria with the exceptions discussed in the text below. The data have been reviewed according to the procedures outlined above and qualified accordingly.

OVERALL EVALUATION OF DATA AND POTENTIAL USABILITY ISSUES

The data are acceptable for use except where qualified below in Surrogate Spike Recoveries and Blanks.

DATA COMPLETENESS
All criteria were met.

NARRATIVE AND DATA REPORTING FORMS
All criteria were met.

CHAIN OF CUSTODY AND TRAFFIC REPORTS
All criteria were met.

HOLDING TIMES
All holding times were met.

INTERNAL STANDARD (IS)
All criteria were met.

SURROGATE SPIKE RECOVERIES
All criteria were met except several surrogates were outside QC limits in the samples and should be qualified as estimated. Associated target analytes in these samples should be qualified as estimated.

Surrogate	Qualifier	Associated Sample
D3-NMeFOSA	UJ	1-4, 2MS, 4MS/MSD
D5-NEtFOSA	UJ	1-4, 2MS, 4MS/MSD
D9-NEtFOSE	UJ	2, 4

BLANKS
All the criteria were met except several target analytes were detected in S091252-IBL1. Many of these target analytes were not detected in the associated samples, so no further action is required.

Blank ID	Target Analyte	Concentration (ng/ml)	Qualifier	Associate Sample
S091252-IBL1	PFTeDA	.0356	U at RL	1, 5

FIELD DUPLICATE SAMPLE PRECISION
All criteria were met except PFOA, PFDA, PFPeS and PFHxS were detected in DUSR ID#1 but were not detected in #5.

LABORATORY CONTROL SAMPLES
All criteria were met.

MS/MSD
All criteria were met.

COMPOUND QUANTITATION
All criteria were met.

INITIAL CALIBRATION
All criteria were met.

CONTINUING CALIBRATION
All criteria were met.

APPENDIX H

COMMUNITY AIR MONITORING PLAN

COMMUNITY AIR MONITORING PLAN

DFSP VERONA
5449 West Main Street
Verona, New York
New York State Department of Environmental Conservation Site Code 633086

This Community Air Monitoring Plan (CAMP) has been prepared by TK&K Services (TK&K) on behalf of the Defense Logistics Agency – Energy (DLA-Energy) for the former Defense Fuel Support Point (DFSP) Verona (the Site), Verona, New York. It is provided as **Appendix H** of the *Remedial Investigation Work Plan and Semi-Annual Groundwater Monitoring Report* prepared in accordance with the New York State Department of Health (NYSDOH) Generic CAMP (Appendix 1A of DER 10). Per the Work Plan, TK&K proposes to advance soil borings, install monitoring wells, and collect soil, sediment and surface water samples to investigate the extent of soil and groundwater containing per- and polyfluoro-alkyl substances (PFAS) at the Site and its impact on Stony Creek. The drilling and sampling activities have the potential to generate dust which triggers the requirement for a CAMP.

This CAMP is separate from the Site-specific health and safety plan (HASP). The Site-specific HASP provides details related to health and safety for on-site activities for Site workers and the CAMP details air monitoring activities to protect the surrounding community.

This CAMP will be implemented during the Remedial Investigation activities at the Site. The purpose of the CAMP is to provide a measure of protection for the downwind community, more specifically off-site receptors including residents and workers, from potential airborne contaminant releases as a result of drilling and sampling activities performed at the Site.

Volatile Organic Compound Air Monitoring

Volatile organic compound (VOC) air monitoring will be conducted in conjunction with the dust monitoring program. VOC monitoring will be conducted using a RAE Systems MiniRAE 2000 VOC instrument (or a similar photoionization detector device) to provide real-time recordable air monitoring data. VOC monitoring will be conducted for ground intrusive (continuous monitoring) and non-intrusive activities (periodic monitoring).

VOCs will be monitored and recorded at the downwind perimeter of the immediate work area. Upwind concentrations will be measured before field activities commence and periodically throughout the day to establish background conditions. The downwind VOC monitoring device will also be checked periodically throughout the day to assess emissions and the need for correctiveaction.

VOC monitoring response and action levels include:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If the organic vapor level remains sustained above 5 ppm at the perimeter of the work area, activities must be shut down and work will be re-evaluated.

Weather conditions, including the prevailing wind direction, will be observed and recorded for each day of site activities. As work and weather conditions change throughout the day, the locations where the VOC monitoring devices are set up may be adjusted accordingly.

Documentation and Calibration

The volatile organic compound air monitoring device shall be calibrated prior to daily field activities according to manufacturer's instructions and standard industrial hygiene practices. In addition, monitoring instruments will be checked for "drift" upon completion of daily field activities. Calibration measurements will be recorded on a field data record. Field measurements will be recorded and available for State (NYSDEC and NYSDOH) personnel to review. The particulate monitoring device is factory calibrated on an annual basis. Upon completion of field activities, available monitored data recorded will be downloaded, evaluated and summarized in the Closure Report.

Meteorological Data

Wind direction is the only meteorological data considered relevant for the remedial activities and CAMP. Wind direction will be established at the start of each workday and may be reestablished during the day should a significant shift in wind direction be noted. These results will be utilized to position the particulate monitoring and VOC monitoring equipment in appropriate upwind and downwind locations. Wind direction and location of the monitoring stations will be noted on daily field logs.

Particulate Air Monitoring

Particulate monitoring will be conducted during ground intrusive activities at the Site in accordance with the Fugitive Dust and Particulate Monitoring from DER-10 Technical Guidance for Site Investigation and Remediation (Appendix 1B). Dust and particulate monitoring will be conducted near the approximate upwind and downwind perimeters of the exclusion zone, when possible, or where dust generating operations are apparent. Dust monitoring may be suspended during periods of precipitation and snow cover.

Particulate air monitoring will be conducted with a DataRAM-4 (or a similar device). This

instrument is equipped with an audible alarm (indication of exceedance) and is capable of measuring particulate matter less than 10 micrometers in size (PM-10). It will continually record emissions (calculating 15-minute running average concentrations) generated during field activities. The dust monitoring devices will be checked and recorded periodically throughout the day of intrusive activities and once per day for non-intrusive activities to assess emissions and the need for corrective action.

Particulate monitoring response and action levels include:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped and a re- evaluation of activities initiated. Work can resume provided dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.