RECORD OF DECISION

Former BU 51/52 Nike Missile Battery Launch Site
Hamburg, Erie County, New York
FUDS Project No. C02NY007902

October 2023

Prepared for:

U.S. Army Corps of Engineers – New England District

Contract No. W912WJ19D0004

Task Order W912WJ23F0051

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Acronyms

AST	aboveground storage tank
BRA	baseline risk assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPC	constituent of potential concern
CRP	Community Relations Plan
DD	Decision Document
DERP	Defense Environmental Restoration Program
DoD	U.S. Department of Defense
EO	Executive Order
FUDS	Formerly Used Defense Site
GSA	General Services Administration
HHRA	human health risk assessment
INPR	Inventory Project Report
MCL	maximum contaminant level
NAVD88	North American Vertical Datum 1988
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
RI	remedial investigation
ROD	Record of Decision
RSL	Regional Screening Level
SI	site investigation
SLERA	screening level ecological risk assessment
SVOC	semi-volatile organic compound
SWAT	special weapons and tactics
TOC	total organic carbon

USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1 Part 1: Declaration

1.1 Site Name and Location

The Nike Anti-Aircraft Missile Battery BU-51/52 Launch Area Formerly Used Defense Site (FUDS) (the Site) is located on Lakeview Road in Erie County, Hamburg, New York, approximately 5 miles southeast of Lake Erie. The Site is currently owned and operated by the Town of Hamburg, New York (Town). The Site is bound on the north by Interstate 90; on the west by the Town of Hamburg Recreation Area; on the east by residential areas; and on the south by residential areas, Lakeview Road, and Eighteen Mile Creek. A closed and capped (unlined) landfill, formerly operated by the Town, is located north of and adjacent to the Site. The Nike Anti-Aircraft Missile Battery BU-51/52 facility formerly consisted of the Launch Area, a Control Area located to the northeast, and an Easement Area located between the Launch Area and Control Area. The Launch Area contained the facilities and equipment required to assemble, test, and maintain the missiles and launchers. Neither the Control Area nor the Easement Area are included in the FUDS program.

1.2 Statement of Basis and Purpose

This Record of Decision (ROD) is being presented by the U. S. Army Corps of Engineers – New England District (USACE) to describe the decision for the Former BU 51/52 Launch Area Site. The USACE's FUDS program is conducting response activities in accordance with the Defense Environmental Restoration Program (DERP) statute (10 U.S. Code [USC] § 2701 et seq.), the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (42 USC § 9620 et seq.), Executive Orders (EOs) 12580 and 13016, and the National Oil and Hazardous Substances Pollution Contingency Plan, more commonly known as the National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] Part 300).

The U.S. Army is the lead agency and USACE has mission execution authority under CERCLA for the USACE FUDS Program. The USACE executes the FUDS Program on behalf of the Army, including drafting RODs and implementing selected remedial actions. The support agencies for this project are the New York State Departments of Environmental Conservation (NYSDEC) and Health (NYSDOH). Site investigation and remediation activities must follow CERCLA and the NCP. However, pursuant to CERCLA/NCP, USACE seeks the involvement of the state regulatory agencies, and the NYSDEC and NYSDOH have provided regulatory input for this FUDS investigation.

The Former BU 51/52 Launch Area Site is a non-National Priorities List (NPL) site. This ROD was developed following the Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents (USEPA 1999). This ROD presents the decision of no further action for Hazardous and Toxic Waste (HTW) in environmental media at the Site in accordance with CERCLA and the NCP. This decision is based on the Administrative Record file for this Site.

1.3 Decision Made

The results from the Remedial Investigation (RI) and associated Human Health Risk Assessment (HHRA) indicate that no response action is required to be protective of human health with respect to constituents of potential concern (COPC) present in the soil and groundwater at the Site that could be associated with Department of Defense (DoD) activities. Similarly, the results from the Screening Level Ecological Risk Assessment (SLERA)

indicate that the potential for ecological exposure is expected to be low. Therefore, the decision for the Site is No Action as there is no unacceptable risk to public health or welfare and the environment from DoD-impacts. The NYSDEC and the NYSDOH concur with the No-Action decision as it relates to DoD activities at the Site.

1.4 Statutory Determinations

No remedial action is necessary at the Site to ensure protection of human health and the environment. The selection of No-Action is protective of human health and the environment because all risks calculated for soil and groundwater exposures for COPC that could be associated with DoD activities were deemed acceptable. Accordingly, five-year reviews are neither required nor necessary.

1.5 Authorizing Signatures

This ROD presents the final decision for the Former BU 51/52 Launch Area FUDS Site. The DoD is the lead agency under the DERP at the Former BU 51/52 Launch Area FUDS Site, and U.S. Army Corps of Engineers has developed this Record of Decision for DoD consistent with CERCLA, as amended, and the NCP. This Record of Decision will be incorporated into the larger Administrative Record File for the Former BU 51/52 Launch Area FUDS Site, which is available for public view at U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742, and at https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-NIKE-Site-Hamburg-New-York/. This document, presenting a final decision with a total CTC estimate recorded in FUDSMIS of $0.00, is approved by the undersigned and pursuant to the delegated authority in the Assistant Secretary of the Army (ASA) for Installations, Energy, and Environment (IE&E) memorandum 25 May 2022 subject: Assignment of Mission Execution Functions Associated with Department of Defense Lead Agent Responsibilities for the Formerly Used Defense Sites Program, and subsequent re-delegations.

Signature:

KOENIG.REINHARD.WOLFRAM.1162741418

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Programs Director
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Date

2 Part 2: Decision Summary

2.1 Site Location, History, and Description

2.1.1 Site Location

The Site is located on Lakeview Road in Erie County, Hamburg, New York, approximately 5 miles southeast of Lake Erie (Figure 1). The Site is bound on the north by Interstate 90; on the west by the Town of Hamburg Recreation Area; on the east by residential areas; and on the south by residential areas, Lakeview Road, and Eighteen Mile Creek. A closed and capped (unlined) landfill, formerly operated by the Town, is located north of, and adjacent to, the Site.

The Nike Anti-Aircraft Missile Battery BU-51/52 facility consisted of the Launch Area, a Control Area located to northeast, and an Easement Area located between the Launch Area and Control Area. The Launch Area contained the facilities and equipment required to assemble, test, and maintain the missiles and launchers. The Town of Hamburg is the current owner of the Site and currently uses the Site for a Town Highway Facility that includes office space, truck garage space, storage of gravel piles and road salt, and as an accumulation of household hazardous waste (e.g., paint cans), electronic waste (e.g., televisions), and scrap metal. Neither the Control Area nor the Easement Area are included in the FUDS program as operations in these areas did not include activities or facilities that could have resulted in releases of hazardous materials to the environment. The former Control and Easement Areas are currently used as the Town of Hamburg's Lakeview Recreational Area, which includes a playground, sledding hill, ball fields, and a BMX (bicycle off-road racing and trick riding) track.

2.1.2 Site History

During the Cold War, the U.S. Army developed the Nike anti-aircraft missile to protect population centers and important industrial and military installations. Between December 1955 and May 1956, the DoD acquired approximately 57 acres by various deeds and condemnation proceedings and 95 acres in easements to develop the Nike Anti-Aircraft Missile Battery BU-51/52 site, which operated from 1956 until its closure in 1961. The Nike Anti-Aircraft Missile Battery BU-51/52 Launch Area contained a total of 60 Nike Ajax supersonic missiles, which were stored horizontally in six underground silos. The aboveground components of the silos have been demolished, and the subsurface elements of the silos were filled with asphalt road millings by the Town at some point after 2015.

On June 1, 1965, the DoD transferred the Nike Anti-Aircraft Missile Battery BU-51/52 property to the General Services Administration (GSA). In 1968, GSA conveyed the property to the Town of Hamburg, New York. Figure 2 provides historical site features of the Nike Anti-Aircraft Missile Battery BU-51/52 Launch Area FUDS from the period of DoD ownership. As shown on Figure 2, the Launch Area contained several support facilities in addition to the silos. These included facilities for missile assembly, nitric acid oxidizer (part of the fuel mixture) storage and handling, on-site power generation, and drum storage. Barracks and a mess hall for site personnel were also present. Sanitary wastes from the facility were conveyed to a sewage treatment facility located across Lakeview Road to the east of the silo area. The sewage treatment facility consisted of septic tanks, a chlorination facility, and a sand filter leaching area. The sewage treatment facility is not part of the FUDS investigation area.

2.1.3 Site Description

Figure 3 provides current features of the Former BU-51/52 Launch Area FUDS. The Site is approximately 5 miles southeast of Lake Erie. The surrounding area is characterized by a relatively flat land surface that slopes gently toward Lake Erie. Surface elevation at the Site ranges from approximately 770 to 755 feet above mean sea level (NAVD88). Native overburden materials in the area are composed of interlaminated silt and clay derived from lake deposits; however, most of the overburden at the Site is composed primarily of fill materials (i.e., gravel, cinders, millings) combined with reworked native overburden materials. The overburden is generally 12 to 20 feet thick and is underlain by bedrock consisting of gray to brown shale with frequent horizontal bedding plane fractures (locally) that decrease with depth. The shale is characterized by petroleum odors, which are associated with naturally occurring regional natural gas deposits. There is a former natural gas production well present at the Site. Based on information contained in the NYSDEC Oil and Gas Well Database, this well was drilled in 1989 and is 1,660 feet deep.

Groundwater in the overburden and bedrock, which are connected and function as one flow system, flows to the south and east toward Eighteen Mile Creek. Surface water runoff associated with precipitation or snowmelt at the Site flows into a manmade drainage ditch that drains the perimeter of the former Town landfill, then traces the southwest and southeast sides of the silo area. This manmade ditch drains east to a second ditch that discharges to Eighteen Mile Creek, located 200 feet south of the Site boundary. Eighteen Mile Creek flows westward approximately 6 miles to Lake Erie. Natural surface water drainage at the Site emanates from an area northeast of the landfill and flows along the western landfill boundary. Other surface water drainage is controlled by manmade ditches.

2.1.3.1 Current Land Use

The ground surface at the Former BU-51/52 Launch Area Site has historically been reworked and has little native vegetation. The below-ground portions of the former missile silos are in an area currently used by the Town of Hamburg Highway Department for staging of materials. The silos have been backfilled with asphalt millings; however, the concrete pads are still visible in some areas and the ground surface around some of the silos has collapsed/settled over time.

A closed and capped (unlined) landfill, constructed and formerly operated by the Town, is located adjacent to the Site (see Figure 3). The Town of Hamburg began operating the Town of Hamburg Landfill in 1970. The landfill is not part of the FUDS program because it was constructed and operated by the Town after the Nike Anti-Aircraft Missile Battery BU-51/52 site closure. The Town of Hamburg Landfill is identified as Site No. 915097 in the state of New York's Inactive Hazardous Waste Disposal Site ('State Superfund') Program. The landfill was closed in 1984 and covered with approximately 2 feet of soil.

The Town of Hamburg Police Department uses the area formerly occupied by the enlisted men's barracks along the northwestern property boundary for the special weapons and tactics (SWAT) team activities, and as a firearms training center. This includes a small arms range with an earthen backstop berm. Based on information provided by the Town, sanitary wastes from the Highway Department and Police Department facilities are still conveyed to the sewage treatment facility located across Lakeview Road.

Groundwater at the Site is not currently used as a drinking water source and is unlikely to be used in the future. Potable water is supplied to the Site and nearby residents by the Erie County Water Authority, which receives surface water from Lake Erie and the Niagara River.

2.2 Environmental Investigations

Several environmental investigations have been conducted at the former Launch Area and nearby residences along Lakeview Road. These investigations are summarized in the sections below.

2.2.1 1989 Confirmation Study and Contamination Evaluation

An environmental contractor conducted a Confirmation Study and Contamination Evaluation (Inventory Phase Investigation) for USACE Kansas City District at the Nike Anti-Aircraft Missile Battery BU-51/52 Launch Area FUDS. The objective of the evaluation was to determine whether contamination that may have resulted from the use of the Site by the DoD was present. The investigation included: a site visit to collect background information and to determine sampling locations; installation of four monitoring wells; sampling and analysis of groundwater, soil, water present in the silos, and tank oil to evaluate the potential for contamination; and evaluation of physical and analytical data. The Contamination Evaluation found that arsenic, cadmium, and lead were the only potential contaminants detected in groundwater at concentrations greater than the applicable standards.

2.2.2 1991 Inventory Project Report

In 1991, USACE New York District conducted a survey of the former Launch Area to assess the presence of unsafe debris, hazardous waste impacts, and unexploded ordnance and completed an Inventory Project Report (INPR). The INPR recommended that: an underground storage tank (UST) located at the former Launch Area be properly abandoned, with soil excavation as necessary under New York State Petroleum Bulk Storage Regulations; monitoring wells previously installed by USACE be resampled to confirm the presence of metals in groundwater; and a risk assessment be performed. Specifically, the INPR Findings and Determination of Eligibility sheet proposed a public health assessment to determine the risk to public health from contamination at the former Launch Area resulting from DoD activity.

2.2.3 1999 NYSDEC UST Removal

In 1999, the NYSDEC opened spill number 9875480 due to a sheen observed in soil during excavation of two USTs from the former Launch Area by the Town of Hamburg. The Town removed a 550-gallon UST from the former Launch Area and an 8,000- to 9,000-gallon UST from the former Control Area. Both USTs historically contained petroleum products, and petroleum-impacted soil removed from the excavation area was disposed of off-site. The NYSDEC spill number was closed on April 28, 1999.

2.2.4 1999 Environmental Study, Nike Base/Hamburg Landfill

In 1999, the Town of Hamburg hired an environmental contractor to conduct a records search and media sampling at the former Nike Anti-Aircraft Missile Battery BU-51/52 Launch, Control, and Easement Areas and the Town of Hamburg Landfill. The results of their records search indicated areas of concern at the former Launch Area, including the acid neutralizing pit; aboveground storage tanks (ASTs); USTs; septic system and leach field; and potential contamination in former missile silos.

The environmental contractor collected 36 surface soil, 18 subsurface soil, and 11 groundwater samples from the areas of concern in two sampling rounds. In addition, surface water and sediment samples were collected from 14 locations and air samples from three locations. Arsenic and chromium (total) in surface soil samples exceeded the current (2019) United States Environmental Protection Agency (USEPA) Industrial Regional Screening Levels (RSLs) but were less than the concentrations of metals reported in the NYSDEC Statewide Rural Surface Soil

Survey (NYSDEC 2005). Thallium was detected in one surface soil sample collected downgradient of the former Launch Area at a concentration that exceeds the current (2019) USEPA Industrial RSL. Concentrations of benzene and ethylbenzene were detected in a groundwater sample collected from a monitoring well located downgradient of a suspected fuel tank. Concentrations of cadmium, manganese, and total cyanide were also detected in former Launch Area groundwater samples.

2.2.5 1999 Groundwater Sampling of Residential Wells

In 1999, the NYSDOH sampled groundwater at nine residential properties in the vicinity of the former Launch Area. The samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals. VOCs related to petroleum compounds and metals were detected at two Lakeview Road residences located adjacent to the former Launch Area at concentrations less than USEPA drinking water standards.

2.2.6 1999 Soil and Groundwater Quality Investigations of Lakeview Properties

Based on the NYSDOH sampling results, two residents retained a consultant to investigate soil and water quality on their Lakeview Road properties. Results of the groundwater analysis indicated the presence of ethylbenzene and xylenes, 2-butanone, and acetone at concentrations above USEPA drinking water criteria for groundwater. Metals detected in groundwater at concentrations above USEPA criteria included arsenic, beryllium, cadmium, chromium (total), lead, nickel, and zinc. The two surface soil samples contained elevated concentrations of arsenic, beryllium, cadmium, chromium (total), lead, nickel, and zinc.

2.2.7 2000 Site Investigation, Former Nike Anti-Aircraft Missile Battery BU-51/52 Launch Area

In 2000, an environmental contractor conducted a site investigation (SI) at the Site on behalf of USACE to determine the presence and magnitude of subsurface contamination, and to look for evidence of southward migration of contaminants from the Site. The contractor installed and sampled three soil borings at the former Launch Area and four monitoring wells at nearby residences on Lakeview Road. Samples were analyzed for metals, VOCs, and SVOCs. Concentrations of arsenic, chromium (total), and thallium in the Site soil samples exceeded USEPA Industrial RSLs. Thallium concentrations in groundwater exceeded the current (2019) USEPA Tapwater RSL but were less than the USEPA Maximum Contaminant Level (MCL) (USEPA 2009). Barium was present at concentrations that exceeded the USEPA MCL in one groundwater sample from MW-4. Benzene was the only VOC present in groundwater at concentrations that exceeded the MCL. The contractor concluded that the levels of contamination of subsurface soil and groundwater were low at the perimeter of the former Launch Area. They also concluded that hydrazine (a component of rocket fuel) was detected only in soil samples collected near the perimeter of the former Launch Area and not in residential soil. The contractor also recommended completion of a screening level human health risk assessment (HHRA) to confirm the low likelihood of adverse impacts.

2.2.8 2000 Screening Level Human Health Risk Assessment

An environmental contractor performed a screening level HHRA to evaluate potential risks to Lakeview Road residents south of the former Launch Area from exposure to potential DoD-related chemicals in soil, groundwater, and water in sumps at off-site residences. Analytical results from five independent investigations previously conducted by the state of New York and independent entities were used for the screening level HHRA.

Constituents of potential concern (COPCs) in soil included cadmium, nickel, thallium, zinc, hydrazine, and VOCs. All volatile chemicals detected in soil, groundwater, and sump water were retained as COPCs for the vapor migration to indoor air evaluation; only the adult indoor air exposure through vapor intrusion was evaluated (e.g., inhalation of indoor air for children and shower inhalation were not evaluated). Total cancer risks for residential exposures to soil (dermal contact, incidental ingestion, and vegetable consumption) based on the maximum and average detected concentrations were less than the USEPA's acceptable risk range of $1x10^{-6}$. Non-cancer risks, as well as inhalation risks and hazards for adult residential vapor intrusion exposure to volatile constituents in soil, groundwater, and sump water, were also less than the USEPA threshold values (total Hazard Index of 1). The assessment concluded that the risks and hazards were within acceptable ranges, indicating that adverse health effects to residents near the former Launch Area were unlikely.

2.2.9 2003 NYSDEC UST Removal

In 2003, four additional USTs were removed from the former Control Area under NYSDEC spill number 0375052. Petroleum-impacted soils removed from the excavation area and the USTs were disposed of off-site. The NYSDEC spill number was closed on November 24, 2003.

2.2.10 2018 Records Review and Site Visit

In June 2018, USACE and their contractors conducted a site visit to collect information for development of a sampling/investigation plan to support a Remedial Investigation/Feasibility Study (RI/FS) for potential contamination. The team visited the former Launch Area as well as a wetland mitigation pond, the former Control Area, and the Twin Ponds Area as part of the site review.

2.2.11 2020 to 2022 FUDS Remedial Investigation

The FUDS RI field activities at the Former BU-51/52 Launch Area Site were conducted from May 2020 to March 2021. The methods and results of the RI activities are included in the Final RI Report, dated January 2023 (Seres-Arcadis JV 2023).

2.2.11.1 Habitat Assessment

A habitat assessment was conducted to document ecological habitat, identify potential ecological receptors, and evaluate the potential for ecological exposure to constituents in soil. The results from the habitat assessment indicate that only small areas (approximately ½-acre) of successional old field at the Site perimeter provide potential habitat at the Site. The former Launch Area is actively used by the Town and is largely covered with gravel, asphalt, or buildings; and ecological exposure to soil in these areas is not likely. Similarly, other areas of the former Launch Area are maintained lawn. Lawn areas are not a natural cover type and provide limited wildlife habitat. Site habitat does not support abundant and diverse populations of wildlife, and potential exposure for populations of ecological receptors (plants, soil invertebrates, birds, and mammals) is limited.

2.2.11.2 Soil

Soil sampling locations are shown on Figure 4. Surface and subsurface soil samples were collected during installation of 16 overburden wells. Subsurface soil samples were collected from the top of native material to the water table and analyzed for metals (including hexavalent chromium), VOCs, SVOCs (including polycyclic aromatic hydrocarbons (PAHs)), hydrazines, and total organic carbon (TOC). As many as three soil samples were

collected from each boring, depending on the total depth. At each location, one sample was collected from the 1-foot interval immediately below the ground surface/fill layer, and one sample was collected from the 2-foot interval directly above the water table. A third sample was collected if there were indications of contamination based on field observations in the intervals between the other two soil samples. Surface soil samples (0 to 1-foot below ground surface) were collected from eight locations associated with historical and current use of the former Launch Area (e.g., drum storage areas, generator building/transformer pad, acid storage shed, former missile silos). Surface soil samples were analyzed for metals, VOCs, SVOCs (including PAHs), and hydrazines to evaluate the potential risks associated with surface soil exposure to site users. Three of the surface soil samples collected in the vicinity of the former transformer pad were analyzed for polychlorinated biphenyls (PCBs) in addition to metals, VOCs, SVOCs, PAHs, and hydrazines. Surface soil samples were not collected from soils that were identified as fill material. Subsurface soil samples were collected to evaluate the presence of contamination at depth and, if present, the potential for leaching to groundwater.

Reference samples were collected in the former Easement Area, which is directly adjacent to, and northeast of, the former Launch Area, and which was not part of the FUDS investigation. Reference soil samples were only collected from subsurface soils that, based on their lithology, represented naturally occurring soils similar to those encountered at the former Launch Area. Reference soil samples were analyzed for metals and PAHs to gather site-specific information on naturally occurring and/or anthropogenic background conditions. The reference sample data were compared to concentrations in samples from the former Launch Area. The reference sampling area was immediately northeast of the former Launch Area and is currently used by the Town for recreational purposes (Figure 4).

Only metals and PAHs were present in the soil samples at concentrations exceeding the (2019) USEPA Industrial RSLs. However, these compounds were ubiquitous throughout the investigation area and they were also detected in the reference soil samples at comparable concentration levels. These data, combined with the fact that there are no localized areas of relatively elevated concentrations, indicate that the metals and PAHs reported in Site soils represent naturally occurring or anthropogenic conditions, not DoD-related activities.

2.2.11.3 Groundwater

Groundwater sampling locations are shown on Figure 5. Sixteen new overburden and five new bedrock monitoring wells were installed during the RI to evaluate the nature and extent of groundwater impacts (if present) and for evaluation of vertical and horizontal groundwater flow patterns. Two rounds of groundwater sampling were conducted (September 2020 and December 2020) after the completion of well installation and development. During each sampling event, water levels were measured, and groundwater samples were collected for analysis of metals, VOCs, SVOCs, and hardness. Hydraulic conductivity tests were also conducted in overburden wells and the results were used to evaluate groundwater flow rates. Based on water level measurements, the direction of groundwater flow at the site in both the overburden and bedrock, which are connected and function as one flow system, is to the south/southeast toward Eighteen Mile Creek. A groundwater flow map showing groundwater elevation contours from the December 2020 sampling event is shown on Figure 6.

Groundwater sample results were compared to (2019) USEPA Tapwater RSLs as a conservative screening level even though groundwater from the former Launch Area is not used for drinking water. VOCs, composed primarily of benzene and ethylbenzene, were detected at concentrations exceeding the USEPA Tapwater RSLs at only three locations. Concentrations of SVOCs in groundwater exceeding the USEPA Tapwater RSLs were detected at five locations. However, the compounds detected were primarily PAHs, which are commonly found in commercial and industrial settings, and in common manmade materials such as asphalt. Based on their isolated

nature and location/distance from former DoD activity areas, the concentrations of VOCs and SVOCs in groundwater are not indicative of a release to the environment associated with past DoD activities.

Numerous metals were detected in groundwater at concentrations greater than the USEPA Tapwater RSLs in both the total and dissolved samples. However, the same metals were detected at comparable concentration levels in locations upgradient from the DoD activity areas as well as downgradient from those locations. Many of these metals (i.e., iron, manganese, aluminum) are ubiquitous in groundwater throughout the region. In addition, storage, handling, and use of highly soluble road salts by the Town of Hamburg's Highway Department on and adjacent to the former Launch Area appears to have impacted groundwater, resulting in elevated concentrations of sodium, potassium, calcium, and magnesium in groundwater that are characteristic of typical road salts. These road salts, when introduced into the soil at high concentrations, will displace other metals associated with the soil. The result is elevated levels of some metals in groundwater. For example, sodium, the most common element of the road salt used, is present in the groundwater at levels as much as 100 times higher than is typically expected for groundwater in this area. Based on the distribution of metals throughout the Site and given the use of the former Launch Area as a Town maintenance facility for more than 50 years, the metals detected in groundwater are not indicative of a release to the environment associated with past DoD activities.

2.2.11.4 Residential Well Survey

A desktop database and windshield survey were conducted within a 1-mile radius of the Site to evaluate the potential presence of water supply wells at the adjacent residences. The survey did not identify residential wells within the survey area and the area is supplied with potable water by Erie County; therefore, current and future residential use of groundwater in the area is unlikely.

2.2.11.5 Baseline Risk Assessment

A baseline risk assessment (BRA) was conducted for the Nike Anti-Aircraft Missile Battery BU-51/52 Launch Area FUDS. The BRA included both an HHRA and a SLERA and was performed using the soil and groundwater data collected during the RI. The risk assessments followed appropriate guidelines from the USEPA and USACE.

The objectives of the HHRA were to evaluate potential human health risks and provide a basis for deciding if remedial action is necessary to protect human health. The following exposure scenarios were evaluated as part of the HHRA:

- On-site
  - Current/most likely future on-site indoor commercial/industrial worker exposure to COPCs in indoor dust derived from surface soil via incidental ingestion and inhalation of wind-blown fugitive dust and volatiles.
  - Current/most likely future on-site indoor commercial/industrial worker exposure to volatile COPCs present in underlying groundwater that could potentially migrate from shallow groundwater to indoor air of on-site buildings.
  - Current/most likely future on-site outdoor maintenance worker exposure to COPCs in surface soil via incidental ingestion, dermal contact, and inhalation of wind-blown fugitive dust and volatiles.
  - Current/most likely future on-site construction/utility worker exposure to COPCs in combined surface and subsurface soil via incidental ingestion, dermal contact, and inhalation of volatiles and dust during excavation.
  - Current/most likely future on-site construction/utility worker exposure to COPCs in groundwater via incidental ingestion, dermal contact, and inhalation of volatiles in shallow groundwater that could infiltrate the bottom of an excavation.

  - Hypothetical future scenario for on-site indoor commercial/industrial worker exposed to COPCs in groundwater via ingestion of groundwater used as potable water, dermal contact while washing hands, and inhalation of volatiles released to indoor air during potable use of groundwater, although no water on-site is used as potable water or for any other purpose.
- Off-site
  - Current/most likely future off-site resident exposure to volatile COPCs that could migrate from shallow groundwater to indoor air of nearby residences.
  - Hypothetical future scenario, off-site resident exposure to COPCs in groundwater via ingestion of groundwater used as potable water, dermal contact while washing hands and showering, and inhalation of volatile compounds released to indoor air during household use of groundwater (e.g., clothes washing), although surrounding residences do not use groundwater for potable purposes and are supplied by the Erie County Water Authority, which receives surface water from Lake Erie and the Niagara River.

The HHRA results indicated that for all current/most likely future on-site exposure scenarios, both cancer risk and non-cancer hazards are less than their USEPA threshold values of 1×10^{-4} to 1×10^{-6} and 1, respectively, and are therefore considered acceptable under CERCLA. For the unlikely hypothetical future use scenario where groundwater from the Site was used as a potable water source, the only non-cancer hazards greater than 1 were for thallium (on-site and off-site) and benzene and bis(2-ethylhexyl)phthalate (off-site). However, the presence of these compounds is either not indicative of a release and/or can't be attributed to DoD use of the Site and are, therefore, not eligible for action under the FUDS program. In addition, the hypothetical use of Site groundwater as a potable water source is unlikely as the area is supplied with potable water by Erie County.

Although the habitat characterization identified the former Launch Area as having been historically reworked with marginal habitat, a SLERA was performed to evaluate the likelihood of adverse ecological effects occurring because of exposure to constituents associated with the former Launch Area. Potential risks to ecological receptors were evaluated by comparing soil data from areas of the Site with potential habitat to conservative ecotoxicological benchmarks (USEPA 2007a, USEPA 2018, LANL 2017). The SLERA results indicate that on-site habitat does not support abundant and diverse populations of wildlife, and potential risk for populations of ecological receptors (plants, soil invertebrates, birds, and mammals) is limited.

2.2.11.6 FUDS RI Recommendations

The results from the RI and associated HHRA indicate that no response action is required to be protective of human health with respect to COPC present in the soil and groundwater at the Site that could be associated with DoD activities. Similarly, the results from the SLERA indicate that the potential for ecological exposure is expected to be low. Therefore, the recommended remedial alternative for the Site is No Action as there is no unacceptable risk to public health or welfare and the environment.

3 Regulatory Requirements

The DoD has the responsibility to remediate former DoD facilities under the DERP for FUDS and, therefore, is responsible for site investigation and remediation activities at the Former BU 51/52 Nike Battery Launch Site as they relate to activities conducted by the DoD. The USACE goal under the FUDS program is to achieve regulatory closure for the Site. FUDS program policy requires USACE to:

- Comply with DERP, CERCLA, the NCP, and Army policies for the FUDS program;
- Coordinate with the lead regulators, which are NYSDEC and NYSDOH;
- Conduct a RI with a baseline risk assessment to evaluate the need for remediation; and
- Attain standards and meet requirements that are consistent with CERCLA and NCP processes and criteria.

Site investigation and remediation activities must follow federal laws, guidance, and methods. The NYSDEC and NYSDOH have participated by providing regulatory input for the FUDS investigation. The RI was conducted under the DERP for FUDS and performed in accordance with the CERCLA and NCP.

3.1 Community Participation

The scope of community participation activities performed was consistent with the USEPA CERCLA guidance for community involvement (USEPA 2016), Section 300 of the NCP, and USACE guidance contained in Engineering Regulation 200-3-1 (USACE 2020) and the FUDS Handbook (USACE 2022).

The USACE completed the following activities as part of its public outreach effort:

- Prepared a Community Relations Plan (CRP) to support the FUDS RI for the Site. The CRP was finalized in April 2020 (Seres-Arcadis JV 2020) and updated in 2022.
- Provided project reports including the RI Work Plan and RI Report to the information repository located at the Hamburg Public Library, 102 Buffalo Street, Hamburg, NY 14075.
- Solicited public comment on the Proposed Plan (USACE 2023). The Proposed Plan was made available to the public at the following repository Hamburg Public Library and at the USACE Administrative Record website found at https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-NIKE-Site-Hamburg-New-York/.
- Conducted a virtual public meeting to present the Proposed Plan.
- Maintained and updated the Administrative Record as necessary.

3.1.1 Proposed Plan

The Proposed Plan was developed to summarize the RI, present the USACE rationale for the selected decision of No Action, and to fulfill the public participation requirements of CERCLA Section 117(a), which specifies that the lead agency (i.e., USACE) publish a plan outlining any remedial alternatives evaluated for the Site and identifying the proposed decision.

Notice of the availability of the Proposed Plan was provided to the project mailing list and published in The Buffalo News on February 8, 2023 and in The Hamburg Sun on February 10, 2023 (Appendix A). The public comment period for this Proposed Plan provided an opportunity to provide input regarding the proposed No Action recommendation for the Former Nike Anti-Aircraft Missile Battery BU-51/52 Launch Area FUDS. The public comment period was open from February 10, 2023 to March 15, 2023. USACE accepted written comments on the Proposed Plan during the public comment period.

USACE held a virtual public meeting to discuss the PP on February 22, 2023, starting at 6:00 PM. Interested members of the public were invited to participate in the virtual meeting via WebEx or by phone. The public meeting also provided an additional opportunity to submit comments to USACE on the Proposed Plan. The transcript from the public meeting is presented in Appendix B of this ROD. The slide presentation from the meeting is also included in Appendix B.

3.2 Scope and Role of the Response Action

The results from the RI and associated risk assessments/screening indicate that no response action is required to be protective of human health and the environment. Therefore, the selected decision for the Site is No Action.

3.3 Documentation Of Significant Changes From Preferred Alternative Of Proposed Plan

This ROD contains no changes from the Proposed Plan.

4 Part 4: Responsiveness Summary

In comment letters dated 14 March 2022, 3 June 2022, and 27 September 2022, NYSDEC disagreed with the RI findings that No Further Action is warranted at the FUDS. NYSDEC also disagreed with the USACE's determination to not collect soil vapor samples or evaluate the soil vapor medium. However, USACE explained in a 27 July 2022 call, and documented that call in a 24 October 2022 letter to NYSDEC, that USACE conducts environmental response activities in accordance with the Defense Environmental Restoration Program (DERP) statute (10 USC § 2701 et seq.), the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA), 42 USC § 9601 et seq., Executive Orders (EOs) 12580 and 13016, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Part 300), and all applicable DoD (e.g., *DoD Management Guidance for the DERP [28 September 2001]*) and Army policies in managing and executing the FUDS program. Therefore, the VOC detections in groundwater are expressly ineligible for USACE to further characterize, including in soil vapor, because they are not related to DoD activities. Additionally, the request that the USACE apply state Applicable or Relevant and Appropriate Requirements (ARARs), specifically 6 NYCRR Part 37 Section 1.8 (a)(6), is not warranted. The selection of potential ARARs is not appropriate when the USACE determines there is no unacceptable risk. The determination of no further action is based on the finding of no unacceptable risk associated with DoD-related constituents in the soil and groundwater; therefore, in accordance with CERCLA and NCP, USACE will not apply any ARARs. Correspondence between NYSDEC and USACE is provided in Appendix C.

Based on the 27 July 2022 conference call with Ms. Melissa Sweet (NYSDEC), Mr. John Swartwout (NYSDEC), Ms. Jacquelyn Nealon (NYSDOH), Mr. Gary Morin (USACE), Ms. Heather Sullivan (USACE), and Ms. Erin Kirby (USACE), NYSDEC agreed that the characterization of nature and extent for DoD-constituents is complete and no CERCLA-actionable risk is identified for DoD-constituents. The FUDS Program's authority is limited to addressing DoD-related constituents; therefore, the Remedial Investigation of the DoD-related constituents is complete in accordance with DERP guidance. As discussed on the call, USACE cannot legally address non-DoD impacts; therefore, the project moved into the Proposed Plan phase and then the Record of Decision phase for DoD-related impacts.

USACE submitted the Proposed Plan on 6 September 2022 to NYSDEC, NYSDOH, and the Town of Hamburg. On 10 February 2023, NYSDEC sent USACE a letter indicating that they did not agree that the Proposed Plan supports the statement that there are no unacceptable risks to human health or ecological receptors because USACE had not investigated non-DoD impacts (Appendix C). Specifically, NYSDEC had the four (4) comments below:

1. "The preferred remedy stated in the Proposed Plan is No Action. The Proposed Plan supports this with the statement that there are no unacceptable risks to human health or ecological receptors. However, as the NYSDEC and the NYSDOH have previously noted, the media of soil vapor and air were excluded from sampling in the Remedial Investigation. Therefore, the Risk Assessments did not consider empirical soil vapor/air data in their calculations.

   The State intends to collect soil vapor data on the site and at the boundary of the site to assess if the remedy would be protective of human health and the environment. This data will allow the State to evaluate if soil vapor is negatively impacting the risk. After this evaluation, the State will be able to re-assess the preferred remedy of No Action."
2. "The first page of the Proposed Plan includes the statement "This document is issued by USACE for the DoD with the concurrence of the New York State Department of Environmental Conservation (NYSDEC)

and the New York State Department of Health (NYSDOH)." While the NYSDEC and NYSDOH do not object to releasing the Proposed Plan for public review and comment at this time, a decision on State concurrence has been deferred and this statement needs to be revised or removed."

3. "General: The date listed in the Table of Contents for the Proposed Plan is September 2022. This should be re-dated."
4. "Introduction: The date of the Final Remedial Investigation Report is August 2022 rather than May 2022 as shown in this section of the Proposed Plan."

The Public Meeting to present the Proposed Plan was held on 22 February 2023. The USACE did not receive any public comments on the Proposed Plan during the meeting or the associated public comment period.

In the final version of the Proposed Plan, dated June 2023, USACE made NYSDEC and NYSDOH's administrative comments. However, as USACE had made their position clear that site soil vapor at the site was not FUDS-eligible in the 27 July 2022 conference call and 24 October 2022 letter, USACE did not re-state their position.

On 25 May 2023, NYSDEC's environmental contractor installed three (3) temporary soil gas points and collected soil gas samples for analysis of VOCs. It should be noted that the VOCs were determined to be non-DoD compounds at this site; therefore, are not FUDS-eligible. The three soil gas samples were collected via Summa canisters and submitted to a laboratory for VOC analysis via USEPA Method TO-15. On 9 August 2023, NYSDEC submitted a letter to USACE indicating their findings of the soil vapor investigation. NYSDEC concluded that several VOCs were detected in the TO-15 analysis for each sample location; however, in the State of New York, soil vapor results do not have a direct comparable standard or guidance value for the detected VOCs. Therefore, NYSDEC submitted the soil vapor results to NYSDOH for review and evaluation. NYSDOH confirmed that the soil gas does not pose a potential exposure concern for the public. NYSDEC concluded no further sampling for soil gas or nor soil vapor intrusion is necessary. NYSDEC's letter including the soil vapor results is provided in Appendix C.

Additionally, NYSDEC officially requested permission in their 27 September 2022 letter to collect groundwater samples from existing monitoring wells for the emerging contaminants 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS) (Appendix C). This sampling was conducted to address NYSDEC concerns about impacts associated with the Town's landfill, which is not FUDS-eligible. On 22 September 2022, and again on 16 May 2023, NYSDEC sampled three (3) monitoring wells (MW-6, MW-14, and MW-5OB) located immediately downgradient of the Town of Hamburg's former landfill for the emerging contaminants 1,4-dioxane and PFAS. Several PFAS compounds were detected, but no PFAS compounds, when compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA Guidance Values, exceeded their respective guidance values. The analytical results for 1,4-dioxane did not exceed the NYSDEC TOGS 1.1.1 Class GA Guidance Value. NYSDEC also compared the PFAS and 1,4-dioxane analytical data to the New York State Ambient Water Quality Guidance Values dated March 2023. All data was found to be below the Guidance Values. Therefore, NYSDEC concluded the site does not warrant any further investigation for PFAS or 1,4-dioxane. NYSDEC's letter including 1,4-dioxane and PFAS groundwater results are provided in Appendix C.

On 27 September 2023, NYSDEC submitted a memo to USACE indicating that, based on their soil vapor and 1,4-dioxane and PFAS groundwater results, NYSDEC and NYSDOH concur with the Record of Decision for No Action at the site.

5 Part 5: References

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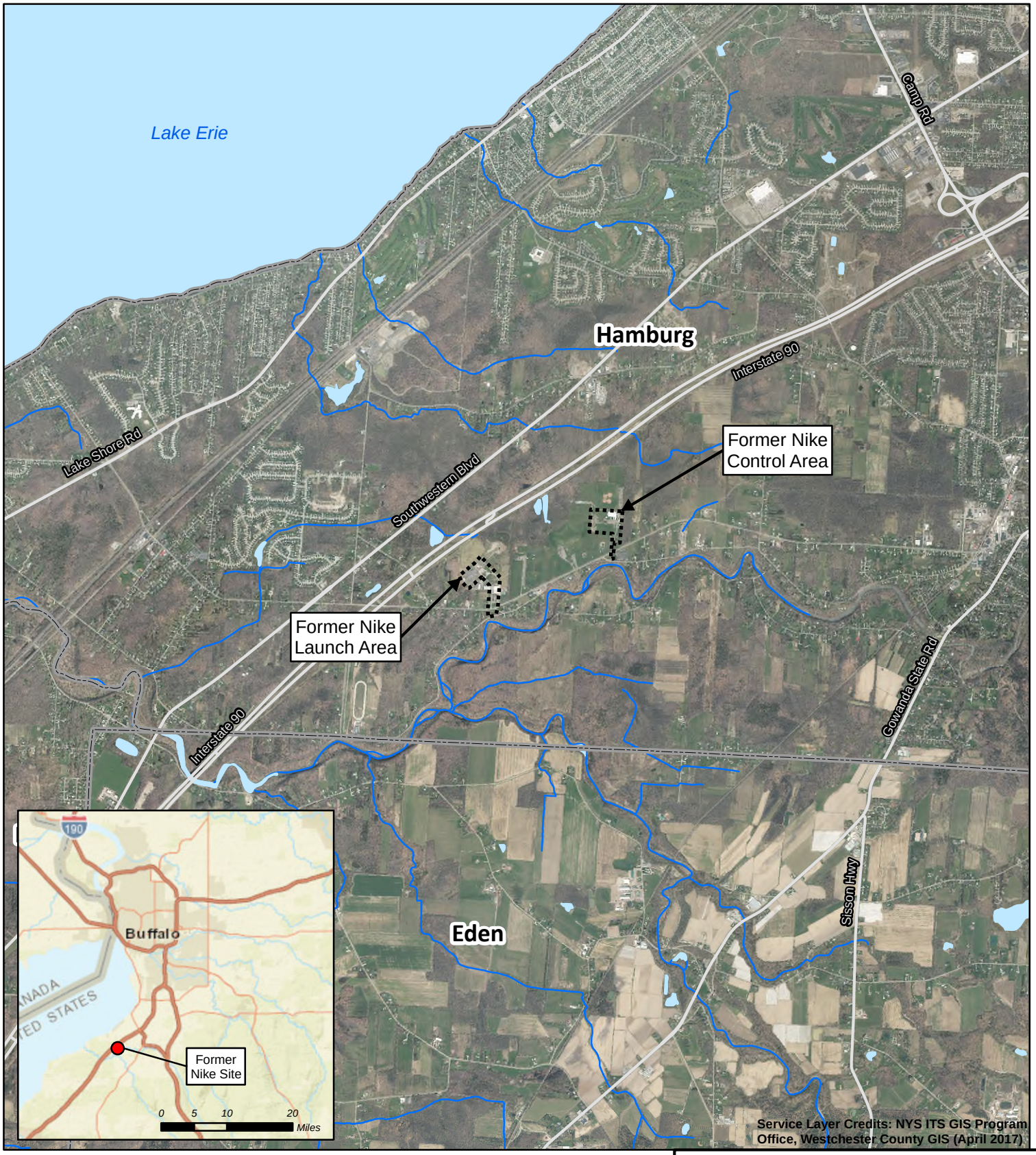
Figures



Former Nike Launch and Control Areas (Approx.)
Waterbody
Streams and Rivers
Major Roads
Town Boundaries

N W E S

0 0.5 1 2 Miles

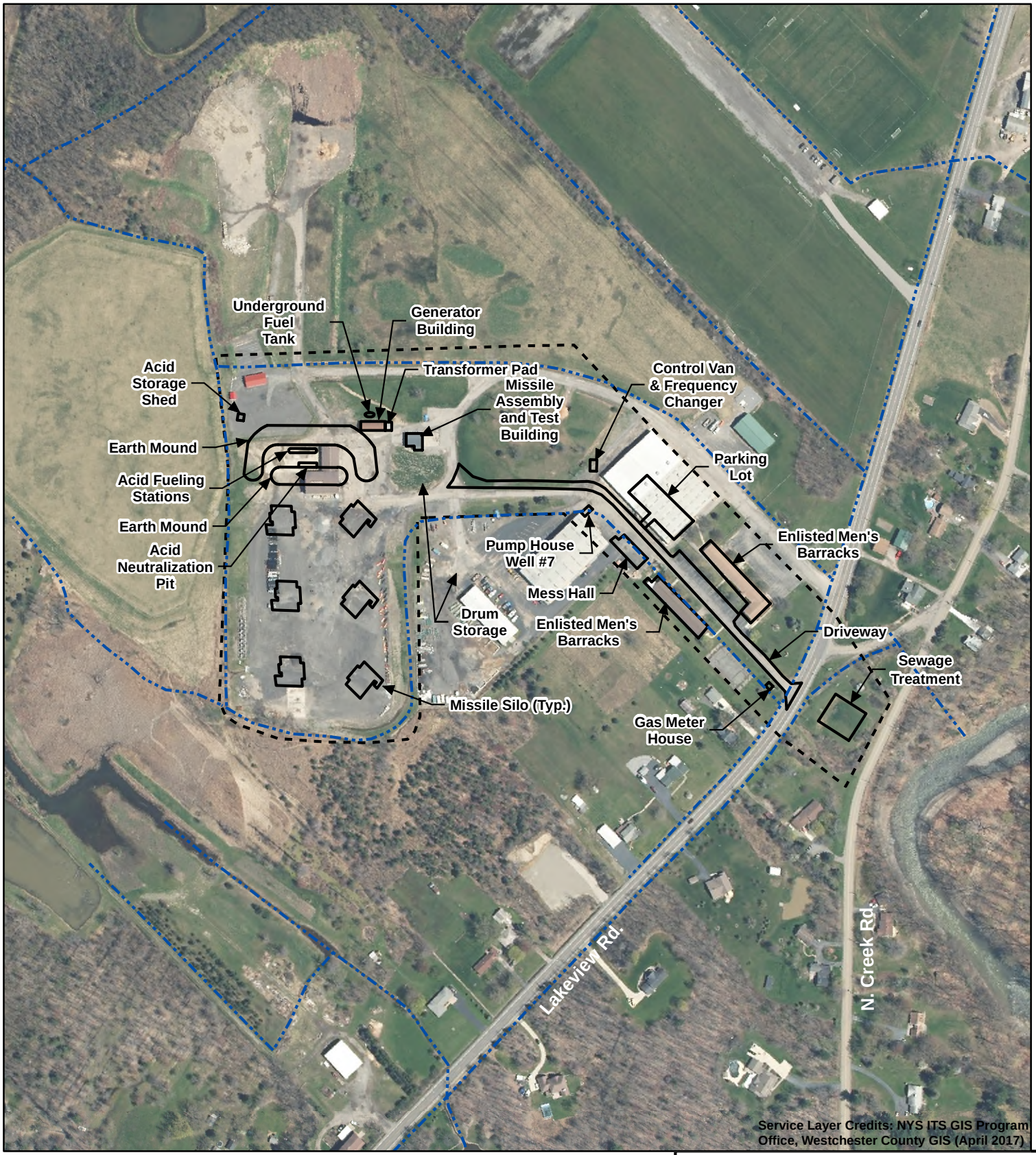
Coordinate System: NAD 1983 UTM Zone 18N
Projection: Transverse Mercator
Source: GZA, 1999; Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS

FORMER NIKE BU-51/52 LAUNCH AREA FUDS

SITE LOCATION

FIGURE 1

Document Path: \\10.19.7.200\data_ENV\Nike Project\Mxd\2021\20211217\Figure 1-1_Regional Map.mxd



Artificial Intermittent Stream/Ditch (approx.)
Historical Site Features
Former Nike Launch Area (approx.)

Coordinate System: NAD 1983 UTM Zone 18N
Projection: Transverse Mercator
Sources: Battelle, 2000; GZA, 1999

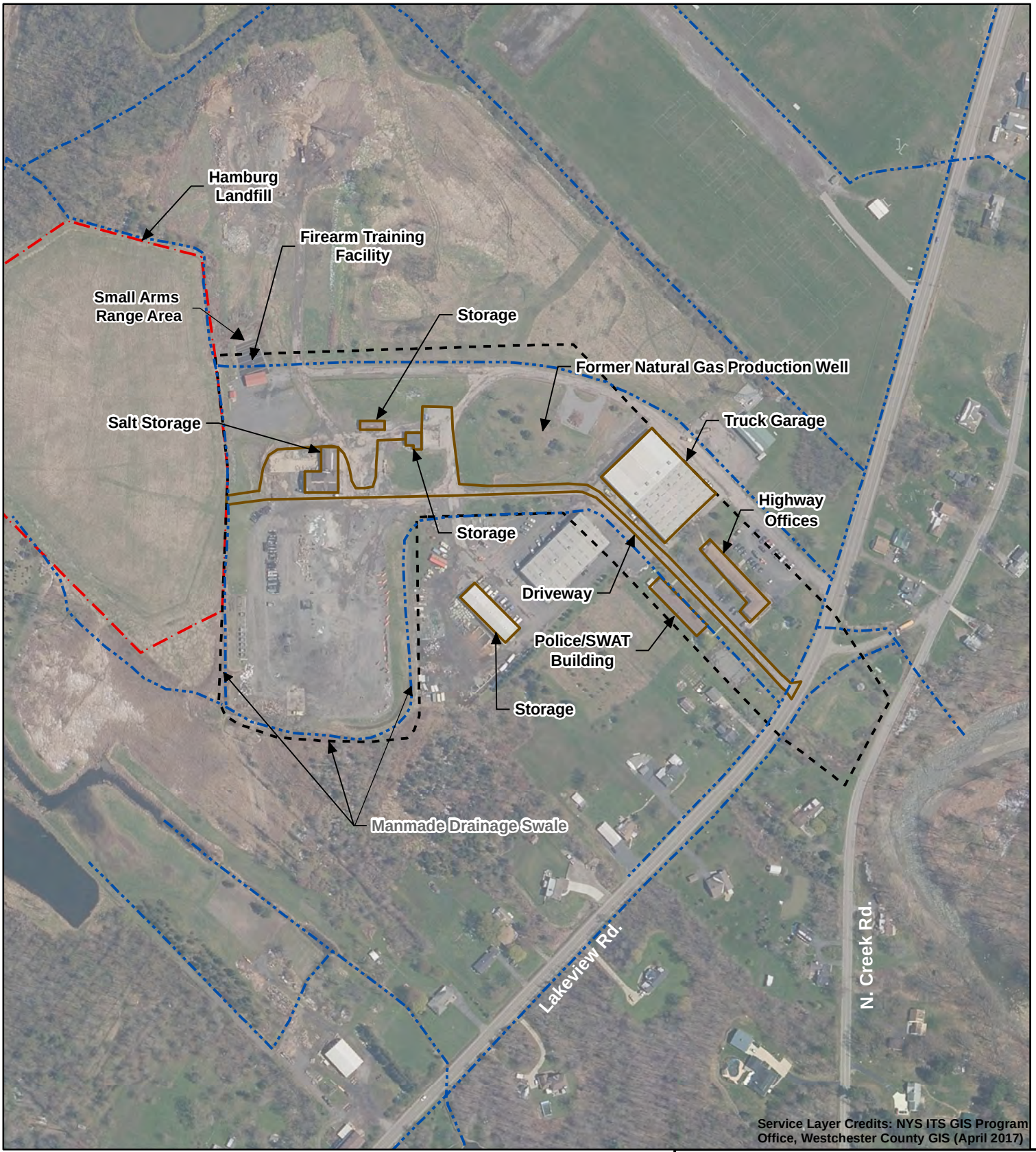
0 200 400 800 Feet

FORMER NIKE BU-51/52 LAUNCH AREA FUDS

HISTORICAL SITE FEATURES

FIGURE 2

Document Path: \\10.19.7.200\data_ENV\Nike Project\Mxd\2021\20211217\Figure 1-3_Historical Site Features.mxd



Artificial Intermittent Stream/Ditch (approx.)
Current Site Features
Former Nike Launch Area (approx.)
Landfill

0 200 400 800 Feet

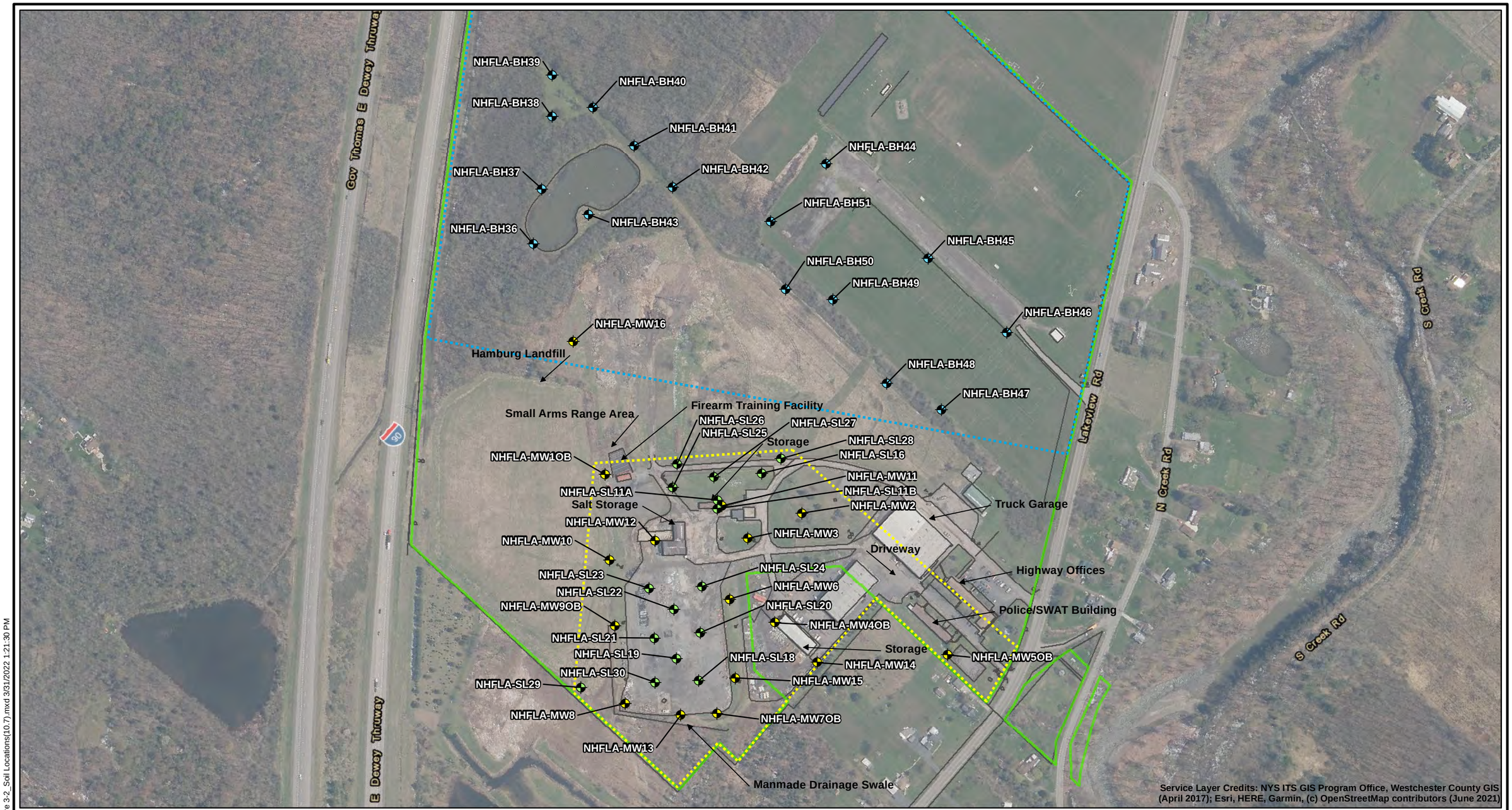
Coordinate System: NAD 1983 UTM Zone 18N
Projection: Transverse Mercator
Sources: Battelle, 2000; GZA, 1999

FORMER NIKE BU-51/52 LAUNCH AREA FUDS

CURRENT SITE FEATURES

FIGURE 3

Document Path: \\stwvdfs03.file.core.windows.net\data_ENV\Nike Project\Mxd\2021\20211217\Figure 1-4_Current Site Features(10.7).mxd



Service Layer Credits: NYS ITS GIS Program Office, Westchester County GIS (April 2017); Esri, HERE, Garmin, (c) OpenStreetMap contributors (June 2021)

Legend

- Reference Soil Sample
- Surface Soil Sample
- Overburden Monitoring Well with Surface and Subsurface Soil Sample
- Former Launch Area (approximate)
- Reference Area (approximate)
- Tax Parcel Boundary
- 2020 Survey Features

0 100 200 400 600 800 Feet

NOTES:
COORDINATE SYSTEM: NEW YORK STATE PLANE WEST, NAD 1983
SURVEY: KHEOPS ARCHITECTURE, ENGINEERING & SURVEY, DECEMBER 7, 2020

FORMER NIKE BU-51/52 LAUNCH AREA FUDS

SOIL SAMPLING LOCATIONS

FIGURE 4

City: Clifton Park Div/Group: ENV Created By: Last Saved By: Giroux
Project 30027953
T:_ENV\Nike Project\Mxd\2021\20211217\Figure 3-2_Soil Locations(10.7).mxd 3/31/2022 1:21:30 PM

Legend

- Overburden Monitoring Well
- Bedrock Monitoring Well
- *Decommissioned Well*
- Former Launch Area (approximate)
- Reference Area (approximate)
- Tax Parcel Boundary
- 2020 Survey Features

0 50 100 200 300 400 Feet

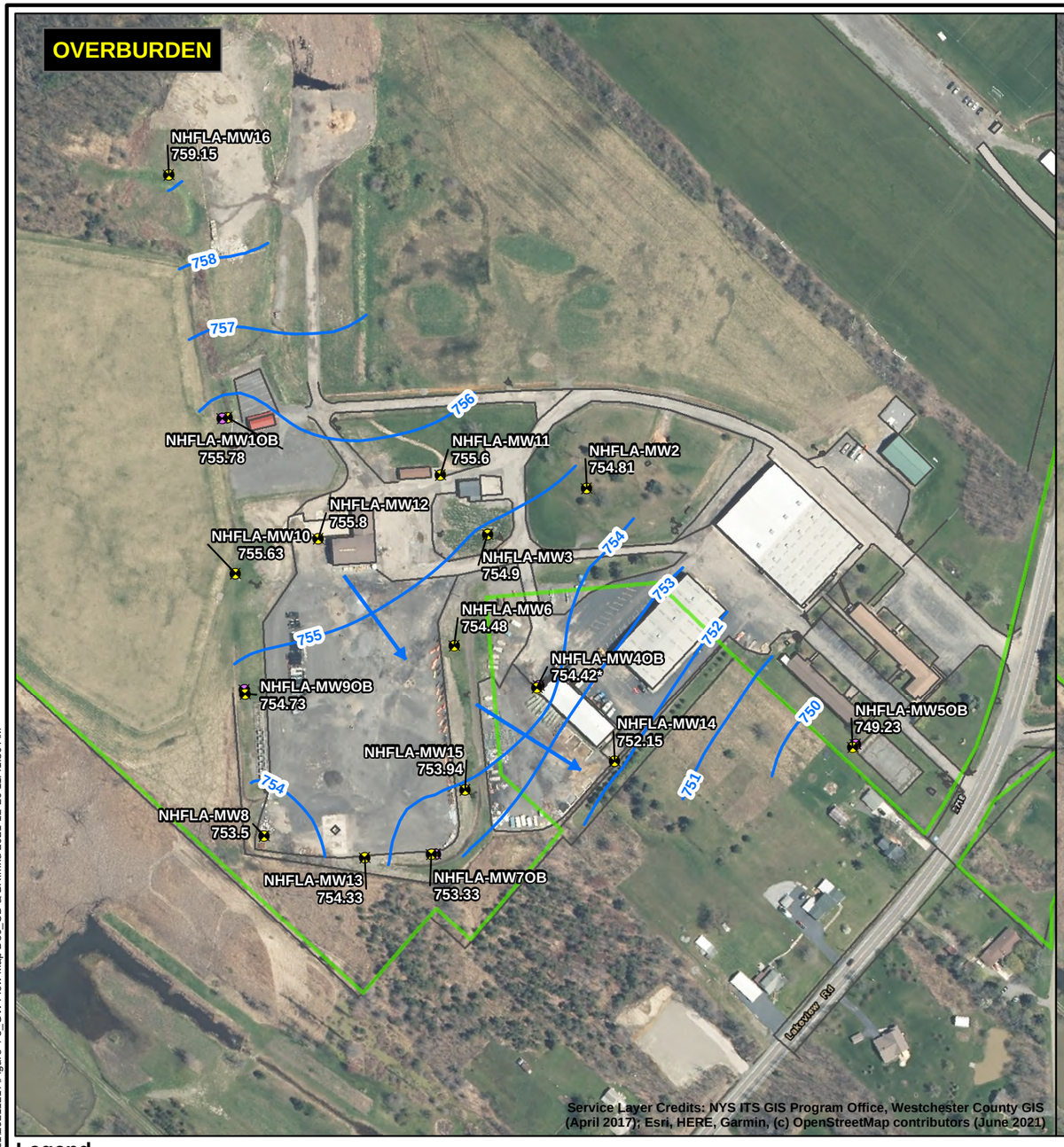
NOTES:
COORDINATE SYSTEM: NEW YORK STATE PLANE WEST, NAD 1983
SURVEY: KHEOPS ARCHITECTURE, ENGINEERING & SURVEY, DECEMBER 7, 2020

FORMER NIKE BU-51/52 LAUNCH AREA FUDS

GROUNDWATER SAMPLING LOCATIONS

FIGURE **5**

City: Clifton Park Div/Group: ENV Created By: Last Saved By: tdoerken
Project 30027953
\\10.19.7.200\data_ENV\Nike Project\Mxd\2021\20211217\Figure 3-1_Well Locations.mxd 2021-12-20 11:22:34 AM



Legend

- Overburden Monitoring Well
- Bedrock Monitoring Well
- Groundwater Elevation Contour Overburden
- Groundwater Elevation Contour Bedrock
- Groundwater Flow Direction
- 759 Groundwater Elevation (feet amsl NAVD88)
- Tax Parcel Boundary
- 2020 Survey Features

0 100 200 400 600 800 Feet

N E S W

NOTES:
GROUNDWATER LEVELS GAUGED ON DECEMBER 15, 2020.
* - NOT USED FOR CONTOURING.
amsl - ABOVE MEAN SEA LEVEL.
COORDINATE SYSTEM: NEW YORK STATE PLANE WEST, NAD 1983
PRELIMINARY SURVEY: KHEOPS ARCHITECTURE, ENGINEERING & SURVEY, DECEMBER 7, 2020

FORMER NIKE BU-51/52 LAUNCH AREA FUDS

DECEMBER 2020 GROUNDWATER FLOW DIRECTION

FIGURE 6

City: Clifton Park Div/Group: ENV Created By: Last Saved By: tdoerken
Project 30027953
\\10.19.7.200\data_ENV\Nike ProjectMxd\20211202\20211217\Figure 4-5_GW Flow Map Dec_OB & BR.mxd 2021-12-20 11:41:30 AM

Appendix A

Proposed Plan Publication Documentation

THE BUFFALO NEWS

-Affidavit-

Joseph Meyer of the City of Buffalo, New York, being duly sworn, deposes and says that he/she is Principal Clerk of THE BUFFALO NEWS INC., Publisher of THE BUFFALO NEWS, a daily newspaper, or The Sun, a weekly newspaper, or the Pennysaver, a weekly shopper published in Buffalo NY. A notice was inserted and published therein **1** times, the first insertion being on **02/08/2023** and the last insertion being on **02/08/2023**

Joseph Meyer

Dates Ad Ran:

Buffalo News (P1) 02/08/23

Sworn to before me this 10th day of, February 2023

Debra M Palkowski

Notary Public, Erie County, New York

DEBRA M. PALKOWSKI
Notary Public - State of New York
No. 01P84955693
Qualified in Erie County
My Commission Expires Sept. 5, 2025

Ad ID#: 1720762

THE BUFFALO NEWS

-Affidavit-

Joseph Meyer of the City of Buffalo, New York, being duly sworn, deposes and says that he/she is Principal Clerk of THE BUFFALO NEWS INC., Publisher of THE BUFFALO NEWS, a daily newspaper, or The Sun, a weekly newspaper, or the Pennysaver, a weekly shopper published in Buffalo NY. A notice was inserted and published therein **1** times, the first insertion being on **02/10/2023** and the last insertion being on **02/10/2023**

Joseph Meyer

Dates Ad Ran:

Hamburg Sun (30) 02/10/23

Sworn to before me this 16 day of, Feb. 2023

Carrie B. Choboy

Notary Public, Erie County, New York

Carrie B. Choboy
Notary Public, State of New York
Reg. No. 01CH6432119
Qualified in Erie County
Commission Expires 4/26

Ad ID#: 1720792

Appendix B

Public Meeting Transcript and Presentation

Transcript
Virtual Public Meeting
6:00 PM Eastern Time, February 22, 2023
Former Nike BU 51/52 Launch Area Proposed Plan

Time (minutes from start)	Speaker
0:03	[Beth Gosselin] So good evening and welcome to this virtual public meeting with the US Army Corps of Engineers. We are also known as USACE. My name is Beth Gosselin and I'm the Chief of Public Affairs for the USACE New England District. I will be your moderator for tonight's meeting. Tonight's meeting will provide information about the former Nike Antiaircraft Missile Battery, Former Launch Area BU5152 site in Hamburg, New York. There will be time after the presentation for questions and answers. Information about this project and the proposed plan is available on our district website. We will list the website address in the comments section of this virtual meeting platform. If you're connected from a computer, please turn off your camera to save bandwidth. The comments made at tonight's meeting will be recorded and will be considered as part of our review process. At this time, I'd like to ask Erin Kirby, the New England District's Project Manager, to begin today's meeting. Erin will provide background on the project and will present the proposed plan for the project. If you think of questions during the presentation, please feel free to use the chat box located on the right side of the screen and we will address them after the presentation.
1:22	[Beth Gosselin] There will also be time after the presentation for questions and answers. Erin, over to you. [Erin Kirby] Thank you, Beth. So good evening and welcome. My name is Erin Kirby. I'm the project manager for the US Army Corps of Engineers, New England District for the former Nike Antiaircraft Missile Battery Launch Area BU5152, located in Hamburg, New York. That's a mouthful. So moving forward, we're going to refer to the site as the launch area.
1:52	[Erin Kirby] We are here tonight to discuss the environmental assessment of the site, including recent work and findings regarding the possible presence of contaminants at the project site associated with the Department of Defense activities. This slide is an agenda and a quick preview of what we are going to discuss in more depth tonight. First, let me introduce the team. The project is being led by the US Army Corps of Engineers New England District. We're being supported by our environmental contractor, Seres-Arcadis. The New York State Department of Environmental Conservation, the New York State Department of Health, and the Town of Hamburg the property owner. Representatives from Seres-Arcadis, the New York State Department of Environmental Conservation, the New York State Department of Health and the Town of Hamburg are all on the line tonight. Thank you everyone, for attending.
2:56	[Erin Kirby] During the presentation, we will discuss the regulatory framework for which this environmental project is being managed, the history of the site, the history of the environmental investigations at the site, what we have found based on the investigations and what the next steps for this project are. And finally, but just as important, how you can comment on this project and our proposed plan.
3:22	[Erin Kirby] As a reference, the FUDS program for which the site is being currently managed under, was established in 1986 as part of the Defense Environmental Restoration Program. Specifically, the goal of the FUDS program is to investigate and address environmental contamination that are the result of DoD activities at former DoD sites that were transferred control of prior to October 17th, 1986. The Defense Environmental Restoration Program statute provides authorization to the DoD to perform and fund environmental actions in the FUDS program in accordance with CERCLA. CERCLA is the acronym for the Comprehensive Environmental Response, Compensation, and Liability Act, which is a federal law that provides a consistent approach for the cleanup of sites

Time (minutes from start)	Speaker
	across the nation, basically. CERCLA standardizes requirements for site assessment, risk assessment, and cleanups of federal sites so that one state or region doesn't have more or less standards. There are multiple steps to CERCLA, including Preliminary Assessment/Site Assessment, which identifies projects such as those in the formerly used defense sites that could pose a risk to human health and the environment. The next step under CERCLA is the remediation investigation - remedial investigation, excuse me, which we just completed for the project in 2022. During the remedial investigation, DoD collects detailed information through field investigations to characterize site conditions. This includes determining the nature and extent of the contamination, for example, the source where the contamination is coming from, how widespread the contamination is in soil, groundwater or other media, and evaluating risks to human health and the environment.
5:14	[Erin Kirby] It should be noted that all sites do not have to progress through all the phases. For example, no further action can be required at the end of the site inspection or the remedial in phase. Also, some sites may not require a long-term monitoring if response actions completed during the remedial design and remedial action phase are sufficient to clean up the site if contamination at the site is below unacceptable risk level.
5:42	[Erin Kirby] No further work is required at the site for the launch area. The remedial investigation concluded that there was no DoD related contamination at the site. That posed an unacceptable risk. Therefore, we move directly from the remedial phase to the proposed plan stage. The proposed plan is our recommendation for how to further manage the site for the launch area and we have recommended no further action for DoD contaminants.
6:13	[Erin Kirby] The former launch area is located on Lakeview on Lakeview Rd. In the town of Hamburg and Erie County and New York State, approximately 5 miles southeast of Lake Erie. The site is bounded to the north by Interstate 90, on the West by the town's recreation area, and on the east by residential areas and on the South by additional residential areas, Lakeview Rd. and 18 Mile Creek. A closed and capped landfill formerly operated by the town is loaded, located north and adjacent to the site. The former Town of Hamburg landfill was operated beginning in 1970 until it was capped and closed in 1984. The landfill is not part of the FUDS program because it was constructed and operated by the Town after the former launch area site closure the site is currently owned and operated by the Town of Hamburg as their highway department maintenance facility. The Town uses the site for office space, truck garage space, storage of gravel piles and road salt, and an accumulation of household hazardous waste including paint cans, electronic waste such as televisions and scrap metal. The Town of Hamburg Police Department also uses the area along the northwestern property boundary for their special weapons and tactics, known as SWAT activities, the police also operate a firearms training area, which includes a small arms range and an earthen backstop. Moving left to right. The first photograph is the current highway department storage area looking to the north towards the landfill, which is in the background. The concrete area is what remains of the Missile Launcher and Silo area. The middle picture is of the Town landfill looking southwest. The landfill is on the right, represented by the higher area of grass. A stormwater drainage ditch is located between the landfill and the storage area, which is located to the left on the photo. And finally, the last photograph on the right is a photograph of the police Department's firearms training area looking east. The building is where the firearms stations are located.
8:33	[Erin Kirby] During the Cold War, the US Army developed Nike antiaircraft missile sites to protect population centers such as Buffalo and important industrial and military installations. The former launch area was operated approximately 5 years from 1956 to 1961. The former launch area contains several support facilities in addition to the silos. These facilities included were used for missile assembly, nitric acid, oxidizer storage and handling. Nitric acid was part of the fuel mixture for the missiles onsite power generation and drum storage. Barracks and a mass hull for site personnel were also present during operation. The former launch area contained a total of 60 Nike

Time (minutes from start)	Speaker
	Ajax supersonic missiles, which were stored horizontally and six underground silos. In June 1965, the DoD transferred the former launch area property to the General Services Administration. Then in 1968, the General Services Administration conveyed the property to the Town of Hamburg. The above bound components of the silos have been demolished and the subsurface elements of the silos have been filled with asphalt millings by the town at some point.
9:57	[Erin Kirby] After 2015, as previously noted, the site is now used by the town as their highway maintenance facility and for police training. If there were DoD contaminants on-site, then town workers, construction workers and visitors to the site could be exposed. Additionally, plants and animals on the site, such as birds, mice or foxes, could encounter contaminants. However, the site is currently covered by gravel, asphalt, or buildings - most of the site is - and so exposure is unlikely. Several environmental investigations have been conducted at the former launch area and nearby residences along Lakeview Rd. Beginning in 1989 and up to the present
10:25	[Erin Kirby] The US Army Corps of Engineers initiated the remedial investigation field work in 2020.This work included overburden in bedrock groundwater sampling. Overburden is just the soil that is on top of the bedrock surface. So what I'm saying is that we sample both the groundwater and soil and the groundwater in bedrock. We also collected surface and subsurface soil samples and performed human health and ecological risk assessments.
11:16	[Erin Kirby] We identified 4 areas of concern associated with DoD activities where release of contaminants could have occurred to the environment, including the former silos and fueling areas, the former underground and above ground storage tanks, the former generator slash transformer area and the former drum storage area, it should be noted that all above ground features associated with these areas of concern were removed before the town took ownership of the property in 1968. Based on these areas of concern, the types of chemicals that could be released included volatile organic compounds, semi volatile organic compounds, metals, polychlorinated biphenyls also known as PCB's and hydrazine which is a component in the fuel used in missiles.
12:09	[Erin Kirby] A combination our combined total, excuse me, of 78 surface and subsurface soil samples were collected during drilling activities. Between 2 to 3 soil samples were collected from each drilling location and submitted to the laboratory for chemical analysis to understand if DoD related contaminants are present, insight soils, and if those possible impacts could be presenting risks to humans or the environment. 16 new overburden and five new bedrock monitoring wells were installed during the remedial investigation to evaluate if chemicals were present. Insight Groundwater 2 rounds of groundwater sampling were conducted, one in September 2020 and again in December 2020. The groundwater samples were collected and sent to a laboratory to assess if a release of DoD contaminants had occurred. If they had occurred, were they impacting sight, groundwater and if impacts could be posing risks to humans or the environment. Based on our field work, the soil to site is primarily fill or native soil that has been reworked. Bedrock is shale and is located approximately 12 to 14 feet below ground surface. Both overburden which again is the soil overlying the bedrock and the groundwater bedrock flow or to the South SE towards 18 Mile Creek as represented by the white arrow on the figure.
13:39	[Erin Kirby] Based on the soil sampling conducted at the site, there were no impacts from DoD related contaminants. Therefore, no further soil sampling is required by the DoD. Based on the groundwater sampling conducted at the site, there were no impacts from DoD related contaminants. Therefore, no further groundwater sampling is required by the DoD.
14:06	[Erin Kirby] The results from the Human Health Risk Assessment indicate that no response action is required to be protective of human health from DUD contaminants. The results from the ecological risk assessment indicate that no response action is required to be protective of the environment from DUD contaminants.

Time (minutes from start)	Speaker
14:29	[Erin Kirby] Based on the results of the remedial investigation, no further work to remedy DoD contaminants is proposed for the former launch area because there are no unacceptable risks from DoD impacts to humans or the environment. Therefore, the Army Corps of Engineers proposes no action in our proposed plan because there are no unacceptable risks related to human health or ecological risks - receptors, excuse me - at the site related to past DoD use of the site. We are taking public comments on the proposed plan. Starting February 15th until March 15th, 2023, all comments will be taken into consideration and a response for each comment will be prepared. After we will finalize the Proposed Plan and incorporate all applicable comments, then we will prepare a Record of Decision. All documents will be available at the town hall and online. Now how you can comment: You can comment tonight verbally in the meeting, you can comment in the chat box, or you can fill out a comment form that is available on the website and mail it or e-mail it, or snail mail it to myself or to Beth. All of this must be done and postmarked by March 15th.
15:57	[Erin Kirby] So Beth, did you get any questions? [Beth Gosselin] I do not have any questions in the chat, but I want to thank you for sharing the information with us. And we'll give folks a couple of minutes. If they have questions in the chat, they can put those in there or you're able to unmute yourselves and you may ask a question. I want to remind folks that the meeting is being recorded so that we ensure the accuracy of your comments. And all comments will be given equal consideration whether you send them via e-mail, mail or you speak them verbally tonight. So we'll give a second. If anybody has a comment on the line, feel free to ask Erin.
17:01	[Beth Gosselin] I think you covered everything fully, Erin. I'd just like to say yeah, that I just want to thank everyone for attending this public meeting tonight. [Erin Kirby] Our decision regarding the proposed plan will be made after all comments have been evaluated and the evaluation process is complete. So again, people still have time, plenty of time to comment until March 15th. As a reminder, public comments can be submitted to USACE online, they can be emailed, or they can be sent via US Post Office. So I just want to thank everybody for their interest in participation. And Beth, unless you have anything else to say, I think this meeting will probably be officially closed. [Beth Gosselin] No, I think that's it. Thank you so much for your time, everybody. Have a good night. Thank you.
END OF TRANSCRIPT	

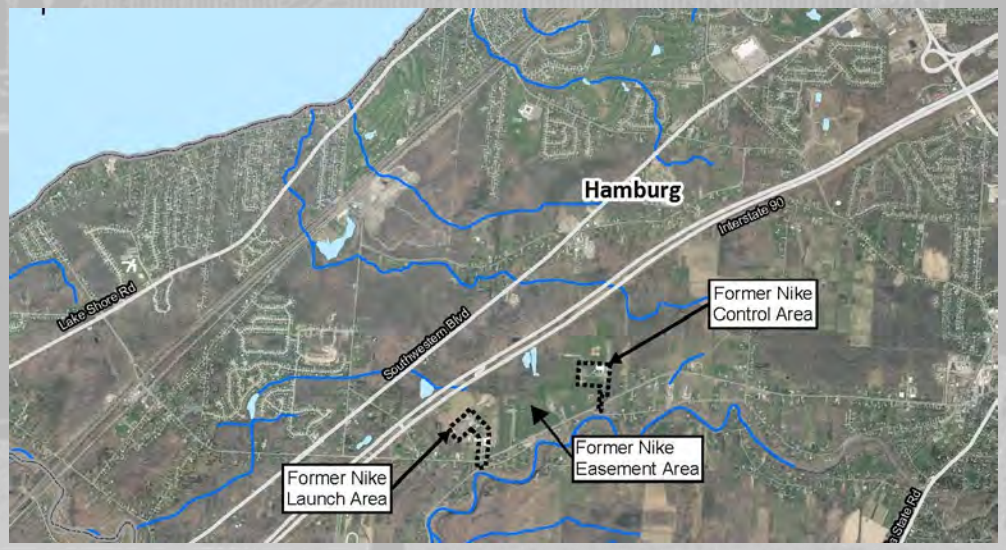
FORMER NIKE ANTI-AIRCRAFT MISSILE BATTERY LAUNCH AREA BU-51/52, HAMBURG, NY

Formerly Utilized Defense Sites (FUDS) Program

Public Meeting for the Proposed Plan

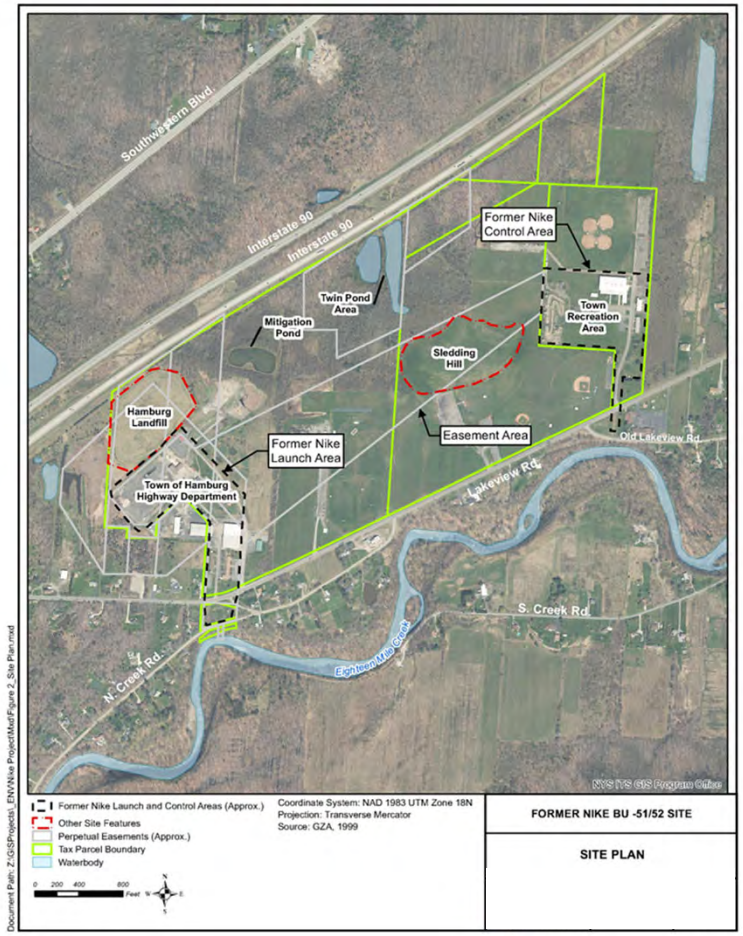
Erin Kirby
Project Manager
U.S. Army Corps of Engineers
New England District
Date: 22 February 2023

US Army Corps of Engineers®



AGENDA

- Introduction
- CERCLA Process
- Nike BU 52/52 Site (Background, History, Use)
- Previous Investigations
- Remedial Investigation Results
- Risk Management Methodology
- Next Steps
- Ways to Comment
- Questions



INTRODUCTION – PROJECT TEAM

- United States Army Corps of Engineers (USACE) New England District
- USACE Contractor: Seres – Arcadis Joint Venture (JV)
- New York State Department of Environmental Conservation (NYSDEC)
- New York State Department of Health (NYSDOH)
- Town of Hamburg, NY (property owner)

INTRODUCTION – MEETING OBJECTIVES

Purpose of Public Meeting

- Present the Formerly Used Defense Sites (FUDS) Program and Process
- Present the background for Former Former Nike Anti-Aircraft Missile Battery Launch Area BU-51/52 (Launch Area)
- Present the results of the Remedial Investigation (RI) conducted at the Launch Area for DoD impacts
- Present the Proposed Plan for the Launch Area for DoD impacts
- Receive public input on the Preferred Approach

FORMERLY USED DEFENSE SITES (FUDS)

- Established by U.S. Congress in 1986 as part of the Defense Environmental Restoration Program (DERP) Act
- Provides for the environmental investigation and cleanup of contamination at properties that were formerly owned by, leased to, or otherwise possessed by the United States Department of Defense (DoD) that were transferred from DoD control prior to 17 October 1986
- Executed by USACE pursuant to the Comprehensive Environmental Response, Compensation, and Liabilities Act (CERCLA, aka Superfund)
- Goal is to investigate and address environmental contamination that was the result of DoD activities

CERCLA PROCESS

Preliminary Assessment/Site Inspection

- Identify projects posing potential risk.
- Eliminate projects that pose no unacceptable risk.
- Determine if a removal action is warranted.

Remedial Investigation

- Determine nature/extent of contamination.
- Assess risks to human health and the environment.
- Support development of remedial alternatives.

Feasibility Study

- Develop and evaluate remedial alternatives to support remedy selection.
- Evaluate alternatives against CERCLA criteria.

Proposed Plan/Record of Decision

- Provide documentation from RI/FS supporting preferred remedial alternative.
- Obtain stakeholder input and provide opportunity for public comment on the preferred alternative.
- Selection and approval of the final remedy for the site.

Remedial Design and Action

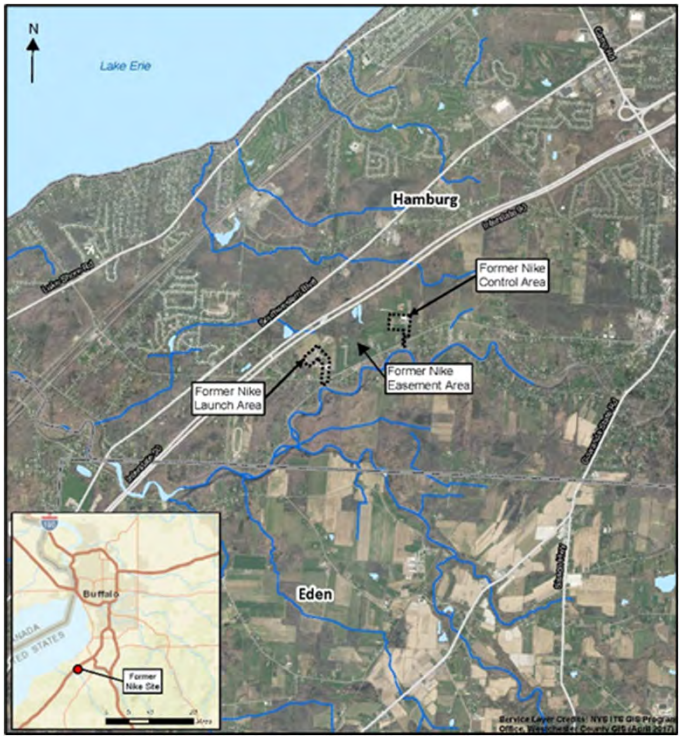
- Develop design plans, specifications of selected remedy.
- Implement selected remedy.

Long-Term Management

- Verify that the remedy continues to be protective of human health and the environment.

SITE LOCATION AND BACKGROUND

- Located on Lakeview Road in Hamburg, Erie County, New York, approximately 5 miles southeast of Lake Erie
- Currently owned by the Town of Hamburg. Site uses include:
  - Town of Hamburg Highway Department maintenance facility
  - Former Town of Hamburg Landfill (capped and closed in 1984)
  - Hamburg Police Department training center
  - Highway Department materials storage (i.e., road salt, gravel, construction supplies)



SITE LOCATION AND BACKGROUND

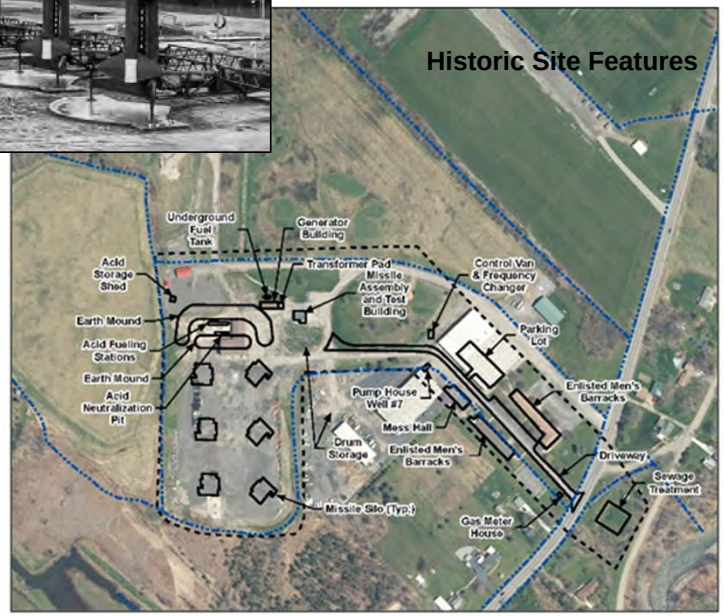
Current Highway Dept. Storage Area (Former Nike Missile Silos)

Capped Landfill

Firearms Training Area

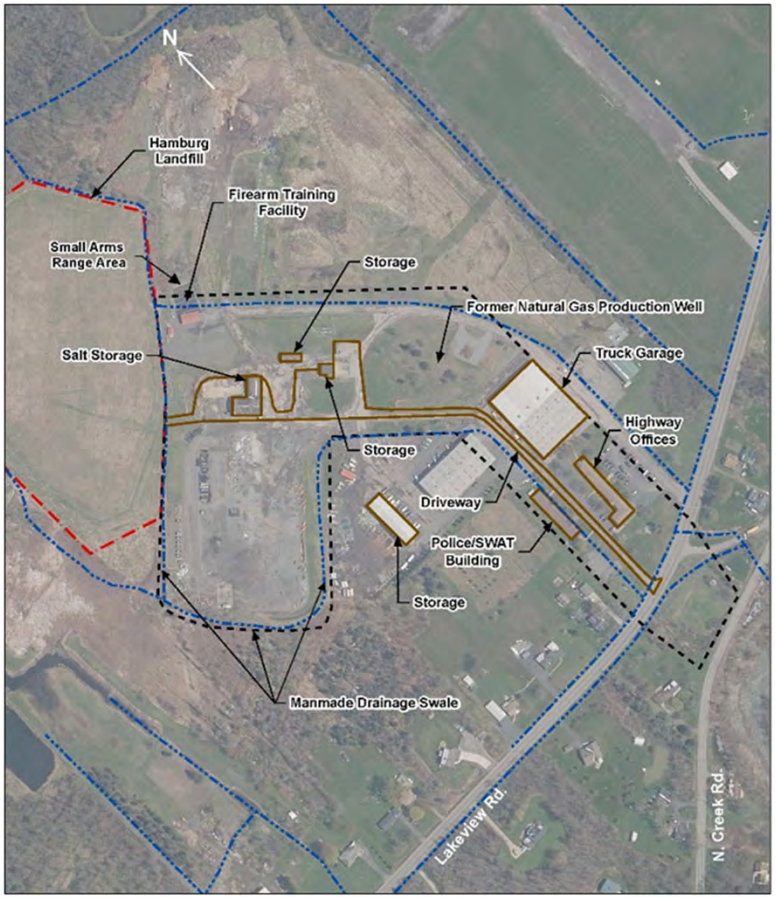
FORMER LAUNCH AREA SITE HISTORY

- Location of former Nike Ajax Missile launch facility from 1955 to 1961
  - 60 Nike Ajax missiles stored in 6 underground silos
  - Support facilities, including fueling stations, also present
  - A control area was located to the northwest (current location of Town Recreation Area – not included in FUDS program)
- Property transferred from DoD to General Services Administration (GSA) in 1965
- Property transferred from GSA to Town in 1968



SITE USE

- Current site use is commercial /industrial (highway maintenance facility and police training) and is expected to continue as such
- Silos were filled by the Town using asphalt millings in last 10 years
- **Humans**: Site workers/staff, construction workers, visitors
- **Environmental**: Limited to local plants and animals. Most of site is gravel, asphalt, and buildings

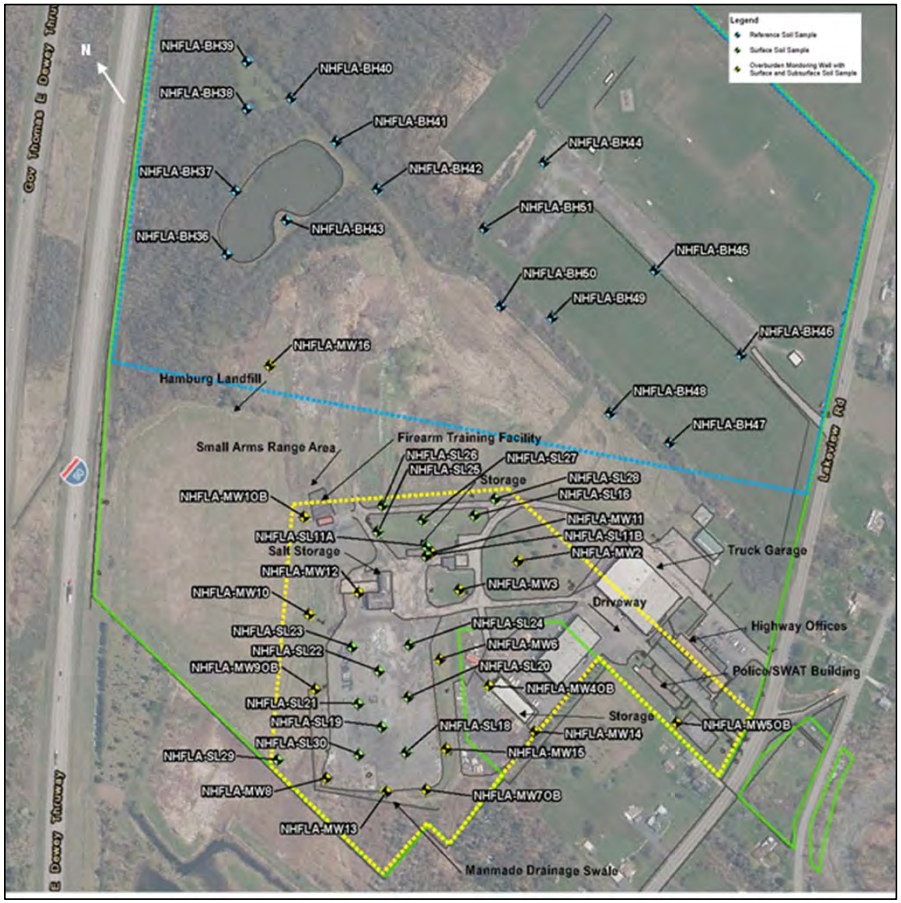


PREVIOUS INVESTIGATIONS

- **1989 Confirmation Study and Contamination Evaluation**
  - Groundwater sampling found elevated metals concentrations (arsenic, cadmium, lead, manganese)
- **1991 Inventory Project Report**
  - Concluded that former Launch Area was eligible under the DERP-FUDS program
- **1999 Environmental Study**
  - 36 surface soil, 18 subsurface soil, and 11 groundwater samples collected from areas of concern, including UST and former silo areas
  - Benzene and ethylbenzene detected in groundwater in UST area, and metals present in groundwater in other areas of site, at concentrations greater than NYSDEC standards
- **2000 Site Investigation (SI)**
  - Additional subsurface soil and groundwater sampling with similar results to 1999 study
- **2000 Screening Level Human Health Risk Assessment**
  - Concluded that adverse health effects for residents near the former Launch Area were unlikely

2020 – 2022 REMEDIAL INVESTIGATION (RI)

- **Remedial Investigation Activities**
  - Habitat Assessment
  - Overburden groundwater sampling
  - Bedrock groundwater sampling
  - Surface and subsurface soil sampling
  - Human health and ecological risk assessment
- **Areas of Concern**
  - Former Silos & Fueling Areas
  - Former UST/AST Areas
  - Former Generator/Transformer Area
  - Former Drum Storage Area
- **Contaminants of Concern (COCs)**
  - Volatile Organic Compounds (VOCs)
  - Semi-Volatile Organic Compounds (SVOCs)
  - Metals
  - Polychlorinated biphenyls (PCBs)
  - Hydrazine (missile fuel component)



2020-2022 RI – SOIL INVESTIGATION

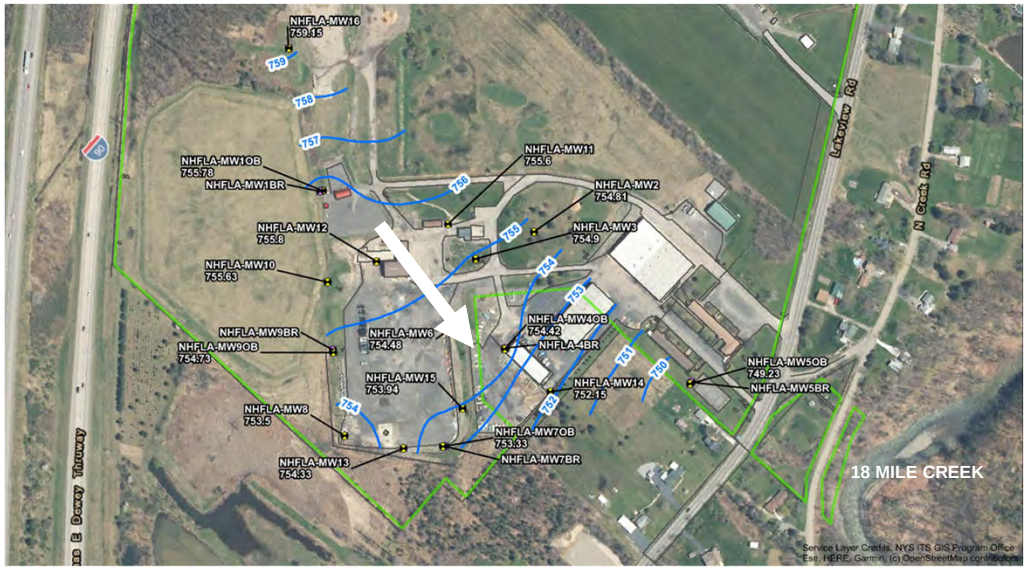
- **Surface soil samples**
  - Collected from top 12 inches of soil column at 32 locations
  - Purpose: Assess potential risk from human or ecological contact with contaminated soil
- **Subsurface soil samples**
  - 46 samples collected from 21 locations using drilling rig
  - Depths from 1 foot below ground surface to 17 feet below ground surface (top of bedrock)
  - Purpose: Assess potential risk for human contact with contaminated soil (construction worker) and evaluate potential for migration of contaminants to groundwater

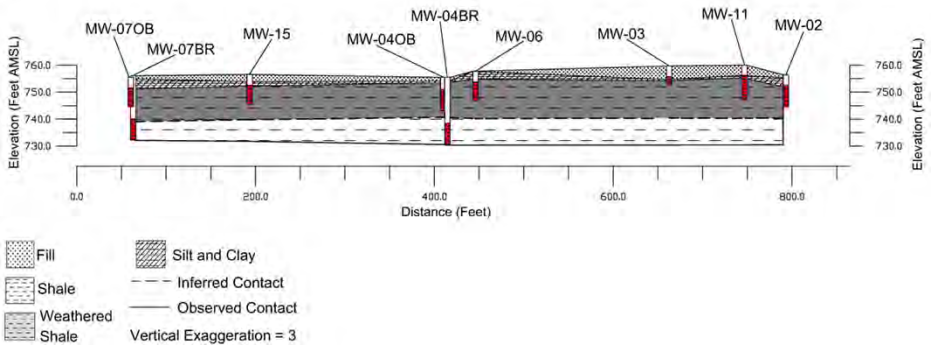
2020-2022 RI – GROUNDWATER INVESTIGATION

- **Groundwater Monitoring Well Installation**
  - 16 wells installed in overburden (above bedrock)
  - 5 wells installed in bedrock
  - Purpose: Evaluate groundwater flow direction and allow for collection of groundwater samples
- **Groundwater Sampling**
  - September 2020 and December 2020 (21 locations)
  - Purpose: Evaluate presence of contaminants in groundwater
- **Hydraulic Conductivity Testing**
  - Purpose: Evaluate the speed at which groundwater is moving

2020-2022 RI - RESULTS

- **Geology & Hydrogeology**
  - Overburden soil is primarily fill and reworked native material
  - Weathered bedrock layer is present between overburden and solid bedrock
  - Shale bedrock generally within 12 to 17 feet below ground surface
  - Groundwater flow is to the south / southeast toward 18 Mile Creek both in overburden groundwater and bedrock groundwater





2020-2022 RI - RESULTS

- **Soil**
  - No visible evidence of contamination
  - Metals (arsenic and chromium), and polycyclic aromatic hydrocarbons (PAHs) present
    - Investigation found that the metals and PAHs were either naturally occurring or associated with common commercial/industrial site uses, and are not related to DoD use of the site
  - <u>Conclusion</u>**:** No further soil sampling required to assess DoD impacts

2020-2022 RI - RESULTS

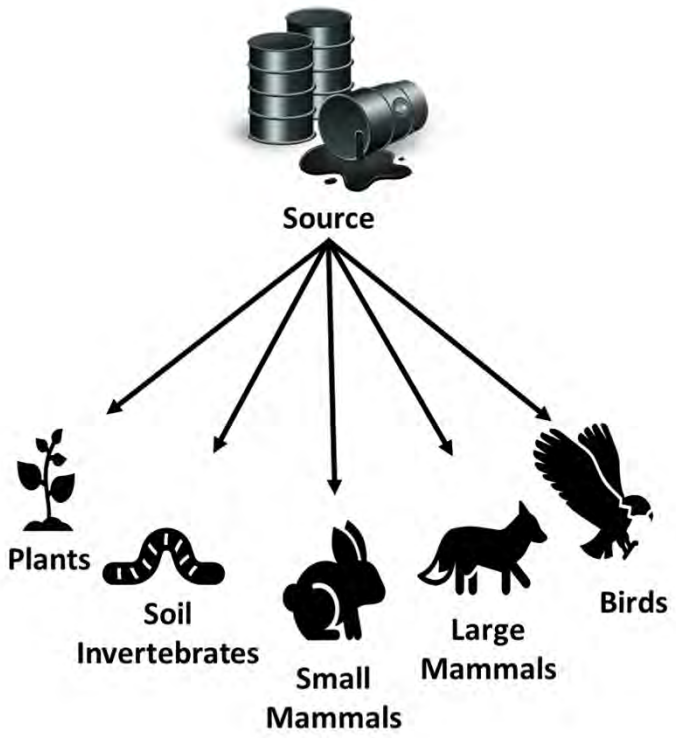
- **Groundwater**
  - No visible evidence of contamination
  - Concentrations of metals (arsenic, iron, manganese, aluminum, sodium, potassium, calcium), PAHs, and benzene/ethylbenzene detected
    - Investigation found that metals and PAHs are either naturally occurring or associated with common commercial/industrial site uses, and are not related to DoD use of the site
  - <u>Conclusion</u>**:** No further groundwater sampling required to assess DoD impacts

2020-2022 RI – HUMAN HEALTH RISK ASSESSMENT

- Performed using USEPA Risk Assessment Guidance for Superfund (RAGS)
- Objective: Evaluate potential human health risks based on the current and anticipated site use and the site-specific sampling data
- Conclusion: Risks are less than their USEPA threshold values and are considered acceptable under CERCLA for all current/most likely future on-site exposure scenarios

2020-2022 RI – ECOLOGICAL RISK ASSESSMENT

- Screening Level Ecological Risk Assessment (SLERA) conducted using USEPA protocols to provide a basis for deciding if remedial action is necessary to protect environmental health
- Objective: Evaluate potential ecological health risks based on the current habitat conditions and the site-specific sampling data
- Conclusion: Potential risk for ecological receptors (plants, soil invertebrates, birds, and mammals) is limited due to lack of habitat



2020-2022 RI - CONCLUSIONS

- Contaminants found in **soil** are not associated with past use of the site by DoD and do not pose a risk to human health and the environment under the current and anticipated future site use
- Contaminants found in **groundwater** are not associated with past use of the site by DoD and do not pose a risk to human health and the environment under the current and anticipated future site use

PROPOSED PLAN

- USACE proposes that **No Action** is required for the former Nike BU 51/52 Launch Area FUDS as there are no unacceptable risks related to human health or ecological receptors at the site related to past DoD use of the site

NEXT STEPS

- Take public comments under consideration and prepare responses to comments
- Public comment Period: February 15 – March 15, 2023
- Prepare a Decision Document, with responsiveness summary and considering all applicable comments
- Final Decision Document placed in the Town of Hamburg Public Library and online

HOW TO COMMENT

- Verbally at tonight's meeting
- Fill out a form and email or mail by March 15, 2023 to:

Email: Erin.Kirby@usace.army.mil
Mail: Erin Kirby
USACE–New England District
696 Virginia Road
Concord, MA 01742

Email: cenae-pa@usace.army.mil
Mail: Elizabeth Gosselin
USACE–New England District
696 Virginia Road
Concord, MA 01742

- Documents available at:
  - https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-NIKE-Site-Hamburg-New-York/
  - Hamburg Public Library - 102 Buffalo Street, Hamburg, NY 14075

QUESTIONS?

Appendix C

State Regulatory Agency Concurrence Letters

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

March 14, 2022

Ms. Erin Kirby, P.G., LEP
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742
Erin.Kirby@usace.army.mil

Re: Former Nike Battery BU-51/52, Hamburg, Erie County, NY
NYSDEC Site No. 915327
Draft Final Remedial Investigation Report, February 2022

Dear Ms. Erin Kirby:

The New York State Department of Environmental Conservation and the New York State Department of Health (collectively "the State") have reviewed the Draft Final Remedial Investigation Report, Nike Anti-Aircraft Missile Battery BU-51/52 for the NYSDEC Site Former Nike Battery BU-51/52 Site dated February 2022. The State does not accept the Remedial Investigation Report and has provided the following comments for your consideration:

1. General: The State has concluded that the objective, "Gather sufficient information to assess and delineate the nature and extent of impacts (if present) in soil and groundwater from the Department of Defense (DoD) activities in the Launch Area of the former Nike Battery", was not met. The recommendation of the RIR, "Given the use of the former Launch Area as a town maintenance facility for more than 50 years, these contaminants cannot be linked conclusively to past DoD activities at the site…" indicates that the report has not fully characterized the use of the site by the Town versus the DoD. A comprehensive study of the Town maintenance facility's impact to the property as well as a study of the past uses of the areas that were defined as "Reference locations" has not been completed. Only through these studies would it be possible to characterize the impacts that the Town's maintenance facility versus the DoD have had on the Site.

2. General: The text, tables, and figures should include references to 6NYCRR Part 703.5 as these groundwater standards apply to the site.

3. General: Given the significant exceedances of groundwater standards in groundwater at the most downgradient monitoring wells (NHFLA-MW5OB and NHFLA-MW5BR), the State requests that an additional monitoring well be installed further downgradient-ideally near the sewage treatment plant and that surface water and sediment sampling be conducted in Eighteen-mile creek. This is a Class B stream which supports swimming, recreational activities, and fishing and thus there is a high probability of

human health and ecological impacts if the stream is impacted by the site from DoD activities.

4. General: It is noted that there is a Petroleum Gas Well located on the site. Please see this link for more information: http://www.dec.ny.gov/cfmx/extapps/GasOil/search/wells/index.cfm?api=31029218250000

5. Section 1.2.2 Historical Information: This section generally discusses the structure of the missile silo; however, the depth of the silo is never stated. Please include this information.

6. Section 1.2.3.7: "Barium, likely a contaminant from the Town of Hamburg Highway Department's storage of road salt and brine at the site, was present at concentrations that exceeded the 2019 USEPA MCL in the groundwater samples from MW-4 (installed at a nearby residence; Bluestone 2019)". Please provide the 2019 RI WP to the NYSDEC for our review. What is the reasoning for the Town to be the source for Barium? Barium is a known component of munitions

7. Section 3.6.2: The Reference Soil Samples: This section does not present any history on this area that was chosen for reference soil sampling– only the current usage. Please include a history of this area, to ensure that the soil samples collected from it, do in fact, represent background data and were not impacted by past uses. Given this significant lack of information, the State rejects the use of the "Reference Locations" as background data.

8. Section 3.12.1: The State is requesting that NHLA-MW17 as show in the work plan be installed and samples collected. The reasoning from USACE to remove NHLA-MW17 from the scope of work is flawed and biased. The Town has used the entire former Nike Battery property since the DoD transferred ownership to the Town in 1968. Therefore, the impacts to the former Nike Battery Launch Area on the northwest side of Lakeview Avenue from both the DoD and the Town would also impact the WWTP as it was used by both the Town's maintenance facility and the DoD.

9. Section 4.3.1, Table 3-1, Table 4-2a,b,c: A table should be generated that indicates the depths at which soil samples were collected from the monitoring well boring locations, especially the depth of the "C" locations.

10. Section 5.2.1 SVOCs/PAH, third paragraph (groundwater): The State disagrees with the statement that "…based on their isolated nature and location/distance from former DoD activity areas, do not indicate a release to the environment associated with past DoD activities". In the case of groundwater contamination even given the low hydraulic conductivity for this site, the 70 years since DoD impacts may have occurred is enough time for potential contamination to have traveled across this site and potentially off-site. In addition, given the shallow depth of bedrock, the hydraulic connection between the overburden and the bedrock aquifers, and fracturing of the bedrock, the isolated nature of the contaminants observed in various locations is not unlikely.

11. Section 5.2.2 Metals, 2nd paragraph (soils): The State disagrees that the site soils have not been impacted by DoD-related activities. The State rejects the Reference Area sample results as background given the lack of historical information on this portion of

land and its past uses. Therefore, comparisons to Reference Areas are rejected. The metals' impacts to soils by the DoD must be re-evaluated without Reference Area sample results.

12. Section 5.2.2 Metals, 4th paragraph (groundwater): The State disagrees with the generalization that all metals detected in the groundwater are indicative of releases related to road salt storage on-site. The State does agree that metals such as sodium, potassium, calcium, magnesium, and manganese are observed at greater concentrations and can be attributable to road salt impacts. Other metals such as Cobalt, Barium, Thallium, Arsenic, Chromium (both trivalent and hexavalent), and Vanadium are not the direct result of road salt storage and other sources must be considered. Therefore, the CSM is not complete.

13. Section 6.1.1, Data Evaluation, 3rd and 4th bullet: The State disagrees with the elimination of metals and PAH's detected at concentrations greater than the Residential soil RSLs but less than BTVs from further quantitative evaluation for reasons per comment 11. As such the COPCs, in addition to those listed in this section, that should be retained are:

    Surface soil metals: Arsenic, Cobalt, Thallium, Vanadium,
    Subsurface soil metals: Arsenic, Cobalt, Hexavalent Chromium, Thallium, Vanadium, Manganese

14. Section 6.1.1, Data Evaluation, 7th bullet: The State does not accept the evaluation of the vapor intrusion pathway in the method stated in this bullet point. The NYSDOH and NYSDEC requested soil vapor sampling in our July 2020 comment letter. We request that a soil vapor and vapor intrusion investigation be conducted, given the significant benzene results seen at the southern boundary of the site nearest to the residential area. In addition, the exceedance of the VISL, according to your calculations, indicates that there is a high potential for a vapor intrusion issue at nearby residential buildings and the on-site buildings. Therefore, your own calculations indicate a vapor sampling program should be conducted.

15. Section 6.1.1, Data Evaluation, line 1994-1996: In reference to the State comment 14 above, the State rejects the statement on lines 1994-1996 of the Report. The COPCs for vapor cannot be determined given that no sampling of this media was conducted.

16. Section 6.1.5 HHRA Summary and Conclusions: The State disagrees with the conclusions of the HHRA. The calculations did not account for all contaminants that could contribute to the HHRA as a COPC due to the flawed use of the Reference Locations as background data.

17. Section 6.1.5. HHRA Summary and Conclusions, lines 2473-2476: These statements are erroneous. Although there is evidence for the origin of sodium, potassium, manganese, and magnesium due to road salt use, the origin of other metals (e.g., barium, cobalt, arsenic, vanadium, hexavalent chromium) are not explained. The presence and exceedance of standards of these constituents in soils and groundwater are all potentially attributable to historical DoD activities. The State rejects this statement.

18. Section 6.2 Screening Level Ecological Risk Assessment: We decline to comment on Section 6.2.

19. Section 7.2 Recommendations: The State disagrees with the findings of the RI. They do not support a No Further Action Proposed Plan. Rather further investigation is required to ensure that there are no impacts to environment and human health from DoD activities from both on-site and off-site media.

20. Table 3-2, Figure 3-2, Section 4.3.1, Table 4-2a,b,c: Table 3-2 indicates there were 16 SL (surface) samples collected, however, Figure 3-2 only shows the locations of 8 SL samples, Section 4.3.1 states there were 10 SL samples (including duplicates), and Tables 4-2a,b,c show 10 sample results (including duplicates). Please clarify the additional SL samples shown in Table 3-2.

21. Table 4-2: The project action limits (PAL) for VOCs, metals, SVOCs, and PCBs referenced in the UFP-QAPP are residential RSLs. The QAPP does not reference industrial RSLs. Although the industrial RSLs may be referenced in the RIR, decisions should not be based on the analytical results in comparison to industrial RSLs, but to Residential RSLs as per the QAPP.

22. Table 4-3b: Reference Soil Analytical Results – Metals: Chromium and Mercury are denoted with a 6 and 7 respectively, however, there is no reference in the notes to the 6 and 7.

23. Figure 4-3: Cross Section B-B' is inaccurate and does not account for the fill over the length of the area that was formerly the launch pad of the Missile Silo area.

24. Figure 4-5, GW Contours: Why was data from MW5BR excluded from contouring.

25. Appendix D: Water Well Survey: Were all seven water wells listed in the QAPP Section 10.6.4 also shown in Appendix D? Again, these wells are listed in the Bluestone 2019 work plan. Please provide this work plan to NYSDEC.

Please find below the comments provided by the New York State Department of Health (NYSDOH) regarding the visitors to the park, town maintenance facility employees, and nearby residents and the potential health risks that are being left unaddressed in a timeframe that is protective of their health.

1. "*There is no soil vapor investigation planned for volatile organic compounds (VOCs) detected on-site, however, soil and groundwater will be analyzed for VOCs. Given the known history of BTEX contamination at this site, DEC/DOH reserve the right to request a soil vapor/vapor intrusion investigation as a follow-up activity depending on the results of the soil and groundwater sampling*." My comment was noted, but not addressed or planned to be implemented in the future.

2. *"In Section 10.7 – Data Gaps, and QAPP Worksheet #18: Sampling Locations and Methods/1995 Standard Operating Procedure Requirements, surface soils are planned to be collected from 0 to 12 inches. For metals, pesticides, PBCs and SVOCs, surface soils samples should be collected at 0 to 2 inches below grass cover; surface soils samples for VOCs should be collected at 0 to 6 inches below grass cover*." The DoD still plans the collection of surface soil samples at depths of 0-12 inches at the direction of USACE, with VOCs collected immediately after exposure at the base of the 12-inch

horizon. These depths will not characterize what might be at surface soils where children may have a residual dermal contact as they play at the current park area.

3. *"Site-related sampling may determine that contamination is migrating off-site toward homes and/or businesses. The procedures for performing private and public supply well sampling should be included in the QAPP."* The Army states that sampling of private and public supply wells is out of the scope of this phase of the project. If results of the investigation indicate that offsite migration may be occurring specifically related to historic DoD activities at the site, the necessity of private and public supply well sampling will be evaluated and the QAPP would then be updated, as appropriate. Private and/or public wells could remain contaminated with site-related compounds during the USACE's evaluation and QAPP revision process.

4. "*There should be additional soil and groundwater samples collected around the landfill in the areas of the historic drainage lines to determine what may have leached from the landfill and impacted downgradient areas*". The Army asserts that the current locations as proposed provide the appropriate data set to evaluate potential impacts from the landfill at this stage in the investigation. This includes groundwater and soil samples collected from location 001, 008, 009, 010 and soil samples from location 029. However, the specified sampling areas are limited in areas of the historic drainage lines that are close to currently occupied structures.

The comments and sampling request the NYSDOH made are specific to determining the possible impacts that site-related contamination may have on the community immediately surrounding the site and including the site itself which is an active park area for the community. By not implemented and/or conducting the requested sampling, possible exposure routes remain undetermined and possible exposures could be occurring. With this information the NYSDOH does not find the RIR acceptable.

Should you have any questions or wish to discuss NYSDEC and the NYSDOH comments, please contact me at (518) 402-9614 or melissa.sweet@dec.ny.gov.

Sincerely,

Melissa L. Sweet, PE
Project Manager

ec: J. Swartwout – NYSDEC
J. Nealon/ C. Bethoney - NYSDOH

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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June 3, 2022

Ms. Erin Kirby, P.G., LEP
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742
Erin.Kirby@usace.army.mil

Re: Former Nike Battery BU-51/52, Hamburg, Erie County, NY
NYSDEC Site No. 915327
Final Remedial Investigation Report, May 2022

Dear Ms. Erin Kirby:

The New York State Department of Environmental Conservation and the New York State Department of Health (collectively "the State") have reviewed the Final Remedial Investigation Report for Nike Anti-Aircraft Missile Battery BU-51/52 for the NYSDEC Site Former Nike Battery BU-51/52 Site dated May 2022 and the associated Response to NYSDEC and NYSDOH Comments. The State accepts the Response to Comments however we are in disagreement on the Recommendations of the Final Remedial Investigation Report. The Report does not satisfy the requirement to determine the nature and extent of the contamination nor present a complete Conceptual Site Model. Especially concerning is the USACE dismissal of NYSDEC Comments G3 (concerning potential impacts to Eighteen-mile Creek) and 10 (concerning the lack of soil vapor intrusion sampling at nearby homes). The NYSDEC will not support a No Further Action Proposed Plan at this time.

Should you have any questions or wish to discuss NYSDEC and the NYSDOH comments, please contact me at (518) 402-9614 or melissa.sweet@dec.ny.gov.

Sincerely,

Melissa L. Sweet, PE
Project Manager

ec: J. Swartwout – NYSDEC
J. Nealon/ C. Bethoney - NYSDOH

NEW YORK STATE | Department of Environmental Conservation 50

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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September 27, 2022

Ms. Erin Kirby, P.G., LEP
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742
Erin.Kirby@usace.army.mil

Re: Former Nike Battery BU-51/52, Hamburg, Erie County, NY
NYSDEC Site No. 915327
Final Remedial Investigation Report, August 2022

Dear Erin Kirby:

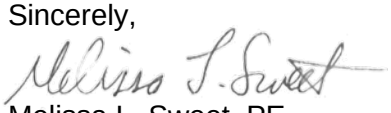
The New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) have reviewed the Final Remedial Investigation Report (RIR), dated August 2022, for Former Nike Battery BU-51/52 located in Hamburg, NY. The RIR Recommendations state the RI supports a No Further Action Proposed Plan. The NYSDEC and the NYSDOH have determined that the recommended remedy would not be protective of human health and the environment. Therefore, we do not accept the RIR.

The US Army Corps of Engineers (USACE), the NYSDEC, and the NYSDOH discussed the NYSDEC and NYSDOH concerns over the conceptual site model not fully considering impacts from soil vapor and soil vapor intrusion to public health and environmental. 6 NYCRR Part 375 Section 1.8 (a)(6) states that “The remedial program at a site shall analyze the impact of contamination at a site on the following environmental media:” That list of media includes soil vapor and ambient air. Therefore, NYSDEC and NYSDOH have requested in multiple comment letters (July 3, 2020, March 14, 2022, June 3, 2022) that the USACE evaluate this medium and its associated risk. Since the USACE chose not to collect soil vapor samples to evaluate the soil vapor medium, NYSDEC will take steps to evaluate this environmental medium ourselves.

In addition, during the course of the investigation, NYSDEC informed USACE of our intent to collect emerging contaminant (PFAS and 1,4-dioxane) samples at the Former Nike Battery BU-51/52 following the completion of the USACE investigation. As that field work has concluded, NYSDEC expects to request access to collect the samples shortly.

Should you have any questions regarding the above, please contact me at (518) 402-9614 or melissa.sweet@dec.ny.gov.

Sincerely,



Melissa L. Sweet, PE
Project Manager

ec: J. Swartwout – NYSDEC
J. Nealon/ C. Bethoney - NYSDOH

NEW YORK STATE | Department of Health

KATHY HOCHUL
Governor

JAMES V. McDONALD, M.D., M.P.H.
Acting Commissioner

MEGAN E. BALDWIN
Acting Executive Deputy Commissioner

February 10, 2023

Melissa Sweet, P.E.
New York State Department of Environmental Conservation
Environmental Engineer, Division of Environmental Remediation
12th Floor, 625 Broadway,
Albany, NY 12233-7015

Re: **Draft Proposed Plan, January 2023**
Former Nike BU 51/52 Launch Area
Formerly Used Defense Site (FUDS)
Site #915327
Hamburg, Erie County

Dear Melissa Sweet:

I reviewed the *Draft Proposed Plan, January 2023* for the Former Nike BU 51/52 Launch Area (Formerly Used Defense Site (FUDS) located in Hamburg, Erie County. I have the following comments:

1. With respect to the human health risk assessment (HHRA) and the evaluation of the potential for human health risks as it pertains to vapor intrusion on or off-site, according to the Plan, the HHRA results indicated that for all current/most likely future on-site exposure scenarios, both cancer risk and non-cancer hazards are less than their USEPA threshold values of 1×10-4 to 1×10-6 and 1, respectively, and are therefore considered acceptable under CERCLA. Soil vapor and indoor air were not sampled for in the Remedial Investigation, therefore, the risk assessments are not quantitatively evaluating soil vapor and indoor air data in their calculations.

2. With respect to the HHRA and the evaluation of the potential for human health risks as it pertains to vapor intrusion on or off-site, this evaluation was only conducted for adults not for children. Children should be added to the HHRA vapor intrusion evaluation.

If you have any questions concerning my comment, please contact me at (518) 402-7883.

Sincerely,

Jacquelyn Nealon

Jacquelyn Nealon
Public Health Specialist 3
Bureau of Environmental Exposure Investigation

Cc: C. Bethoney / e-File
A. Bonamici / C. Nicastro – NYSDOH WRO
M. Desiderio / J. Delaney – ECDOH
M. Cruden / J. Swartwout – NYSDEC Central Office
A. Caprio – NYSDEC Region 9

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February 10, 2023

Ms. Erin Kirby, P.G., LEP
US Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742
Erin.Kirby@usace.army.mil

Re: Former Nike Battery BU-51/52, Hamburg, Erie County, NY
NYSDEC Site No. 915327
Draft Proposed Plan, January 2023

Dear Erin Kirby:

The New York State Department of Environmental Conservation (NYSDEC) has reviewed the draft Proposed Plan, received January 2023, for the FUDS Former Nike Battery BU-51/52 site located in Hamburg, NY. We are providing the following comments for your consideration:

1. The preferred remedy stated in the Proposed Plan is No Action. The Proposed Plan supports this with the statement that there are no unacceptable risks to human health or ecological receptors. However, as the NYSDEC and the NYSDOH have previously noted, the media of soil vapor and air were excluded from sampling in the Remedial Investigation. Therefore, the Risk Assessments did not consider empirical soil vapor/air data in their calculations.

   The State intends to collect soil vapor data on the site and at the boundary of the site to assess if the remedy would be protective of human health and the environment. This data will allow the State to evaluate if soil vapor is negatively impacting the risk. After this evaluation, the State will be able to re-assess the preferred remedy of No Action.

2. The first page of the Proposed Plan includes the statement “This document is issued by USACE for the DoD with the concurrence of the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH).” While the NYSDEC and NYSDOH do not object to releasing the Proposed Plan for public review and comment at this time, a decision on State concurrence has been deferred and this statement needs to be revised or removed.

3. General: The date listed in the Table of Contents for the Proposed Plan is September 2022. This should be re-dated.

4. Introduction: The date of the Final Remedial Investigation Report is August 2022, rather than May 2022 as shown in this section of the Proposed Plan.

Should you have any questions regarding the above, please contact me at (518) 402-9614 or melissa.sweet@dec.ny.gov.

Sincerely,

Melissa L. Sweet, PE
Project Manager

ec: J. Swartwout – NYSDEC
J. Nealon/ C. Bethoney - NYSDOH

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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Memorandum

To: File
From: Melissa Sweet, Project Manager
Subject: Former Nike Battery BU 51/52, Site No. 915327 EC Sampling
Date: August 9, 2023

This memo summarizes the field activities conducted by Groundwater Environmental Services (GES) at the above referenced site. During these sampling events, groundwater was sampled and analyzed for PFAS and 1,4-dioxane and soil gas was sampled and analyzed for VOCs. A site map has been provided in Figure 1.

Monitoring Well Sampling

On May 16, 2023, GES mobilized to the site to sample existing monitoring wells on-site. Three wells (MW-6, MW-14, and MW-5OB) were gauged for depth to water (DTW) and depth to bottom (DTB) and volume of standing water was calculated. Their locations are shown in Figure 2. Using a Teflon-free peristaltic pump and dedicated HDPE tubing, the monitoring wells were purged using the low flow method, not exceeding 250 ml/minute until parameters met the required criteria (temperature +/-3%, specific conductance +/-3%, pH +/- 0.1, ORP +/- 10mV, DO +/- 10%, Turbidity +/- 10%). Field measurements are contained in the well sampling logs in Appendix A. Once stabilization was reached, groundwater samples were collected using appropriate laboratory-provided containers. Samples were collected for analysis of PFAS via EPA Method 1633 and 1,4-dixoane via 8270 SIM. QA/QC samples were prepared in the field for analysis included one blind duplicate (DUP_20230516, collected from MW-14) and one MS/MSD collected from MW-5OB and one equipment blank. Following sample collection, containers were placed in a cooler with ice to maintain a temperature no greater than 4°C. Samples were submitted for standard (30-day) turnaround time, with Category B deliverables. Waste material generated during the PFAS groundwater sampling event was contained in a five-gallon bucket, run through a carbon filtration system, and discharged to unpaved ground surface.

Soil Gas Sampling

On May 25, 2023, GES mobilized to the site to install temporary soil gas points for sampling of VOCs. Sampling points were installed at SV-1, SV-2, and SV-3 as shown in Figure 3. Points were drilled using a core drill until the asphalt was cleared. Then a hand auger was used to drill to a depth not to exceed depth to groundwater. SV-1 was noted to have crusher run and slag beneath the asphalt. Groundwater was encountered at 9” below ground surface with a notable sulfur odor. SV-2 and SV-3 were drilled in the same manner as SV-1. SV-2 was noted to have an asphalt depth of 7” and only crusher run and sand and gravel beneath the asphalt. The groundwater was also noted as having a sulfur odor. SV-3 was drilled to 20.5” and did not encounter groundwater. At each soil gas sampling point, the screen was placed in the hole, connected to silicone tubing and loosely filled with sand to the depth of the bottom of the asphalt. Bentonite was used to the seal to the top of grade.

These points were helium tested per NYSDOH guidance and were allowed to equilibrate overnight. GES mobilized to the site on May 26, 2023 to collect soil gas samples from the

installed temporary points. Summa Canisters were connected via silicone tubing to each sampling point. Each Summa started with approximately -30" Hg vacuum and was allowed to collect sample for approximately eight hours to end with a vacuum of between -4.25" Hg and -8.25" Hg. Collection details are shown in soil gas logs in Appendix A. Samples were collected for analysis of VOCs via TO-15. QA/QC samples included a field duplicate at SV-2 and an ambient air sample collected near SV-1. Samples were submitted for standard (30-day) turnaround time, with Category B deliverables.

Laboratory Analytical Results - Groundwater

Several PFAS compounds were detected, but all, when compared to the NYSDEC TOGS 1.1.1 Class GA Guidance Values, did not exceed their respective guidance values. Analytical results for PFAS are shown in Table 1. The analytical results for 1,4-dioxane when compared to the NYSDEC TOGS 1.1.1 Class GA Guidance Values, did not exceed the guidance value. Analytical results for 1,4-dioxane are shown in Table 2. The laboratory analytical reports for groundwater sampling have been included in Appendix B.

Laboratory Analytical Results – Soil Vapor

Several VOCs were detected in the TO-15 analysis for each sample location. Those results are shown in Table 3. There is no standard or guidance by which to compare soil gas directly. The laboratory analytical report for soil gas has been included in Appendix B.

Data validation was performed on both the groundwater and soil gas analytical data. This included DUSR generation and EQuIS EDD file validation. The DUSRs indicated no rejections of the data and reported the data as usable for intended purposes. The DUSRs have been included in Appendix C.

Conclusions

The PFAS and 1,4-dioxane analytical data for groundwater was compared to the Ambient Water Quality Guidance Values (March 2023). All data was found to be below the Guidance Values. Therefore, the site does not warrant any further investigation for PFAS or 1,4-dioxane.

The soil vapor results do not have a direct comparable standard or guidance value. Therefore, these results were reviewed with the New York State Department of Health (NYSDOH) project manager. The NYSDOH PM, after their review of the data, confirmed that the soil gas does not pose a potential exposure concern for the public. No further sampling for soil gas or nor soil vapor intrusion is necessary.

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Transmitted Via Email only

September 27, 2023

Erin Kirby, P.G., LEP
Technical Lead
US Army Corps of Engineers
New England District
696 Virginia Rd
Concord, MA 01742
Erin.Kirby@usace.army.mil

Re: Former Nike Battery BU-51/52 Formerly Used Defense Site (FUDS)
NYSDEC Site No. 915327

Dear Ms. Kirby:

The US Army Corps of Engineers submitted the August 2023 draft Decision Document entitled "Record of Decision, Former BU 51/52 Nike Missile Battery Launch Site, Hamburg, Erie County, NY, FUDS Project No. C02NY007902". The draft Decision Document has been reviewed by the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH). Based on this review, there are no comments.

Based on Remedial Investigations, the US Army Corps of Engineers (USACE), recommended "No Action" as the preferred alternative in the Proposed Plan. The NYSDEC and NYSDOH did not concur with this recommendation, at that time, due to the lack of data collected from soil vapor, as well as lack of analysis for per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane in groundwater. The NYSDEC conducted soil vapor sampling as well as groundwater sampling for PFAS and 1,4-dioxane. The analytical results from the samples collected by NYSDEC indicated that there are no potential issues from the above.

The Record of Decision, selected in coordination with NYSDEC and NYSDOH, is "No Action" and has been determined to be a protective of public health and the environment for the Former Nike Battery BU-51/52 FUDS site. As no remediation will be conducted at the site, Five-Year reviews will not be required. NYSDEC and NYSDOH concur with the Record of Decision.

Should you have any questions, please contact Melissa Sweet at (518) 402-9614 or by email at melissa.sweet@dec.ny.gov.

NEW YORK STATE | Department of Environmental Conservation

Sincerely,

Richard A. Mustico, PE
Director
Remedial Bureau A
Division of Environmental Remediation

ec: A. Guglielmi, NYSDEC
J. Swartwout, NYSDEC
M. Sweet, NYSDEC
A. Caprio, NYSDEC R9
J. Nealon, NYSDOH
C. Bethoney, NYSDOH

Figures

Artificial Intermittent Stream/Ditch (approx.)
Current Site Features
Former Nike Launch Area (approx.)
Landfill

0 200 400 800 Feet

Coordinate System: NAD 1983 UTM Zone 18N
Projection: Transverse Mercator
Sources: Battelle, 2000; GZA, 1999

FORMER NIKE BU-51/52 LAUNCH AREA REMEDIAL INVESTIGATION

FORMER LAUNCH AREA CURRENT SITE FEATURES

SERES ARCADIS a joint venture

FIGURE 1-4

Document Path: \\10.19.7.200\data_ENV\Nike Project\Mxd\2021\20211217\Figure 1-4_Current Site Features.mxd

NHFLA-MW16
Hamburg Landfill
GZA-MW-3
Small Arms Range Area
Firearm Training Facility
NHFLA-MW10B
NHFLA-MW1BR
Storage
NHFLA-MW11
NHFLA-MW3
NHFLA-MW2
Truck Garage
Salt Storage
NHFLA-MW12
GZA-MW-1
Driveway
Highway Offices
NHFLA-MW10
NHFLA-MW6
NHFLA-MW9BR
NHFLA-MW9OB
NHFLA-4BR
NHFLA-MW4OB
Police/SWAT Building
Storage
NHFLA-MW5BR
NHFLA-MW14
GZA-MW-2
NHFLA-MW5OB
NHFLA-MW8
GZA-MW-2
NHFLA-MW15
NHFLA-MW13
NHFLA-MW7OB
NHFLA-MW7BR
Manmade Drainage Swale
Gov Thomas E Dewey Thruway
Lakeview Rd
N Grock Rd
S Grock Rd

Service Layer Credits: NYS ITS GIS Program Office, Westchester County GIS (April 2017); Esri, HERE, Garmin, (c) OpenStreetMap contributors (June 2021)

Legend

- Overburden Monitoring Well
- Bedrock Monitoring Well
- *Decommissioned Well*
- Former Launch Area (approximate)
- Reference Area (approximate)
- Tax Parcel Boundary
- 2020 Survey Features

0 50 100 200 300 400 Feet

N E S W

NOTES:
COORDINATE SYSTEM: NEW YORK STATE PLANE WEST, NAD 1983
SURVEY: KHEOPS ARCHITECTURE, ENGINEERING & SURVEY, DECEMBER 7, 2020

FORMER NIKE BU-51/52 LAUNCH AREA
REMEDIAL INVESTIGATION

MONITORING WELL LOCATIONS

SERES ARCADIS a joint venture

FIGURE 3-1

City: Clifton Park Div/Group: ENV Created By: Last Saved By: tdoerken
Project 30027953
\\10.19.7.200\data_ENV\Nike Project\Mxd\2021\20211217\Figure 3-1_Well Locations.mxd 2021-12-20 11:22:34 AM

Legend: Soil Gas Sample Location

Source: NYS ITS GIS

Figure 3
Soil Gas Sampling Locations

Former Nike Battery BU-51/52
Site No. 915327
2720 Lake View Road
Lake View, New York

Created by: MLS
Date: 06/14/2023

Tables

Table 1
Former Nike Battery BU-51/52, DEC Site 915327
2720 Lake View Rd, Lake View, NY
PFAS in Groundwater Results

LAB ID	23E2619-01	23E2619-02	23E2619-03	23E2619-04	23E2619-05
CLIENT ID	MW-6_20230516	MW-14_20230516	MW-50B_20230516	Equipment Blank	DUP_20230516
DATE SAMPLED	16-May-23	16-May-23	16-May-23	16-May-23	16-May-23
Analyte					
Perfluorobutanoic acid (PFBA)	8.2	4.1	<1.4	<1.3	4.6
Perfluoropentanoic acid (PFPeA)	6.1	1.7	<0.33	<0.32	1.2
Perfluorohexanoic acid (PFHxA)	4.2	1	<0.21	<0.20	1.3
Perfluoroheptanoic acid (PFHpA)	0.53	0.66	<0.24	<0.24	0.85
Perfluorooctanoic acid (PFOA)	0.55	1.4	0.22	<0.21	1.7
Perfluorononanoic acid (PFNA)	<0.17	<0.17	<0.18	<0.18	<0.17
Perfluorodecanoic acid (PFDA)	<0.16	<0.17	<0.18	<0.17	<0.16
Perfluoroundecanoic acid (PFUnA)	<0.24	<0.24	<0.26	<0.25	<0.24
Perfluorododecanoic acid (PFDoA)	<0.23	<0.23	<0.25	<0.24	<0.22
Perfluorotridecanoic acid (PFTrDA)	<0.24	<0.24	<0.26	<0.25	<0.24
Perfluorotetradecanoic acid (PFTeDA)	<0.22	<0.22	<0.24	<0.23	<0.22
Perfluorobutanesulfonic acid (PFBS)	1.7	0.72	<0.25	<0.24	1.2
Perfluoropentanesulfonic acid (PFPeS)	0.63	<0.21	<0.23	<0.22	<0.21
Perfluorohexanesulfonic acid (PFHxS)	3.5	0.78	<0.20	<0.19	1.2
Perfluoroheptanesulfonic acid (PFHpS)	<0.27	<0.27	<0.29	<0.28	<0.27
Perfluorooctanesulfonic acid (PFOS)	0.51	0.34	<0.30	<0.29	0.48
Perfluorononanesulfonic acid (PFNS)	<0.26	<0.26	<0.28	<0.27	<0.26
Perfluorodecanesulfonic acid (PFDS)	<0.27	<0.28	<0.30	<0.29	<0.27
Perfluorododecanesulfonic acid (PFDoS)	<0.23	<0.24	<0.25	<0.25	<0.23
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	<0.61	<0.62	<0.67	<0.65	<0.60
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	2.5	2.5	5.5	<0.91	3.2
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	<0.95	<0.97	<1.0	<1.0	<0.94
Perfluorooctanesulfonamide (PFOSA)	0.28	<0.27	<0.29	<0.28	<0.27
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	<0.36	<0.37	<0.40	<0.38	<0.36
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	<0.27	<0.28	<0.30	<0.29	<0.27
N-MeFOSAA (NMeFOSAA)	<0.38	<0.39	<0.42	<0.41	<0.38
N-EtFOSAA (NEtFOSAA)	<0.19	<0.20	<0.21	<0.20	<0.19
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	<2.3	<2.3	<2.5	<2.4	<2.3
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	<2.1	<2.2	<2.3	<2.3	<2.1
Hexafluoropropylene oxide dimer acid (HFPO-DA)	<0.91	<0.93	<1.0	<0.97	<0.91
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60	<0.61	<0.66	<0.64	<0.60
9Cl-PF3ONS (F53B Minor)	<0.74	<0.76	<0.82	<0.79	<0.74
11Cl-PF3OUdS (F53B Major)	<0.84	<0.86	<0.93	<0.90	<0.84
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	<1.6	<1.6	<1.7	<1.7	<1.6
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	<8.9	<9.1	<9.8	<9.5	<8.9
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	<7.7	<7.9	<8.4	<8.2	<7.6
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	<0.43	<0.44	<0.47	<0.45	<0.43
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.43	<0.44	<0.48	<0.46	<0.43
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.35	<0.36	<0.38	<0.37	<0.35
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.76	<0.77	<0.83	<0.80	<0.75
Units are ng/L or ppt					

Table 2
Former Nike Battery BU-51/52, DEC Site 915327
2720 Lake View Rd, Lake View, NY
1,4-Dioxane in Groundwater Results

LAB ID	23E2622-01	23E2622-02	23E2622-03	23E2622-04	23E2622-05
CLIENT ID	MW-6_20230516	MW-14_20230516	MW-50B_20230516	EQUIPMENT BLANK	DUP_20230515
DATE SAMPLED	16-May-23	16-May-23	16-May-23	16-May-23	16-May-23
Analyte					
1,4-Dioxane	<0.031	<0.031	<0.032	<0.032	<0.032

Units are ug/L or ppb

Table 3
Former Nike Battery BU-51/52, DEC Site 915327
2720 Lake View Rd, Lake View, NY
VOCs in Soil Gas Results

LAB ID	23F0203-01	23F0203-02	23F0203-03	23F0203-04	23F0203-05
CLIENT ID	SV-1	SV-2	SV-2	SV-3	AA-1
DATE SAMPLED	26-May-23	26-May-23	26-May-23	26-May-23	26-May-23
Analyte					
Acetone	690	840	510	88	4.4
Benzene	8.4	18	10	3.3	0.12
Benzyl chloride	<0.46	<0.46	<0.46	<0.46	<0.16
Bromodichloromethane	15	30	17	2.4	<0.16
Bromoform	<0.70	<0.70	<0.70	<0.70	<0.25
Bromomethane	<0.26	<0.26	<0.26	<0.26	<0.091
1,3-Butadiene	<0.19	<0.19	<0.19	<0.19	<0.065
2-Butanone (MEK)	170	210	130	270	<1.1
Carbon Disulfide	19	160	90	13	<0.10
Carbon Tetrachloride	<0.50	0.57	0.5	<0.50	0.3
Chlorobenzene	<0.31	<0.31	<0.31	0.46	<0.11
Chloroethane	<0.23	1.8	1	0.25	<0.082
Chloroform	31	110	59	15	<0.16
Chloromethane	0.59	1.5	1.3	1	0.83
Cyclohexane	3.6	34	18	16	<0.073
Dibromochloromethane	3.3	5.6	3.3	<0.56	<0.20
1,2-Dibromoethane (EDB)	<0.46	<0.46	<0.46	<0.46	<0.16
1,2-Dichlorobenzene	<0.35	<0.35	<0.35	<0.35	<0.12
1,3-Dichlorobenzene	0.41	<0.33	<0.33	<0.33	<0.12
1,4-Dichlorobenzene	<0.39	<0.39	<0.39	<0.39	<0.14
Dichlorodifluoromethane (Freon 12)	1.9	1.8	1.6	1.7	0.99
1,1-Dichloroethane	<0.35	0.82	0.49	<0.35	<0.12
1,2-Dichloroethane	<0.37	0.41	<0.37	<0.37	<0.13
1,1-Dichloroethylene	<0.30	<0.30	<0.30	<0.30	<0.11
cis-1,2-Dichloroethylene	<0.29	2.9	<0.29	<0.29	<0.10
trans-1,2-Dichloroethylene	<0.31	<0.31	<0.31	<0.31	<0.11
1,2-Dichloropropane	<0.25	<0.25	<0.25	<0.25	<0.088
cis-1,3-Dichloropropene	<0.24	<0.24	<0.24	<0.24	<0.082
trans-1,3-Dichloropropene	<0.23	<0.23	<0.23	<0.23	<0.082
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	<0.69	<0.69	<0.69	<0.69	<0.24
1,4-Dioxane	<0.30	<0.30	<0.30	<0.30	<0.10
Ethanol	93	54	32	50	2.8
Ethyl Acetate	82	83	47	5	<0.64
Ethylbenzene	9.3	14	8.1	1.1	<0.089
4-Ethyltoluene	1.2	1.6	0.94	0.43	<0.11
Heptane	10	32	18	2.6	<0.092
Hexachlorobutadiene	<0.88	<0.88	<0.88	<0.88	<0.31
Hexane	9.3	90	52	13	<0.64
2-Hexanone (MBK)	3.9	9.8	<0.20	1.1	<0.072
Isopropanol	61	76	43	11	<0.60
Methyl tert-Butyl Ether (MTBE)	<0.28	0.54	0.29	<0.28	<0.098
Methylene Chloride	<1.6	<1.6	<1.6	<1.6	<0.57
4-Methyl-2-pentanone (MIBK)	20	8.5	4.6	<0.22	<0.077
Naphthalene	0.95	0.88	0.51	1	<0.14
Propene	<1.5	<1.5	<1.5	38	<0.53
Styrene	1.7	1.9	1.1	1.1	<0.079
1,1,2,2-Tetrachloroethane	<0.37	<0.37	<0.37	<0.37	<0.13
Tetrachloroethylene	72	81	43	4.1	<0.18
Tetrahydrofuran	14	33	18	53	<0.17
Toluene	73	80	46	5.1	0.22
1,2,4-Trichlorobenzene	<0.69	<0.69	<0.69	<0.69	<0.24
1,1,1-Trichloroethane	<0.43	<0.43	<0.43	<0.43	<0.15

Table 3
Former Nike Battery BU-51/52, DEC Site 915327
2720 Lake View Rd, Lake View, NY
VOCs in Soil Gas Results

LAB ID	23F0203-01	23F0203-02	23F0203-03	23F0203-04	23F0203-05
CLIENT ID	SV-1	SV-2	SV-2	SV-3	AA-1
DATE SAMPLED	26-May-23	26-May-23	26-May-23	26-May-23	26-May-23
Analyte					
1,1,2-Trichloroethane	<0.38	<0.38	<0.38	<0.38	<0.13
Trichloroethylene	4.3	6.4	2.5	3.8	<0.13
Trichlorofluoromethane (Freon 11)	1.2	1.1	1.1	1.8	0.76
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<0.85	<0.85	<0.85	<0.85	0.31
1,2,4-Trimethylbenzene	4.3	5.1	3.1	2.8	<0.076
1,3,5-Trimethylbenzene	1.3	1.6	0.98	0.45	<0.091
Vinyl Acetate	13	70	39	<1.9	<0.66
Vinyl Chloride	<0.23	0.38	<0.23	<0.23	<0.081
m&p-Xylene	27	44	26	3.7	<0.17
o-Xylene	7.5	12	6.9	1.5	<0.078

Units are µg/m3

Appendix A

Sampling Logs

WELL SAMPLING LOG

TASK : **Groundwater Monitoring & Sampling** PSID **984026**

Project Name:	NYSDEC LakeView LakeViewRd2720	Date:	05/16/2023
Project Address:	2720 Lakeview Road, Lake View, NY	Sampler(s):	Jessica Paterson
Project #/Phase/Task/Org:	0901873///1109	Sampling Method	Low Flow

Well ID: **MW-6 (Sample ID: MW-6_20230516)**
Well Diameter: **2"**
Initial Depth to Water (ft): **5.48'**
Depth to Bottom (ft): **13.93'**

Pump Type/Model: **Pine Peristaltic Pump # 033386**
Water Quality Meter Model/SN: **YSI Pro DSS: #46377 and #211368**
Date Meter Calibrated: **5/10/2023**

Clock Time (24 Hour)	Depth to Water (ft)	Purge Rate (ml/min)	Cumulative Volume Purged (Gallons)	Temp. (°C)	Spec. Cond. (mS/cm)	pH	ORP/Eh (mV)	DO (mg/L)	Turbidity (NTU)	Comments (Clear/Turbid, Sheen, Color, Well Dry)
15:28	7.04	300	2.00	10.9	4.888	6.30	-99.8	1.04	30.87	yellow tint / cloudy / sediment
15:33	7.05	300	2.25	11.0	4.982	6.27	-100.1	0.84	21.93	same
15:38	7.00	300	2.50	11.1	5.816	6.25	-101.8	0.86	244.22	mostly clear w/ sediment
15:41	6.98	300	2.75	11.2	6.185	6.24	-104.8	0.82	24.75	mostly clear w/ sediment
15:44	6.97	300	3.00	10.8	6.200	6.23	-107.2	0.78	24.19	mostly clear w/ sediment
15:47	7.00	300	3.25	10.8	6.055	6.23	-104.4	0.78	25.42	mostly clear w/ sediment
				+/- 3% Yes	+/- 3% Yes	+/- 0.1 Yes	+/- 10 mV Yes	+/- 10% Yes	+/- 10% Yes	stabilization target ranges for last three (3) readings

Comments: **Purge started at 15:15 ; Sampled at 16:00**
Purge water initially brown with sediment, pulled tubing up slightly and it cleared up some.

WELL SAMPLING LOG

TASK : **Groundwater Monitoring & Sampling** PSID **984026**

Project Name:	NYSDEC LakeView LakeViewRd2720	Date:	05/16/2023
Project Address:	2720 Lakeview Road, Lake View, NY	Sampler(s):	Jessica Paterson
Project #/Phase/Task/Org:	0901873///1109	Sampling Method	Low Flow

Well ID: **MW-14 (Sample ID: MW-14_20230516)**
Well Diameter: **2"**
Initial Depth to Water (ft): **5.51'**
Depth to Bottom (ft): **14.00'**

Pump Type/Model: **Pine Peristaltic Pump # 033386**
Water Quality Meter Model/SN: **YSI Pro DSS: #46377 and #211368**
Date Meter Calibrated: **5/10/2023**

Clock Time (24 Hour)	Depth to Water (ft)	Purge Rate (ml/min)	Cumulative Volume Purged (Gallons)	Temp. (°C)	Spec. Cond. (mS/cm)	pH	ORP/Eh (mV)	DO (mg/L)	Turbidity (NTU)	Comments (Clear/Turbid, Sheen, Color, Well Dry)
13:40	5.67	300	0.50	10.2	2.501	6.44	-115.8	0.71	16.19	yellow tint
13:45	5.68	300	1.00	10.1	2.532	6.43	-130.9	0.67	17.13	mostly clear
13:50	5.69	300	1.50	10.2	2.622	6.40	-140.3	0.65	18.20	mostly clear
13:53	5.68	300	2.00	10.3	2.656	6.40	-145.3	0.63	21.65	mostly clear
13:56	5.68	300	2.25	10.2	2.693	6.39	-140.0	0.63	19.44	mostly clear
13:59	5.68	300	2.50	10.3	2.735	6.38	-141.0	0.63	18.51	mostly clear
14:02	5.68	300	2.75	10.4	2.750	6.37	-141.6	0.62	18.05	mostly clear
				+/- 3% Yes	+/- 3% Yes	+/- 0.1 Yes	+/- 10 mV Yes	+/- 10% Yes	+/- 10% Yes	stabilization target ranges for last three (3) readings

Comments: **Purge started at 13:30 ; Sampled at 14:05 ; Collected DUP**
Yellow/brown at beginning of purge, cleared up within a few minutes.
Slight sulfur odor.

WELL SAMPLING LOG

TASK : **Groundwater Monitoring & Sampling** PSID **984026**

Project Name:	NYSDEC LakeView LakeViewRd2720	Date:	05/16/2023
Project Address:	2720 Lakeview Road, Lake View, NY	Sampler(s):	Jessica Paterson
Project #/Phase/Task/Org:	0901873///1109	Sampling Method	Low Flow

Well ID: **MW-50B (Sample ID: MW-50B_20230516)**
Well Diameter: **2"**
Initial Depth to Water (ft): **4.81'**
Depth to Bottom (ft): **21.27'**

Pump Type/Model: **Pine Peristaltic Pump # 033386**
Water Quality Meter Model/SN: **YSI Pro DSS: #46377 and #211368**
Date Meter Calibrated: **5/10/2023**

Clock Time (24 Hour)	Depth to Water (ft)	Purge Rate (ml/min)	Cumulative Volume Purged (Gallons)	Temp. (°C)	Spec. Cond. (mS/cm)	pH	ORP/Eh (mV)	DO (mg/L)	Turbidity (NTU)	Comments (Clear/Turbid, Sheen, Color, Well Dry)
11:00	6.15	250	1.00	11.8	4.389	7.06	-209.9	0.67	45.09	clear / gray tint
11:05	6.25	250	1.50	11.8	4.280	7.09	-232.2	0.65	80.75	clear w/ little sediment
11:10	6.30	250	2.00	12.0	4.245	7.12	-255.9	0.62	36.00	clear w/ little sediment
11:15	6.36	250	2.25	12.0	4.181	7.12	-269.0	0.60	28.72	clear w/ little sediment
11:18	6.41	250	2.50	12.0	4.156	7.12	-275.3	0.59	39.54	clear w/ little sediment
11:21	6.47	250	2.75	11.8	4.134	7.12	-284.6	0.58	8.91	clear w/ little sediment
11:24	6.53	250	3.00	11.9	4.136	7.13	-287.9	0.59	8.82	clear w/ little sediment
11:27	6.60	250	3.25	11.8	4.145	7.13	-295.8	0.57	8.87	clear w/ little sediment
				+/- 3% Yes	+/- 3% Yes	+/- 0.1 Yes	+/- 10 mV Yes	+/- 10% Yes	+/- 10% Yes	stabilization target ranges for last three (3) readings

Comments: **Purge started at 10:45 ; Sampled at 11:30 ; Collected MS/MSD**
Very slight sheen observed on purge water. Purge water passed through carbon bucket.
Slight sulfur odor.

Sample ID	Sample Type	Location	Canister #	Regulator #	Date Start	Time Start	Pressure Start ("Hg)	Date End	Time End	Pressure End ("Hg)	Comments (include any chemical substances in rooms)
	SV-1	Lot	BC 1472	3122	5/26/23	08:17	-28.5	5/26/23	16:17	-5	outside, no PID hits
DUP	SV-2	Between buildings	BC 2478	5080DUP	5/26/23	08:33	> -30	5/26/23	16:33	-4.25	outside, no PID hits
			BC 2135	5080DUP	5/26/23	08:33	> -30	5/26/23	16:33	-4.25	outside, no PID hits
	SV-3	East of buildings	BC 1161	3267	5/26/23	08:58	-30	5/26/23	16:58	-8.25	outside, no PID hits
Ambient	AA-1	Lot by house	BC 2061	3042	5/26/23	08:45	-30	5/26/23	16:45	-4.75	breathing height on top of concrete block, no PID hits.

Note:

NA = not applicable

"Hg = inches of mercury

NOTES:	Barometric pressure:	Temperature
at 07:00	30.35"Hg	46°F
at 14:00	30.34"Hg	68°F
at 16:00	30.32"Hg	70°F

Appendix B

Lab Data

con-test®
A Pace Analytical® Laboratory

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

June 8, 2023

Melissa Sweet
NYDEC_GES - Amherst, NY
625 Broadway, 12th FL
Albany, NY 12233

Project Location: 2720 Lakeview Road, Lake View, NY
Client Job Number:
Project Number: 2209206
Laboratory Work Order Number: 23E2619

Enclosed are results of analyses for samples as received by the laboratory on May 18, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kyle A. Murray
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

NYDEC_GES - Amherst, NY
625 Broadway, 12th FL
Albany, NY 12233
ATTN: Melissa Sweet

REPORT DATE: 6/8/2023

PURCHASE ORDER NUMBER: 147207

PROJECT NUMBER: 2209206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23E2619

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 2720 Lakeview Road, Lake View, NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW-6_20230516	23E2619-01	Ground Water		Draft Method 1633	
MW-14_20230516	23E2619-02	Ground Water		Draft Method 1633	
MW-50B_20230516	23E2619-03	Ground Water		Draft Method 1633	
Equipment Blank	23E2619-04	Equipment Blank Water		Draft Method 1633	
DUP_20230516	23E2619-05	Ground Water		Draft Method 1633	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

Draft Method 1633

Qualifications:

H-01

Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.

Analyte & Samples(s) Qualified:

Total Suspended Solids
23E2619-03[MW-50B_20230516]

PF-17

Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.

Analyte & Samples(s) Qualified:

13C2-4:2FTS
23E2619-01[MW-6_20230516]

1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS
23E2619-01[MW-6_20230516]

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

con-test® A Pace Analytical® Laboratory

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-6_20230516 Sampled: 5/16/2023 16:00

Sample ID: 23E2619-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	8.2	3.5	1.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluoropentanoic acid (PFPeA)	6.1	1.7	0.30	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorohexanoic acid (PFHxA)	4.2	0.87	0.19	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluoroheptanoic acid (PFHpA)	0.53	0.87	0.22	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorooctanoic acid (PFOA)	0.55	0.87	0.20	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorononanoic acid (PFNA)	ND	0.87	0.17	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorodecanoic acid (PFDA)	ND	0.87	0.16	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.87	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.87	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	0.87	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorotetradecanoic acid (PFTeDA)	ND	0.87	0.22	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorobutanesulfonic acid (PFBS)	1.7	0.87	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluoropentanesulfonic acid (PFPeS)	0.63	0.87	0.21	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorohexanesulfonic acid (PFHxS)	3.5	0.87	0.18	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.87	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorooctanesulfonic acid (PFOS)	0.51	0.87	0.28	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.87	0.26	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.87	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorododecanesulfonic acid (PFDoS)	ND	0.87	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.5	0.61	ng/L	1	PF-17	Draft Method 1633	5/26/23	5/31/23 5:00	RRB
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	2.5	3.5	0.86	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:00	RRB
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.5	0.95	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluorooctanesulfonamide (PFOSA)	0.28	0.87	0.27	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:00	RRB
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.87	0.36	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.87	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
N-MeFOSAA (NMeFOSAA)	ND	0.87	0.38	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
N-EtFOSAA (NEtFOSAA)	ND	0.87	0.19	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	8.7	2.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	8.7	2.1	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.5	0.91	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.5	0.60	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
9Cl-PF3ONS (F53B Minor)	ND	3.5	0.74	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
11Cl-PF3OUdS (F53B Major)	ND	3.5	0.84	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	8.7	1.6	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	44	8.9	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	44	7.7	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.7	0.43	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.7	0.43	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-6_20230516 Sampled: 5/16/2023 16:00

Sample ID: 23E2619-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.7	0.35	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	0.76	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:00	RRB

Surrogates	% Recovery		Recovery Limits	Flag/Qual	
13C4-PFBA	56.7		20-150		5/31/23 5:00
13C5-PFPeA	60.0		20-150		5/31/23 5:00
13C5-PFHxA	85.5		20-150		5/31/23 5:00
13C4-PFHpA	90.0		20-150		5/31/23 5:00
13C8-PFOA	85.9		20-150		5/31/23 5:00
13C9-PFNA	82.3		20-150		5/31/23 5:00
13C6-PFDA	82.4		20-150		5/31/23 5:00
13C7-PFUnA	85.0		20-150		5/31/23 5:00
13C2-PFDoA	78.8		20-150		5/31/23 5:00
13C2-PFTeDA	61.8		20-150		5/31/23 5:00
13C3-PFBS	85.7		20-150		5/31/23 5:00
13C3-PFHxS	86.5		20-150		5/31/23 5:00
13C8-PFOS	80.6		20-150		5/31/23 5:00
13C2-4:2FTS	**165**	*	20-150	PF-17	5/31/23 5:00
13C2-6:2FTS	132		20-150		5/31/23 5:00
13C2-8:2FTS	108		20-150		5/31/23 5:00
13C8-PFOSA	74.3		20-150		5/31/23 5:00
D3-NMeFOSA	61.1		20-150		5/31/23 5:00
D5-NEtFOSA	62.1		20-150		5/31/23 5:00
D3-NMeFOSAA	70.6		20-150		5/31/23 5:00
D5-NEtFOSAA	71.4		20-150		5/31/23 5:00
D7-NMeFOSE	73.1		20-150		5/31/23 5:00
D9-NEtFOSE	68.7		20-150		5/31/23 5:00
13C3-HFPO-DA	66.6		20-150		5/31/23 5:00

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-6_20230516 Sampled: 5/16/2023 16:00

Sample ID: 23E2619-01

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	18	10	10	mg/L	1		Draft Method 1633	5/23/23	5/23/23 13:08	LL

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-14_20230516 Sampled: 5/16/2023 14:05

Sample ID: 23E2619-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.1	3.6	1.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluoropentanoic acid (PFPeA)	1.7	1.8	0.31	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorohexanoic acid (PFHxA)	1.0	0.89	0.19	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluoroheptanoic acid (PFHpA)	0.66	0.89	0.23	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorooctanoic acid (PFOA)	1.4	0.89	0.20	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorononanoic acid (PFNA)	ND	0.89	0.17	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorodecanoic acid (PFDA)	ND	0.89	0.17	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.89	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.89	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	0.89	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorotetradecanoic acid (PFTeDA)	ND	0.89	0.22	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorobutanesulfonic acid (PFBS)	0.72	0.89	0.23	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.89	0.21	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorohexanesulfonic acid (PFHxS)	0.78	0.89	0.18	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.89	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorooctanesulfonic acid (PFOS)	0.34	0.89	0.28	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.89	0.26	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.89	0.28	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorododecanesulfonic acid (PFDoS)	ND	0.89	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.6	0.62	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	2.5	3.6	0.88	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:16	RRB
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.6	0.97	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluorooctanesulfonamide (PFOSA)	ND	0.89	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.89	0.37	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.89	0.28	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
N-MeFOSAA (NMeFOSAA)	ND	0.89	0.39	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
N-EtFOSAA (NEtFOSAA)	ND	0.89	0.20	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	8.9	2.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	8.9	2.2	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.6	0.93	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.6	0.61	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
9Cl-PF3ONS (F53B Minor)	ND	3.6	0.76	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
11Cl-PF3OUdS (F53B Major)	ND	3.6	0.86	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	8.9	1.6	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	45	9.1	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	45	7.9	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.8	0.44	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.8	0.44	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-14_20230516 Sampled: 5/16/2023 14:05

Sample ID: 23E2619-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.8	0.36	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	0.77	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:16	RRB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	83.4	20-150		5/31/23 5:16
13C5-PFPeA	79.1	20-150		5/31/23 5:16
13C5-PFHxA	86.1	20-150		5/31/23 5:16
13C4-PFHpA	86.9	20-150		5/31/23 5:16
13C8-PFOA	89.7	20-150		5/31/23 5:16
13C9-PFNA	83.9	20-150		5/31/23 5:16
13C6-PFDA	89.5	20-150		5/31/23 5:16
13C7-PFUnA	89.7	20-150		5/31/23 5:16
13C2-PFDoA	84.0	20-150		5/31/23 5:16
13C2-PFTeDA	72.7	20-150		5/31/23 5:16
13C3-PFBS	95.2	20-150		5/31/23 5:16
13C3-PFHxS	87.2	20-150		5/31/23 5:16
13C8-PFOS	84.9	20-150		5/31/23 5:16
13C2-4:2FTS	121	20-150		5/31/23 5:16
13C2-6:2FTS	88.6	20-150		5/31/23 5:16
13C2-8:2FTS	95.2	20-150		5/31/23 5:16
13C8-PFOSA	77.6	20-150		5/31/23 5:16
D3-NMeFOSA	63.8	20-150		5/31/23 5:16
D5-NEtFOSA	65.0	20-150		5/31/23 5:16
D3-NMeFOSAA	70.4	20-150		5/31/23 5:16
D5-NEtFOSAA	73.2	20-150		5/31/23 5:16
D7-NMeFOSE	76.9	20-150		5/31/23 5:16
D9-NEtFOSE	73.7	20-150		5/31/23 5:16
13C3-HFPO-DA	74.2	20-150		5/31/23 5:16

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-14_20230516 Sampled: 5/16/2023 14:05

Sample ID: 23E2619-02

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	ND	10	10	mg/L	1		Draft Method 1633	5/23/23	5/23/23 13:08	LL

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-50B_20230516 Sampled: 5/16/2023 11:30

Sample ID: 23E2619-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	3.8	1.4	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	0.33	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.96	0.21	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.96	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorooctanoic acid (PFOA)	0.22	0.96	0.22	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorononanoic acid (PFNA)	ND	0.96	0.18	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorodecanoic acid (PFDA)	ND	0.96	0.18	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.96	0.26	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.96	0.25	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	0.96	0.26	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorotetradecanoic acid (PFTeDA)	ND	0.96	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.96	0.25	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.96	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.96	0.20	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.96	0.29	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	0.96	0.30	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.96	0.28	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.96	0.30	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorododecanesulfonic acid (PFDoS)	ND	0.96	0.25	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.8	0.67	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	5.5	3.8	0.94	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.8	1.0	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluorooctanesulfonamide (PFOSA)	ND	0.96	0.29	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.96	0.40	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.96	0.30	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
N-MeFOSAA (NMeFOSAA)	ND	0.96	0.42	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
N-EtFOSAA (NEtFOSAA)	ND	0.96	0.21	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.6	2.5	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.6	2.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.8	1.0	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.8	0.66	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
9Cl-PF3ONS (F53B Minor)	ND	3.8	0.82	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
11Cl-PF3OUdS (F53B Major)	ND	3.8	0.93	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	9.6	1.7	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	48	9.8	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	48	8.4	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.47	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.9	0.48	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-50B_20230516 Sampled: 5/16/2023 11:30

Sample ID: 23E2619-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.9	0.38	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.83	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:32	RRB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	79.7	20-150		5/31/23 5:32
13C5-PFPeA	90.2	20-150		5/31/23 5:32
13C5-PFHxA	93.1	20-150		5/31/23 5:32
13C4-PFHpA	93.2	20-150		5/31/23 5:32
13C8-PFOA	93.5	20-150		5/31/23 5:32
13C9-PFNA	88.4	20-150		5/31/23 5:32
13C6-PFDA	91.9	20-150		5/31/23 5:32
13C7-PFUnA	85.8	20-150		5/31/23 5:32
13C2-PFDoA	80.9	20-150		5/31/23 5:32
13C2-PFTeDA	74.7	20-150		5/31/23 5:32
13C3-PFBS	104	20-150		5/31/23 5:32
13C3-PFHxS	97.0	20-150		5/31/23 5:32
13C8-PFOS	89.0	20-150		5/31/23 5:32
13C2-4:2FTS	82.9	20-150		5/31/23 5:32
13C2-6:2FTS	80.4	20-150		5/31/23 5:32
13C2-8:2FTS	86.5	20-150		5/31/23 5:32
13C8-PFOSA	84.9	20-150		5/31/23 5:32
D3-NMeFOSA	70.2	20-150		5/31/23 5:32
D5-NEtFOSA	70.7	20-150		5/31/23 5:32
D3-NMeFOSAA	81.0	20-150		5/31/23 5:32
D5-NEtFOSAA	81.1	20-150		5/31/23 5:32
D7-NMeFOSE	78.7	20-150		5/31/23 5:32
D9-NEtFOSE	77.6	20-150		5/31/23 5:32
13C3-HFPO-DA	87.6	20-150		5/31/23 5:32

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: MW-50B_20230516 Sampled: 5/16/2023 11:30

Sample ID: 23E2619-03

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	12	10	10	mg/L	1	H-01	Draft Method 1633	5/23/23	5/23/23 13:08	LL

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Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: Equipment Blank Sampled: 5/16/2023 16:15

Sample ID: 23E2619-04

Sample Matrix: Equipment Blank Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	3.7	1.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	0.32	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.93	0.20	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.93	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorooctanoic acid (PFOA)	ND	0.93	0.21	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorononanoic acid (PFNA)	ND	0.93	0.18	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorodecanoic acid (PFDA)	ND	0.93	0.17	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.93	0.25	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.93	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	0.93	0.25	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorotetradecanoic acid (PFTeDA)	ND	0.93	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.93	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.93	0.22	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.93	0.19	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.93	0.28	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	0.93	0.29	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.93	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.93	0.29	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorododecanesulfonic acid (PFDoS)	ND	0.93	0.25	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.7	0.65	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.7	0.91	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.7	1.0	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluorooctanesulfonamide (PFOSA)	ND	0.93	0.28	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.93	0.38	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.93	0.29	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
N-MeFOSAA (NMeFOSAA)	ND	0.93	0.41	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
N-EtFOSAA (NEtFOSAA)	ND	0.93	0.20	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.3	2.4	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.3	2.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.7	0.97	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.7	0.64	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
9Cl-PF3ONS (F53B Minor)	ND	3.7	0.79	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
11Cl-PF3OUdS (F53B Major)	ND	3.7	0.90	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	9.3	1.7	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	46	9.5	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	46	8.2	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.9	0.45	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.9	0.46	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: Equipment Blank Sampled: 5/16/2023 16:15

Sample ID: 23E2619-04

Sample Matrix: Equipment Blank Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.9	0.37	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	0.80	ng/L	1		Draft Method 1633	5/26/23	5/31/23 5:47	RRB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	85.7	20-150		5/31/23 5:47
13C5-PFPeA	82.4	20-150		5/31/23 5:47
13C5-PFHxA	85.8	20-150		5/31/23 5:47
13C4-PFHpA	85.9	20-150		5/31/23 5:47
13C8-PFOA	84.9	20-150		5/31/23 5:47
13C9-PFNA	80.9	20-150		5/31/23 5:47
13C6-PFDA	82.3	20-150		5/31/23 5:47
13C7-PFUnA	82.1	20-150		5/31/23 5:47
13C2-PFDoA	79.0	20-150		5/31/23 5:47
13C2-PFTeDA	74.6	20-150		5/31/23 5:47
13C3-PFBS	92.7	20-150		5/31/23 5:47
13C3-PFHxS	87.0	20-150		5/31/23 5:47
13C8-PFOS	84.1	20-150		5/31/23 5:47
13C2-4:2FTS	76.5	20-150		5/31/23 5:47
13C2-6:2FTS	78.0	20-150		5/31/23 5:47
13C2-8:2FTS	77.0	20-150		5/31/23 5:47
13C8-PFOSA	82.3	20-150		5/31/23 5:47
D3-NMeFOSA	64.8	20-150		5/31/23 5:47
D5-NEtFOSA	66.7	20-150		5/31/23 5:47
D3-NMeFOSAA	80.3	20-150		5/31/23 5:47
D5-NEtFOSAA	81.6	20-150		5/31/23 5:47
D7-NMeFOSE	82.0	20-150		5/31/23 5:47
D9-NEtFOSE	80.0	20-150		5/31/23 5:47
13C3-HFPO-DA	77.8	20-150		5/31/23 5:47

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Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: DUP_20230516 Sampled: 5/16/2023 14:05

Sample ID: 23E2619-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.6	3.5	1.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluoropentanoic acid (PFPeA)	1.2	1.7	0.30	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorohexanoic acid (PFHxA)	1.3	0.87	0.19	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluoroheptanoic acid (PFHpA)	0.85	0.87	0.22	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorooctanoic acid (PFOA)	1.7	0.87	0.20	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorononanoic acid (PFNA)	ND	0.87	0.17	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorodecanoic acid (PFDA)	ND	0.87	0.16	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.87	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.87	0.22	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	0.87	0.24	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorotetradecanoic acid (PFTeDA)	ND	0.87	0.22	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorobutanesulfonic acid (PFBS)	1.2	0.87	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.87	0.21	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorohexanesulfonic acid (PFHxS)	1.2	0.87	0.18	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.87	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorooctanesulfonic acid (PFOS)	0.48	0.87	0.28	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.87	0.26	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.87	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorododecanesulfonic acid (PFDoS)	ND	0.87	0.23	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.5	0.60	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	3.2	3.5	0.86	ng/L	1	J	Draft Method 1633	5/26/23	5/31/23 6:03	RRB
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.5	0.94	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluorooctanesulfonamide (PFOSA)	ND	0.87	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.87	0.36	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.87	0.27	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
N-MeFOSAA (NMeFOSAA)	ND	0.87	0.38	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
N-EtFOSAA (NEtFOSAA)	ND	0.87	0.19	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	8.7	2.3	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	8.7	2.1	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.5	0.91	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.5	0.60	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
9Cl-PF3ONS (F53B Minor)	ND	3.5	0.74	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
11Cl-PF3OUdS (F53B Major)	ND	3.5	0.84	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	8.7	1.6	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	43	8.9	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	43	7.6	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	1.7	0.43	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	1.7	0.43	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB

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Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: DUP_20230516 Sampled: 5/16/2023 14:05

Sample ID: 23E2619-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	1.7	0.35	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	0.75	ng/L	1		Draft Method 1633	5/26/23	5/31/23 6:03	RRB

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
13C4-PFBA	75.2	20-150		5/31/23 6:03
13C5-PFPeA	74.1	20-150		5/31/23 6:03
13C5-PFHxA	76.7	20-150		5/31/23 6:03
13C4-PFHpA	77.9	20-150		5/31/23 6:03
13C8-PFOA	79.0	20-150		5/31/23 6:03
13C9-PFNA	75.5	20-150		5/31/23 6:03
13C6-PFDA	72.8	20-150		5/31/23 6:03
13C7-PFUnA	80.5	20-150		5/31/23 6:03
13C2-PFDoA	72.9	20-150		5/31/23 6:03
13C2-PFTeDA	65.0	20-150		5/31/23 6:03
13C3-PFBS	87.5	20-150		5/31/23 6:03
13C3-PFHxS	74.9	20-150		5/31/23 6:03
13C8-PFOS	77.4	20-150		5/31/23 6:03
13C2-4:2FTS	109	20-150		5/31/23 6:03
13C2-6:2FTS	80.8	20-150		5/31/23 6:03
13C2-8:2FTS	84.8	20-150		5/31/23 6:03
13C8-PFOSA	68.3	20-150		5/31/23 6:03
D3-NMeFOSA	58.2	20-150		5/31/23 6:03
D5-NEtFOSA	60.7	20-150		5/31/23 6:03
D3-NMeFOSAA	62.5	20-150		5/31/23 6:03
D5-NEtFOSAA	62.5	20-150		5/31/23 6:03
D7-NMeFOSE	67.5	20-150		5/31/23 6:03
D9-NEtFOSE	66.0	20-150		5/31/23 6:03
13C3-HFPO-DA	69.2	20-150		5/31/23 6:03

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Road, Lake View, Sample Description: Work Order: 23E2619

Date Received: 5/18/2023

Field Sample #: DUP_20230516 Sampled: 5/16/2023 14:05

Sample ID: 23E2619-05

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Total Suspended Solids	22	10	10	mg/L	1		Draft Method 1633	5/23/23	5/23/23 13:08	LL

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method:Draft Method 1633 **Analytical Method:Draft Method 1633** **Leachates were extracted on 5/23/2023 per NO PREP in Batch B341055**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23E2619-01 [MW-6_20230516]	B340971	573	5.00	05/26/23
23E2619-02 [MW-14_20230516]	B340971	560	5.00	05/26/23
23E2619-03 [MW-50B_20230516]	B340971	522	5.00	05/26/23
23E2619-04 [Equipment Blank]	B340971	539	5.00	05/26/23
23E2619-05 [DUP_20230516]	B340971	576	5.00	05/26/23

Draft Method 1633

Lab Number [Field ID]	Batch	Initial [mL]	Date
23E2619-01 [MW-6_20230516]	B341055	50.0	05/23/23
23E2619-02 [MW-14_20230516]	B341055	50.0	05/23/23
23E2619-03 [MW-50B_20230516]	B341055	50.0	05/23/23
23E2619-05 [DUP_20230516]	B341055	50.0	05/23/23

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
Blank (B340971-BLK1)				Prepared: 05/25/23 Analyzed: 05/31/23						
Perfluorobutanoic acid (PFBA)	ND	3.9	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	0.98	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	0.98	ng/L							
Perfluorooctanoic acid (PFOA)	ND	0.98	ng/L							
Perfluorononanoic acid (PFNA)	ND	0.98	ng/L							
Perfluorodecanoic acid (PFDA)	ND	0.98	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	0.98	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	0.98	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	0.98	ng/L							
Perfluorotetradecanoic acid (PFTeDA)	ND	0.98	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	0.98	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	0.98	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	0.98	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.98	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	0.98	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	0.98	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	0.98	ng/L							
Perfluorododecanesulfonic acid (PFDoS)	ND	0.98	ng/L							
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	3.9	ng/L							
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	3.9	ng/L							
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	3.9	ng/L							
Perfluorooctanesulfonamide (PFOSA)	ND	0.98	ng/L							
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.98	ng/L							
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.98	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	0.98	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	0.98	ng/L							
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.8	ng/L							
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.8	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	3.9	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	3.9	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	3.9	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	3.9	ng/L							
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	9.8	ng/L							
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	49	ng/L							
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	49	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	ng/L							
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L							
Surrogate: 13C4-PFBA	*90.6*		ng/L	98.0		92.4	20-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
Blank (B340971-BLK1)				Prepared: 05/25/23 Analyzed: 05/31/23						
Surrogate: 13C5-PFPeA	*43.9*		ng/L	49.0		89.5	20-150			
Surrogate: 13C5-PFHxA	*22.6*		ng/L	24.5		92.2	20-150			
Surrogate: 13C4-PFHpA	*22.6*		ng/L	24.5		92.3	20-150			
Surrogate: 13C8-PFOA	*24.4*		ng/L	24.5		99.6	20-150			
Surrogate: 13C9-PFNA	*11.1*		ng/L	12.3		90.8	20-150			
Surrogate: 13C6-PFDA	*10.9*		ng/L	12.3		88.6	20-150			
Surrogate: 13C7-PFUnA	*10.4*		ng/L	12.3		85.1	20-150			
Surrogate: 13C2-PFDoA	*10.1*		ng/L	12.3		82.3	20-150			
Surrogate: 13C2-PFTeDA	*9.64*		ng/L	12.3		78.7	20-150			
Surrogate: 13C3-PFBS	*23.9*		ng/L	24.5		97.7	20-150			
Surrogate: 13C3-PFHxS	*22.4*		ng/L	24.5		91.6	20-150			
Surrogate: 13C8-PFOS	*21.9*		ng/L	24.5		89.4	20-150			
Surrogate: 13C2-4:2FTS	*40.4*		ng/L	49.0		82.4	20-150			
Surrogate: 13C2-6:2FTS	*42.1*		ng/L	49.0		85.9	20-150			
Surrogate: 13C2-8:2FTS	*40.1*		ng/L	49.0		81.7	20-150			
Surrogate: 13C8-PFOSA	*21.5*		ng/L	24.5		87.6	20-150			
Surrogate: D3-NMeFOSA	*15.7*		ng/L	24.5		64.2	20-150			
Surrogate: D5-NEtFOSA	*17.0*		ng/L	24.5		69.3	20-150			
Surrogate: D3-NMeFOSAA	*42.9*		ng/L	49.0		87.5	20-150			
Surrogate: D5-NEtFOSAA	*41.4*		ng/L	49.0		84.4	20-150			
Surrogate: D7-NMeFOSE	*214*		ng/L	245		87.5	20-150			
Surrogate: D9-NEtFOSE	*208*		ng/L	245		84.8	20-150			
Surrogate: 13C3-HFPO-DA	*83.5*		ng/L	98.0		85.2	20-150			
LCS (B340971-BS1)				Prepared: 05/25/23 Analyzed: 05/31/23						
Perfluorobutanoic acid (PFBA)	9.16	3.9	ng/L	7.88		116	40-150			
Perfluoropentanoic acid (PFPeA)	4.15	2.0	ng/L	3.94		105	40-150			
Perfluorohexanoic acid (PFHxA)	2.10	0.98	ng/L	1.97		106	40-150			
Perfluoroheptanoic acid (PFHpA)	2.07	0.98	ng/L	1.97		105	40-150			
Perfluorooctanoic acid (PFOA)	2.02	0.98	ng/L	1.97		103	40-150			
Perfluorononanoic acid (PFNA)	2.05	0.98	ng/L	1.97		104	40-150			
Perfluorodecanoic acid (PFDA)	1.96	0.98	ng/L	1.97		99.6	40-150			
Perfluoroundecanoic acid (PFUnA)	2.07	0.98	ng/L	1.97		105	40-150			
Perfluorododecanoic acid (PFDoA)	2.08	0.98	ng/L	1.97		105	40-150			
Perfluorotridecanoic acid (PFTrDA)	1.97	0.98	ng/L	1.97		100	40-150			
Perfluorotetradecanoic acid (PFTeDA)	2.04	0.98	ng/L	1.97		103	40-150			
Perfluorobutanesulfonic acid (PFBS)	1.60	0.98	ng/L	1.75		91.6	40-150			
Perfluoropentanesulfonic acid (PFPeS)	1.87	0.98	ng/L	1.85		101	40-150			
Perfluorohexanesulfonic acid (PFHxS)	1.82	0.98	ng/L	1.80		101	40-150			
Perfluoroheptanesulfonic acid (PFHpS)	2.13	0.98	ng/L	1.88		113	40-150			
Perfluorooctanesulfonic acid (PFOS)	1.91	0.98	ng/L	1.83		105	40-150			
Perfluorononanesulfonic acid (PFNS)	1.86	0.98	ng/L	1.90		98.0	40-150			
Perfluorodecanesulfonic acid (PFDS)	1.85	0.98	ng/L	1.90		97.3	40-150			
Perfluorododecanesulfonic acid (PFDoS)	1.90	0.98	ng/L	1.91		99.6	40-150			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	7.90	3.9	ng/L	7.39		107	40-150			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	7.56	3.9	ng/L	7.49		101	40-150			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	7.19	3.9	ng/L	7.58		94.9	40-150			
Perfluorooctanesulfonamide (PFOSA)	2.02	0.98	ng/L	1.97		103	40-150			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	2.06	0.98	ng/L	1.97		104	40-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
LCS (B340971-BS1)				Prepared: 05/25/23 Analyzed: 05/31/23						
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	2.15	0.98	ng/L	1.97		109	40-150			
N-MeFOSAA (NMeFOSAA)	2.14	0.98	ng/L	1.97		109	40-150			
N-EtFOSAA (NEtFOSAA)	1.91	0.98	ng/L	1.97		96.8	40-150			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	19.9	9.8	ng/L	19.7		101	40-150			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	20.1	9.8	ng/L	19.7		102	40-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.52	3.9	ng/L	7.88		95.4	40-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.64	3.9	ng/L	7.44		103	40-150			
9Cl-PF3ONS (F53B Minor)	7.11	3.9	ng/L	7.39		96.3	40-150			
11Cl-PF3OUdS (F53B Major)	6.87	3.9	ng/L	7.44		92.3	40-150			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	19.7	9.8	ng/L	19.7		99.9	40-150			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	103	49	ng/L	98.5		104	40-150			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	94.4	49	ng/L	98.5		95.9	40-150			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.09	2.0	ng/L	3.51		88.1	40-150			
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.64	2.0	ng/L	3.94		92.3	40-150			
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.57	2.0	ng/L	3.94		90.7	40-150			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.41	2.0	ng/L	3.94		86.5	40-150			
Surrogate: 13C4-PFBA	*86.9*		ng/L	98.5		88.2	20-150			
Surrogate: 13C5-PFPeA	*41.9*		ng/L	49.2		85.2	20-150			
Surrogate: 13C5-PFHxA	*21.2*		ng/L	24.6		86.2	20-150			
Surrogate: 13C4-PFHpA	*21.9*		ng/L	24.6		88.9	20-150			
Surrogate: 13C8-PFOA	*22.2*		ng/L	24.6		90.0	20-150			
Surrogate: 13C9-PFNA	*10.3*		ng/L	12.3		83.9	20-150			
Surrogate: 13C6-PFDA	*10.3*		ng/L	12.3		83.4	20-150			
Surrogate: 13C7-PFUnA	*10.2*		ng/L	12.3		82.6	20-150			
Surrogate: 13C2-PFDoA	*9.80*		ng/L	12.3		79.6	20-150			
Surrogate: 13C2-PFTeDA	*9.82*		ng/L	12.3		79.7	20-150			
Surrogate: 13C3-PFBS	*23.8*		ng/L	24.6		96.7	20-150			
Surrogate: 13C3-PFHxS	*21.8*		ng/L	24.6		88.7	20-150			
Surrogate: 13C8-PFOS	*21.4*		ng/L	24.6		86.8	20-150			
Surrogate: 13C2-4:2FTS	*40.0*		ng/L	49.2		81.2	20-150			
Surrogate: 13C2-6:2FTS	*40.9*		ng/L	49.2		83.1	20-150			
Surrogate: 13C2-8:2FTS	*39.3*		ng/L	49.2		79.9	20-150			
Surrogate: 13C8-PFOSA	*20.1*		ng/L	24.6		81.8	20-150			
Surrogate: D3-NMeFOSA	*16.1*		ng/L	24.6		65.5	20-150			
Surrogate: D5-NEtFOSA	*17.1*		ng/L	24.6		69.4	20-150			
Surrogate: D3-NMeFOSAA	*41.3*		ng/L	49.2		83.9	20-150			
Surrogate: D5-NEtFOSAA	*41.0*		ng/L	49.2		83.2	20-150			
Surrogate: D7-NMeFOSE	*199*		ng/L	246		80.7	20-150			
Surrogate: D9-NEtFOSE	*200*		ng/L	246		81.1	20-150			
Surrogate: 13C3-HFPO-DA	*77.9*		ng/L	98.5		79.1	20-150			
LCS (B340971-BS2)				Prepared: 05/25/23 Analyzed: 05/31/23						
Perfluorobutanoic acid (PFBA)	93.2	4.0	ng/L	94.9		98.2	40-150			
Perfluoropentanoic acid (PFPeA)	46.6	2.0	ng/L	47.4		98.3	40-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
LCS (B340971-BS2)				Prepared: 05/25/23 Analyzed: 05/31/23						
Perfluorohexanoic acid (PFHxA)	22.9	0.99	ng/L	23.7		96.7	40-150			
Perfluoroheptanoic acid (PFHpA)	21.7	0.99	ng/L	23.7		91.6	40-150			
Perfluorooctanoic acid (PFOA)	22.6	0.99	ng/L	23.7		95.3	40-150			
Perfluorononanoic acid (PFNA)	23.3	0.99	ng/L	23.7		98.1	40-150			
Perfluorodecanoic acid (PFDA)	22.9	0.99	ng/L	23.7		96.6	40-150			
Perfluoroundecanoic acid (PFUnA)	24.1	0.99	ng/L	23.7		102	40-150			
Perfluorododecanoic acid (PFDoA)	23.3	0.99	ng/L	23.7		98.1	40-150			
Perfluorotridecanoic acid (PFTrDA)	22.8	0.99	ng/L	23.7		96.0	40-150			
Perfluorotetradecanoic acid (PFTeDA)	22.3	0.99	ng/L	23.7		94.1	40-150			
Perfluorobutanesulfonic acid (PFBS)	19.1	0.99	ng/L	21.1		90.5	40-150			
Perfluoropentanesulfonic acid (PFPeS)	22.3	0.99	ng/L	22.3		100	40-150			
Perfluorohexanesulfonic acid (PFHxS)	19.7	0.99	ng/L	21.7		90.6	40-150			
Perfluoroheptanesulfonic acid (PFHpS)	21.6	0.99	ng/L	22.6		95.4	40-150			
Perfluorooctanesulfonic acid (PFOS)	20.0	0.99	ng/L	22.0		91.1	40-150			
Perfluorononanesulfonic acid (PFNS)	21.5	0.99	ng/L	22.8		94.2	40-150			
Perfluorodecanesulfonic acid (PFDS)	20.7	0.99	ng/L	22.9		90.5	40-150			
Perfluorododecanesulfonic acid (PFDoS)	20.6	0.99	ng/L	23.0		89.6	40-150			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	92.7	4.0	ng/L	89.0		104	40-150			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	87.8	4.0	ng/L	90.1		97.4	40-150			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	90.9	4.0	ng/L	91.3		99.5	40-150			
Perfluorooctanesulfonamide (PFOSA)	22.8	0.99	ng/L	23.7		96.1	40-150			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	23.5	0.99	ng/L	23.7		98.9	40-150			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	22.7	0.99	ng/L	23.7		95.6	40-150			
N-MeFOSAA (NMeFOSAA)	23.9	0.99	ng/L	23.7		101	40-150			
N-EtFOSAA (NEtFOSAA)	21.2	0.99	ng/L	23.7		89.2	40-150			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	227	9.9	ng/L	237		95.7	40-150			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	232	9.9	ng/L	237		97.8	40-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	97.0	4.0	ng/L	94.9		102	40-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	95.8	4.0	ng/L	89.6		107	40-150			
9Cl-PF3ONS (F53B Minor)	85.8	4.0	ng/L	89.0		96.4	40-150			
11Cl-PF3OUdS (F53B Major)	82.9	4.0	ng/L	89.6		92.6	40-150			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	243	9.9	ng/L	237		102	40-150			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	1220	49	ng/L	1190		103	40-150			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	1160	49	ng/L	1190		98.1	40-150			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	39.0	2.0	ng/L	42.2		92.3	40-150			
Perfluoro-3-methoxypropanoic acid (PFMPA)	45.1	2.0	ng/L	47.4		95.0	40-150			
Perfluoro-4-methoxybutanoic acid (PFMBA)	46.7	2.0	ng/L	47.4		98.3	40-150			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	39.3	2.0	ng/L	47.4		82.8	40-150			
Surrogate: 13C4-PFBA	*89.8*		ng/L	98.8		90.9	20-150			
Surrogate: 13C5-PFPeA	*43.6*		ng/L	49.4		88.1	20-150			
Surrogate: 13C5-PFHxA	*22.3*		ng/L	24.7		90.2	20-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
LCS (B340971-BS2)				Prepared: 05/25/23 Analyzed: 05/31/23						
Surrogate: 13C4-PFHpA	*22.9*		ng/L	24.7		92.7	20-150			
Surrogate: 13C8-PFOA	*22.7*		ng/L	24.7		91.8	20-150			
Surrogate: 13C9-PFNA	*11.0*		ng/L	12.4		88.7	20-150			
Surrogate: 13C6-PFDA	*11.2*		ng/L	12.4		90.3	20-150			
Surrogate: 13C7-PFUnA	*10.7*		ng/L	12.4		87.0	20-150			
Surrogate: 13C2-PFDoA	*10.7*		ng/L	12.4		86.7	20-150			
Surrogate: 13C2-PFTeDA	*10.5*		ng/L	12.4		84.9	20-150			
Surrogate: 13C3-PFBS	*24.5*		ng/L	24.7		99.1	20-150			
Surrogate: 13C3-PFHxS	*22.9*		ng/L	24.7		92.6	20-150			
Surrogate: 13C8-PFOS	*21.7*		ng/L	24.7		87.9	20-150			
Surrogate: 13C2-4:2FTS	*43.3*		ng/L	49.4		87.6	20-150			
Surrogate: 13C2-6:2FTS	*44.7*		ng/L	49.4		90.4	20-150			
Surrogate: 13C2-8:2FTS	*42.9*		ng/L	49.4		86.9	20-150			
Surrogate: 13C8-PFOSA	*21.1*		ng/L	24.7		85.3	20-150			
Surrogate: D3-NMeFOSA	*16.2*		ng/L	24.7		65.5	20-150			
Surrogate: D5-NEtFOSA	*17.6*		ng/L	24.7		71.2	20-150			
Surrogate: D3-NMeFOSAA	*42.0*		ng/L	49.4		85.0	20-150			
Surrogate: D5-NEtFOSAA	*43.3*		ng/L	49.4		87.6	20-150			
Surrogate: D7-NMeFOSE	*204*		ng/L	247		82.7	20-150			
Surrogate: D9-NEtFOSE	*200*		ng/L	247		80.8	20-150			
Surrogate: 13C3-HFPO-DA	*81.2*		ng/L	98.8		82.2	20-150			
Matrix Spike (B340971-MS1)		**Source: 23E2619-03**		Prepared: 05/25/23 Analyzed: 05/31/23						
Perfluorobutanoic acid (PFBA)	91.7	3.8	ng/L	91.2	ND	101	40-150			
Perfluoropentanoic acid (PFPeA)	45.3	1.9	ng/L	45.6	0.332	98.7	40-150			
Perfluorohexanoic acid (PFHxA)	22.5	0.95	ng/L	22.8	ND	98.8	40-150			
Perfluoroheptanoic acid (PFHpA)	21.0	0.95	ng/L	22.8	ND	92.2	40-150			
Perfluorooctanoic acid (PFOA)	22.2	0.95	ng/L	22.8	0.223	96.4	40-150			
Perfluorononanoic acid (PFNA)	22.5	0.95	ng/L	22.8	ND	98.5	40-150			
Perfluorodecanoic acid (PFDA)	21.9	0.95	ng/L	22.8	ND	95.9	40-150			
Perfluoroundecanoic acid (PFUnA)	23.3	0.95	ng/L	22.8	ND	102	40-150			
Perfluorododecanoic acid (PFDoA)	22.5	0.95	ng/L	22.8	ND	98.7	40-150			
Perfluorotridecanoic acid (PFTrDA)	21.1	0.95	ng/L	22.8	ND	92.6	40-150			
Perfluorotetradecanoic acid (PFTeDA)	22.3	0.95	ng/L	22.8	ND	97.8	40-150			
Perfluorobutanesulfonic acid (PFBS)	18.5	0.95	ng/L	20.2	ND	91.4	40-150			
Perfluoropentanesulfonic acid (PFPeS)	21.8	0.95	ng/L	21.4	ND	102	40-150			
Perfluorohexanesulfonic acid (PFHxS)	19.2	0.95	ng/L	20.9	ND	91.9	40-150			
Perfluoroheptanesulfonic acid (PFHpS)	20.7	0.95	ng/L	21.7	ND	95.5	40-150			
Perfluorooctanesulfonic acid (PFOS)	19.1	0.95	ng/L	21.1	ND	90.5	40-150			
Perfluorononanesulfonic acid (PFNS)	20.3	0.95	ng/L	21.9	ND	92.6	40-150			
Perfluorodecanesulfonic acid (PFDS)	19.5	0.95	ng/L	22.0	ND	88.7	40-150			
Perfluorododecanesulfonic acid (PFDoS)	18.4	0.95	ng/L	22.1	ND	83.3	40-150			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	88.5	3.8	ng/L	85.5	ND	104	40-150			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	82.3	3.8	ng/L	86.6	5.55	88.7	40-150			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	87.3	3.8	ng/L	87.7	ND	99.5	40-150			
Perfluorooctanesulfonamide (PFOSA)	22.2	0.95	ng/L	22.8	ND	97.5	40-150			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	22.1	0.95	ng/L	22.8	ND	97.1	40-150			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	22.5	0.95	ng/L	22.8	ND	98.7	40-150			
N-MeFOSAA (NMeFOSAA)	23.4	0.95	ng/L	22.8	ND	103	40-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
Matrix Spike (B340971-MS1)	**Source: 23E2619-03**			Prepared: 05/25/23 Analyzed: 05/31/23						
N-EtFOSAA (NEtFOSAA)	21.8	0.95	ng/L	22.8	ND	95.7	40-150			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	216	9.5	ng/L	228	ND	94.7	40-150			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	221	9.5	ng/L	228	ND	96.9	40-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	92.2	3.8	ng/L	91.2	ND	101	40-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	91.8	3.8	ng/L	86.0	ND	107	40-150			
9Cl-PF3ONS (F53B Minor)	83.1	3.8	ng/L	85.5	ND	97.2	40-150			
11Cl-PF3OUdS (F53B Major)	73.6	3.8	ng/L	86.0	ND	85.6	40-150			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	229	9.5	ng/L	228	ND	100	40-150			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	1180	47	ng/L	1140	ND	103	40-150			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	1130	47	ng/L	1140	ND	98.8	40-150			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	39.1	1.9	ng/L	40.6	ND	96.3	40-150			
Perfluoro-3-methoxypropanoic acid (PFMPA)	42.0	1.9	ng/L	45.6	ND	92.2	40-150			
Perfluoro-4-methoxybutanoic acid (PFMBA)	46.3	1.9	ng/L	45.6	ND	102	40-150			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	38.6	1.9	ng/L	45.6	ND	84.8	40-150			
Surrogate: 13C4-PFBA	*66.0*		ng/L	95.0		69.5	20-150			
Surrogate: 13C5-PFPeA	*39.8*		ng/L	47.5		83.8	20-150			
Surrogate: 13C5-PFHxA	*20.4*		ng/L	23.7		86.0	20-150			
Surrogate: 13C4-PFHpA	*21.0*		ng/L	23.7		88.4	20-150			
Surrogate: 13C8-PFOA	*21.1*		ng/L	23.7		89.0	20-150			
Surrogate: 13C9-PFNA	*9.83*		ng/L	11.9		82.8	20-150			
Surrogate: 13C6-PFDA	*10.1*		ng/L	11.9		84.7	20-150			
Surrogate: 13C7-PFUnA	*9.51*		ng/L	11.9		80.1	20-150			
Surrogate: 13C2-PFDoA	*9.15*		ng/L	11.9		77.1	20-150			
Surrogate: 13C2-PFTeDA	*8.54*		ng/L	11.9		71.9	20-150			
Surrogate: 13C3-PFBS	*22.9*		ng/L	23.7		96.4	20-150			
Surrogate: 13C3-PFHxS	*20.5*		ng/L	23.7		86.4	20-150			
Surrogate: 13C8-PFOS	*19.8*		ng/L	23.7		83.2	20-150			
Surrogate: 13C2-4:2FTS	*40.9*		ng/L	47.5		86.2	20-150			
Surrogate: 13C2-6:2FTS	*40.5*		ng/L	47.5		85.3	20-150			
Surrogate: 13C2-8:2FTS	*38.9*		ng/L	47.5		82.0	20-150			
Surrogate: 13C8-PFOSA	*19.4*		ng/L	23.7		81.5	20-150			
Surrogate: D3-NMeFOSA	*15.6*		ng/L	23.7		65.6	20-150			
Surrogate: D5-NEtFOSA	*15.8*		ng/L	23.7		66.7	20-150			
Surrogate: D3-NMeFOSAA	*37.1*		ng/L	47.5		78.2	20-150			
Surrogate: D5-NEtFOSAA	*36.7*		ng/L	47.5		77.3	20-150			
Surrogate: D7-NMeFOSE	*178*		ng/L	237		75.2	20-150			
Surrogate: D9-NEtFOSE	*172*		ng/L	237		72.3	20-150			
Surrogate: 13C3-HFPO-DA	*77.0*		ng/L	95.0		81.1	20-150			
Matrix Spike Dup (B340971-MSD1)	**Source: 23E2619-03**			Prepared: 05/25/23 Analyzed: 05/31/23						
Perfluorobutanoic acid (PFBA)	91.1	3.8	ng/L	91.7	ND	99.4	40-150	0.673	30	
Perfluoropentanoic acid (PFPeA)	45.0	1.9	ng/L	45.8	0.332	97.4	40-150	0.769	30	
Perfluorohexanoic acid (PFHxA)	22.4	0.95	ng/L	22.9	ND	97.7	40-150	0.564	30	
Perfluoroheptanoic acid (PFHpA)	21.2	0.95	ng/L	22.9	ND	92.3	40-150	0.720	30	
Perfluorooctanoic acid (PFOA)	22.0	0.95	ng/L	22.9	0.223	95.2	40-150	0.739	30	

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
Matrix Spike Dup (B340971-MSD1)	**Source: 23E2619-03**			Prepared: 05/25/23 Analyzed: 05/31/23						
Perfluorononanoic acid (PFNA)	22.9	0.95	ng/L	22.9	ND	99.8	40-150	1.81	30	
Perfluorodecanoic acid (PFDA)	21.6	0.95	ng/L	22.9	ND	94.2	40-150	1.31	30	
Perfluoroundecanoic acid (PFUnA)	22.2	0.95	ng/L	22.9	ND	96.8	40-150	4.77	30	
Perfluorododecanoic acid (PFDoA)	22.0	0.95	ng/L	22.9	ND	96.1	40-150	2.08	30	
Perfluorotridecanoic acid (PFTrDA)	20.8	0.95	ng/L	22.9	ND	90.9	40-150	1.35	30	
Perfluorotetradecanoic acid (PFTeDA)	22.2	0.95	ng/L	22.9	ND	96.7	40-150	0.511	30	
Perfluorobutanesulfonic acid (PFBS)	18.1	0.95	ng/L	20.3	ND	88.9	40-150	2.20	30	
Perfluoropentanesulfonic acid (PFPeS)	22.6	0.95	ng/L	21.5	ND	105	40-150	3.38	30	
Perfluorohexanesulfonic acid (PFHxS)	18.9	0.95	ng/L	21.0	ND	90.1	40-150	1.43	30	
Perfluoroheptanesulfonic acid (PFHpS)	21.1	0.95	ng/L	21.8	ND	96.8	40-150	1.83	30	
Perfluorooctanesulfonic acid (PFOS)	19.1	0.95	ng/L	21.3	ND	90.0	40-150	0.0243	30	
Perfluorononanesulfonic acid (PFNS)	20.4	0.95	ng/L	22.1	ND	92.7	40-150	0.672	30	
Perfluorodecanesulfonic acid (PFDS)	18.9	0.95	ng/L	22.1	ND	85.3	40-150	3.39	30	
Perfluorododecanesulfonic acid (PFDoS)	18.0	0.95	ng/L	22.2	ND	81.1	40-150	2.08	30	
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	87.0	3.8	ng/L	85.9	ND	101	40-150	1.68	30	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	87.9	3.8	ng/L	87.1	5.55	94.6	40-150	6.51	30	
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	87.2	3.8	ng/L	88.2	ND	98.8	40-150	0.141	30	
Perfluorooctanesulfonamide (PFOSA)	21.9	0.95	ng/L	22.9	ND	95.4	40-150	1.65	30	
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	21.7	0.95	ng/L	22.9	ND	94.9	40-150	1.79	30	
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	21.4	0.95	ng/L	22.9	ND	93.3	40-150	5.10	30	
N-MeFOSAA (NMeFOSAA)	22.5	0.95	ng/L	22.9	ND	98.4	40-150	3.85	30	
N-EtFOSAA (NEtFOSAA)	21.6	0.95	ng/L	22.9	ND	94.1	40-150	1.12	30	
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	214	9.5	ng/L	229	ND	93.5	40-150	0.754	30	
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	213	9.5	ng/L	229	ND	92.9	40-150	3.74	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	92.2	3.8	ng/L	91.7	ND	101	40-150	0.00145	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	93.9	3.8	ng/L	86.5	ND	109	40-150	2.30	30	
9Cl-PF3ONS (F53B Minor)	81.4	3.8	ng/L	85.9	ND	94.7	40-150	2.08	30	
11Cl-PF3OUdS (F53B Major)	70.3	3.8	ng/L	86.5	ND	81.3	40-150	4.62	30	
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	225	9.5	ng/L	229	ND	98.4	40-150	1.51	30	
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	1150	48	ng/L	1150	ND	101	40-150	2.15	30	
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	1110	48	ng/L	1150	ND	96.9	40-150	1.42	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	41.3	1.9	ng/L	40.8	ND	101	40-150	5.61	30	
Perfluoro-3-methoxypropanoic acid (PFMPA)	44.1	1.9	ng/L	45.8	ND	96.2	40-150	4.81	30	
Perfluoro-4-methoxybutanoic acid (PFMBA)	48.6	1.9	ng/L	45.8	ND	106	40-150	4.75	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	40.5	1.9	ng/L	45.8	ND	88.4	40-150	4.76	30	
Surrogate: 13C4-PFBA	*62.8*		ng/L	95.5		65.7	20-150			
Surrogate: 13C5-PFPeA	*38.9*		ng/L	47.7		81.4	20-150			
Surrogate: 13C5-PFHxA	*20.0*		ng/L	23.9		83.8	20-150			
Surrogate: 13C4-PFHpA	*20.5*		ng/L	23.9		85.7	20-150			
Surrogate: 13C8-PFOA	*19.9*		ng/L	23.9		83.4	20-150			
Surrogate: 13C9-PFNA	*9.72*		ng/L	11.9		81.4	20-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B340971 - Draft Method 1633										
Matrix Spike Dup (B340971-MSD1)	**Source: 23E2619-03**			Prepared: 05/25/23 Analyzed: 05/31/23						
Surrogate: 13C6-PFDA	*9.88*		ng/L	11.9		82.8	20-150			
Surrogate: 13C7-PFUnA	*9.25*		ng/L	11.9		77.5	20-150			
Surrogate: 13C2-PFDoA	*8.48*		ng/L	11.9		71.1	20-150			
Surrogate: 13C2-PFTeDA	*7.73*		ng/L	11.9		64.8	20-150			
Surrogate: 13C3-PFBS	*22.4*		ng/L	23.9		93.9	20-150			
Surrogate: 13C3-PFHxS	*19.4*		ng/L	23.9		81.1	20-150			
Surrogate: 13C8-PFOS	*19.2*		ng/L	23.9		80.5	20-150			
Surrogate: 13C2-4:2FTS	*39.4*		ng/L	47.7		82.6	20-150			
Surrogate: 13C2-6:2FTS	*38.0*		ng/L	47.7		79.7	20-150			
Surrogate: 13C2-8:2FTS	*37.9*		ng/L	47.7		79.3	20-150			
Surrogate: 13C8-PFOSA	*19.0*		ng/L	23.9		79.6	20-150			
Surrogate: D3-NMeFOSA	*13.7*		ng/L	23.9		57.4	20-150			
Surrogate: D5-NEtFOSA	*13.8*		ng/L	23.9		57.9	20-150			
Surrogate: D3-NMeFOSAA	*35.6*		ng/L	47.7		74.7	20-150			
Surrogate: D5-NEtFOSAA	*34.7*		ng/L	47.7		72.7	20-150			
Surrogate: D7-NMeFOSE	*164*		ng/L	239		68.7	20-150			
Surrogate: D9-NEtFOSE	*158*		ng/L	239		66.2	20-150			
Surrogate: 13C3-HFPO-DA	*73.5*		ng/L	95.5		77.0	20-150			
Batch B342149 - Draft Method 1633										
Blank (B342149-BLK1)				Prepared: 06/06/23 Analyzed: 06/07/23						
Perfluorobutanoic acid (PFBA)	ND	4.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	0.99	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	0.99	ng/L							
Perfluorooctanoic acid (PFOA)	ND	0.99	ng/L							
Perfluorononanoic acid (PFNA)	ND	0.99	ng/L							
Perfluorodecanoic acid (PFDA)	ND	0.99	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	0.99	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	0.99	ng/L							
Perfluorotridecanoic acid (PFTrDA)	ND	0.99	ng/L							
Perfluorotetradecanoic acid (PFTeDA)	ND	0.99	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	0.99	ng/L							
Perfluoropentanesulfonic acid (PFPeS)	ND	0.99	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	0.99	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.99	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	0.99	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	0.99	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	0.99	ng/L							
Perfluorododecanesulfonic acid (PFDoS)	ND	0.99	ng/L							
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	ND	4.0	ng/L							
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	ND	4.0	ng/L							
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	ND	4.0	ng/L							
Perfluorooctanesulfonamide (PFOSA)	ND	0.99	ng/L							
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	ND	0.99	ng/L							
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	ND	0.99	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	0.99	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	0.99	ng/L							

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342149 - Draft Method 1633										
Blank (B342149-BLK1)				Prepared: 06/06/23 Analyzed: 06/07/23						
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	ND	9.9	ng/L							
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	ND	9.9	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.0	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	4.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	4.0	ng/L							
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	ND	9.9	ng/L							
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	ND	50	ng/L							
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	ND	50	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	2.0	ng/L							
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L							
Surrogate: 13C4-PFBA	*86.1*		ng/L	99.5		86.6	20-150			
Surrogate: 13C5-PFPeA	*42.7*		ng/L	49.7		85.8	20-150			
Surrogate: 13C5-PFHxA	*21.4*		ng/L	24.9		86.0	20-150			
Surrogate: 13C4-PFHpA	*21.3*		ng/L	24.9		85.5	20-150			
Surrogate: 13C8-PFOA	*21.8*		ng/L	24.9		87.5	20-150			
Surrogate: 13C9-PFNA	*10.1*		ng/L	12.4		81.5	20-150			
Surrogate: 13C6-PFDA	*10.5*		ng/L	12.4		84.1	20-150			
Surrogate: 13C7-PFUnA	*10.4*		ng/L	12.4		83.9	20-150			
Surrogate: 13C2-PFDoA	*9.81*		ng/L	12.4		78.9	20-150			
Surrogate: 13C2-PFTeDA	*9.72*		ng/L	12.4		78.1	20-150			
Surrogate: 13C3-PFBS	*22.1*		ng/L	24.9		88.7	20-150			
Surrogate: 13C3-PFHxS	*21.5*		ng/L	24.9		86.3	20-150			
Surrogate: 13C8-PFOS	*21.2*		ng/L	24.9		85.1	20-150			
Surrogate: 13C2-4:2FTS	*38.7*		ng/L	49.7		77.9	20-150			
Surrogate: 13C2-6:2FTS	*38.5*		ng/L	49.7		77.4	20-150			
Surrogate: 13C2-8:2FTS	*37.3*		ng/L	49.7		74.9	20-150			
Surrogate: 13C8-PFOSA	*19.3*		ng/L	24.9		77.6	20-150			
Surrogate: D3-NMeFOSA	*17.1*		ng/L	24.9		68.6	20-150			
Surrogate: D5-NEtFOSA	*17.7*		ng/L	24.9		71.1	20-150			
Surrogate: D3-NMeFOSAA	*38.7*		ng/L	49.7		77.8	20-150			
Surrogate: D5-NEtFOSAA	*38.5*		ng/L	49.7		77.4	20-150			
Surrogate: D7-NMeFOSE	*197*		ng/L	249		79.4	20-150			
Surrogate: D9-NEtFOSE	*193*		ng/L	249		77.7	20-150			
Surrogate: 13C3-HFPO-DA	*86.5*		ng/L	99.5		87.0	20-150			
LCS (B342149-BS1)				Prepared: 06/06/23 Analyzed: 06/07/23						
Perfluorobutanoic acid (PFBA)	6.66	4.0	ng/L	7.96		83.7	40-150			
Perfluoropentanoic acid (PFPeA)	3.62	2.0	ng/L	3.98		90.9	40-150			
Perfluorohexanoic acid (PFHxA)	1.88	0.99	ng/L	1.99		94.5	40-150			
Perfluoroheptanoic acid (PFHpA)	1.69	0.99	ng/L	1.99		85.0	40-150			
Perfluorooctanoic acid (PFOA)	1.74	0.99	ng/L	1.99		87.5	40-150			
Perfluorononanoic acid (PFNA)	1.72	0.99	ng/L	1.99		86.5	40-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342149 - Draft Method 1633										
LCS (B342149-BS1)				Prepared: 06/06/23 Analyzed: 06/07/23						
Perfluorodecanoic acid (PFDA)	1.55	0.99	ng/L	1.99		77.9	40-150			
Perfluoroundecanoic acid (PFUnA)	1.75	0.99	ng/L	1.99		88.0	40-150			
Perfluorododecanoic acid (PFDoA)	1.73	0.99	ng/L	1.99		87.2	40-150			
Perfluorotridecanoic acid (PFTrDA)	1.69	0.99	ng/L	1.99		84.8	40-150			
Perfluorotetradecanoic acid (PFTeDA)	1.79	0.99	ng/L	1.99		90.0	40-150			
Perfluorobutanesulfonic acid (PFBS)	1.58	0.99	ng/L	1.77		89.2	40-150			
Perfluoropentanesulfonic acid (PFPeS)	1.73	0.99	ng/L	1.87		92.7	40-150			
Perfluorohexanesulfonic acid (PFHxS)	1.46	0.99	ng/L	1.82		80.0	40-150			
Perfluoroheptanesulfonic acid (PFHpS)	1.73	0.99	ng/L	1.89		91.1	40-150			
Perfluorooctanesulfonic acid (PFOS)	1.21	0.99	ng/L	1.85		65.5	40-150			
Perfluorononanesulfonic acid (PFNS)	1.67	0.99	ng/L	1.91		87.2	40-150			
Perfluorodecanesulfonic acid (PFDS)	1.46	0.99	ng/L	1.92		76.0	40-150			
Perfluorododecanesulfonic acid (PFDoS)	1.58	0.99	ng/L	1.93		82.1	40-150			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	6.58	4.0	ng/L	7.46		88.2	40-150			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	6.96	4.0	ng/L	7.56		92.0	40-150			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	7.12	4.0	ng/L	7.66		93.0	40-150			
Perfluorooctanesulfonamide (PFOSA)	1.79	0.99	ng/L	1.99		90.0	40-150			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	1.70	0.99	ng/L	1.99		85.2	40-150			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	1.64	0.99	ng/L	1.99		82.6	40-150			
N-MeFOSAA (NMeFOSAA)	1.76	0.99	ng/L	1.99		88.5	40-150			
N-EtFOSAA (NEtFOSAA)	1.59	0.99	ng/L	1.99		80.1	40-150			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	17.4	9.9	ng/L	19.9		87.3	40-150			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	17.4	9.9	ng/L	19.9		87.6	40-150			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.45	4.0	ng/L	7.96		93.7	40-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	6.59	4.0	ng/L	7.51		87.7	40-150			
9Cl-PF3ONS (F53B Minor)	6.75	4.0	ng/L	7.46		90.4	40-150			
11Cl-PF3OUdS (F53B Major)	6.55	4.0	ng/L	7.51		87.3	40-150			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	17.7	9.9	ng/L	19.9		89.0	40-150			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	87.9	50	ng/L	99.5		88.4	40-150			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	80.1	50	ng/L	99.5		80.5	40-150			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	3.24	2.0	ng/L	3.54		91.6	40-150			
Perfluoro-3-methoxypropanoic acid (PFMPA)	3.64	2.0	ng/L	3.98		91.5	40-150			
Perfluoro-4-methoxybutanoic acid (PFMBA)	3.82	2.0	ng/L	3.98		96.1	40-150			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	3.52	2.0	ng/L	3.98		88.4	40-150			
Surrogate: 13C4-PFBA	*82.5*		ng/L	99.5		83.0	20-150			
Surrogate: 13C5-PFPeA	*41.3*		ng/L	49.7		83.1	20-150			
Surrogate: 13C5-PFHxA	*21.0*		ng/L	24.9		84.5	20-150			
Surrogate: 13C4-PFHpA	*20.6*		ng/L	24.9		82.9	20-150			
Surrogate: 13C8-PFOA	*20.3*		ng/L	24.9		81.7	20-150			
Surrogate: 13C9-PFNA	*10.2*		ng/L	12.4		82.0	20-150			
Surrogate: 13C6-PFDA	*10.3*		ng/L	12.4		82.9	20-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342149 - Draft Method 1633										
LCS (B342149-BS1)				Prepared: 06/06/23 Analyzed: 06/07/23						
Surrogate: 13C7-PFUnA	*9.79*		ng/L	12.4		78.7	20-150			
Surrogate: 13C2-PFDoA	*9.52*		ng/L	12.4		76.6	20-150			
Surrogate: 13C2-PFTeDA	*9.21*		ng/L	12.4		74.1	20-150			
Surrogate: 13C3-PFBS	*21.4*		ng/L	24.9		86.1	20-150			
Surrogate: 13C3-PFHxS	*20.4*		ng/L	24.9		82.2	20-150			
Surrogate: 13C8-PFOS	*20.1*		ng/L	24.9		80.9	20-150			
Surrogate: 13C2-4:2FTS	*38.4*		ng/L	49.7		77.2	20-150			
Surrogate: 13C2-6:2FTS	*38.1*		ng/L	49.7		76.6	20-150			
Surrogate: 13C2-8:2FTS	*36.8*		ng/L	49.7		73.9	20-150			
Surrogate: 13C8-PFOSA	*18.7*		ng/L	24.9		75.1	20-150			
Surrogate: D3-NMeFOSA	*15.8*		ng/L	24.9		63.5	20-150			
Surrogate: D5-NEtFOSA	*16.2*		ng/L	24.9		65.2	20-150			
Surrogate: D3-NMeFOSAA	*37.8*		ng/L	49.7		76.1	20-150			
Surrogate: D5-NEtFOSAA	*37.0*		ng/L	49.7		74.3	20-150			
Surrogate: D7-NMeFOSE	*183*		ng/L	249		73.7	20-150			
Surrogate: D9-NEtFOSE	*182*		ng/L	249		73.1	20-150			
Surrogate: 13C3-HFPO-DA	*82.9*		ng/L	99.5		83.3	20-150			
LCS (B342149-BS2)				Prepared: 06/06/23 Analyzed: 06/07/23						
Perfluorobutanoic acid (PFBA)	101	4.0	ng/L	95.5		106	40-150			
Perfluoropentanoic acid (PFPeA)	51.6	2.0	ng/L	47.7		108	40-150			
Perfluorohexanoic acid (PFHxA)	26.2	0.99	ng/L	23.9		110	40-150			
Perfluoroheptanoic acid (PFHpA)	24.8	0.99	ng/L	23.9		104	40-150			
Perfluorooctanoic acid (PFOA)	25.3	0.99	ng/L	23.9		106	40-150			
Perfluorononanoic acid (PFNA)	24.7	0.99	ng/L	23.9		104	40-150			
Perfluorodecanoic acid (PFDA)	25.3	0.99	ng/L	23.9		106	40-150			
Perfluoroundecanoic acid (PFUnA)	25.6	0.99	ng/L	23.9		107	40-150			
Perfluorododecanoic acid (PFDoA)	25.7	0.99	ng/L	23.9		108	40-150			
Perfluorotridecanoic acid (PFTrDA)	26.0	0.99	ng/L	23.9		109	40-150			
Perfluorotetradecanoic acid (PFTeDA)	26.3	0.99	ng/L	23.9		110	40-150			
Perfluorobutanesulfonic acid (PFBS)	22.7	0.99	ng/L	21.2		107	40-150			
Perfluoropentanesulfonic acid (PFPeS)	24.3	0.99	ng/L	22.4		108	40-150			
Perfluorohexanesulfonic acid (PFHxS)	21.9	0.99	ng/L	21.8		100	40-150			
Perfluoroheptanesulfonic acid (PFHpS)	23.3	0.99	ng/L	22.7		102	40-150			
Perfluorooctanesulfonic acid (PFOS)	21.0	0.99	ng/L	22.1		94.7	40-150			
Perfluorononanesulfonic acid (PFNS)	23.1	0.99	ng/L	23.0		101	40-150			
Perfluorodecanesulfonic acid (PFDS)	21.8	0.99	ng/L	23.0		94.5	40-150			
Perfluorododecanesulfonic acid (PFDoS)	22.4	0.99	ng/L	23.2		96.7	40-150			
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	104	4.0	ng/L	89.5		116	40-150			
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	103	4.0	ng/L	90.7		113	40-150			
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	103	4.0	ng/L	91.9		113	40-150			
Perfluorooctanesulfonamide (PFOSA)	25.2	0.99	ng/L	23.9		106	40-150			
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	25.7	0.99	ng/L	23.9		108	40-150			
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	25.2	0.99	ng/L	23.9		105	40-150			
N-MeFOSAA (NMeFOSAA)	25.0	0.99	ng/L	23.9		105	40-150			
N-EtFOSAA (NEtFOSAA)	24.7	0.99	ng/L	23.9		103	40-150			
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	259	9.9	ng/L	239		109	40-150			
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	256	9.9	ng/L	239		107	40-150			

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QUALITY CONTROL

Semivolatile Organic Compounds by - LC/MS-MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B342149 - Draft Method 1633										
LCS (B342149-BS2)				Prepared: 06/06/23 Analyzed: 06/07/23						
Hexafluoropropylene oxide dimer acid (HFPO-DA)	104	4.0	ng/L	95.5		109	40-150			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	93.5	4.0	ng/L	90.1		104	40-150			
9Cl-PF3ONS (F53B Minor)	94.0	4.0	ng/L	89.5		105	40-150			
11Cl-PF3OUdS (F53B Major)	93.0	4.0	ng/L	90.1		103	40-150			
3-Perfluoropropyl propanoic acid (FPrPA) (3:3FTCA)	240	9.9	ng/L	239		100	40-150			
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	1210	50	ng/L	1190		101	40-150			
3-Perfluoroheptyl propanoic acid (FHpPA) (7:3FTCA)	1120	50	ng/L	1190		93.4	40-150			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	48.6	2.0	ng/L	42.5		114	40-150			
Perfluoro-3-methoxypropanoic acid (PFMPA)	53.0	2.0	ng/L	47.7		111	40-150			
Perfluoro-4-methoxybutanoic acid (PFMBA)	56.4	2.0	ng/L	47.7		118	40-150			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	55.1	2.0	ng/L	47.7		115	40-150			
Surrogate: 13C4-PFBA	*79.3*		ng/L	99.5		79.8	20-150			
Surrogate: 13C5-PFPeA	*39.3*		ng/L	49.7		79.1	20-150			
Surrogate: 13C5-PFHxA	*19.6*		ng/L	24.9		79.0	20-150			
Surrogate: 13C4-PFHpA	*20.0*		ng/L	24.9		80.5	20-150			
Surrogate: 13C8-PFOA	*19.8*		ng/L	24.9		79.8	20-150			
Surrogate: 13C9-PFNA	*9.96*		ng/L	12.4		80.1	20-150			
Surrogate: 13C6-PFDA	*10.3*		ng/L	12.4		82.7	20-150			
Surrogate: 13C7-PFUnA	*9.95*		ng/L	12.4		80.0	20-150			
Surrogate: 13C2-PFDoA	*9.76*		ng/L	12.4		78.5	20-150			
Surrogate: 13C2-PFTeDA	*9.10*		ng/L	12.4		73.2	20-150			
Surrogate: 13C3-PFBS	*20.3*		ng/L	24.9		81.8	20-150			
Surrogate: 13C3-PFHxS	*19.7*		ng/L	24.9		79.3	20-150			
Surrogate: 13C8-PFOS	*20.0*		ng/L	24.9		80.6	20-150			
Surrogate: 13C2-4:2FTS	*37.7*		ng/L	49.7		75.9	20-150			
Surrogate: 13C2-6:2FTS	*38.7*		ng/L	49.7		77.8	20-150			
Surrogate: 13C2-8:2FTS	*37.7*		ng/L	49.7		75.9	20-150			
Surrogate: 13C8-PFOSA	*18.0*		ng/L	24.9		72.5	20-150			
Surrogate: D3-NMeFOSA	*16.0*		ng/L	24.9		64.4	20-150			
Surrogate: D5-NEtFOSA	*16.2*		ng/L	24.9		65.3	20-150			
Surrogate: D3-NMeFOSAA	*38.4*		ng/L	49.7		77.2	20-150			
Surrogate: D5-NEtFOSAA	*37.4*		ng/L	49.7		75.2	20-150			
Surrogate: D7-NMeFOSE	*180*		ng/L	249		72.4	20-150			
Surrogate: D9-NEtFOSE	*177*		ng/L	249		71.3	20-150			
Surrogate: 13C3-HFPO-DA	*80.1*		ng/L	99.5		80.5	20-150			

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B341055 - Draft Method 1633										
Blank (B341055-BLK1)				Prepared & Analyzed: 05/23/23						
Total Suspended Solids	ND	5.0	mg/L							
LCS (B341055-BS1)				Prepared & Analyzed: 05/23/23						
Total Suspended Solids	133	5.0	mg/L	200		66.5	64.1-125			

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-01	Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
Draft Method 1633 in Water	
Total Suspended Solids	CT,MA,NH,NY,RI,NC,ME,VA
Perfluorobutanoic acid (PFBA)	NY,NH-P
Perfluoropentanoic acid (PFPeA)	NY,NH-P
Perfluorohexanoic acid (PFHxA)	NY,NH-P
Perfluoroheptanoic acid (PFHpA)	NY,NH-P
Perfluorooctanoic acid (PFOA)	NY,NH-P
Perfluorononanoic acid (PFNA)	NY,NH-P
Perfluorodecanoic acid (PFDA)	NY,NH-P
Perfluoroundecanoic acid (PFUnA)	NY,NH-P
Perfluorododecanoic acid (PFDoA)	NY,NH-P
Perfluorotridecanoic acid (PFTrDA)	NY,NH-P
Perfluorotetradecanoic acid (PFTeDA)	NY,NH-P
Perfluorobutanesulfonic acid (PFBS)	NY,NH-P
Perfluoropentanesulfonic acid (PFPeS)	NY,NH-P
Perfluorohexanesulfonic acid (PFHxS)	NY,NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NY,NH-P
Perfluorooctanesulfonic acid (PFOS)	NY,NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorododecanesulfonic acid (PFDoS)	NH-P
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	NH-P
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	NY,NH-P
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	NY,NH-P
Perfluorooctanesulfonamide (PFOSA)	NH-P
N-methyl perfluoroocatnesulfonamide (NMeFOSA)	NH-P
N-ethyl perfluorooctanesulfonamide (NEtFOSA)	NH-P
N-MeFOSAA (NMeFOSAA)	NY,NH-P
N-EtFOSAA (NEtFOSAA)	NY,NH-P
N-methylperfluorooctanesulfonamidoethanol(NMeFOSE)	NH-P
N-ethylperfluorooctanesulfonamidoethanol (NEtFOSE)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NY,NH-P
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	NY,NH-P
9Cl-PF3ONS (F53B Minor)	NY,NH-P
11Cl-PF3OUdS (F53B Major)	NY,NH-P
3-Perfluoropropyl propanoic acid (FPrPA)(3:3FTCA)	NH-P
2H,2H,3H,3H-Perfluorooctanoic acid(FPePA)(5:3FTCA)	NH-P
3-Perfluoroheptyl propanoic acid (FHpPA)(7:3FTCA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NY,NH-P
Perfluoro-3-methoxypropanoic acid (PFMPA)	NY,NH-P
Perfluoro-4-methoxybutanoic acid (PFMBA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P

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Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
MA	Massachusetts DEP	M-MA100	06/30/2024
CT	Connecticut Department of Public Health	PH-0821	12/31/2024
NY	New York State Department of Health	10899 NELAP	04/1/2024
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
RI	Rhode Island Department of Health	LAO00373	12/30/2023
NC	North Carolina Div. of Water Quality	652	12/31/2023
ME	State of Maine	MA00100	06/9/2025
VA	Commonwealth of Virginia	460217	12/14/2023
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2023

CHAIN OF CUSTODY

23E2619

Client: New York State Dept. of Environmental Conservation

KAM

PAGE OF

FED-EX Tracking #

Bottle Order Control #

Lab Quote #

Lab Job #

CLIENT/REPORTING INFORMATION	PROJECT INFORMATION	BILLING INFORMATION
Groundwater & Environmental Services, Inc. 6010 N. Bailey Ave, Suite 1, Amherst, NY 14226 Project Manager: Thomas Palmer Phone #: 800-287-7857 TPalmer@gesonline.com fax GESInbox@gesonline.com 866-902-2187	Project Name: NYSDEC LakeView LakeViewRd2720 Project Address: 2720 Lakeview Road, Lake View, NY Project PSID #: 984026	DEC Lab Callout ID: 147207 DEC PM: Melissa Sweet Invoice Instructions (Project #/ Phase / Task / Altorg) 0901866/06/206/1100 NYSDEC Site No. 2209206 Lab Project Manager: Kyle Murray

Sampler(s) Name:

Sampler(s) Name:

Lab Sample #	Field ID / Point of Collection (Sys_loc_code)	Depth Interval (ft)	Date Sampled	Time Sampled	Sampler	Matrix	Total # Bottles	number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Amber	REQUESTED ANALYSIS: PFAS (Method 1633)	MS/MSD	LAB USE ONLY
1	MW-6_20230516		5/16/23	1600	JP	WG	3					3					X		
2	MW-14_20230516		5/16/23	1405	JP	WG	3					3					X		
3	MW-50B_20230516		5/16/23	1130	JP	WG	7					7					X	X	
4	Equipment Blank		5/16/23	1615	JP	WG	2					2					X		
5	DUP_20230516		5/16/23	1405	JP	WG	3					3					X		

Turnaround Time (Business Days) Approved By (Lab PM) / Date

- [x] Standard 14 Days
- [ ] 1 day RUSH
- [ ] Other

Laboratory Information

Lab: Pace Analytical Services - Pace New England
Address: 39 Spruce Street, East Longmeadow, MA 01028
Phone: 413.525.2332 x49
Lab PM: Kyle Murray
Lab PM Email: Kyle.Murray@pacelabs.com

Please Email the EQ EDD Package to ges@equisonline.com

EQEDD Name: NYSDEC LakeView LakeViewRd2720_LabReport#.33974.EQEDD.zip

Data Deliverable Information

- [ ] Commercial 'A' (Level 1) = Results Only
- [ ] Commercial 'B' (Level 2) = Results + QC Summary
- [ ] FULLT1 (Level 3 & 4)
- [ ] NJ Reduced = Results + QC Summary + Partial Raw Data
- [ ] Commercial 'C'
- [ ] *NJ Data of Known Quality Protocol Reporting*
- [ ] NYASP Category A
- [x] NYASP Category B
- [ ] State Forms
- [x] EDD Format EDD for GES EQUIS
- [x] Other NYSDEC EDD FOR NYSDEC EQUIS

Sample Custody must be documented below each time samples change possession, including courier.

Relinquished By Sampler:	Date / Time:	Received By:
1 Jessica Paterson	1 05/16/23 1800	1 GES Fridge
Relinquished By:	Date / Time:	Received By:
2 Jessica Paterson	2 5/17/23 1400	2 5/18/23 0832
Relinquished By:	Date / Time:	Received By:
3	3	3

Custody Seal Number: [ ] Intact [ ] Not Intact [ ] Preserved where applicable [ ] On Ice Cooler Temp 2.0°C

[redacted]

FedEx® Tracking

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Thursday

5/18/2023 at 9:23 am

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Delivered

TRACKING ID

398433822864

FROM
EAST LONGMEADOW, MA US

Label Created
5/17/2023 12:54 PM

PACKAGE RECEIVED BY FEDEX
CHEEKTOWAGA, NY
5/17/2023 6:42 PM

IN TRANSIT
WINDSOR LOCKS, CT
5/18/2023 8:20 AM

OUT FOR DELIVERY
WINDSOR LOCKS, CT
5/18/2023 8:47 AM

DELIVERED
EAST LONGMEADOW, MA US

Delivered
5/18/2023 at 9:23 AM

View travel history

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Shipment facts

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

ENV-FRM-ELON-0001 V05__Sample Receiving Checklist

Log In Back-Sheet

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

Pace® PEOPLE ADVANCING SCIENCE

Client Groundwater & Environmental Services

Project NYSDEC Lakeview

MCP/RCP Required NYSDEC EDD EQUIS

Deliverable Package Requirement CAT B

Location 2770 Lakeview Road, Lakeview, NY

PWSID# (When Applicable) N/A

Arrival Method:

Courier ☐ Fed Ex ☑ Walk In ☐ Other ☐

Received By / Date / Time AAM / 5-18-23 / 0923

Back-Sheet By / Date / Time AAM / 5-18-23 / 1620

Temperature Method Temp. Gun # 5

Temp ☑ < 6° C Actual Temperature Temp. Gun

Rush Samples: Yes (No) Notify

Short Hold: Yes (No) Notify

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
Is there enough Volume	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☑	☐
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client ☑ Analysis ☑ Sampler Name ☐
Project ☑ IDs ☑ Collection Date/Time ☑

All Samples Proper pH: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Additional Container Notes

Sample	Soils Jars (Circle Amb/Clear)				Ambers						Plastics										VOA Vials					Other / Fill in				
	16oz Amb/Clear	8oz Amb/Clear	4oz Amb/Clear	2oz Amb/Clear	1 Liter			250mL		100mL	1 Liter		500mL		250mL															
					Unpreserved	HCL	Sulfuric	Sulfuric	Phosphoric	HCl	Unpreserved	Unpreserved	Sulfuric	Unpreserved	Unpreserved	Trizma	Sulfuric	Nitric	NaOH	NaOH/Zinc	Unpreserved	HCl	MeOH	D.I. Water	Bisulfate	Col/Bact	Other Please Note				
1													2														-			
2													1														-			
3													3														-			
4													2																	
5													1														-			
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20																														

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

June 7, 2023

Melissa Sweet
NYDEC_GES - Amherst, NY
625 Broadway, 12th FL
Albany, NY 12233

Project Location: 2720 Lakeview Rd., Lake View, NY
Client Job Number:
Project Number: 2209206
Laboratory Work Order Number: 23E2622

Enclosed are results of analyses for samples as received by the laboratory on May 18, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kyle A. Murray
Project Manager

Table of Contents

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

NYDEC_GES - Amherst, NY
625 Broadway, 12th FL
Albany, NY 12233
ATTN: Melissa Sweet

REPORT DATE: 6/7/2023

PURCHASE ORDER NUMBER: 147207

PROJECT NUMBER: 2209206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23E2622

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 2720 Lakeview Rd., Lake View, NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MW-6_20230516	23E2622-01	Ground Water		SW-846 8270E	
MW-14_20230516	23E2622-02	Ground Water		SW-846 8270E	
MW-50B_20230516	23E2622-03	Ground Water		SW-846 8270E	
EQUIPMENT BLANK	23E2622-04	Water		SW-846 8270E	
DUP_20230515	23E2622-05	Ground Water		SW-846 8270E	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Rd., Lake View, N Sample Description: Work Order: 23E2622

Date Received: 5/18/2023

Field Sample #: MW-6_20230516 Sampled: 5/16/2023 16:00

Sample ID: 23E2622-01

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.19	0.031	µg/L	1		SW-846 8270E	5/23/23	6/6/23 14:30	SPF

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
1,4-Dioxane-d8	34.5	15-110			6/6/23 14:30

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Rd., Lake View, N Sample Description: Work Order: 23E2622

Date Received: 5/18/2023

Field Sample #: MW-14_20230516 Sampled: 5/16/2023 14:05

Sample ID: 23E2622-02

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.19	0.031	µg/L	1		SW-846 8270E	5/23/23	6/6/23 14:49	SPF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	29.7	15-110		6/6/23 14:49

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Rd., Lake View, N Sample Description: Work Order: 23E2622

Date Received: 5/18/2023

Field Sample #: MW-50B_20230516 Sampled: 5/16/2023 11:30

Sample ID: 23E2622-03

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.032	µg/L	1		SW-846 8270E	5/23/23	6/2/23 17:52	SPF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,4-Dioxane-d8	28.6	15-110		6/2/23 17:52

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Rd., Lake View, N Sample Description: Work Order: 23E2622

Date Received: 5/18/2023

Field Sample #: EQUIPMENT BLANK Sampled: 5/16/2023 14:15

Sample ID: 23E2622-04

Sample Matrix: Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.032	µg/L	1		SW-846 8270E	5/23/23	6/6/23 12:49	SPF

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
1,4-Dioxane-d8	31.7	15-110			6/6/23 12:49

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2720 Lakeview Rd., Lake View, N Sample Description: Work Order: 23E2622

Date Received: 5/18/2023

Field Sample #: DUP_20230515 Sampled: 5/16/2023 14:05

Sample ID: 23E2622-05

Sample Matrix: Ground Water

1,4-Dioxane by isotope dilution GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
1,4-Dioxane	ND	0.20	0.032	µg/L	1		SW-846 8270E	5/23/23	6/6/23 13:09	SPF

Surrogates	% Recovery	Recovery Limits	Flag/Qual		
1,4-Dioxane-d8	27.2	15-110			6/6/23 13:09

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method:SW-846 3510C **Analytical Method:SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23E2622-03 [MW-50B_20230516]	B341039	1020	1.00	05/23/23

Prep Method:SW-846 3510C **Analytical Method:SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
23E2622-01 [MW-6_20230516]	B341099	1040	1.00	05/23/23
23E2622-02 [MW-14_20230516]	B341099	1040	1.00	05/23/23
23E2622-04 [EQUIPMENT BLANK]	B341099	1020	1.00	05/23/23
23E2622-05 [DUP_20230515]	B341099	1020	1.00	05/23/23

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

1,4-Dioxane by isotope dilution GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B341039 - SW-846 3510C										
Blank (B341039-BLK1)				Prepared: 05/23/23 Analyzed: 05/25/23						
1,4-Dioxane	ND	0.20	µg/L							
Surrogate: 1,4-Dioxane-d8	*2.64*		µg/L	10.0		26.4	15-110			
LCS (B341039-BS1)				Prepared: 05/23/23 Analyzed: 05/29/23						
1,4-Dioxane	10.3	0.20	µg/L	10.0		103	40-140			
Surrogate: 1,4-Dioxane-d8	*3.26*		µg/L	10.0		32.6	15-110			
LCS Dup (B341039-BSD1)				Prepared: 05/23/23 Analyzed: 05/25/23						
1,4-Dioxane	10.9	0.20	µg/L	10.0		109	40-140	5.31	30	
Surrogate: 1,4-Dioxane-d8	*2.85*		µg/L	10.0		28.5	15-110			
Matrix Spike (B341039-MS1)	**Source: 23E2622-03**			Prepared: 05/23/23 Analyzed: 06/02/23						
1,4-Dioxane	10.6	0.20	µg/L	9.76	ND	109	40-140			
Surrogate: 1,4-Dioxane-d8	*2.61*		µg/L	9.76		26.7	15-110			
Matrix Spike Dup (B341039-MSD1)	**Source: 23E2622-03**			Prepared: 05/23/23 Analyzed: 06/02/23						
1,4-Dioxane	11.2	0.20	µg/L	9.80	ND	114	40-140	4.93	20	
Surrogate: 1,4-Dioxane-d8	*2.84*		µg/L	9.80		29.0	15-110			
Batch B341099 - SW-846 3510C										
Blank (B341099-BLK1)				Prepared: 05/23/23 Analyzed: 06/06/23						
1,4-Dioxane	ND	0.20	µg/L							
Surrogate: 1,4-Dioxane-d8	*3.39*		µg/L	10.0		33.9	15-110			
LCS (B341099-BS1)				Prepared: 05/23/23 Analyzed: 06/06/23						
1,4-Dioxane	10.6	0.20	µg/L	10.0		106	40-140			
Surrogate: 1,4-Dioxane-d8	*2.84*		µg/L	10.0		28.4	15-110			
LCS Dup (B341099-BSD1)				Prepared: 05/23/23 Analyzed: 06/06/23						
1,4-Dioxane	11.0	0.20	µg/L	10.0		110	40-140	3.43	30	
Surrogate: 1,4-Dioxane-d8	*3.58*		µg/L	10.0		35.8	15-110			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level

Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.

No results have been blank subtracted unless specified in the case narrative section.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Water	
1,4-Dioxane	NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
NY	New York State Department of Health	10899 NELAP	04/1/2024
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024

23E2622 MEK

CHAIN OF CUSTODY

Client: New York State Dept. of Environmental Conservation

PAGE OF

FED-EX Tracking #	Bottle Order Control #
Lab Quote #	Lab Job #

CLIENT/REPORTING INFORMATION	PROJECT INFORMATION	BILLING INFORMATION
Groundwater & Environmental Services, Inc. 6010 N. Bailey Ave, Suite 1, Amherst, NY 14226 **Project Manager:** Thomas Palmer **Phone #:** 800-287-7857 TPalmer@gesonline.com fax GESInbox@gesonline.com **866-902-2187**	**Project Name:** NYSDEC LakeView LakeViewRd2720 **Project Address:** 2720 Lakeview Road, Lake View, NY **Project PSID #:** 984026	**DEC Lab Callout ID:** 147207 **DEC PM:** Melissa Sweet **Invoice Instructions (Project #/ Phase / Task / Altorg)** **0901866/06/206/1100** **NYSDEC Site No.** 2209206 **Lab Project Manager:** Kyle Murray

Sampler(s) Name:

Sampler(s) Name:

Lab Sample #	Field ID / Point of Collection (Sys_loc_code)	Depth Interval (ft)	Date Sampled	Time Sampled	Sampler	Matrix	Total # Bottles	number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Amber	REQUESTED ANALYSIS (see Test Code sheet): 1,4-Dioxane (8270 SIM)	MS/MSD	LAB USE ONLY
	MW-6_20230516		5/16/23	1600	JP	WG	2									2	X		
	MW-14_20230516		5/16/23	1405	JP	WG	4									4	X		
	MW-50B_20230516		5/16/23	1130	JP	WG	6									6	X	X	
	EQUIPMENT BLANK		5/16/23	1415	JP		2									2	X		
	DUP_20230516		5/16/23	1405	JP	WG	2									2	X		

Turnaround Time (Business Days) **Approved By (Lab PM) / Date**

- ☑ Standard 14 Days
- ☐ 1 day RUSH
- ☐ Other _____

Laboratory Information

Lab: Pace Analytical Services - Pace New England
Address: 39 Spruce Street, East Longmeadow, MA 01028
Phone: 413.525.2332 x49
Lab PM: Kyle Murray
Lab PM Email: Kyle.Murray@pacelabs.com

Data Deliverable Information

- ☐ Commercial 'A' (Level 1) = Results Only
- ☐ Commercial 'B' (Level 2) = Results + QC Summary
- ☐ FULLT1 (Level 3 & 4)
- ☐ NJ Reduced = Results + QC Summary + Partial Raw Data
- ☐ Commercial 'C'
- ☐ *NJ Data of Known Quality Protocol Reporting*
- ☐ NYASP Category A
- ☑ NYASP Category B
- ☐ State Forms
- ☑ EDD Format EDD for GES EQEUIS
- ☑ Other NYSDEC EDD FOR NYSDEC EQUIS

Dup sample added per client, KAM 5/19/23

Please Email the EQ EDD Package to ges@equisonline.com

EQEDD Name: NYSDEC LakeView LakeViewRd2720_LabReport#.33974.EQEDD.zip

Sample Custody must be documented below each time samples change possession, including courier.

	Date / Time:	Received By:
1 Relinquished By Sampler: ~~Jessica Patterson~~	1 ~~05/16/23 1600~~	1
2 Relinquished By: Jessica Patterson	2 05/17/23 1400	2
3 Relinquished By: [signature] 923	3 5-18-23 923	3

Custody Seal Number: ☐ Intact 2.0 ☐ Not Intact ☐ Preserved where applicable ☐ On Ice Cooler Temp _____

Table of Contents

[redacted]

FedEx® Tracking

DELIVERED

Thursday

5/18/2023 at 9:23 am

Signed for by: A.ALYSSA

Obtain Proof of delivery

How was your delivery?

DELIVERY STATUS

Delivered

TRACKING ID

791356301628

FROM
AMHERST, NY US

Label Created
5/4/2023 3:17 PM

PACKAGE RECEIVED BY FEDEX
CHEEKTOWAGA, NY
5/17/2023 6:42 PM

IN TRANSIT
WINDSOR LOCKS, CT
5/18/2023 8:22 AM

OUT FOR DELIVERY
WINDSOR LOCKS, CT
5/18/2023 8:47 AM

DELIVERED
East Longmeadow, MA US

Delivered
5/18/2023 at 9:23 AM

View travel history

Want updates on this shipment? Enter your email and we will do the rest!

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SUBMIT

MORE OPTIONS

Manage Delivery

39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
www.pacelabs.com

ENV-FRM-ELON-0001 V05__Sample Receiving Checklist

Log In Back-Sheet

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

Pace
PEOPLE ADVANCING SCIENCE

Client GFS
Project NYDEC Lakeview
MCP/RCP Required No
Deliverable Package Requirement CAT B
Location NY
PWSID# (When Applicable) 984026
Arrival Method:

Courier ☐ Fed Ex ☑ Walk In ☐ Other ☐

Received By / Date / Time SB 5/18/23 923
Back-Sheet By / Date / Time SR 5/18/23 1617
Temperature Method gun #5
Temp ☑ < 6° C Actual Temperature 20.4.7
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

	True	False
Received on Ice	☑	☐
Received in Cooler	☑	☐
Custody Seal: DATE TIME	☐	☑
COC Relinquished	☑	☐
COC/Samples Labels Agree	☑	☐
All Samples in Good Condition	☑	☐
Samples Received within Holding Time	☑	☐
Is there enough Volume	☑	☐
Proper Media/Container Used	☑	☐
Splitting Samples Required	☐	☑
MS/MSD	☑	☐
Trip Blanks	☐	☑
Lab to Filters	☐	☑
COC Legible	☑	☐

COC Included: (Check all included)

Client	☑	Analysis	☑	Sampler Name	☑
Project	☑	IDs	☐	Collection Date/Time	☑

All Samples Proper pH: (N/A) ☐ ☐

Notes regarding Samples/COC outside of SOP:

Additional Container Notes

Sample	Soils Jars (Circle Amb/Clear)				Ambers						Plastics										VOA Vials						Other / Fill in					
					1 Liter			250mL			1 Liter		500mL		250mL																	
	16oz Amb/Clear	8oz Amb/Clear	4oz Amb/Clear	2oz Amb/Clear	Unpreserved	HCL	Sulfuric	Sulfuric	Phosphoric	HCl	Unpreserved	Unpreserved	Sulfuric	Unpreserved	Trizma	Sulfuric	Nitric	NaOH	NaOH/Zinc	Unpreserved	HCl	MeOH	D.I. Water	Bisulfate	Col/Bact						
1					7																										
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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

June 6, 2023

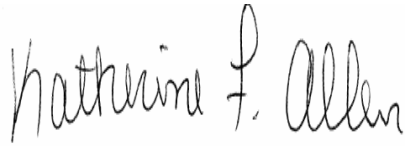
Thomas Palmer
NYDEC_GES - Amherst, NY
6010 North Bailey Ave., Suite 1
Amherst, NY 14226

Project Location:
Client Job Number:
Project Number: 2209206
Laboratory Work Order Number: 23F0203

Enclosed are results of analyses for samples as received by the laboratory on June 1, 2023. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kyle A. Murray
Project Manager



QA Officer
Katherine Allen

Laboratory Manager
Daren Damboragian

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

NYDEC_GES - Amherst, NY
6010 North Bailey Ave., Suite 1
Amherst, NY 14226
ATTN: Thomas Palmer

REPORT DATE: 6/6/2023

PURCHASE ORDER NUMBER: 147207

PROJECT NUMBER: 2209206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 23F0203

The results of analyses performed on the following samples submitted to Con-Test, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION:

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SV-1	23F0203-01	Soil Gas		EPA TO-15	
SV-2	23F0203-02	Soil Gas		EPA TO-15	
SV-2	23F0203-03	Soil Gas		EPA TO-15	
SV-3	23F0203-04	Soil Gas		EPA TO-15	
AA-1	23F0203-05	Ambient Air		-	
				EPA TO-15	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA TO-15

Qualifications:

E Reported result is estimated. Value reported over verified calibration range.

Analyte & Samples(s) Qualified:

Acetone

23F0203-01[SV-1], 23F0203-02[SV-2], 23F0203-03[SV-2], B342428-DUP1

L-03 Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.

Analyte & Samples(s) Qualified:

1,2,4-Trichlorobenzene, Naphthalene

23F0203-01[SV-1], 23F0203-02[SV-2], 23F0203-03[SV-2], 23F0203-04[SV-3], 23F0203-05[AA-1], B342428-BLK1, B342428-BS1, B342428-DUP1

V-06 Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

Analyte & Samples(s) Qualified:

2-Hexanone (MBK)

23F0203-01[SV-1], 23F0203-02[SV-2], 23F0203-04[SV-3], B342428-BS1, B342428-DUP1, S088612-CCV1

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Lisa A. Worthington
Technical Representative

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-1
Sample ID: 23F0203-01
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:17

Sample Description/Location:
Sub Description/Location:
Canister ID: 1472
Canister Size: 6 liter
Flow Controller ID: 3122
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): -28.5
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -7.2
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Acetone	290	4.0	2.4	E	690	9.5	5.7	2	6/5/23 18:50	CMR
Benzene	2.6	0.10	0.076		8.4	0.32	0.24	2	6/5/23 18:50	CMR
Benzyl chloride	ND	0.10	0.088		ND	0.52	0.46	2	6/5/23 18:50	CMR
Bromodichloromethane	2.2	0.10	0.070		15	0.67	0.47	2	6/5/23 18:50	CMR
Bromoform	ND	0.10	0.068		ND	1.0	0.70	2	6/5/23 18:50	CMR
Bromomethane	ND	0.10	0.067		ND	0.39	0.26	2	6/5/23 18:50	CMR
1,3-Butadiene	ND	0.10	0.084		ND	0.22	0.19	2	6/5/23 18:50	CMR
2-Butanone (MEK)	59	4.0	1.1		170	12	3.1	2	6/5/23 18:50	CMR
Carbon Disulfide	6.0	1.0	0.092		19	3.1	0.29	2	6/5/23 18:50	CMR
Carbon Tetrachloride	ND	0.10	0.080		ND	0.63	0.50	2	6/5/23 18:50	CMR
Chlorobenzene	ND	0.10	0.066		ND	0.46	0.31	2	6/5/23 18:50	CMR
Chloroethane	ND	0.10	0.089		ND	0.26	0.23	2	6/5/23 18:50	CMR
Chloroform	6.4	0.10	0.095		31	0.49	0.46	2	6/5/23 18:50	CMR
Chloromethane	0.29	0.20	0.079		0.59	0.41	0.16	2	6/5/23 18:50	CMR
Cyclohexane	1.1	0.10	0.060		3.6	0.34	0.21	2	6/5/23 18:50	CMR
Dibromochloromethane	0.38	0.10	0.066		3.3	0.85	0.56	2	6/5/23 18:50	CMR
1,2-Dibromoethane (EDB)	ND	0.10	0.060		ND	0.77	0.46	2	6/5/23 18:50	CMR
1,2-Dichlorobenzene	ND	0.10	0.057		ND	0.60	0.35	2	6/5/23 18:50	CMR
1,3-Dichlorobenzene	0.068	0.10	0.055	J	0.41	0.60	0.33	2	6/5/23 18:50	CMR
1,4-Dichlorobenzene	ND	0.10	0.065		ND	0.60	0.39	2	6/5/23 18:50	CMR
Dichlorodifluoromethane (Freon 12)	0.38	0.10	0.098		1.9	0.49	0.48	2	6/5/23 18:50	CMR
1,1-Dichloroethane	ND	0.10	0.087		ND	0.40	0.35	2	6/5/23 18:50	CMR
1,2-Dichloroethane	ND	0.10	0.091		ND	0.40	0.37	2	6/5/23 18:50	CMR
1,1-Dichloroethylene	ND	0.10	0.076		ND	0.40	0.30	2	6/5/23 18:50	CMR
cis-1,2-Dichloroethylene	ND	0.10	0.073		ND	0.40	0.29	2	6/5/23 18:50	CMR
trans-1,2-Dichloroethylene	ND	0.10	0.079		ND	0.40	0.31	2	6/5/23 18:50	CMR
1,2-Dichloropropane	ND	0.10	0.054		ND	0.46	0.25	2	6/5/23 18:50	CMR
cis-1,3-Dichloropropene	ND	0.10	0.052		ND	0.45	0.24	2	6/5/23 18:50	CMR
trans-1,3-Dichloropropene	ND	0.10	0.051		ND	0.45	0.23	2	6/5/23 18:50	CMR
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.10	0.098		ND	0.70	0.69	2	6/5/23 18:50	CMR
1,4-Dioxane	ND	1.0	0.083		ND	3.6	0.30	2	6/5/23 18:50	CMR
Ethanol	49	4.0	1.8		93	7.5	3.3	2	6/5/23 18:50	CMR
Ethyl Acetate	23	1.0	0.51		82	3.6	1.8	2	6/5/23 18:50	CMR
Ethylbenzene	2.1	0.10	0.058		9.3	0.43	0.25	2	6/5/23 18:50	CMR
4-Ethyltoluene	0.24	0.10	0.061		1.2	0.49	0.30	2	6/5/23 18:50	CMR
Heptane	2.5	0.10	0.064		10	0.41	0.26	2	6/5/23 18:50	CMR
Hexachlorobutadiene	ND	0.10	0.082		ND	1.1	0.88	2	6/5/23 18:50	CMR
Hexane	2.6	4.0	0.52	J	9.3	14	1.8	2	6/5/23 18:50	CMR
2-Hexanone (MBK)	0.95	0.10	0.050	V-06	3.9	0.41	0.20	2	6/5/23 18:50	CMR
Isopropanol	25	4.0	0.69		61	9.8	1.7	2	6/5/23 18:50	CMR
Methyl tert-Butyl Ether (MTBE)	ND	0.10	0.077		ND	0.36	0.28	2	6/5/23 18:50	CMR
Methylene Chloride	ND	1.0	0.46		ND	3.5	1.6	2	6/5/23 18:50	CMR
4-Methyl-2-pentanone (MIBK)	4.9	0.10	0.053		20	0.41	0.22	2	6/5/23 18:50	CMR
Naphthalene	0.18	0.10	0.075	L-03	0.95	0.52	0.40	2	6/5/23 18:50	CMR
Propene	ND	4.0	0.88		ND	6.9	1.5	2	6/5/23 18:50	CMR
Styrene	0.41	0.10	0.053		1.7	0.43	0.22	2	6/5/23 18:50	CMR
1,1,2,2-Tetrachloroethane	ND	0.10	0.054		ND	0.69	0.37	2	6/5/23 18:50	CMR

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-1
Sample ID: 23F0203-01
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:17

Sample Description/Location:
Sub Description/Location:
Canister ID: 1472
Canister Size: 6 liter
Flow Controller ID: 3122
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): -28.5
Final Vacuum(in Hg): -5
Receipt Vacuum(in Hg): -7.2
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Tetrachloroethylene	11	0.10	0.076		72	0.68	0.52	2	6/5/23 18:50	CMR
Tetrahydrofuran	4.7	1.0	0.16		14	2.9	0.48	2	6/5/23 18:50	CMR
Toluene	19	0.10	0.057		73	0.38	0.22	2	6/5/23 18:50	CMR
1,2,4-Trichlorobenzene	ND	0.10	0.093	L-03	ND	0.74	0.69	2	6/5/23 18:50	CMR
1,1,1-Trichloroethane	ND	0.10	0.079		ND	0.55	0.43	2	6/5/23 18:50	CMR
1,1,2-Trichloroethane	ND	0.10	0.070		ND	0.55	0.38	2	6/5/23 18:50	CMR
Trichloroethylene	0.80	0.10	0.067		4.3	0.54	0.36	2	6/5/23 18:50	CMR
Trichlorofluoromethane (Freon 11)	0.21	0.40	0.12	J	1.2	2.2	0.66	2	6/5/23 18:50	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.40	0.11		ND	3.1	0.85	2	6/5/23 18:50	CMR
1,2,4-Trimethylbenzene	0.87	0.10	0.044		4.3	0.49	0.22	2	6/5/23 18:50	CMR
1,3,5-Trimethylbenzene	0.27	0.10	0.053		1.3	0.49	0.26	2	6/5/23 18:50	CMR
Vinyl Acetate	3.6	2.0	0.54		13	7.0	1.9	2	6/5/23 18:50	CMR
Vinyl Chloride	ND	0.10	0.090		ND	0.26	0.23	2	6/5/23 18:50	CMR
m&p-Xylene	6.1	0.20	0.11		27	0.87	0.49	2	6/5/23 18:50	CMR
o-Xylene	1.7	0.10	0.051		7.5	0.43	0.22	2	6/5/23 18:50	CMR

Surrogates	% Recovery	% REC Limits		
4-Bromofluorobenzene (1)	92.6	70-130		6/5/23 18:50

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-2
Sample ID: 23F0203-02
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:33

Sample Description/Location:
Sub Description/Location:
Canister ID: 2478
Canister Size: 6 liter
Flow Controller ID: 5080
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): >-30
Final Vacuum(in Hg): -4.25
Receipt Vacuum(in Hg): -4.9
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Acetone	350	4.0	2.4	E	840	9.5	5.7	2	6/5/23 18:08	CMR
Benzene	5.6	0.10	0.076		18	0.32	0.24	2	6/5/23 18:08	CMR
Benzyl chloride	ND	0.10	0.088		ND	0.52	0.46	2	6/5/23 18:08	CMR
Bromodichloromethane	4.5	0.10	0.070		30	0.67	0.47	2	6/5/23 18:08	CMR
Bromoform	ND	0.10	0.068		ND	1.0	0.70	2	6/5/23 18:08	CMR
Bromomethane	ND	0.10	0.067		ND	0.39	0.26	2	6/5/23 18:08	CMR
1,3-Butadiene	ND	0.10	0.084		ND	0.22	0.19	2	6/5/23 18:08	CMR
2-Butanone (MEK)	71	4.0	1.1		210	12	3.1	2	6/5/23 18:08	CMR
Carbon Disulfide	51	1.0	0.092		160	3.1	0.29	2	6/5/23 18:08	CMR
Carbon Tetrachloride	0.090	0.10	0.080	J	0.57	0.63	0.50	2	6/5/23 18:08	CMR
Chlorobenzene	ND	0.10	0.066		ND	0.46	0.31	2	6/5/23 18:08	CMR
Chloroethane	0.67	0.10	0.089		1.8	0.26	0.23	2	6/5/23 18:08	CMR
Chloroform	22	0.10	0.095		110	0.49	0.46	2	6/5/23 18:08	CMR
Chloromethane	0.74	0.20	0.079		1.5	0.41	0.16	2	6/5/23 18:08	CMR
Cyclohexane	9.8	0.10	0.060		34	0.34	0.21	2	6/5/23 18:08	CMR
Dibromochloromethane	0.66	0.10	0.066		5.6	0.85	0.56	2	6/5/23 18:08	CMR
1,2-Dibromoethane (EDB)	ND	0.10	0.060		ND	0.77	0.46	2	6/5/23 18:08	CMR
1,2-Dichlorobenzene	ND	0.10	0.057		ND	0.60	0.35	2	6/5/23 18:08	CMR
1,3-Dichlorobenzene	ND	0.10	0.055		ND	0.60	0.33	2	6/5/23 18:08	CMR
1,4-Dichlorobenzene	ND	0.10	0.065		ND	0.60	0.39	2	6/5/23 18:08	CMR
Dichlorodifluoromethane (Freon 12)	0.37	0.10	0.098		1.8	0.49	0.48	2	6/5/23 18:08	CMR
1,1-Dichloroethane	0.20	0.10	0.087		0.82	0.40	0.35	2	6/5/23 18:08	CMR
1,2-Dichloroethane	0.10	0.10	0.091		0.41	0.40	0.37	2	6/5/23 18:08	CMR
1,1-Dichloroethylene	ND	0.10	0.076		ND	0.40	0.30	2	6/5/23 18:08	CMR
cis-1,2-Dichloroethylene	0.72	0.10	0.073		2.9	0.40	0.29	2	6/5/23 18:08	CMR
trans-1,2-Dichloroethylene	ND	0.10	0.079		ND	0.40	0.31	2	6/5/23 18:08	CMR
1,2-Dichloropropane	ND	0.10	0.054		ND	0.46	0.25	2	6/5/23 18:08	CMR
cis-1,3-Dichloropropene	ND	0.10	0.052		ND	0.45	0.24	2	6/5/23 18:08	CMR
trans-1,3-Dichloropropene	ND	0.10	0.051		ND	0.45	0.23	2	6/5/23 18:08	CMR
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.10	0.098		ND	0.70	0.69	2	6/5/23 18:08	CMR
1,4-Dioxane	ND	1.0	0.083		ND	3.6	0.30	2	6/5/23 18:08	CMR
Ethanol	28	4.0	1.8		54	7.5	3.3	2	6/5/23 18:08	CMR
Ethyl Acetate	23	1.0	0.51		83	3.6	1.8	2	6/5/23 18:08	CMR
Ethylbenzene	3.3	0.10	0.058		14	0.43	0.25	2	6/5/23 18:08	CMR
4-Ethyltoluene	0.33	0.10	0.061		1.6	0.49	0.30	2	6/5/23 18:08	CMR
Heptane	7.9	0.10	0.064		32	0.41	0.26	2	6/5/23 18:08	CMR
Hexachlorobutadiene	ND	0.10	0.082		ND	1.1	0.88	2	6/5/23 18:08	CMR
Hexane	26	4.0	0.52		90	14	1.8	2	6/5/23 18:08	CMR
2-Hexanone (MBK)	2.4	0.10	0.050	V-06	9.8	0.41	0.20	2	6/5/23 18:08	CMR
Isopropanol	31	4.0	0.69		76	9.8	1.7	2	6/5/23 18:08	CMR
Methyl tert-Butyl Ether (MTBE)	0.15	0.10	0.077		0.54	0.36	0.28	2	6/5/23 18:08	CMR
Methylene Chloride	ND	1.0	0.46		ND	3.5	1.6	2	6/5/23 18:08	CMR
4-Methyl-2-pentanone (MIBK)	2.1	0.10	0.053		8.5	0.41	0.22	2	6/5/23 18:08	CMR
Naphthalene	0.17	0.10	0.075	L-03	0.88	0.52	0.40	2	6/5/23 18:08	CMR
Propene	ND	4.0	0.88		ND	6.9	1.5	2	6/5/23 18:08	CMR
Styrene	0.45	0.10	0.053		1.9	0.43	0.22	2	6/5/23 18:08	CMR
1,1,2,2-Tetrachloroethane	ND	0.10	0.054		ND	0.69	0.37	2	6/5/23 18:08	CMR

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-2
Sample ID: 23F0203-02
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:33

Sample Description/Location:
Sub Description/Location:
Canister ID: 2478
Canister Size: 6 liter
Flow Controller ID: 5080
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): >-30
Final Vacuum(in Hg): -4.25
Receipt Vacuum(in Hg): -4.9
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Tetrachloroethylene	12	0.10	0.076		81	0.68	0.52	2	6/5/23 18:08	CMR
Tetrahydrofuran	11	1.0	0.16		33	2.9	0.48	2	6/5/23 18:08	CMR
Toluene	21	0.10	0.057		80	0.38	0.22	2	6/5/23 18:08	CMR
1,2,4-Trichlorobenzene	ND	0.10	0.093	L-03	ND	0.74	0.69	2	6/5/23 18:08	CMR
1,1,1-Trichloroethane	ND	0.10	0.079		ND	0.55	0.43	2	6/5/23 18:08	CMR
1,1,2-Trichloroethane	ND	0.10	0.070		ND	0.55	0.38	2	6/5/23 18:08	CMR
Trichloroethylene	1.2	0.10	0.067		6.4	0.54	0.36	2	6/5/23 18:08	CMR
Trichlorofluoromethane (Freon 11)	0.20	0.40	0.12	J	1.1	2.2	0.66	2	6/5/23 18:08	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.40	0.11		ND	3.1	0.85	2	6/5/23 18:08	CMR
1,2,4-Trimethylbenzene	1.0	0.10	0.044		5.1	0.49	0.22	2	6/5/23 18:08	CMR
1,3,5-Trimethylbenzene	0.32	0.10	0.053		1.6	0.49	0.26	2	6/5/23 18:08	CMR
Vinyl Acetate	20	2.0	0.54		70	7.0	1.9	2	6/5/23 18:08	CMR
Vinyl Chloride	0.15	0.10	0.090		0.38	0.26	0.23	2	6/5/23 18:08	CMR
m&p-Xylene	10	0.20	0.11		44	0.87	0.49	2	6/5/23 18:08	CMR
o-Xylene	2.8	0.10	0.051		12	0.43	0.22	2	6/5/23 18:08	CMR

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	91.8	70-130	6/5/23 18:08

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-2
Sample ID: 23F0203-03
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:33

Sample Description/Location:
Sub Description/Location:
Canister ID: 2135
Canister Size: 6 liter
Flow Controller ID: 5080
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): >-30
Final Vacuum(in Hg): -4.25
Receipt Vacuum(in Hg): -5.3
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Acetone	210	4.0	2.4	E	510	9.5	5.7	2	6/5/23 17:26	CMR
Benzene	3.2	0.10	0.076		10	0.32	0.24	2	6/5/23 17:26	CMR
Benzyl chloride	ND	0.10	0.088		ND	0.52	0.46	2	6/5/23 17:26	CMR
Bromodichloromethane	2.5	0.10	0.070		17	0.67	0.47	2	6/5/23 17:26	CMR
Bromoform	ND	0.10	0.068		ND	1.0	0.70	2	6/5/23 17:26	CMR
Bromomethane	ND	0.10	0.067		ND	0.39	0.26	2	6/5/23 17:26	CMR
1,3-Butadiene	ND	0.10	0.084		ND	0.22	0.19	2	6/5/23 17:26	CMR
2-Butanone (MEK)	42	4.0	1.1		130	12	3.1	2	6/5/23 17:26	CMR
Carbon Disulfide	29	1.0	0.092		90	3.1	0.29	2	6/5/23 17:26	CMR
Carbon Tetrachloride	0.080	0.10	0.080	J	0.50	0.63	0.50	2	6/5/23 17:26	CMR
Chlorobenzene	ND	0.10	0.066		ND	0.46	0.31	2	6/5/23 17:26	CMR
Chloroethane	0.38	0.10	0.089		1.00	0.26	0.23	2	6/5/23 17:26	CMR
Chloroform	12	0.10	0.095		59	0.49	0.46	2	6/5/23 17:26	CMR
Chloromethane	0.61	0.20	0.079		1.3	0.41	0.16	2	6/5/23 17:26	CMR
Cyclohexane	5.3	0.10	0.060		18	0.34	0.21	2	6/5/23 17:26	CMR
Dibromochloromethane	0.39	0.10	0.066		3.3	0.85	0.56	2	6/5/23 17:26	CMR
1,2-Dibromoethane (EDB)	ND	0.10	0.060		ND	0.77	0.46	2	6/5/23 17:26	CMR
1,2-Dichlorobenzene	ND	0.10	0.057		ND	0.60	0.35	2	6/5/23 17:26	CMR
1,3-Dichlorobenzene	ND	0.10	0.055		ND	0.60	0.33	2	6/5/23 17:26	CMR
1,4-Dichlorobenzene	ND	0.10	0.065		ND	0.60	0.39	2	6/5/23 17:26	CMR
Dichlorodifluoromethane (Freon 12)	0.32	0.10	0.098		1.6	0.49	0.48	2	6/5/23 17:26	CMR
1,1-Dichloroethane	0.12	0.10	0.087		0.49	0.40	0.35	2	6/5/23 17:26	CMR
1,2-Dichloroethane	ND	0.10	0.091		ND	0.40	0.37	2	6/5/23 17:26	CMR
1,1-Dichloroethylene	ND	0.10	0.076		ND	0.40	0.30	2	6/5/23 17:26	CMR
cis-1,2-Dichloroethylene	ND	0.10	0.073		ND	0.40	0.29	2	6/5/23 17:26	CMR
trans-1,2-Dichloroethylene	ND	0.10	0.079		ND	0.40	0.31	2	6/5/23 17:26	CMR
1,2-Dichloropropane	ND	0.10	0.054		ND	0.46	0.25	2	6/5/23 17:26	CMR
cis-1,3-Dichloropropene	ND	0.10	0.052		ND	0.45	0.24	2	6/5/23 17:26	CMR
trans-1,3-Dichloropropene	ND	0.10	0.051		ND	0.45	0.23	2	6/5/23 17:26	CMR
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.10	0.098		ND	0.70	0.69	2	6/5/23 17:26	CMR
1,4-Dioxane	ND	1.0	0.083		ND	3.6	0.30	2	6/5/23 17:26	CMR
Ethanol	17	4.0	1.8		32	7.5	3.3	2	6/5/23 17:26	CMR
Ethyl Acetate	13	1.0	0.51		47	3.6	1.8	2	6/5/23 17:26	CMR
Ethylbenzene	1.9	0.10	0.058		8.1	0.43	0.25	2	6/5/23 17:26	CMR
4-Ethyltoluene	0.19	0.10	0.061		0.94	0.49	0.30	2	6/5/23 17:26	CMR
Heptane	4.3	0.10	0.064		18	0.41	0.26	2	6/5/23 17:26	CMR
Hexachlorobutadiene	ND	0.10	0.082		ND	1.1	0.88	2	6/5/23 17:26	CMR
Hexane	15	4.0	0.52		52	14	1.8	2	6/5/23 17:26	CMR
2-Hexanone (MBK)	ND	0.10	0.050		ND	0.41	0.20	2	6/5/23 17:26	CMR
Isopropanol	18	4.0	0.69		43	9.8	1.7	2	6/5/23 17:26	CMR
Methyl tert-Butyl Ether (MTBE)	0.080	0.10	0.077	J	0.29	0.36	0.28	2	6/5/23 17:26	CMR
Methylene Chloride	ND	1.0	0.46		ND	3.5	1.6	2	6/5/23 17:26	CMR
4-Methyl-2-pentanone (MIBK)	1.1	0.10	0.053		4.6	0.41	0.22	2	6/5/23 17:26	CMR
Naphthalene	0.098	0.10	0.075	L-03, J	0.51	0.52	0.40	2	6/5/23 17:26	CMR
Propene	ND	4.0	0.88		ND	6.9	1.5	2	6/5/23 17:26	CMR
Styrene	0.26	0.10	0.053		1.1	0.43	0.22	2	6/5/23 17:26	CMR
1,1,2,2-Tetrachloroethane	ND	0.10	0.054		ND	0.69	0.37	2	6/5/23 17:26	CMR

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-2
Sample ID: 23F0203-03
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:33

Sample Description/Location:
Sub Description/Location:
Canister ID: 2135
Canister Size: 6 liter
Flow Controller ID: 5080
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): >-30
Final Vacuum(in Hg): -4.25
Receipt Vacuum(in Hg): -5.3
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

Analyte	ppbv Results	ppbv RL	ppbv MDL	Flag/Qual	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Dilution	Date/Time Analyzed	Analyst
Tetrachloroethylene	6.4	0.10	0.076		43	0.68	0.52	2	6/5/23 17:26	CMR
Tetrahydrofuran	6.1	1.0	0.16		18	2.9	0.48	2	6/5/23 17:26	CMR
Toluene	12	0.10	0.057		46	0.38	0.22	2	6/5/23 17:26	CMR
1,2,4-Trichlorobenzene	ND	0.10	0.093	L-03	ND	0.74	0.69	2	6/5/23 17:26	CMR
1,1,1-Trichloroethane	ND	0.10	0.079		ND	0.55	0.43	2	6/5/23 17:26	CMR
1,1,2-Trichloroethane	ND	0.10	0.070		ND	0.55	0.38	2	6/5/23 17:26	CMR
Trichloroethylene	0.47	0.10	0.067		2.5	0.54	0.36	2	6/5/23 17:26	CMR
Trichlorofluoromethane (Freon 11)	0.20	0.40	0.12	J	1.1	2.2	0.66	2	6/5/23 17:26	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.40	0.11		ND	3.1	0.85	2	6/5/23 17:26	CMR
1,2,4-Trimethylbenzene	0.63	0.10	0.044		3.1	0.49	0.22	2	6/5/23 17:26	CMR
1,3,5-Trimethylbenzene	0.20	0.10	0.053		0.98	0.49	0.26	2	6/5/23 17:26	CMR
Vinyl Acetate	11	2.0	0.54		39	7.0	1.9	2	6/5/23 17:26	CMR
Vinyl Chloride	ND	0.10	0.090		ND	0.26	0.23	2	6/5/23 17:26	CMR
m&p-Xylene	6.0	0.20	0.11		26	0.87	0.49	2	6/5/23 17:26	CMR
o-Xylene	1.6	0.10	0.051		6.9	0.43	0.22	2	6/5/23 17:26	CMR

Surrogates	% Recovery	% REC Limits		
4-Bromofluorobenzene (1)	91.7	70-130		6/5/23 17:26

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-3
Sample ID: 23F0203-04
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:58

Sample Description/Location:
Sub Description/Location:
Canister ID: 1161
Canister Size: 6 liter
Flow Controller ID: 3267
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): -30
Final Vacuum(in Hg): -8.25
Receipt Vacuum(in Hg): -6.8
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Acetone	37	4.0	2.4		88	9.5	5.7	2	6/5/23 16:44	CMR
Benzene	1.0	0.10	0.076		3.3	0.32	0.24	2	6/5/23 16:44	CMR
Benzyl chloride	ND	0.10	0.088		ND	0.52	0.46	2	6/5/23 16:44	CMR
Bromodichloromethane	0.36	0.10	0.070		2.4	0.67	0.47	2	6/5/23 16:44	CMR
Bromoform	ND	0.10	0.068		ND	1.0	0.70	2	6/5/23 16:44	CMR
Bromomethane	ND	0.10	0.067		ND	0.39	0.26	2	6/5/23 16:44	CMR
1,3-Butadiene	ND	0.10	0.084		ND	0.22	0.19	2	6/5/23 16:44	CMR
2-Butanone (MEK)	90	4.0	1.1		270	12	3.1	2	6/5/23 16:44	CMR
Carbon Disulfide	4.2	1.0	0.092		13	3.1	0.29	2	6/5/23 16:44	CMR
Carbon Tetrachloride	ND	0.10	0.080		ND	0.63	0.50	2	6/5/23 16:44	CMR
Chlorobenzene	0.10	0.10	0.066		0.46	0.46	0.31	2	6/5/23 16:44	CMR
Chloroethane	0.094	0.10	0.089	J	0.25	0.26	0.23	2	6/5/23 16:44	CMR
Chloroform	3.0	0.10	0.095		15	0.49	0.46	2	6/5/23 16:44	CMR
Chloromethane	0.50	0.20	0.079		1.0	0.41	0.16	2	6/5/23 16:44	CMR
Cyclohexane	4.7	0.10	0.060		16	0.34	0.21	2	6/5/23 16:44	CMR
Dibromochloromethane	ND	0.10	0.066		ND	0.85	0.56	2	6/5/23 16:44	CMR
1,2-Dibromoethane (EDB)	ND	0.10	0.060		ND	0.77	0.46	2	6/5/23 16:44	CMR
1,2-Dichlorobenzene	ND	0.10	0.057		ND	0.60	0.35	2	6/5/23 16:44	CMR
1,3-Dichlorobenzene	ND	0.10	0.055		ND	0.60	0.33	2	6/5/23 16:44	CMR
1,4-Dichlorobenzene	ND	0.10	0.065		ND	0.60	0.39	2	6/5/23 16:44	CMR
Dichlorodifluoromethane (Freon 12)	0.35	0.10	0.098		1.7	0.49	0.48	2	6/5/23 16:44	CMR
1,1-Dichloroethane	ND	0.10	0.087		ND	0.40	0.35	2	6/5/23 16:44	CMR
1,2-Dichloroethane	ND	0.10	0.091		ND	0.40	0.37	2	6/5/23 16:44	CMR
1,1-Dichloroethylene	ND	0.10	0.076		ND	0.40	0.30	2	6/5/23 16:44	CMR
cis-1,2-Dichloroethylene	ND	0.10	0.073		ND	0.40	0.29	2	6/5/23 16:44	CMR
trans-1,2-Dichloroethylene	ND	0.10	0.079		ND	0.40	0.31	2	6/5/23 16:44	CMR
1,2-Dichloropropane	ND	0.10	0.054		ND	0.46	0.25	2	6/5/23 16:44	CMR
cis-1,3-Dichloropropene	ND	0.10	0.052		ND	0.45	0.24	2	6/5/23 16:44	CMR
trans-1,3-Dichloropropene	ND	0.10	0.051		ND	0.45	0.23	2	6/5/23 16:44	CMR
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.10	0.098		ND	0.70	0.69	2	6/5/23 16:44	CMR
1,4-Dioxane	ND	1.0	0.083		ND	3.6	0.30	2	6/5/23 16:44	CMR
Ethanol	26	4.0	1.8		50	7.5	3.3	2	6/5/23 16:44	CMR
Ethyl Acetate	1.4	1.0	0.51		5.0	3.6	1.8	2	6/5/23 16:44	CMR
Ethylbenzene	0.26	0.10	0.058		1.1	0.43	0.25	2	6/5/23 16:44	CMR
4-Ethyltoluene	0.088	0.10	0.061	J	0.43	0.49	0.30	2	6/5/23 16:44	CMR
Heptane	0.64	0.10	0.064		2.6	0.41	0.26	2	6/5/23 16:44	CMR
Hexachlorobutadiene	ND	0.10	0.082		ND	1.1	0.88	2	6/5/23 16:44	CMR
Hexane	3.7	4.0	0.52	J	13	14	1.8	2	6/5/23 16:44	CMR
2-Hexanone (MBK)	0.28	0.10	0.050	V-06	1.1	0.41	0.20	2	6/5/23 16:44	CMR
Isopropanol	4.5	4.0	0.69		11	9.8	1.7	2	6/5/23 16:44	CMR
Methyl tert-Butyl Ether (MTBE)	ND	0.10	0.077		ND	0.36	0.28	2	6/5/23 16:44	CMR
Methylene Chloride	ND	1.0	0.46		ND	3.5	1.6	2	6/5/23 16:44	CMR
4-Methyl-2-pentanone (MIBK)	ND	0.10	0.053		ND	0.41	0.22	2	6/5/23 16:44	CMR
Naphthalene	0.20	0.10	0.075	L-03	1.0	0.52	0.40	2	6/5/23 16:44	CMR
Propene	22	4.0	0.88		38	6.9	1.5	2	6/5/23 16:44	CMR
Styrene	0.27	0.10	0.053		1.1	0.43	0.22	2	6/5/23 16:44	CMR
1,1,2,2-Tetrachloroethane	ND	0.10	0.054		ND	0.69	0.37	2	6/5/23 16:44	CMR

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: SV-3
Sample ID: 23F0203-04
Sample Matrix: Soil Gas
Sampled: 5/26/2023 16:58

Sample Description/Location:
Sub Description/Location:
Canister ID: 1161
Canister Size: 6 liter
Flow Controller ID: 3267
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): -30
Final Vacuum(in Hg): -8.25
Receipt Vacuum(in Hg): -6.8
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Tetrachloroethylene	0.61	0.10	0.076		4.1	0.68	0.52	2	6/5/23 16:44	CMR
Tetrahydrofuran	18	1.0	0.16		53	2.9	0.48	2	6/5/23 16:44	CMR
Toluene	1.4	0.10	0.057		5.1	0.38	0.22	2	6/5/23 16:44	CMR
1,2,4-Trichlorobenzene	ND	0.10	0.093	L-03	ND	0.74	0.69	2	6/5/23 16:44	CMR
1,1,1-Trichloroethane	ND	0.10	0.079		ND	0.55	0.43	2	6/5/23 16:44	CMR
1,1,2-Trichloroethane	ND	0.10	0.070		ND	0.55	0.38	2	6/5/23 16:44	CMR
Trichloroethylene	0.72	0.10	0.067		3.8	0.54	0.36	2	6/5/23 16:44	CMR
Trichlorofluoromethane (Freon 11)	0.32	0.40	0.12	J	1.8	2.2	0.66	2	6/5/23 16:44	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.40	0.11		ND	3.1	0.85	2	6/5/23 16:44	CMR
1,2,4-Trimethylbenzene	0.56	0.10	0.044		2.8	0.49	0.22	2	6/5/23 16:44	CMR
1,3,5-Trimethylbenzene	0.092	0.10	0.053	J	0.45	0.49	0.26	2	6/5/23 16:44	CMR
Vinyl Acetate	ND	2.0	0.54		ND	7.0	1.9	2	6/5/23 16:44	CMR
Vinyl Chloride	ND	0.10	0.090		ND	0.26	0.23	2	6/5/23 16:44	CMR
m&p-Xylene	0.85	0.20	0.11		3.7	0.87	0.49	2	6/5/23 16:44	CMR
o-Xylene	0.34	0.10	0.051		1.5	0.43	0.22	2	6/5/23 16:44	CMR

Surrogates	% Recovery	% REC Limits		
4-Bromofluorobenzene (1)	92.8	70-130		6/5/23 16:44

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: AA-1
Sample ID: 23F0203-05
Sample Matrix: Ambient Air
Sampled: 5/26/2023 16:45

Sample Description/Location:
Sub Description/Location:
Canister ID: 2061
Canister Size: 6 liter
Flow Controller ID: 3042
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): -30
Final Vacuum(in Hg): -4.75
Receipt Vacuum(in Hg): -6.3
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	Results	RL	MDL	Flag/Qual	Results	RL	MDL	Dilution	Analyzed	Analyst
Acetone	1.9	1.4	0.85		4.4	3.3	2.0	0.702	6/5/23 16:02	CMR
Benzene	0.037	0.035	0.027		0.12	0.11	0.085	0.702	6/5/23 16:02	CMR
Benzyl chloride	ND	0.035	0.031		ND	0.18	0.16	0.702	6/5/23 16:02	CMR
Bromodichloromethane	ND	0.035	0.025		ND	0.24	0.16	0.702	6/5/23 16:02	CMR
Bromoform	ND	0.035	0.024		ND	0.36	0.25	0.702	6/5/23 16:02	CMR
Bromomethane	ND	0.035	0.023		ND	0.14	0.091	0.702	6/5/23 16:02	CMR
1,3-Butadiene	ND	0.035	0.029		ND	0.078	0.065	0.702	6/5/23 16:02	CMR
2-Butanone (MEK)	ND	1.4	0.37		ND	4.1	1.1	0.702	6/5/23 16:02	CMR
Carbon Disulfide	ND	0.35	0.032		ND	1.1	0.10	0.702	6/5/23 16:02	CMR
Carbon Tetrachloride	0.048	0.035	0.028		0.30	0.22	0.18	0.702	6/5/23 16:02	CMR
Chlorobenzene	ND	0.035	0.023		ND	0.16	0.11	0.702	6/5/23 16:02	CMR
Chloroethane	ND	0.035	0.031		ND	0.093	0.082	0.702	6/5/23 16:02	CMR
Chloroform	ND	0.035	0.033		ND	0.17	0.16	0.702	6/5/23 16:02	CMR
Chloromethane	0.40	0.070	0.028		0.83	0.14	0.058	0.702	6/5/23 16:02	CMR
Cyclohexane	ND	0.035	0.021		ND	0.12	0.073	0.702	6/5/23 16:02	CMR
Dibromochloromethane	ND	0.035	0.023		ND	0.30	0.20	0.702	6/5/23 16:02	CMR
1,2-Dibromoethane (EDB)	ND	0.035	0.021		ND	0.27	0.16	0.702	6/5/23 16:02	CMR
1,2-Dichlorobenzene	ND	0.035	0.020		ND	0.21	0.12	0.702	6/5/23 16:02	CMR
1,3-Dichlorobenzene	ND	0.035	0.019		ND	0.21	0.12	0.702	6/5/23 16:02	CMR
1,4-Dichlorobenzene	ND	0.035	0.023		ND	0.21	0.14	0.702	6/5/23 16:02	CMR
Dichlorodifluoromethane (Freon 12)	0.20	0.035	0.034		0.99	0.17	0.17	0.702	6/5/23 16:02	CMR
1,1-Dichloroethane	ND	0.035	0.031		ND	0.14	0.12	0.702	6/5/23 16:02	CMR
1,2-Dichloroethane	ND	0.035	0.032		ND	0.14	0.13	0.702	6/5/23 16:02	CMR
1,1-Dichloroethylene	ND	0.035	0.027		ND	0.14	0.11	0.702	6/5/23 16:02	CMR
cis-1,2-Dichloroethylene	ND	0.035	0.026		ND	0.14	0.10	0.702	6/5/23 16:02	CMR
trans-1,2-Dichloroethylene	ND	0.035	0.028		ND	0.14	0.11	0.702	6/5/23 16:02	CMR
1,2-Dichloropropane	ND	0.035	0.019		ND	0.16	0.088	0.702	6/5/23 16:02	CMR
cis-1,3-Dichloropropene	ND	0.035	0.018		ND	0.16	0.082	0.702	6/5/23 16:02	CMR
trans-1,3-Dichloropropene	ND	0.035	0.018		ND	0.16	0.082	0.702	6/5/23 16:02	CMR
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.035	0.035		ND	0.25	0.24	0.702	6/5/23 16:02	CMR
1,4-Dioxane	ND	0.35	0.029		ND	1.3	0.10	0.702	6/5/23 16:02	CMR
Ethanol	1.5	1.4	0.62		2.8	2.6	1.2	0.702	6/5/23 16:02	CMR
Ethyl Acetate	ND	0.35	0.18		ND	1.3	0.64	0.702	6/5/23 16:02	CMR
Ethylbenzene	ND	0.035	0.020		ND	0.15	0.089	0.702	6/5/23 16:02	CMR
4-Ethyltoluene	ND	0.035	0.022		ND	0.17	0.11	0.702	6/5/23 16:02	CMR
Heptane	ND	0.035	0.022		ND	0.14	0.092	0.702	6/5/23 16:02	CMR
Hexachlorobutadiene	ND	0.035	0.029		ND	0.37	0.31	0.702	6/5/23 16:02	CMR
Hexane	ND	1.4	0.18		ND	4.9	0.64	0.702	6/5/23 16:02	CMR
2-Hexanone (MBK)	ND	0.035	0.018		ND	0.14	0.072	0.702	6/5/23 16:02	CMR
Isopropanol	ND	1.4	0.24		ND	3.4	0.60	0.702	6/5/23 16:02	CMR
Methyl tert-Butyl Ether (MTBE)	ND	0.035	0.027		ND	0.13	0.098	0.702	6/5/23 16:02	CMR
Methylene Chloride	ND	0.35	0.16		ND	1.2	0.57	0.702	6/5/23 16:02	CMR
4-Methyl-2-pentanone (MIBK)	ND	0.035	0.019		ND	0.14	0.077	0.702	6/5/23 16:02	CMR
Naphthalene	ND	0.035	0.026	L-03	ND	0.18	0.14	0.702	6/5/23 16:02	CMR
Propene	ND	1.4	0.31		ND	2.4	0.53	0.702	6/5/23 16:02	CMR
Styrene	ND	0.035	0.018		ND	0.15	0.079	0.702	6/5/23 16:02	CMR
1,1,2,2-Tetrachloroethane	ND	0.035	0.019		ND	0.24	0.13	0.702	6/5/23 16:02	CMR

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ANALYTICAL RESULTS

Project Location:
Date Received: 6/1/2023
Field Sample #: AA-1
Sample ID: 23F0203-05
Sample Matrix: Ambient Air
Sampled: 5/26/2023 16:45

Sample Description/Location:
Sub Description/Location:
Canister ID: 2061
Canister Size: 6 liter
Flow Controller ID: 3042
Sample Type: 8 hr

Work Order: 23F0203
Initial Vacuum(in Hg): -30
Final Vacuum(in Hg): -4.75
Receipt Vacuum(in Hg): -6.3
Flow Controller Type: Fixed-Orifice
Flow Controller Calibration
RPD Pre and Post-Sampling:

EPA TO-15

	ppbv				ug/m3				Date/Time	
Analyte	**Results**	**RL**	**MDL**	**Flag/Qual**	**Results**	**RL**	**MDL**	**Dilution**	**Analyzed**	**Analyst**
Tetrachloroethylene	ND	0.035	0.027		ND	0.24	0.18	0.702	6/5/23 16:02	CMR
Tetrahydrofuran	ND	0.35	0.058		ND	1.0	0.17	0.702	6/5/23 16:02	CMR
Toluene	0.058	0.035	0.020		0.22	0.13	0.076	0.702	6/5/23 16:02	CMR
1,2,4-Trichlorobenzene	ND	0.035	0.033	L-03	ND	0.26	0.24	0.702	6/5/23 16:02	CMR
1,1,1-Trichloroethane	ND	0.035	0.028		ND	0.19	0.15	0.702	6/5/23 16:02	CMR
1,1,2-Trichloroethane	ND	0.035	0.025		ND	0.19	0.13	0.702	6/5/23 16:02	CMR
Trichloroethylene	ND	0.035	0.024		ND	0.19	0.13	0.702	6/5/23 16:02	CMR
Trichlorofluoromethane (Freon 11)	0.14	0.14	0.041	J	0.76	0.79	0.23	0.702	6/5/23 16:02	CMR
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.040	0.14	0.039	J	0.31	1.1	0.30	0.702	6/5/23 16:02	CMR
1,2,4-Trimethylbenzene	ND	0.035	0.016		ND	0.17	0.076	0.702	6/5/23 16:02	CMR
1,3,5-Trimethylbenzene	ND	0.035	0.019		ND	0.17	0.091	0.702	6/5/23 16:02	CMR
Vinyl Acetate	ND	0.70	0.19		ND	2.5	0.66	0.702	6/5/23 16:02	CMR
Vinyl Chloride	ND	0.035	0.032		ND	0.090	0.081	0.702	6/5/23 16:02	CMR
m&p-Xylene	ND	0.070	0.039		ND	0.30	0.17	0.702	6/5/23 16:02	CMR
o-Xylene	ND	0.035	0.018		ND	0.15	0.078	0.702	6/5/23 16:02	CMR

Surrogates	% Recovery	% REC Limits	
4-Bromofluorobenzene (1)	94.4	70-130	6/5/23 16:02

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Sample Extraction Data

Prep Method: TO-15 Prep-EPA TO-15

Lab Number [Field ID]	Batch	Pressure Dilution	Pre Dilution	Pre-Dil Initial mL	Pre-Dil Final mL	Default Injection mL	Actual Injection mL	Date
23F0203-01 [SV-1]	B342428	1.5	1	N/A	1000	400	300	06/05/23
23F0203-02 [SV-2]	B342428	1.5	1	N/A	1000	400	300	06/05/23
23F0203-03 [SV-2]	B342428	1.5	1	N/A	1000	400	300	06/05/23
23F0203-04 [SV-3]	B342428	1.5	1	N/A	1000	400	300	06/05/23
23F0203-05 [AA-1]	B342428	1.5	1	N/A	1000	400	855	06/05/23

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B342428 - TO-15 Prep											
Blank (B342428-BLK1)					Prepared & Analyzed: 06/05/23						
Acetone	ND	1.4									
Benzene	ND	0.035									
Benzyl chloride	ND	0.035									
Bromodichloromethane	ND	0.035									
Bromoform	ND	0.035									
Bromomethane	ND	0.035									
1,3-Butadiene	ND	0.035									
2-Butanone (MEK)	ND	1.4									
Carbon Disulfide	ND	0.35									
Carbon Tetrachloride	ND	0.035									
Chlorobenzene	ND	0.035									
Chloroethane	ND	0.035									
Chloroform	ND	0.035									
Chloromethane	ND	0.070									
Cyclohexane	ND	0.035									
Dibromochloromethane	ND	0.035									
1,2-Dibromoethane (EDB)	ND	0.035									
1,2-Dichlorobenzene	ND	0.035									
1,3-Dichlorobenzene	ND	0.035									
1,4-Dichlorobenzene	ND	0.035									
Dichlorodifluoromethane (Freon 12)	ND	0.035									
1,1-Dichloroethane	ND	0.035									
1,2-Dichloroethane	ND	0.035									
1,1-Dichloroethylene	ND	0.035									
cis-1,2-Dichloroethylene	ND	0.035									
trans-1,2-Dichloroethylene	ND	0.035									
1,2-Dichloropropane	ND	0.035									
cis-1,3-Dichloropropene	ND	0.035									
trans-1,3-Dichloropropene	ND	0.035									
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.035									
1,4-Dioxane	ND	0.35									
Ethanol	ND	1.4									
Ethyl Acetate	ND	0.35									
Ethylbenzene	ND	0.035									
4-Ethyltoluene	ND	0.035									
Heptane	ND	0.035									
Hexachlorobutadiene	ND	0.035									
Hexane	ND	1.4									
2-Hexanone (MBK)	ND	0.035									
Isopropanol	ND	1.4									
Methyl tert-Butyl Ether (MTBE)	ND	0.035									
Methylene Chloride	ND	0.35									
4-Methyl-2-pentanone (MIBK)	ND	0.035									
Naphthalene	ND	0.035									L-03
Propene	ND	1.4									
Styrene	ND	0.035									

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B342428 - TO-15 Prep											
Blank (B342428-BLK1)					Prepared & Analyzed: 06/05/23						
1,1,2,2-Tetrachloroethane	ND	0.035									
Tetrachloroethylene	ND	0.035									
Tetrahydrofuran	ND	0.35									
Toluene	ND	0.035									
1,2,4-Trichlorobenzene	ND	0.035									L-03
1,1,1-Trichloroethane	ND	0.035									
1,1,2-Trichloroethane	ND	0.035									
Trichloroethylene	ND	0.035									
Trichlorofluoromethane (Freon 11)	ND	0.14									
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.14									
1,2,4-Trimethylbenzene	ND	0.035									
1,3,5-Trimethylbenzene	ND	0.035									
Vinyl Acetate	ND	0.70									
Vinyl Chloride	ND	0.035									
m&p-Xylene	ND	0.070									
o-Xylene	ND	0.035									
Surrogate: 4-Bromofluorobenzene (1)	*7.37*				*8.00*		*92.1*	*70-130*			
LCS (B342428-BS1)					Prepared & Analyzed: 06/05/23						
Acetone	4.87				5.00		97.4	70-130			
Benzene	5.37				5.00		107	70-130			
Benzyl chloride	4.94				5.00		98.9	70-130			
Bromodichloromethane	5.05				5.00		101	70-130			
Bromoform	4.37				5.00		87.4	70-130			
Bromomethane	4.49				5.00		89.8	70-130			
1,3-Butadiene	4.77				5.00		95.4	70-130			
2-Butanone (MEK)	4.49				5.00		89.9	70-130			
Carbon Disulfide	5.04				5.00		101	70-130			
Carbon Tetrachloride	4.78				5.00		95.7	70-130			
Chlorobenzene	4.44				5.00		88.9	70-130			
Chloroethane	5.08				5.00		102	70-130			
Chloroform	4.68				5.00		93.6	70-130			
Chloromethane	4.78				5.00		95.6	70-130			
Cyclohexane	5.54				5.00		111	70-130			
Dibromochloromethane	4.35				5.00		87.1	70-130			
1,2-Dibromoethane (EDB)	4.53				5.00		90.5	70-130			
1,2-Dichlorobenzene	3.53				5.00		70.6	70-130			
1,3-Dichlorobenzene	3.87				5.00		77.4	70-130			
1,4-Dichlorobenzene	3.73				5.00		74.5	70-130			
Dichlorodifluoromethane (Freon 12)	5.23				5.00		105	70-130			
1,1-Dichloroethane	4.66				5.00		93.2	70-130			
1,2-Dichloroethane	4.70				5.00		94.0	70-130			
1,1-Dichloroethylene	4.73				5.00		94.6	70-130			
cis-1,2-Dichloroethylene	4.64				5.00		92.8	70-130			
trans-1,2-Dichloroethylene	4.76				5.00		95.2	70-130			
1,2-Dichloropropane	5.19				5.00		104	70-130			

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC		%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B342428 - TO-15 Prep												
LCS (B342428-BS1)					Prepared & Analyzed: 06/05/23							
cis-1,3-Dichloropropene	5.29				5.00		106		70-130			
trans-1,3-Dichloropropene	5.41				5.00		108		70-130			
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	4.40				5.00		88.0		70-130			
1,4-Dioxane	5.01				5.00		100		70-130			
Ethanol	4.45				5.00		89.0		70-130			
Ethyl Acetate	4.26				5.00		85.2		70-130			
Ethylbenzene	5.35				5.00		107		70-130			
4-Ethyltoluene	5.15				5.00		103		70-130			
Heptane	5.81				5.00		116		70-130			
Hexachlorobutadiene	3.02				4.25		71.0		70-130			
Hexane	4.59				5.00		91.8		70-130			
2-Hexanone (MBK)	5.20				5.00		104		70-130			V-06
Isopropanol	3.69				5.00		73.8		70-130			
Methyl tert-Butyl Ether (MTBE)	4.80				5.00		96.0		70-130			
Methylene Chloride	4.58				5.00		91.6		70-130			
4-Methyl-2-pentanone (MIBK)	5.41				5.00		108		70-130			
Naphthalene	2.48				3.68		**67.5**	*	70-130			L-03
Propene	4.40				5.00		87.9		70-130			
Styrene	4.99				5.00		99.8		70-130			
1,1,2,2-Tetrachloroethane	4.83				5.00		96.6		70-130			
Tetrachloroethylene	4.08				5.00		81.6		70-130			
Tetrahydrofuran	5.13				5.00		103		70-130			
Toluene	5.28				5.00		106		70-130			
1,2,4-Trichlorobenzene	2.56				3.90		**65.7**	*	70-130			L-03
1,1,1-Trichloroethane	4.78				5.00		95.6		70-130			
1,1,2-Trichloroethane	5.02				5.00		100		70-130			
Trichloroethylene	5.07				5.00		101		70-130			
Trichlorofluoromethane (Freon 11)	4.34				5.00		86.8		70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	4.15				5.00		83.0		70-130			
1,2,4-Trimethylbenzene	4.84				5.00		96.8		70-130			
1,3,5-Trimethylbenzene	4.98				5.00		99.5		70-130			
Vinyl Acetate	5.12				5.00		102		70-130			
Vinyl Chloride	4.95				5.00		98.9		70-130			
m&p-Xylene	11.2				10.0		112		70-130			
o-Xylene	5.53				5.00		111		70-130			
Surrogate: 4-Bromofluorobenzene (1)	*7.45*				*8.00*		*93.1*		*70-130*			

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QUALITY CONTROL

Air Toxics by EPA Compendium Methods - Quality Control

Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B342428 - TO-15 Prep											
Duplicate (B342428-DUP1)			**Source: 23F0203-01**		Prepared & Analyzed: 06/05/23						
Acetone	290	4.0	680	9.5		290			2.15	25	E
Benzene	2.7	0.10	8.7	0.32		2.6			3.21	25	
Benzyl chloride	ND	0.10	ND	0.52		ND				25	
Bromodichloromethane	2.2	0.10	15	0.67		2.2			3.53	25	
Bromoform	ND	0.10	ND	1.0		ND				25	
Bromomethane	ND	0.10	ND	0.39		ND				25	
1,3-Butadiene	ND	0.10	ND	0.22		ND				25	
2-Butanone (MEK)	59	4.0	180	12		59			0.428	25	
Carbon Disulfide	5.9	1.0	19	3.1		6.0			0.403	25	
Carbon Tetrachloride	0.084	0.10	0.53	0.63		ND				25	J
Chlorobenzene	0.12	0.10	0.57	0.46		ND				25	
Chloroethane	ND	0.10	ND	0.26		ND				25	
Chloroform	6.4	0.10	31	0.49		6.4			0.344	25	
Chloromethane	0.29	0.20	0.60	0.41		0.29			2.08	25	
Cyclohexane	1.0	0.10	3.6	0.34		1.1			0.570	25	
Dibromochloromethane	0.38	0.10	3.2	0.85		0.38			1.58	25	
1,2-Dibromoethane (EDB)	ND	0.10	ND	0.77		ND				25	
1,2-Dichlorobenzene	ND	0.10	ND	0.60		ND				25	
1,3-Dichlorobenzene	0.060	0.10	0.36	0.60		0.068			12.5	25	J
1,4-Dichlorobenzene	ND	0.10	ND	0.60		ND				25	
Dichlorodifluoromethane (Freon 12)	0.37	0.10	1.8	0.49		0.38			2.70	25	
1,1-Dichloroethane	ND	0.10	ND	0.40		ND				25	
1,2-Dichloroethane	ND	0.10	ND	0.40		ND				25	
1,1-Dichloroethylene	ND	0.10	ND	0.40		ND				25	
cis-1,2-Dichloroethylene	ND	0.10	ND	0.40		ND				25	
trans-1,2-Dichloroethylene	ND	0.10	ND	0.40		ND				25	
1,2-Dichloropropane	ND	0.10	ND	0.46		ND				25	
cis-1,3-Dichloropropene	ND	0.10	ND	0.45		ND				25	
trans-1,3-Dichloropropene	ND	0.10	ND	0.45		ND				25	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	ND	0.10	ND	0.70		ND				25	
1,4-Dioxane	ND	1.0	ND	3.6		ND				25	
Ethanol	49	4.0	93	7.5		49			0.309	25	
Ethyl Acetate	23	1.0	82	3.6		23			0.590	25	
Ethylbenzene	2.2	0.10	9.5	0.43		2.1			2.13	25	
4-Ethyltoluene	0.25	0.10	1.2	0.49		0.24			1.63	25	
Heptane	2.6	0.10	11	0.41		2.5			3.45	25	
Hexachlorobutadiene	ND	0.10	ND	1.1		ND				25	
Hexane	2.7	4.0	9.6	14		2.6			2.54	25	J
2-Hexanone (MBK)	0.97	0.10	4.0	0.41		0.95			1.46	25	V-06
Isopropanol	24	4.0	60	9.8		25			1.35	25	
Methyl tert-Butyl Ether (MTBE)	ND	0.10	ND	0.36		ND				25	
Methylene Chloride	ND	1.0	ND	3.5		ND				25	
4-Methyl-2-pentanone (MIBK)	5.1	0.10	21	0.41		4.9			3.90	25	
Naphthalene	0.19	0.10	0.97	0.52		0.18			2.17	25	
Propene	ND	4.0	ND	6.9		ND				25	
Styrene	0.41	0.10	1.7	0.43		0.41			0.00	25	

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Analyte	ppbv Results	ppbv RL	ug/m3 Results	ug/m3 RL	Spike Level ppbv	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag/Qual
Batch B342428 - TO-15 Prep											
Duplicate (B342428-DUP1)			**Source: 23F0203-01**		Prepared & Analyzed: 06/05/23						
1,1,2,2-Tetrachloroethane	ND	0.10	ND	0.69		ND				25	
Tetrachloroethylene	10	0.10	71	0.68		11			1.56	25	
Tetrahydrofuran	4.9	1.0	15	2.9		4.7			4.07	25	
Toluene	19	0.10	73	0.38		19			0.464	25	
1,2,4-Trichlorobenzene	ND	0.10	ND	0.74		ND				25	L-03
1,1,1-Trichloroethane	ND	0.10	ND	0.55		ND				25	
1,1,2-Trichloroethane	ND	0.10	ND	0.55		ND				25	
Trichloroethylene	0.81	0.10	4.3	0.54		0.80			1.25	25	
Trichlorofluoromethane (Freon 11)	0.21	0.40	1.2	2.2		0.21			0.948	25	J
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.40	ND	3.1		ND				25	
1,2,4-Trimethylbenzene	0.92	0.10	4.5	0.49		0.87			5.14	25	
1,3,5-Trimethylbenzene	0.28	0.10	1.4	0.49		0.27			2.88	25	
Vinyl Acetate	3.7	2.0	13	7.0		3.6			1.82	25	
Vinyl Chloride	ND	0.10	ND	0.26		ND				25	
m&p-Xylene	6.2	0.20	27	0.87		6.1			2.17	25	
o-Xylene	1.8	0.10	7.7	0.43		1.7			2.53	25	
Surrogate: 4-Bromofluorobenzene (1)	*7.58*				*8.00*		*94.8*	*70-130*			

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Note: Blank Subtraction is not performed unless otherwise noted

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
RL	Reporting Limit
MDL	Method Detection Limit
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
LCS Dup	Duplicate Laboratory Control Sample
MS	Matrix Spike Sample
MS Dup	Duplicate Matrix Spike Sample
REC	Recovery
QC	Quality Control
ppbv	Parts per billion volume
EPA	United States Environmental Protection Agency
% REC	Percent Recovery
ND	Not Detected
N/A	Not Applicable
DL	Detection Limit
NC	Not Calculated
LFB/LCS	Lab Fortified Blank/Lab Control Sample
ORP	Oxidation-Reduction Potential
wet	Not dry weight corrected
% wt	Percent weight
Kg	Kilogram
g	Gram
mg	Milligram
µg	Microgram
ng	Nanogram
L	Liter
mL	Milliliter
µL	Microliter
m3	Cubic Meter
EPH	Extractable Petroleum Hydrocarbons
VPH	Volatile Petroleum Hydrocarbons
APH	Air Petroleum Hydrocarbons
FID	Flame Ionization Detector
PID	Photo Ionization Detector
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
E	Reported result is estimated. Value reported over verified calibration range.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
L-03	Laboratory fortified blank/laboratory control sample recovery is outside of control limits. Reported value for this compound is likely to be biased on the low side.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

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ANALYST

STATION	Report Queue Station
KAM	Kyle A. Murray
KMC	Kristen M Couture
CMR	Catherine M. Rouleau

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INTERNAL STANDARD AREA AND RT SUMMARY

EPA TO-15

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Initial Cal Check (S087880-ICV1)			Lab File ID: G23A142005.D			Analyzed: 05/22/23 12:35			
Bromochloromethane (1)	1177814	8.294	1177814	8.294	100	60 - 140	0.0000	+/-0.50	
1,4-Difluorobenzene (1)	2526889	10.069	2526889	10.069	100	60 - 140	0.0000	+/-0.50	
Chlorobenzene-d5 (1)	2419599	14.434	2419599	14.434	100	60 - 140	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY

EPA TO-15

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Calibration Check (S088612-CCV1)			Lab File ID: G23A156004.D			Analyzed: 06/05/23 11:11			
Bromochloromethane (1)	1201963	8.288	1201963	8.288	100	60 - 140	0.0000	+/-0.50	
1,4-Difluorobenzene (1)	2219387	10.062	2219387	10.062	100	60 - 140	0.0000	+/-0.50	
Chlorobenzene-d5 (1)	2052929	14.434	2052929	14.434	100	60 - 140	0.0000	+/-0.50	
LCS (B342428-BS1)			Lab File ID: G23A156005.D			Analyzed: 06/05/23 11:51			
Bromochloromethane (1)	1193892	8.288	1201963	8.288	99	60 - 140	0.0000	+/-0.50	
1,4-Difluorobenzene (1)	2195249	10.062	2219387	10.062	99	60 - 140	0.0000	+/-0.50	
Chlorobenzene-d5 (1)	2040880	14.427	2052929	14.434	99	60 - 140	-0.0070	+/-0.50	
Blank (B342428-BLK1)			Lab File ID: G23A156010.D			Analyzed: 06/05/23 15:18			
Bromochloromethane (1)	1118609	8.301	1201963	8.288	93	60 - 140	0.0130	+/-0.50	
1,4-Difluorobenzene (1)	2015594	10.069	2219387	10.062	91	60 - 140	0.0070	+/-0.50	
Chlorobenzene-d5 (1)	1897068	14.434	2052929	14.434	92	60 - 140	0.0000	+/-0.50	
AA-1 (23F0203-05)			Lab File ID: G23A156011.D			Analyzed: 06/05/23 16:02			
Bromochloromethane (1)	1131746	8.295	1201963	8.288	94	60 - 140	0.0070	+/-0.50	
1,4-Difluorobenzene (1)	2059619	10.063	2219387	10.062	93	60 - 140	0.0010	+/-0.50	
Chlorobenzene-d5 (1)	1991134	14.428	2052929	14.434	97	60 - 140	-0.0060	+/-0.50	
SV-3 (23F0203-04)			Lab File ID: G23A156012.D			Analyzed: 06/05/23 16:44			
Bromochloromethane (1)	1198319	8.294	1201963	8.288	100	60 - 140	0.0060	+/-0.50	
1,4-Difluorobenzene (1)	2251499	10.062	2219387	10.062	101	60 - 140	0.0000	+/-0.50	
Chlorobenzene-d5 (1)	2122061	14.427	2052929	14.434	103	60 - 140	-0.0070	+/-0.50	
SV-2 (23F0203-03)			Lab File ID: G23A156013.D			Analyzed: 06/05/23 17:26			
Bromochloromethane (1)	1216989	8.294	1201963	8.288	101	60 - 140	0.0060	+/-0.50	
1,4-Difluorobenzene (1)	2263475	10.068	2219387	10.062	102	60 - 140	0.0060	+/-0.50	
Chlorobenzene-d5 (1)	2141333	14.427	2052929	14.434	104	60 - 140	-0.0070	+/-0.50	
SV-2 (23F0203-02)			Lab File ID: G23A156014.D			Analyzed: 06/05/23 18:08			
Bromochloromethane (1)	1187777	8.288	1201963	8.288	99	60 - 140	0.0000	+/-0.50	
1,4-Difluorobenzene (1)	2202068	10.062	2219387	10.062	99	60 - 140	0.0000	+/-0.50	
Chlorobenzene-d5 (1)	2059503	14.427	2052929	14.434	100	60 - 140	-0.0070	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

EPA TO-15

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SV-1 (23F0203-01)			Lab File ID: G23A156015.D			Analyzed: 06/05/23 18:50			
Bromochloromethane (1)	1170893	8.295	1201963	8.288	97	60 - 140	0.0070	+/-0.50	
1,4-Difluorobenzene (1)	2126893	10.069	2219387	10.062	96	60 - 140	0.0070	+/-0.50	
Chlorobenzene-d5 (1)	2027374	14.428	2052929	14.434	99	60 - 140	-0.0060	+/-0.50	
Duplicate (B342428-DUP1)			Lab File ID: G23A156016.D			Analyzed: 06/05/23 19:31			
Bromochloromethane (1)	1201639	8.288	1201963	8.288	100	60 - 140	0.0000	+/-0.50	
1,4-Difluorobenzene (1)	2149162	10.062	2219387	10.062	97	60 - 140	0.0000	+/-0.50	
Chlorobenzene-d5 (1)	2136727	14.427	2052929	14.434	104	60 - 140	-0.0070	+/-0.50	

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CONTINUING CALIBRATION CHECK

EPA TO-15

S088612-CCV1

COMPOUND	TYPE	CONC. (ppbv)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Acetone	A	5.00	5.52	0.842918	0.9311435		10.5	30
Benzene	A	5.00	5.76	0.7637592	0.8804103		15.3	30
Benzyl chloride	A	5.00	6.24	0.8073339	1.007372		24.8	30
Bromodichloromethane	A	5.00	5.63	0.6340264	0.7135441		12.5	30
Bromoform	A	5.00	4.74	0.5011309	0.4751221		-5.2	30
Bromomethane	A	5.00	4.92	0.4077907	0.4012476		-1.6	30
1,3-Butadiene	A	5.00	5.20	0.3749869	0.3898276		4.0	30
2-Butanone (MEK)	A	5.00	4.87	1.356654	1.321691		-2.6	30
Carbon Disulfide	A	5.00	5.56	1.498765	1.66697		11.2	30
Carbon Tetrachloride	A	5.00	4.99	0.539535	0.5386576		-0.2	30
Chlorobenzene	A	5.00	4.99	0.7621755	0.7605913		-0.2	30
Chloroethane	A	5.00	5.40	0.2218197	0.2397984		8.1	30
Chloroform	A	5.00	5.09	1.217612	1.239106		1.8	30
Chloromethane	A	5.00	5.20	0.4957722	0.5150827		3.9	30
Cyclohexane	A	5.00	5.76	0.2931361	0.3376327		15.2	30
Dibromochloromethane	A	5.00	4.72	0.6090453	0.5745594		-5.7	30
1,2-Dibromoethane (EDB)	A	5.00	5.19	0.5427769	0.5637378		3.9	30
1,2-Dichlorobenzene	A	5.00	4.47	0.5821018	0.520297		-10.6	30
1,3-Dichlorobenzene	A	5.00	4.77	0.6255462	0.5968183		-4.6	30
1,4-Dichlorobenzene	A	5.00	4.61	0.6180168	0.5697693		-7.8	30
Dichlorodifluoromethane (Freon 12)	A	5.00	5.59	1.160248	1.297724		11.8	30
1,1-Dichloroethane	A	5.00	4.95	1.08368	1.073544		-0.9	30
1,2-Dichloroethane	A	5.00	5.12	0.8141384	0.8334659		2.4	30
1,1-Dichloroethylene	A	5.00	5.15	0.9011757	0.928175		3.0	30
cis-1,2-Dichloroethylene	A	5.00	5.15	0.7729613	0.7958195		3.0	30
trans-1,2-Dichloroethylene	A	5.00	4.99	0.8219112	0.8198855		-0.2	30
1,2-Dichloropropane	A	5.00	5.55	0.3298189	0.3661198		11.0	30
cis-1,3-Dichloropropene	A	5.00	6.00	0.4150927	0.4977259		19.9	30
trans-1,3-Dichloropropene	A	5.00	6.00	0.3654657	0.4388707		20.1	30
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 1	A	5.00	5.00	1.209903	1.209708		-0.02	30
1,4-Dioxane	A	5.00	6.06	0.1479759	0.1791969		21.1	30
Ethanol	A	5.00	5.68	0.1349814	0.1534516		13.7	30
Ethyl Acetate	A	5.00	5.18	0.2012452	0.2085801		3.6	30
Ethylbenzene	A	5.00	5.95	1.135348	1.352042		19.1	30
4-Ethyltoluene	A	5.00	5.82	1.109241	1.291395		16.4	30
Heptane	A	5.00	6.05	0.2586753	0.3130875		21.0	30
Hexachlorobutadiene	A	5.00	4.52	0.387821	0.3504152		-9.6	30
Hexane	A	5.00	4.78	0.8920789	0.8519876		-4.5	30

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CONTINUING CALIBRATION CHECK

EPA TO-15

S088612-CCV1

COMPOUND	TYPE	CONC. (ppbv)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
2-Hexanone (MBK)	A	5.00	6.50	0.7281651	0.9470894		30.1	30 *
Isopropanol	A	5.00	4.90	1.000317	0.9800861		-2.0	30
Methyl tert-Butyl Ether (MTBE)	A	5.00	5.06	1.287691	1.301767		1.1	30
Methylene Chloride	A	5.00	4.97	0.7800979	0.7759187		-0.5	30
4-Methyl-2-pentanone (MIBK)	A	5.00	6.13	0.7770459	0.9520582		22.5	30
Naphthalene	A	5.00	4.82	0.8550023	0.8236131		-3.7	30
Propene	A	5.00	4.62	0.5584422	0.5165643		-7.5	30
Styrene	A	5.00	5.90	0.6029259	0.7115913		18.0	30
1,1,2,2-Tetrachloroethane	A	5.00	5.72	0.8096179	0.9264507		14.4	30
Tetrachloroethylene	A	5.00	5.82	0.4009165	0.4670735		16.5	30
Tetrahydrofuran	A	5.00	5.42	0.1920565	0.2081688		8.4	30
Toluene	A	5.00	5.75	0.9093073	1.046043		15.0	30
1,2,4-Trichlorobenzene	A	5.00	4.51	0.3643446	0.3286037		-9.8	30
1,1,1-Trichloroethane	A	5.00	5.35	0.5599026	0.5988356		7.0	30
1,1,2-Trichloroethane	A	5.00	5.60	0.3528872	0.3954249		12.1	30
Trichloroethylene	A	5.00	5.68	0.3564595	0.4049861		13.6	30
Trichlorofluoromethane (Freon 11)	A	5.00	4.56	1.116203	1.017799		-8.8	30
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113	A	5.00	4.54	1.151585	1.044546		-9.3	30
1,2,4-Trimethylbenzene	A	5.00	5.94	0.8946339	1.063338		18.9	30
1,3,5-Trimethylbenzene	A	5.00	5.96	0.9396313	1.119852		19.2	30
Vinyl Acetate	A	5.00	5.11	1.381	1.411097		2.2	30
Vinyl Chloride	A	5.00	5.34	0.4775782	0.5096223		6.7	30
m&p-Xylene	A	10.0	12.6	0.8677866	1.08907		25.5	30
o-Xylene	A	5.00	6.22	0.8787838	1.09284		24.4	30

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA TO-15 in Air	
Acetone	AIHA,NY,ME,NH
Benzene	AIHA,FL,NJ,NY,ME,NH,VA
Benzyl chloride	AIHA,FL,NJ,NY,ME,NH,VA
Bromodichloromethane	AIHA,NJ,NY,ME,NH,VA
Bromoform	AIHA,NJ,NY,ME,NH,VA
Bromomethane	AIHA,FL,NJ,NY,ME,NH
1,3-Butadiene	AIHA,NJ,NY,ME,NH,VA
2-Butanone (MEK)	AIHA,FL,NJ,NY,ME,NH,VA
Carbon Disulfide	AIHA,NJ,NY,ME,NH,VA
Carbon Tetrachloride	AIHA,FL,NJ,NY,ME,NH,VA
Chlorobenzene	AIHA,FL,NJ,NY,ME,NH,VA
Chloroethane	AIHA,FL,NJ,NY,ME,NH,VA
Chloroform	AIHA,FL,NJ,NY,ME,NH,VA
Chloromethane	AIHA,FL,NJ,NY,ME,NH,VA
Cyclohexane	AIHA,NJ,NY,ME,NH,VA
Dibromochloromethane	AIHA,NY,ME,NH
1,2-Dibromoethane (EDB)	AIHA,NJ,NY,ME,NH
1,2-Dichlorobenzene	AIHA,FL,NJ,NY,ME,NH,VA
1,3-Dichlorobenzene	AIHA,NJ,NY,ME,NH
1,4-Dichlorobenzene	AIHA,FL,NJ,NY,ME,NH,VA
Dichlorodifluoromethane (Freon 12)	AIHA,NY,ME,NH
1,1-Dichloroethane	AIHA,FL,NJ,NY,ME,NH,VA
1,2-Dichloroethane	AIHA,FL,NJ,NY,ME,NH,VA
1,1-Dichloroethylene	AIHA,FL,NJ,NY,ME,NH,VA
cis-1,2-Dichloroethylene	AIHA,FL,NY,ME,NH,VA
trans-1,2-Dichloroethylene	AIHA,NJ,NY,ME,NH,VA
1,2-Dichloropropane	AIHA,FL,NJ,NY,ME,NH,VA
cis-1,3-Dichloropropene	AIHA,FL,NJ,NY,ME,NH,VA
trans-1,3-Dichloropropene	AIHA,NY,ME,NH
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	AIHA,NJ,NY,ME,NH,VA
1,4-Dioxane	AIHA,NJ,NY,ME,NH,VA
Ethanol	AIHA
Ethyl Acetate	AIHA
Ethylbenzene	AIHA,FL,NJ,NY,ME,NH,VA
4-Ethyltoluene	AIHA
Heptane	AIHA,NJ,NY,ME,NH,VA
Hexachlorobutadiene	AIHA,NJ,NY,ME,NH,VA
Hexane	AIHA,FL,NJ,NY,ME,NH,VA
2-Hexanone (MBK)	AIHA
Isopropanol	AIHA,NY,ME,NH
Methyl tert-Butyl Ether (MTBE)	AIHA,FL,NJ,NY,ME,NH,VA
Methylene Chloride	AIHA,FL,NJ,NY,ME,NH,VA
4-Methyl-2-pentanone (MIBK)	AIHA,FL,NJ,NY,ME,NH
Naphthalene	NY,ME,NH
Propene	AIHA
Styrene	AIHA,FL,NJ,NY,ME,NH,VA
1,1,2,2-Tetrachloroethane	AIHA,FL,NJ,NY,ME,NH,VA

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
EPA TO-15 in Air	
Tetrachloroethylene	AIHA,FL,NJ,NY,ME,NH,VA
Tetrahydrofuran	AIHA
Toluene	AIHA,FL,NJ,NY,ME,NH,VA
1,2,4-Trichlorobenzene	AIHA,NJ,NY,ME,NH,VA
1,1,1-Trichloroethane	AIHA,FL,NJ,NY,ME,NH,VA
1,1,2-Trichloroethane	AIHA,FL,NJ,NY,ME,NH,VA
Trichloroethylene	AIHA,FL,NJ,NY,ME,NH,VA
Trichlorofluoromethane (Freon 11)	AIHA,NY,ME,NH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	AIHA,NJ,NY,ME,NH,VA
1,2,4-Trimethylbenzene	AIHA,NJ,NY,ME,NH
1,3,5-Trimethylbenzene	AIHA,NJ,NY,ME,NH
Vinyl Acetate	AIHA,FL,NJ,NY,ME,NH,VA
Vinyl Chloride	AIHA,FL,NJ,NY,ME,NH,VA
m&p-Xylene	AIHA,FL,NJ,NY,ME,NH,VA
o-Xylene	AIHA,FL,NJ,NY,ME,NH,VA

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO 17025:2017	100033	03/1/2024
NY	New York State Department of Health	10899 NELAP	04/1/2024
NH	New Hampshire Environmental Lab	2516 NELAP	02/5/2024
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
FL	Florida Department of Health	E871027 NELAP	06/30/2023
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2023

23F0203

Con-Test Pace Analytical
39 Spruce St
East Longmeadow, MA 01028

Canister Samples Chain of Custody Record

Client Contact Information	NYSDEC Project Manager: Melissa Sweet		1 of 1 COCs
Company: NYSDEC	Phone: 518-402-9614		
Address: 270 Michigan Ave.	Site Contact: Thomas Palmer (GES)		
City/State/Zip Buffalo, NY 14203	Pace Contact: Kyle Murray		
Phone: (716) 851-7000	NYSDEC Lab Callout ID - 147207		
FAX:			
Project Name: ~~Hamburg Town Garage~~ Lakeview	**Analysis Turnaround Time**		
Site/location: NYSDEC Site Number C100701	Standard (Specify) 10-day		
GES Project # 0901873	Rush (Specify)		

	Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Canister ~~Flow Controller~~ ID	Flow Controller ~~Canister~~ ID	TO-15	Lab Receipt Pressure				Other (Please specify in notes section)	Sample Type	Other (Please specify in notes section)	Sample Specific Notes:
01	SV-1	05/26	0817	1617	-28.5	-5	BC 1472	3122	X	-7.2							
02	SV-2	05/26	0833	1633	-30	-4.25	BC 2478	5080DUP	X	-4.9							
03	SV-2	05/26	0833	1633	-30	-4.25	BC 2135	5080DUP	X	-5.3							
04	SV-3	05/26	0858	1658	-30	-8.25	BC 1161	3267	X	-6.8							
05	AA-1	05/26	0845	1645	-30	-4.75	BC 2061	3042	X	-6.3							

Sampled by : Jessica Paterson (JP)

Temperature (Fahrenheit)	~~Interior~~	Ambient	
Start	-	46°	
Stop	-	70°	

Pressure (inches of Hg)	~~Interior~~	Ambient	
Start	-	30.35	
Stop	-	30.32	

Special Instructions/QC Requirements & Comments: Category B Deliverable, NYSDEC Equis EDD, GES Equis EDD

Canisters Shipped by: J. PATERSON	Date/Time: 05/30/23 10:00AM	Canisters Received by: [signature]	6/1/23 1146
Samples Relinquished by:	Date/Time:	Received by:	
Relinquished by:	Date/Time:	Received by:	

Use Only **Shipper Name:** **Opened by:** **Condition:**

FedEx® Tracking

Summary Tracking Results

TRACKING ID	SHIP DATE	SHIPPER CITY, STATE	RECIPIENT CITY, STATE	STATUS	DELIVERY DATE	SCH DEL DAT
Multi-piece shipment 398944545743	5/30/2023	EAST LONGMEADOW, MA	EAST LONGMEADOW, MA	Delivered	6/01/2023 11:46 am	
Multi-piece shipment 398944545732 (master)	5/30/2023	EAST LONGMEADOW, MA	EAST LONGMEADOW, MA	Delivered	6/01/2023 11:46 am	

OBTAIN PROOF OF DELIVERY

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39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F:413-525-6405
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Log In Back-Sheet

Login Sample Receipt Checklist – (Rejection Criteria Listing – Using Acceptance Policy) Any False statement will be brought to the attention of the Client – True or False

Pace PEOPLE ADVANCING SCIENCE

Client NYSDEC IGES
Project Lakeview
MCP/RCP Required
Deliverable Package Requirement CAT B
Location
PWSID# (When Applicable)
Arrival Method FedEx 3989 4454 5743
Received By / Date / Time KMC 6/1/23 1146
Back-Sheet By / Date / Time KMC 6/1/23 1320
Temperature Method #
Temp < 6° C ☐ Actual Temperature
Rush Samples: Yes / (No) Notify
Short Hold: Yes / (No) Notify

	True	False
Received on Ice	☐	☒
Received in Cooler	☐	☒
Custody Seal: DATE 5/30 TIME	☒	☐
COC Relinquished	☒	☐
COC/Samples Labels Agree	☒	☐
All Samples in Good Condition	☒	☐
Samples Received within Holding Time	☒	☐
Is there enough Volume	☒	☐
Proper Media/Container Used	☒	☐
Individually Certified Cans	☐	☒
Trip Blanks	☐	☒
COC Legible	☒	☐

Notes regarding Samples/COC outside of SOP:

COC Included: (Check all included)

Client ☒ Analysis ☒ Sampler Name ☒
Project ☒ IDs ☒ Collection Date/Time ☒

Container	#	Size	Regulator	Duration	Accessories			
Summa Cans	5	6L	4	8hr	Nut/Ferrule	3	IC Train	
Tedlar Bags					Tubing	18ft		
TO-17 Tubes					T-Connector	1	Shipping Charges	
Radiello					Syringe			
Pufs/ TO-11					Tedlar			

Can #'s								Regs #'s							
1	1472	8		16		24		1	3122	8		16		24	
2	2478	9		17		25		2	5080	9		17		25	
3	2135	10		18		26		3	5080	10		18		26	
4	1161	11		19		27		4	3267	11		19		27	
5	2061	12		20		28		5	3042	12		20		28	
6		13		21		29		6		13		21		29	
7		14		22		30		7		14		22		30	
		15		23		31				15		23		31	
Unused Media								**Pufs/TO-17's**							
1		8		16		24		1		8		16		24	
2		9		17		25		2		9		17		25	
3		10		18		26		3		10		18		26	
4		11		19		27		4		11		19		27	
5		12		20		28		5		12		20		28	
6		13		21		29		6		13		21		29	
7		14		22		30		7		14		22		30	
		15		23		31				15		23			

Appendix C

Data Validation

RemVēr

Quality Assessment
Data Usability Summary Report

			RemVēr Project #2023GE78 Client Project # 0901873-06-840
Site:	2720 Lakeview Rd. Lake View, NY	**Site #:**	Hamburg Hwy. Dept. #2209206
Client:	NYSDEC via GES, Inc.	**Site Owner:**	–N/A–
Sample Delivery Groups (SDGs)	See Table #1		
Sample Matrix:	☐ Drinking water ☒ Groundwater ☐ Surface water ☐ Soil ☐ Sediment ☒ Air ☐ Biota (tissue, type: _____) ☐ Other: _____		

Introduction

Groundwater & Environmental Services (GES) contracted RemVēr to perform a data quality assessment (DQA) on analytical laboratory data of environmental samples. Con-Test reported the data in separate Sample Delivery Groups (SDGs, see Table 1). Table 2 provides a correlated list of samples associated with each SDG. New York State Department of Environmental Conservation (NYSDEC) only recently requested GES have the data listed herein reviewed for data quality and usability.

A DQA is an evaluation of the performance of analytical procedures and quality of the resulting data. Following the requirements of the NYSDEC Data Usability Summary Report (DUSR) guidelines for an Analytical Services Protocol (ASP) Category B Data Deliverable, RemVēr prepared a separate DQA/DUSR sub-report for each SDG, evaluating the performance of the analytical procedures and the quality of the resulting data. Each sub-report includes a narrative discussion of qualified samples, a DQA Detail Worksheet, and a Non-Conformance Summary Worksheet describing the final reported qualification flags applied to the data during the DQA. Additionally, a validated EXCEL electronic data deliverable (EDD) is included with this deliverable for each SDG discussed herein.

Intended Use of Data Under Review

NYSDEC contracted GES to perform monitoring at the referenced site. The various SDGs discussed herein reflect various monitoring events for groundwater quality and potential soil gas intrusion. The environmental sampling events (during May 2023) of select groundwater wells and air sampling points allowed for the monitoring of selected parameters, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs, in particular 1,4-Dioxane), and perfluoroalkyl and polyfluoroalkyl substances/compounds (PFAS or PFCs).

Significant Data Usability Issues in This Group of SDGs

Overall, the review process deemed this groundwater and soil gas monitoring project's data acceptable for use and representative of site conditions at the locations and times obtained. No results were rejected. Certain results required flagging as estimated (or for other issues), the quality of the analytical data for this project does not appear compromised due to analytical irregularities. Therefore, these data are usable for the stated purpose(s). Refer to the individual SDG Lab Results and the respective Data Usability Narrative section of each DUSR sub-report for further detail.

Reported Methods

☐ Method 1311 TCLP
☐ Method 1312 SPLP
☐ Method 6010A/B/C/D or 6020 Trace Metals
☐ Method 7000 Metals
☐ Method 7196 Hexavalent Chromium (other:_____)
☐ Method 7470A or 7471 Mercury
☐ Method 8021 Volatile Organic Compounds (VOCs) GC
☐ Method 8081B or ☐ 608 Pesticides
☐ Method 8082 or ☐ 608 PCBs
☐ Method 8151 Chlorinated Herbicides
☐ Method 8260C/D VOCs GC/MS
☒ Method 8270D/E Semi-VOCs (sVOCs) GC/MS &/or SIM-ID
☐ Method 9010/9012/9014 Cyanides (_____)

☐ Method RSK-175 Dissolved Gases (Me-/E-thane & Ethene)
☒ Method TO-14A / -15 VOCs (air, summa) (_____)
☐ Method TO-17 VOCs (air, sorbent)
☒ Method 1633 PFCs via SPE & LC/MS-MS
☒ Other Methods:
☑ Method 3510C Extraction (Sep. Funnel)
☑ Method 3535 Solid-Phase Extraction (SPE)
☑ Method 3550C/SHAKE Extract w/Ultrasonic Bath
☑ Method 160.2 TSS

Quality Control Requirements Summary

☒ Duplicate
☒ Matrix Spike [MS] / Matrix Spike Duplicate [MSD]
☐ Trip Blanks (as appropriate)
☒ Equipment, Method, &/or Rinsate Blank

☒ Other Field QC: See Field Notes regarding sampling
☐ Special QAPP Requirements: _____
_____

Table 1. Sample Data Group (SDG) List

Appendix	SDG #	# of Samples	Media	QA	Sample Date	METHOD ANALYTES							
						VOCs	I	I	I	TSS	I	1,4-Dioxane	PFAS
3	23E2619	5	Water	d/EB	05/16/23	—	—	—	—	—	—	—	X
4	23E2622	5	Water	d/EB	05/16/23	—	—	—	—	—	—	X	—
5	23F0203	5	Air	D	05/26/23	X	—	—	—	—	—	—	—

Notes regarding QA Samples: "d" = duplicate EB = equipment blank TSS = Total Suspended Solids

Table 2. SDG and Sample List

Count	SDG 480-#	Sample #	Sample Name	Sample Date	Received
1	23E2619	#–1	MW–6	05/16/23 16:00	05/18/23 09:23
2		#–2	MW–14	05/16/23 14:05	05/18/23 09:23
3		#–3	MW–50B	05/16/23 11:30	05/18/23 09:23
4		#–4	Equip. Blank	05/16/23 14:15	05/18/23 09:23
5		#–5	DUP (#-2)	05/16/23 14:05	05/18/23 09:23
6	23E2622	#–1	MW–6	05/16/23 16:00	05/18/23 09:23
7		#–2	MW–14	05/16/23 14:05	05/18/23 09:23
8		#–3	MW–50B	05/16/23 11:30	05/18/23 09:23
9		#–4	Equip. Blank	05/16/23 14:15	05/18/23 09:23
10		#–5	DUP (#-2)	05/16/23 14:05	05/18/23 09:23
11	23F0203	#–1	SV-1	05/26/23 16:17	06/01/23 11:46
12		#–2	SV-2	05/26/23 16:33	06/01/23 11:46
13		#–3	SV-2	05/26/23 16:33	06/01/23 11:46
14		#–4	SV-3	05/26/23 16:58	06/01/23 11:46
15		#–5	AA-1	05/26/23 16:45	06/01/23 11:46

The DUSR sub-reports attached hereto use the following PFAS compound abbreviations:

Perfluorobutanoic acid (PFBA)
Perfluoropentanoic acid (PFPeA)
Perfluorohexanoic acid (PFHxA)
Perfluoroheptanoic acid (PFHpA)
Perfluorooctanoic acid (PFOA)
Perfluorononanoic acid (PFNA)
Perfluorodecanoic acid (PFDA)
Perfluoroundecanoic acid (PFUnA)
Perfluorododecanoic acid (PFDoA)
Perfluorotridecanoic Acid (PFTriA)
Perfluorotetradecanoic acid (PFTeA)

Perfluorobutanesulfonic acid (PFBS)
Perfluorohexanesulfonic acid (PFHxS)
Perfluoroheptanesulfonic Acid (PFHpS)
Perfluorooctanesulfonic acid (PFOS)
Perfluorodecanesulfonic acid (PFDS)
Perfluorooctane Sulfonamide (PFOSA)
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2)
1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)
1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

References

NYSDEC, 2010, *Technical Guidance for Site Investigation and Remediation*, "DER-10," Division of Environmental Remediation: Albany, NY, May, 232p

NYSDEC, 2010, *Guidance for Data Deliverables and the Development of Data Usability Summary Reports*, Appendix 2B IN *Technical Guidance for Site Investigation and Remediation*, Albany, NY, May, 232p

NYSDEC, 2021, *Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs*, Albany, NY, January, 33p

USEPA, 2012, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846*, Current Online Revision: http://www.epa.gov/epawaste/hazard/testmethods/sw846/online/index.htm, accessed April 2012

USEPA, 2018, Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537, EPA 910-R-18-001. November, 39p

USEPA, 2019, Technical Brief: Per- and Polyfluoroalkyl Substances (PFAS): Reviewing Analytical Methods Data for Environmental Samples, EPA 600-F-19-056, April, 5p.

USEPA, 2020a, National Functional Guidelines for Organic Superfund Methods Data Review. EPA 540-R-20-005, Washington, DC, 190p, https://www.epa.gov/sites/default/files/2021-03/documents/nfg_for_organic_superfund_methods_data

USEPA, 2020c, National Functional Guidelines for High Resolution Superfund Methods Data Review. EPA 542-R-20-007. Washington, DC: U.S. Environmental Protection Agency, November, 86p, https://www.epa.gov/sites/default/files/2021-03/documents/nfg_for_hrsm_superfund_methods_data_review_november_2020.pdf

USEPA, 2022, Method 1633 Analysis of Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous, Solid, Biosolids, and Tissue Samples by LC-MS/MS, Second Draft, EPA 821-D-22-001, 69pp

Attachments

1. Qualifier Flags
2. Data Usability Reviewer Biography
3. DUSR Sub-Report for SDG 23E2619
4. DUSR Sub-Report for SDG 23E2622
5. DUSR Sub-Report for SDG 23F0203

NOTE: Each DUSR Sub-Report has an associated (separate) annotated EDD (with validation) attached hereto (Excel File Name Format: SDG-#_EquaNysdec-V.xls).

Prepared by: Kurt A. Frantzen, PhD
July 16, 2023
GES PO #1127233-1100

Attachment 1. Qualifier Flags

Qualifier	Quality Implication
0–9	Use with Coeluting Congeners
A	Tentatively Identified Compound (TIC) suspected to be an aldol condensation product
B | EB **TB | BB** **RB** **BH/BL**	An analyte identified in method blank (B), aqueous equipment (EB), rinsate (RB), trip (TB), or bottle blanks (BB) used to assess field contamination associated with soil or sediment samples mandates these qualifiers for only soil and sediment sample results. Analyte detected in Blank at level >10X/5-10X that of the Sample
D	Sample analysis from dilution of original sample
E	Analyte concentration exceeds calibration range
H	Biased High
HT	Holding time violation
I	Analyte concentration is an estimated maximum possible concentration (EMPC) due to transition mass ratio and likely to have a high bias (see J+ below)
J	Analyte positively identified at a numerical value that is the approximate concentration of the analyte in the sample
J +	Sample likely to have a high bias
J –	Sample likely to have a low bias
L	Biased Low
N	The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification."
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
R	Sample result rejected due to serious deficiency in ability to analyze sample and meet quality control criteria; the presence or absence of the analyte cannot be confirmed. This qualifier also may apply when more than one sample result is generated for a target analyte (*i.e.*, dilutions or re-analyses), the most technically acceptable result is considered acceptable.
P	Use professional judgment based on data use. It usually has an "M" with it, which indicates that a manual check should be made if the data that are qualified with the "P" are important to the data user. In addition, "PM" also means a decision is necessary from the Project Manager (or a delegate) concerning the need for further review of the data (*see below*).
PM	A manual review of the raw data is recommended to determine if the defect affects data use, as in "R" above. This review should include consideration of potential affects that could result from using the "P" qualified data. For example, in the case of holding-time exceedance, the Project Manager or delegate can decide to use the data with no qualification when analytes of interest are known not to be adversely affected by holding-time exceedances. Another example is the case where soil sample duplicate analyses for metals exceed the precision criteria; because this is likely due to sample non-homogeneity rather than contract laboratory error, then the manager or delegate must decide how to use the data.
U	The analyte was analyzed for but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ	Analyte analyzed for but not detected. Reported quantitation limit is approximate and may be inaccurate or imprecise

Attachment 2. Data Usability Reviewer: Kurt A. Frantzen, PhD

Experience

2013-Present	d/b/a RemVēr	Owner
2014-2019	AECC	Senior EHS Consultant
2011-2012	RemVēr, Inc.	President
2006-2011	Kleinfelder	Senior Principal Scientist
2005	Kleinfelder	Principal Scientist, Part-Time/On Call
2004-2006	d/b/a Environmental Risk Group	Owner
2004-2006	RemVēr, Inc., Larchmont, NY	Founder, President
1999-2004	VHB, Inc.	ERM Director & Associate
1997-1998	GEI Consultants, Inc.	Senior Project Manager
1992-1997	Ecology and Environment, Inc.	Technical Chief
1991-1992	EA Engineering, Science, & Technology, Inc.	Project Manager III
1990-1991	Ecology and Environment, Inc.	Technical Group Manager
1986-1990	Ecology and Environment, Inc.	Senior Environmental Scientist

Education

Am Cancer Soc. Post-Doctoral Fellow, U Washington 1985-1986

PhD—Life Sci. / Biochem, NU—Lincoln	1985
MS—Plant Pathology, Kansas State Univ.	1980
BS—Biology, NU—Omaha	1978

Other

- CERCLA & RCRA experience, as well as DOD (Air Force & Army) & DOE (INEL)
- NE Regional Experience—NY BCP; Mass MCP; & various sites in CT, RI & NH
- National Experience: NE, SE, Gulf & West Coast, Mid-west, Inter-mountain, California, Alaska
- International: Germany, Israel, Kuwait, Australia
- Selected Publications
    - *Using Risk Appraisals to Manage Environmentally Impaired Properties*, 2000, VHB Site Works, Report 108
    - *Risk-Based Analysis for Environmental Managers*, 2001, CRC/Lewis
    - Chapter 7 Risk Assessment, *Managing Hazardous Materials*, 2002 & 2009, IHMM
    - Chapter 22 Cleanup Goals, *Brownfields Law & Practice*, 2004-Present, Lexis/Nexis
    - *Use of Risk Assessment in Risk Management of Contaminated Sites*, 2008, ITRC
- 61 Conference Papers & Invited Professional Presentations
    - 1999-2022, Visiting Lecturer, Brownfields Prgm. & Options Studio, Harvard Univ. Graduate School of Design
    - 2010-2013, Invited Lecturer, Pace University Law School
    - 2014-2015, Adjunct Professor, Pace University Law School

Attachment 3. Data Usability Sub-Report for SDG #23E2619

Detailed Quality Review

Field Notes Review

	Y	N	NA	COMMENTS
Sampling notes	☒	☐	☐	
Field meteorological data	☐	☐	☒	No review required under QAPP
Associated sampling location and plan included	☐	☒	☐	See RAP/QAPP
Associated drilling logs available, reviewed	☐	☐	☒	No review required under QAPP
Identification of QC samples in notes	☒	☐	☐	Sample IDs
Sampling instrument decontamination records	☐	☐	☒	No review required under QAPP
Sampling instrument calibration logs	☐	☐	☒	No review required under QAPP
Chain of custody included	☒	☐	☐	With analytical report
Notes include communication logs	☐	☒	☐	
Any corrective action (CA) reports	☐	☒	☐	If so, CA documentation of results required.
Any deviation from methods noted? If so, explain	☐	☒	☐	None
Any electronic data deliverables	☒	☐	☐	Yes
Sampling Report (by Field Team Leader)	☒	☐	☐	Field Notes

Lab Report Contents

☒ SDG Narrative
☒ Contract Lab Sample Information Sheets
☒ Data Package Summary Forms
☒ Chain-of-Custody (COC) Forms
☒ Test Results (tentatively identified compounds [TICs])
☒ Calibration standards
☒ Surrogate recoveries
☒ Blank results
☒ Spike recoveries
☒ Duplicate results
☒ Confirmation (lab check/QC) samples
☒ Internal standard area & retention time summary
☒ Chromatograms
☒ Raw data files
☒ Other specific information

Is the data package complete as defined under the requirements for the NYSDEC ASP Category B?		
Laboratory Report	**Complete (Y/N)**	**Comments**
23E2619	Y	None

Sample Preservation Requirements & Holding Times Met?			
Laboratory Report	**Hold Times (Y/N)**	**Preservation (Y/N)**	**Exception Comment**
23E2619	Y	Y	None
	N	Y	#-3 analysis w/i 2X holding

Do the QC data fall within the protocol required limits and specifications?

(1) blanks, (2) instrument tunings, (3) calibration standards, (4) calibration verifications, (5) surrogate recoveries/ISD, (6) spike recoveries, (7) replicate analyses, (8) laboratory controls, (9) and sample data

SDG	1	2	3	4	5	6	7	8	9
23E2619	☐	☐	☐	☐	☒	☐	☒	☐	☒

The narrative section, below, discusses these deficiencies in detail, see detail/summary worksheets as well.

Were the data generated using established and agreed upon analytical protocols?		
Laboratory Report	**Protocols (Y/N)**	**Exception Comment**
23E2619	Y	No

Do the raw data confirm the results provided in the data summary sheets and quality control verification forms?		
Laboratory Report	**Confirmation (Y/N)**	**Exception Comment**
23E2619	Y	No

Were correct data qualifiers used and are they consistent with the most current guidance?		
Laboratory Report	**Qualifiers (Y/N)**	**Comment**
23E2619	Y	The laboratory generally applied appropriate qualifiers.

Were quality control (QC) exceedances specifically noted in this DUSR and the corresponding QC summary sheets from the data packages referenced?		
Laboratory Report	**QC Exceedances Documented (Y/N)**	**Comment**
23E2619	N	Any data qualifications applied per the lab as described below

Data Quality and Usability Narrative

Field Notes Inspection

The groundwater samples came from an event across May 16, 2023. A review of the field notes indicated no issues.

Laboratory Report Inspection

Con-Test produced SDG report #23E2619 (dated 8-Jun-23), which had the required data and information.

Chain of Custody (COC) Evaluation

NYSDEC/GES produced a COC for the referenced fieldwork: SDG: #23E2619—single, one-page COC, including three samples, one duplicate, and an equipment blank.

Sample Preservation & Holding Time Evaluation

Laboratory received a cooler with samples on 5/18/2023 @ 09:23 AM (designated as SDG-#23E2619). Cooler(s) temperature at receipt was 2.0ºC, where samples arrived in good condition, properly preserved, under ice where necessary. Holding times were met except that Sample #-3 holding was exceeded for the TSS analysis, but it met the 2X mark of allowable holding time.

Sample Preparation & Analysis

The samples discussed herein were prepared and analyzed as indicated below:

SDG #23E2619			Analysis	
#	**Sample ID**	**QA**	**1933**	
			PFAS & TSS	
#–1	MW–6	—	X	X
#–2	MW–14	—	X	X
#–3	MW–50B	MS/D	X	X
#–4	Equip. Blank	B	X	—
#–5	DUP (#-2)	D	X	X
		Batch #:	B340971 Extracted	B341055 No Prep

The follow-on analyses were within acceptable parameters other than those items discussed below.

Detection Limits

Analytical detection limits (DLs) were acceptable for all analytes causing no QA issues other than those noted. If an analyte was below the method detection limit (MDL), then a "U" flag was set to indicate non-detection (undetected); whereas if an analyte was below the reporting limit (RL), then a "J" flag was set to indicate detection with an estimated result.

Calibration Standards (Initial) and Initial/Continuing Calibration Verification (ICV/CCV)

Calibration standards (external or internal) were acceptable for the analytes. Initial and Continuing Calibration Verifications (ICV/CCVs) were acceptable.

Blank Evaluation

SDG #23E2619 had Method Blanks (MBs) for each method/batch, which were acceptable (no detectable analytes, set at the RL). Additionally, GES submitted a Rinse Blank (#-4); analysis of this sample indicated no detectable levels of the requisite PFAS analytes above the MB at the RL.

Laboratory Control Samples (LCS)

The LCS were within the acceptable control ranges and relative percent differences (RPDs) for the analyses in SDG 23E2619.

Surrogates and Isotope Dilution

Surrogates added to a sample allow testing of preparatory and instrument behavior resulting in recoveries within appropriate method ranges for the analytes; however, surrogate usage was unnecessary for these analyses. Isotope Dilution Analysis (IDA, aka Internal Standards), when used, generally precludes adverse effects on data quality due to elevated IDA recoveries. The Isotope Dilution Analysis (IDA) results were within acceptable performance criteria for the sample runs, with certain exceptions.

- *Method 1633*—Batch had extracted IS recovery for 4:2 outside (>UCL) of control limits with high bias; however, data are not significantly affected due to the analyte not being detected. RemVēr did not flag the ND results per guidance.

Site-Specific Matrix Spikes and Matrix Spike Duplicates

The matrix spike/matrix spike duplicate (MS/MSD) runs for SDG 23E2619 were performed for the listed analyses using Sample #-2. The MS/MSD runs behaved within acceptable performance criteria, save for the following:

Duplicates

The analytical Method Duplicates reported in SDG 23E2619 met their RPD performance criteria, save for certain matrix effects causing IDA issues (as discussed above).

GES submitted one field duplicate sample (#-5 [Dup]) for this SDG. It was a replicate of Sample #-2 (MW-14). The laboratory performed all reported analyses, and the respective analytes met the RPD performance criteria of <30% except: PFOS, PFPeA, PFHxS, and PFBS. RemVēr flagged (UJ or J) those analytes beyond performance criteria only in the replicate sample pair.

Other Analytical Issues

Guidance cites the following items as additional analytical matters of concern for PFAS:

- Secondary Ion Transition Monitoring—no issues reported in the QC details.
- Signal to Noise Ratio (3:1)—no issues reported in the QC details.
- Branched and Linear Isomers—no issues reported in the QC details.
- Peak Integrations—no issues reported in the QC details.

The laboratory reported no other analytical issues.

Tentatively Identified Compounds (TICs)

This SDG had no analysis of TICs.

Sample Result and Usability Evaluation

RemVēr qualified certain results; nevertheless, the data are usable. No data received an R (rejected) flag.

DQA Detail Worksheet for SDG #23E2619

BLANKS	>RL?	Compounds	Notes
PFAS (1933)	No, set @ RL	All	No Comment
TSS	No, set @ RL	Solids	No Comment
EB (#-4)	None	All	No Comment

LCS	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	Compound(s)	Notes
PFAS (1933)	—	—	—	All	No Comment
TSS	—	—	—	—	—

SURROGATE/IDA	SV <10%	> 10% & < LCL	>UCL	Compound(s)	Notes
PFAS (1933)	—	—	—	—	No Comment
4:2	—	—	X	4:2	Flag J+ if detect, Otherwise, no flag.
—	—	—	—	—	—

MS/MSDs	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	QC Source	RPDs	Notes
PFAS (1933)	—	—	—	#-3	—	No Comment
—	—	—	—		—	—

FIELD DUPLICATES RPDs	QC Source	Groundwater RPD > 50%	Water RPD > 30%	Compounds	Notes
Dup (#-5)	#-2	N/A	X	PFOS, PFPeA, PFHxS, & PFBS	Flag UJ/J
		N/A	N/A	—	
LAB DUPLICATES					
All Methods	Batch	N/A	—	As listed	None

Reasonable Confidence Achieved ☐ Y ☐ N—Not Applic.
Significant QC Variances Noted ☐ Y ☒ N Preservation Requirements Met ☒ Y ☐ N
Requested Reporting Limits Achieved ☒ Y ☐ N Holding Time Requirements Met ☒ Y ☐ N

Abbreviations:
RL = Reporting Limit LCS = Laboratory Control Sample SV = Significant QC Variance
RPD = Relative Percent Difference LCL= RCP Lower Control Limit UCL= RCP Upper Control Limit
VOCs = Volatile Organic Compounds SVOCs = Semi-volatile Organic Compounds Pest = Pesticides
EPH = Extractable Petroleum Hydrocarbons VPH = Volatile Petroleum Hydrocarbons ETPH = EPH-Total
PCBs = Polychlorinated Biphenyls N/A = Not Applicable N/C = Not Collected -- = nothing to report
Notes: * Typical lab contaminants, not site-related

DQA Non-Conformance Summary Worksheet for SDG #23E2619

Only Flagged Results Shown Below

Sample Number(s)	Compound(s)	QC Non-Conformance	% Recovery	% RPD †	High or Low Bias ‡	Comments
All	Any	Analyte Not Detected				Flag U
	Any	MDL<result<RDL	—	—	—	Flag J
#-3	TSS	Holding Time	HT < Analysis < 2XHT			Flag HJ
—	—	—	—	—	—	—
#-2 & #-5	PFOS, PFPeA, PFHxS, & PFBS	Field Duplicate	—	>30%	—	Flag UJ/J

Notes: † RPD—Relative Percent Difference

‡ Bias High—Reported result may be lower, Reporting Limit (RL) is acceptable as reported. Bias Low—Reported results may be higher, RL may be higher than reported.

Attachment 4. Data Usability Sub-Report for SDG #23E2622

Detailed Quality Review

Field Notes Review

	Y	N	NA	COMMENTS
Sampling notes	☒	☐	☐	
Field meteorological data	☐	☐	☒	No review required under QAPP
Associated sampling location and plan included	☐	☒	☐	See RAP/QAPP
Associated drilling logs available, reviewed	☐	☐	☒	No review required under QAPP
Identification of QC samples in notes	☒	☐	☐	Sample IDs
Sampling instrument decontamination records	☐	☐	☒	No review required under QAPP
Sampling instrument calibration logs	☐	☐	☒	No review required under QAPP
Chain of custody included	☒	☐	☐	With analytical report
Notes include communication logs	☐	☒	☐	
Any corrective action (CA) reports	☐	☒	☐	If so, CA documentation of results required.
Any deviation from methods noted? If so, explain	☐	☒	☐	None
Any electronic data deliverables	☒	☐	☐	Yes
Sampling Report (by Field Team Leader)	☒	☐	☐	Field Notes

Lab Report Contents

☒ SDG Narrative
☒ Contract Lab Sample Information Sheets
☒ Data Package Summary Forms
☒ Chain-of-Custody (COC) Forms
☒ Test Results (no tentatively identified compounds [TICs])
☒ Calibration standards
☒ Surrogate recoveries
☒ Blank results
☒ Spike recoveries
☒ Duplicate results
☒ Confirmation (lab check/QC) samples
☒ Internal standard area & retention time summary
☒ Chromatograms
☒ Raw data files
☒ Other specific information

Is the data package complete as defined under the requirements for the NYSDEC ASP Category B?		
Laboratory Report	**Complete (Y/N)**	**Comments**
23E2622	Y	No

Sample Preservation Requirements & Holding Times Met?			
Laboratory Report	**Hold Times (Y/N)**	**Preservation (Y/N)**	**Exception Comment**
23E2622	Y	Y	None

Do the QC data fall within the protocol required limits and specifications?
(1) blanks, (2) instrument tunings, (3) calibration standards, (4) calibration verifications, (5) surrogate recoveries/ISD, (6) spike recoveries, (7) replicate analyses, (8) laboratory controls, (9) and sample data

SDG	1	2	3	4	5	6	7	8	9
23E2622	☐	☐	☐	☐	☐	☐	☐	☐	☒

The narrative section, below, discusses these deficiencies in detail, see detail/summary worksheets as well.

Were the data generated using established and agreed upon analytical protocols?		
Laboratory Report	**Protocols (Y/N)**	**Exception Comment**
23E2622	Y	No

Do the raw data confirm the results provided in the data summary sheets and quality control verification forms?		
Laboratory Report	**Confirmation (Y/N)**	**Exception Comment**
23E2622	Y	No

Were correct data qualifiers used and are they consistent with the most current guidance?		
Laboratory Report	**Qualifiers (Y/N)**	**Comment**
23E2622	Y	The laboratory generally applied appropriate qualifiers.

Were quality control (QC) exceedances specifically noted in this DUSR and the corresponding QC summary sheets from the data packages referenced?		
Laboratory Report	**QC Exceedances Documented (Y/N)**	**Comment**
23E2622	Y	Data qualifications were applied as described below

Data Quality and Usability Narrative

Field Notes Inspection

The groundwater samples came from a collection event on May 16, 2023. RemVēr reviewed the field notes as part of this DUSR, which indicated no issues.

Laboratory Report Inspection

Con-Test produced SDG report #23E2622 (dated 7-Jun-23), which had the required data and information.

Chain of Custody (COC) Evaluation

NYSDEC/GES produced a COC for the referenced fieldwork: SDG: #23E2622—single, one-page COC; the laboratory noted one issue at the time of acceptance, that is, time of sampling was not provided on the COC for Sample #-5. Communication with GES revealed that the sampler did indeed record the time but failed to enter it on the COC. The time of sampling was 16:00.

Sample Preservation & Holding Time Evaluation

Laboratory received a cooler with samples on 5/18/2023 @ 09:23 AM (designated as SDG-#23E2622). The temperature of the cooler(s) at receipt was 2.0 and 4.7ºC. The samples arrived in good condition, properly preserved, and where necessary under ice. Holding times and preservation requirements were met.

Sample Preparation & Analyses

Each sample had specifically requested analytical requirements as indicated in the table:

SDG #23E2622			Analysis					
			—	8270E	—	—	—	—
#	**Sample ID**	**QA**	—	**1,4-Dioxane**	—	—	—	—
#-01	MW–6	—	—	X | —	—	—	—	—
#-02	MW–14	—	—	X | —	—	—	—	—
#-03	MW–50B	MS/D	—	— | X	—	—	—	—
#-04	Equip. Blank	EB	—	X | —	—	—	—	—
#-05	DUP (#-2)	Dup	—	X | —	—	—	—	—
		Batch #:	—	B341099 | B341039	—	—	—	—

Sample preparations were within acceptable parameters. The analyses were within acceptable parameters.

Detection Limits

If an analyte was below the method detection limit (MDL), then a “U” flag was set to indicate non-detection (undetected); whereas if an analyte was below the reporting limit (RL), then a “J” flag was set to indicate detection with an estimated result. If an analyte concentration exceeded the calibration range, the laboratory set an “E” flag, and associated reported results were estimates; therefore, RemVēr flagged these analytes as ‘EJ’. Reported results were from undiluted samples and analytical detection limits (DLs) met requirements for the reported analytes.

Calibration Standards (Initial) and Initial/Continuing Calibration Verification (ICV/CCV)

Calibration standards (external or internal) were acceptable for all analytes. Initial and Continuing Calibration Verifications (ICV/CCVs) were acceptable for all methods and analytes.

Blank Evaluation

SDG #23E2622 had Method Blanks (MBs) for each method, which were acceptable (no detectable analytes). Sample #-5 was an equipment blank to support analysis for the presence of Dioxane in the samples. This field blank had no detections greater than the RL or MDL or EDL as reported.

Laboratory Control Samples (LCS)

The various method LCS’ (LCS & LCS duplicates [LCSD]) were within the acceptable control ranges and relative percent differences (RPDs) for their analyses in SDG 23E2622.

Surrogates and Isotope Dilution

Surrogates added to a sample allow testing of preparatory and instrument behavior resulting in recoveries within appropriate method ranges for the analytes. Surrogates behaved in this SDG within acceptable performance criteria. Analysis of 1,4-Dioxane used Isotope Dilution Analyte (IDA), which employs internal isotopic standards. In this case, the IDA results were within acceptable performance limits.

Site-Specific Matrix Spikes and Matrix Spike Duplicates

The matrix spike/matrix spike duplicate (MS/MSD) runs for the analyses met the QA criteria in SDG 23E2622.

Duplicates

The analytical Method Duplicates met their RPD performance criteria.

GES submitted one field duplicate sample (#-5 [Dup-001]), a replicate of Sample #-2 (MW–14). The laboratory analysis met the RPD performance criteria of <20% (<30% for PFAS analytes).

Other Analytical Issues

The laboratory reported no other analytical issues.

Tentatively Identified Compounds (TICs)

This SDG included no TIC analysis.

Sample Result and Usability Evaluation

Due to sample issues or laboratory performance certain results were qualified; however, the data are usable. No data received an R (rejected) flag.

DQA Detail Worksheet for SDG #23E2622

BLANKS	>RL?	Compounds	Notes
SVOC (8270 SIM)	No	1,4-Dioxane	No Comment
—	—	—	—

LCS	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	Compound(s)	Notes
SVOC (8270 SIM)	—	—	—	1,4-Dioxane	No Comment
—	—	—	—	—	—

SURROGATES	SV <10%	> 10% & < LCL	>UCL	Compound(s)	Notes
SVOC (8270 SIM)	—	—	—	—	No Comment
—	—	—	—	—	—

MS/MSDs	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	QC Source	RPDs	Notes
SVOC (8270 SIM)	—	—	—	#-3	—	No Comment
—	—	—	—	—	—	—

FIELD DUPLICATES RPDs	QC Source	Water RPD > 20%	PFAS in Water RPD > 30%	Compounds	Notes
#-5	#-2 (MW–13)	—	—	—	No Comment
LAB DUPLICATES					
All Methods	Batch	—	N/A	As listed	No Comment
—	—	—	—	—	—

Reasonable Confidence Achieved ☐ Y ☐ N—Not Applicable
Significant QC Variances Noted ☒ Y ☐ N Requested Reporting Limits Achieved ☒ Y ☐ N
Preservation Requirements Met ☒ Y ☐ N Holding Time Requirements Met ☒ Y ☐ N

Abbreviations:
RL = Reporting Limit LCS = Laboratory Control Sample SV = Significant QC Variance
RPD = Relative Percent Difference LCL= RCP Lower Control Limit UCL= RCP Upper Control Limit
VOCs = Volatile Organic Compounds SVOCs = Semi-volatile Organic Compounds Pest = Pesticides
EPH = Extractable Petroleum Hydrocarbons VPH = Volatile Petroleum Hydrocarbons ETPH = EPH-Total
PCBs = Polychlorinated Biphenyls N/A = Not Applicable N/C = Not Collected -- = nothing to report
Notes: * Typical lab contaminants, not site-related

DQA Non-Conformance Summary Worksheet for SDG #23E2622

Only Flagged Results Shown Below

Sample Number(s)	Compound(s)	QC Non-Conformance	% Recovery	% RPD †	High or Low Bias ‡	Comments
All	Any	Analyte Non-detect				Flag U
	Any	MDL<result<RDL	—	—	—	Flag J
	Any	Calibrate (Range)	Analyte > Calibrated Range			Flag J E
	—	—	—	—	—	—
—	—	—	—			—
#-2 & 5	Field Dup	Field Duplicate Precision	—	—	—	—

Notes: † RPD—Relative Percent Difference
‡ Bias High—Reported result may be lower, Reporting Limit (RL) is acceptable as reported. Bias Low—Reported results may be higher, RL may be higher than reported.

Attachment 5. Data Usability Sub-Report for SDG #23F0203

Detailed Quality Review

Field Notes Review

	Y	N	NA	COMMENTS
Sampling notes	☒	☐	☐	Field Notes & COC sheets
Field meteorological data	☐	☐	☒	No review required under QAPP
Associated sampling location and plan included	☒	☐	☐	See RAP/QAPP
Associated drilling logs available, reviewed	☐	☐	☒	No review required under QAPP
Identification of QC samples in notes	☒	☐	☐	
Sampling instrument decontamination records	☐	☐	☒	No review required under QAPP
Sampling instrument calibration logs	☐	☐	☒	No review required under QAPP
Chain of custody included	☒	☐	☐	With analytical report
Notes include communication logs	☐	☒	☐	
Any corrective action (CA) reports	☐	☒	☐	If so, CA documentation of results required.
Any deviation from methods noted? If so, explain	☐	☒	☐	None
Any electronic data deliverables	☐	☒	☐	None
Sampling Report (by Field Team Leader)	☒	☐	☐	

Lab Report Contents (Con-Test SDG #23F0203)

☒ SDG Narrative
☒ Contract Lab Sample Information Sheets
☒ Data Package Summary Forms
☒ Chain-of-Custody (COC) Forms
☒ Test Results (no tentatively identified compounds [TICs])
☒ Calibration standards
☒ Surrogate recoveries
☒ Blank results
☒ Spike recoveries
☒ Duplicate results
☒ Confirmation (lab check/QC) samples
☒ Internal standard area & retention time summary
☒ Chromatograms
☒ Raw data files
☒ Other specific information

The laboratory reported on the following samples:

Sample ID	SDG #23F0203 Sample #	Matrix	Sample Start	Sample End	Canister	Pressure OK?
SV-1	1	SV	05/26/23 08:17	05/26/23 16:17	6-L #1472	<0 YES
SV-2	2	SV	05/26/23 08:33	05/26/23 16:33	6-L #2478	<0 YES
SV-2	3	SV	05/26/23 08:33	05/26/23 16:33	6-L #2135	<0 YES
SV-3	4	SV	05/26/23 08:58	05/26/23 16:58	6-L #1161	<0 YES
IA-1	5	IA	05/26/23 08:45	05/26/23 16:45	6-L #2061	<0 YES

NOTES: SV = Sub-slab Soil Gas (Vapor) IA = Indoor Ambient Air OA = Outdoor Ambient Air
* Pressure difference between sampling and analysis must be ≤5 psi

Is the data package complete as defined under the requirements for the NYSDEC ASP Category B?		
Laboratory Report	**Complete (Y/N)**	**Comments**
23F0203	Y	Yes

Sample Preservation Requirements & Holding Times Met?			
Laboratory Report	**Hold Times (Y/N)**	**Preservation (Y/N)**	**Exception Comment**
23F0203	Y	Y	None

Do the QC data fall within the protocol required limits and specifications? *(1) blanks, (2) instrument tunings, (3) calibration standards, (4) calibration verifications, (5) surrogate recoveries, (6) spike recoveries, (7) replicate analyses, (8) laboratory controls, and (9) sample data*									
SDG	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
23F0203	☐	☐	☐	☒	☐	☐	☒	☒	☒
The narrative section, below, discusses these deficiencies in detail, see Attachments 2 and 3 as well.									

Were the data generated using established and agreed upon analytical protocols?		
Laboratory Report	**Protocols (Y/N)**	**Exception Comment**
23F0203	Y	None

Do the raw data confirm the results provided in the data summary sheets and quality control verification forms?		
Laboratory Report	**Confirmation (Y/N)**	**Exception Comment**
23F0203	Y	None

Were correct data qualifiers used and are they consistent with the most current guidance?		
Laboratory Report	**Qualifiers (Y/N)**	**Comment**
23F0203	Y	The laboratory generally applied appropriate qualifiers. Additional qualifications or adjustments made (see respective attachments).

Were quality control (QC) exceedances specifically noted in this DUSR and the corresponding QC summary sheets from the data packages referenced?		
Laboratory Report	**QC Exceedances Documented (Y/N)**	**Comment**
23F0203	Y	Several data qualifications were applied as described below

Data Quality and Usability Narrative

Field Notes Inspection

The air samples came from a collection event beginning on May 26, 2023. GES provided air sampling field notes related to the effort together with the COC.

Laboratory Report Inspection

The laboratory produced SDG report #23F0203. Report was released 06Jun2023 (full ASP Category B). The report contained the required data and information.

Chain of Custody (COC) Evaluation

GES produced a COC for the referenced fieldwork (single, one-page COC for SDG #23F0203). The laboratory noted no quality issues upon sample receipt.

Sample Preservation & Holding Time Evaluation

Laboratory received the canister samples on 6/1/2023 @ 11:46 (sample set designated SDG-23F0203) in proper condition. The laboratory reported on the Summa canister's cleaning. The report and field notes indicated no issues encountered with either the canisters (cleanliness or performance) or valve and flow controllers. Holding times (<30-days) and preservation requirements were met. The sample canisters had measurable pressure readings upon completion of the fieldwork. To meet the preservation criterion, analysis must occur within thirty

days with a pressure difference between sampling and analysis must be ≤5 psi. These criteria were met.

Analytical

The samples associated with SDG #23F0203 were analyzed using USEPA Method TO-15 in a single batch #B342428, which included the required method blank, lab duplicate, and associated QA/QC samples and calibration checks. Samples were analyzed at a pressure dilution of 2X, except for the ambient air samples (#-5) which was at 0.7X.

Detection Limits

Reported results were from undiluted samples and analytical detection limits (DLs) met requirements for the reported analytes. If an analyte was below the method detection limit (MDL), then a "U" flag was set to indicate non-detection (undetected); whereas if an analyte was below the reporting limit (RL), then a "J" flag was set to indicate detection with an estimated result. If an analyte concentration exceeded the calibration range, the laboratory set an 'E' flag indicating an estimated result; in such a case, RemVēr added a 'J+' flag to the result with high bias.

Calibration Standards and Continuing Calibration Verification (CCV)

Initial instrument tuning was found acceptable. Calibration standard (external or internal) were acceptable for the analytes. The continuing calibration verifications (CCVs) were acceptable for the analytes, with the following exceptions:

- *Method TO-15*—Batch #B342428 analysis of 2-Hexanone (MBK) had poorly performing CCV recoveries (above the UCL with high bias). RemVēr flagged the results as UJ+ or J+ as appropriate.

Blank Evaluation

There were no associated blanks, other than the ambient outdoor air sample. All laboratory method blanks performed within acceptable parameters.

Laboratory Control Samples (LCS)

The various LCS' (LCS/LCSD) were within the acceptable range for their analyses in SDG-23F0203, with the following exceptions:

- LCS recovery for Naphthalene and 1,2,4-Trichlorobenzene was below the lower control criterion (<LCL) and biased low. RPD was acceptable. RemVēr flagged the results as UJ- or J- as appropriate.

Surrogates

Surrogates added to a sample allow testing of preparatory and instrument behavior resulting in recoveries within appropriate method ranges for all analytes. Due to the method no surrogate was required.

Site-Specific Matrix Spikes and Matrix Spike Duplicates

No matrix spike/matrix spike duplicate (MS/MSD) runs were required for the analyses per TO-15/SIM Methods.

Duplicates

The laboratory duplicates had no quality performance issues and met the RPD performance criteria of <50%. GES submitted one field duplicate sample #-3 (DUP) collected in a unique canister but replicating the time and location of Sample #2 (SV-2). The laboratory performed the reported analyses, and the respective analytes met the RPD performance criteria of <50% (see the compounds >50% below). RemVēr flagged (UJ or J) those analytes beyond performance criteria only in the replicate sample pair.

Duplicate Compound Flag List: 2-Hexanone (MBK), 4-Ethyltoluene, Benzene, Bromodichloromethane, Carbon Disulfide, Chloroethane, Chloroform, Cis-1,2-Dichloroethylene, Cyclohexane, Dibromochloromethane, Ethyl Acetate, Ethylbenzene, Isopropanol, Methyl Ethyl Ketone (2-Butanone or MEK), Methyl Isobutyl Ketone (4-Methyl-2-Pentanone or MIBK), Naphthalene, N-Heptane, N-Hexane, o-Xylene (1,2-Dimethylbenzene), Styrene, Tert-Butyl Methyl Ether, Tetrachloroethylene (PCE), Tetrahydrofuran, Toluene, Trichloroethylene (TCE), and Vinyl Acetate

Tentatively Identified Compounds (TICs)

This SDG had no analysis of TICs.

Other Analytical Issues

Guidance cites the following items as additional analytical matters of concern:

- Internal Standard and Retention Time
  - Full Analysis—were all acceptable
  - SIM Analysis—were all acceptable

Sample Result and Usability Evaluation

All samples were run as one batch with some pressure dilution. Due to certain sample issues or laboratory performance some results were qualified, nevertheless, the data are usable. No data received an R (rejected) flag.

DQA Detail Worksheet for SDG #23F0203

BLANKS	>RL?	Compounds	Notes
TO-15 Method Blank: VOCs	No	—	No Comment
—	No	—	No Comment

LCS	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	Compound(s)	Notes
TO-15	—	—	—	—	No Comment
All	—	X	—	1,2,4-Trichlorobenzene & Naphthalene	Flag UJ- / J-

SURROGATES	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	Compound(s)	Notes
TO-15	—	—	—	—	No Comment
—	—	—	—	—	No Comment

MS/MSDs	SV <10%	Low Bias > 10% & < LCL	High Bias >UCL	QC Source	RPDs	Notes
VOCs	—	—	—	—	—	No Comment, none required
—	—	—	—	—	—	—

FIELD DUPLICATES RPDs	QC Source	—	Air RPD > 50%	Compounds	Notes
#- (Dup)	#- (IA-13)	—	—	See List Below	No Comment
		—	—	—	—
LAB DUPLICATES					
TO-15 Batch	Lab	N/A	—	—	No Comment
TO-15-SIM Batch	Lab	N/A	—	—	No Comment

Reasonable Confidence Achieved: Not Applicable — Significant QC Variances Noted: ☐ Y ☒ N
Requested Reporting Limits Achieved: ☒ Y ☐ N — Preservation Requirements Met: ☒ Y ☐ N
Holding Time Requirements Met: ☒ Y ☐ N

Abbreviations:
RL = Reporting Limit LCS = Laboratory Control Sample SV = Significant QC Variance
RPD = Relative Percent Difference LCL= RCP Lower Control Limit UCL= RCP Upper Control Limit
VOCs = Volatile Organic Compounds SVOCs = Semi-volatile Organic Compounds Pest = Pesticides
EPH = Extractable Petroleum Hydrocarbons VPH = Volatile Petroleum Hydrocarbons ETPH = EPH-Total
PCBs = Polychlorinated Biphenyls N/A = Not Applicable N/C = Not Collected -- = nothing to report
Notes: * Typical lab contaminants, not site-related

Duplicate Compound Flag List: 2-Hexanone (MBK), 4-Ethyltoluene, Benzene, Bromodichloromethane, Carbon Disulfide, Chloroethane, Chloroform, Cis-1,2-Dichloroethylene, Cyclohexane, Dibromochloromethane, Ethyl Acetate, Ethylbenzene, Isopropanol, Methyl Ethyl Ketone (2-Butanone or MEK), Methyl Isobutyl Ketone (4-Methyl-2-Pentanone or MIBK), Naphthalene, N-Heptane, N-Hexane, o-Xylene (1,2-Dimethylbenzene), Styrene, Tert-Butyl Methyl Ether, Tetrachloroethylene (PCE), Tetrahydrofuran, Toluene, Trichloroethylene (TCE), and Vinyl Acetate

DQA Non-Conformance Summary Worksheet for SDG #23F0203

Only Flagged Results Shown Below

Sample Number(s)	Compound(s)	QC Non-Conformance	% Recovery	% RPD †	High or Low Bias ‡	Comments
All	Any	Not Detected	—	—	—	Flag U
	Any	MDL < result < RDL	—	—	—	Flag J
	Any	Calibration (dilution)	—	—	—	Flag D
	—	—	—	—	X	Flag E J+
#-1, 2, & 4	MBK	CCV	—	>CL	High	Flag UJ+ / J+
All	1,2,4-Trichlorobenzene & Naphthalene	LCS	<LCL	—	Low	Flag UJ- or J-
#-2 & 3	See List Below	Field Duplicate	—	>CL	—	Flag UJ / J

Notes: † RPD—Relative Percent Difference
‡ Bias High—Reported result may be lower, Reporting Limit (RL) is acceptable as reported. Bias Low—Reported results may be higher, RL may be higher than reported.

Duplicate Compound Flag List: 2-Hexanone (MBK), 4-Ethyltoluene, Benzene, Bromodichloromethane, Carbon Disulfide, Chloroethane, Chloroform, Cis-1,2-Dichloroethylene, Cyclohexane, Dibromochloromethane, Ethyl Acetate, Ethylbenzene, Isopropanol, Methyl Ethyl Ketone (2-Butanone or MEK), Methyl Isobutyl Ketone (4-Methyl-2-Pentanone or MIBK), Naphthalene, N-Heptane, N-Hexane, o-Xylene (1,2-Dimethylbenzene), Styrene, Tert-Butyl Methyl Ether, Tetrachloroethylene (PCE), Tetrahydrofuran, Toluene, Trichloroethylene (TCE), and Vinyl Acetate