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PROPOSED PLAN

30-inch Outfall Line, Six Mile Creek, and Southwest Drainage Ditch on the Former Lake Ontario Ordnance Works Niagara County, New York Formerly Used Defense Site: CO2NY0025

U.S. Army Corps of Engineers
Buffalo District
478 Main Street
Buffalo, New York 14202-3278

May 2025

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FIGURES

ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

AGC	U. S. Army Geospatial Center (formerly U.S. Army Topographic Engineering Center [TEC])
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COPC	constituent of potential concern
COPEC	constituent of potential ecological concern
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
EU	exposure unit
ft	foot (feet)
FUDS	Formerly Used Defense Sites
FUSRAP	Formerly Utilized Sites Remedial Action Program
GOCO	government owned – contractor operated
HHRA	human health risk assessment
HI	hazard index
LOOW	Lake Ontario Ordnance Works
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFSS	Niagara Falls Storage Site
NYSDEC	New York State Department of Environmental Conservation
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
ppm	parts per million
PRG	preliminary remediation goal
PRP	potentially responsible party
RI	remedial investigation
RSL	regional screening level
SARA	Superfund Amendments and Reauthorization Act
SBC	small-bermed clearing
SI	site investigation
SLERA	screening level ecological risk assessment
SVOC	semi-volatile organic compound
TEC	[U.S. Army] Topographic Engineering Center
TNT	trinitrotoluene
TOGS	Technical and Operational Guidance Series
USACE	U.S. Army Corps of Engineers
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USEPA	U.S. Environmental Protection Agency

VOC	volatile organic compound
WM	Waste Management, LLC
WWTP	waste water treatment plant
µg/L	micrograms per liter

1.0 PUBLIC COMMENT PERIOD

USACE will accept written comments on the proposed plan during the public comment period from **May 30, 2025, to July 30, 2025**.

Written comments may be submitted by email to derpfuds@usace.army.mil or postal mail to:

- U.S. Army Corps of Engineers
  Special Projects Branch
  Environmental Project Management Team
  478 Main Street
  Buffalo, NY 14202-3278

Public Meeting

- June 24, 2025 @ 6:30 PM
  Town of Lewiston Senior Center
  4361 Lower River Road
  Youngstown, NY 14174

For more information, the **Administrative Record** file is electronically accessible at:

- Lewiston Public Library
  305 South 8th Street
  Lewiston, NY 14092
- Youngstown Free Library
  240 Lockport Street
  Youngstown, NY 14174

Or **by appointment only**:

- U.S. Army Corps of Engineers Buffalo District
  478 Main Street
  Buffalo, NY 14202-3278
  1-800-833-6390 (Option 4)

2.0 INTRODUCTION

This **proposed plan** identifies the preferred remedial response for three areas on the former Lake Ontario Ordnance Works (LOOW) site in the towns of Lewiston and Porter, Niagara County, New York (Figure 1).

- 30-inch outfall line (within LOOW boundary)
- Six Mile Creek
- Southwest Drainage Ditch

Investigation of these areas has not identified contamination that presents unacceptable risk to human health or the environment.

The purpose of this proposed plan is to solicit input from the public about the **U.S. Army Corps of Engineers (USACE)** preferred response, which is **no further action**.

The **Department of Defense (DoD)** owned LOOW from 1941 to 1944 and used it to manufacture **trinitrotoluene (TNT)**. Afterwards, the site was subdivided and owned or operated by a variety of federal and non-federal landowners. It now consists of over 550 parcels within 7,567.46 acres (7,453.28 fee acres and 114.18 acres with perpetual easements). A majority of the site is bounded to the east by Porter Center Road, west by Creek Road, south by Swan Road, and north by Youngstown-Lockport Road. It is divided by Balmer Road, which runs east-west across the site. Easements have been established along Four Mile Creek to be used for drainage, for a 42-inch water intake line from the Niagara River, and for a sewer discharge house and 30-inch sewer outfall to the Niagara River. The water intake and sewer outfall are no longer used.

LOOW is considered a **Formerly Used Defense Site (FUDS)** because it was owned by, leased to, or otherwise possessed by the United States and transferred from DoD control prior to 17 October 1986. The DoD is responsible for identifying and remediating, as necessary, DoD-generated environmental contamination at FUDS properties in accordance with the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, as amended by the **Superfund Amendments and Reauthorization Act of 1986 (SARA)**, and the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. The U.S. Army oversees the FUDS program for DoD, and USACE manages the investigation and cleanup of these properties. The FUDS program was established under the **Defense Environmental Restoration Program (DERP)** and addresses releases or threatened releases attributable to DoD activities on FUDS properties. Properties within the former LOOW have been consolidated under one DERP-FUDS site number (CO2NY0025).

The USACE Buffalo District is issuing this proposed plan for the U.S. Army as the lead agency under the DERP-FUDS program. The **New York State Department of Environmental Conservation (NYSDEC)** is the primary state agency.

More detailed information regarding investigations conducted at the 30-inch outfall line, Six Mile Creek, and the Southwest Drainage Ditch on LOOW can be found in documents cited in Section 2.2 of this proposed plan. These documents are available at the Lewiston Public Library, the Youngstown Free Library, and by appointment at the USACE Buffalo District offices.

The U.S. Army is issuing this proposed plan as part of its public participation responsibilities under Section 117(a) of CERCLA, as amended by SARA, and Section 300.430(f)(2) of the NCP. Public comment is being sought on the proposed plan and the proposed remedy. Words and phrases that appear in bold in this document are defined in the glossary in Section 11.0.

3.0 BACKGROUND

3.1 LOCATION AND HISTORY

LOOW is a 7,567-acre site located in the towns of Lewiston and Porter, New York (Figure 1). It was used as a World War II TNT manufacturing facility. Current property owners within the LOOW footprint include local and federal governments, private corporations, and individual private residents.

Between 1941 and 1944, the DoD acquired property for the establishment of LOOW, a government owned – contractor operated (GOCO) facility built to manufacture flaked TNT. It consisted of six TNT lines (three pairs) with facilities for manufacturing, recovery, purification, concentration, and mixing of acid reagents. The manufacturing operations were concentrated in an approximate 2,500-acre developed area. Disposal of waste materials from the processing operations occurred on-site. In 1943, after nine months of production, LOOW was decommissioned due to excess TNT production at other DoD facilities. TNT manufacturing and waste handling operations were identified as having potentially impacted the land.

The developed area was subsequently used by other DoD agencies. The Air Force and Navy operated high-efficiency borane fuels manufacturing facilities and the Army constructed a Nike Missile Base. In the mid-1940s, 1,500 acres in the southern portion of LOOW was transferred to the USACE, Manhattan Engineer District, which later gave rise to the U. S. Atomic Energy Commission. While under operation by the Manhattan Engineer District, radioactive materials were stored in this area. Between the 1950s and 1980s, the radioactive materials were removed, consolidated, and transferred to the current 191-acre Niagara Falls Storage Site (NFSS). None of the facilities that were present after TNT production ended were located within or adjacent to the areas addressed in this proposed plan.

Surrounding properties are used for industrial, commercial, agricultural, residential, and recreational activities. They include waste treatment, storage and disposal facilities, a mobile home park, public school (Lewiston-Porter Central School District campus), several small farms and residences, a campground, and a religious destination. There are approximately 380 private residences within the original 7,567-acre LOOW land parcel. Most are located along Creek Road, the western section of Cain Road, Balmer Road, and Pletcher Road in the undeveloped area. The largest residential area is located along Balmer Road and includes the Youngstown Mobile Park. A 13-acre seasonal campground is located on the south side of Pletcher Road in the south-central portion of LOOW. The Shrine of Fatima is located on the north side of Swann Road in the undeveloped area. West of LOOW, the Lewiston-Porter Central School District campus is a 372-acre area that includes an elementary school, middle school, and high school. A RCRA Subtitle C waste treatment, storage and disposal facility owned and operated by Waste Management, LLC (WM) occupies the eastern section of LOOW. Modern Disposal Services, Inc. operates a RCRA Subtitle D disposal facility in the southeast section of LOOW.

3.2 PREVIOUS INVESTIGATIONS, STUDIES, RISK ASSESSMENTS AND PLANNING DOCUMENTS

Environmental investigations, studies, risk assessments, and planning documents that are relevant to this proposed plan are summarized below.

- History Search Report (1998). This study identified past operations that occurred at LOOW. Information from the report provided a basis for identifying possible areas of concern attributed to DoD activities (USACE 1998).
- Phase I Remedial Investigation (1999). This **remedial investigation (RI)** evaluated several areas that may have been impacted by DoD activities (USACE 1999). Sample

analysis focused on DoD marker compounds (boron, lithium, and explosives), although other constituents were analyzed in samples from specific areas and media.[1]

- Phase II RI (2002). This RI was performed to further evaluate areas of potential impact that were identified in the Phase I RI as well as additional areas that were potentially impacted by DoD activity (USACE 2002).
- Background Evaluation (2002). Background soil samples were collected during the LOOW Phase I and II RIs and during investigations of NFSS to obtain data representing the general area around LOOW that was not impacted by site operations. The evaluation included collecting samples of surface and subsurface soil, sediment, surface water, and groundwater that were analyzed for metals, boron, and lithium (Figure 2). A subset of the samples was analyzed for **volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), nitroaromatics**, **polychlorinated biphenyls (PCBs)**, and **radionuclides**.[2] Results were documented in the NFSS RI report (USACE 2007a).
- Examination of Historic Aerial Photography – Selected Sites (2002). This study examined historic aerial photographs of LOOW and identified ground anomalies that were considered areas of possible DoD activity (TEC 2002). Photographs from 1938, 1942, 1944, 1951, 1956, 1958, 1960, 1963, 1972, 1978, 1981, 1985, 1990, 1995, and 1997 were used. Many of the identified anomalies were subsequently addressed in a Small-Bermed Clearing Supplemental Investigation (USACE 2004) or Ground Disturbances Site Inspection (USACE 2014).
- Niagara County Department of Health Sampling of the Southwest Drainage Ditch (2002). This **site investigation (SI)** analyzed sediment and water samples from the Southwest Drainage Ditch adjacent to the Lewiston-Porter Central School campus (Niagara County Department of Health 2002).
- Small-Bermed Clearing Supplemental Investigation (2004). This SI evaluated features identified as *small-bermed clearings* (SBCs) to determine if DoD contamination was present (USACE 2004). SBCs were identified as anomalies during the examination of historic aerial photography and were believed to represent open burn pits that were used during TNT production. A subset of the SBCs was investigated. Soil samples were collected from 12 locations on four LOOW properties. They were analyzed for TNT, TNT degradation products, and total petroleum hydrocarbons – diesel range organics. A subset of the samples was also analyzed for VOCs, PAHs, PCBs, herbicides, pesticides, explosives, metals, and radionuclides. The investigation determined that there has been no release and no threat of a release of DoD contaminants at the SBCs that would represent a threat to public health or the environment.
- Phase III RI (2008). This RI focused on underground utilities at LOOW that included acid waste sewer lines, sanitary sewer lines, the 30-inch outfall, lines associated with

[1] Boron, lithium, and explosives were used as DoD marker compounds because prior DoD activities at LOOW involved these constituents. There has been no documented evidence that non-DoD entities at LOOW used them.
[2] SVOCs include **polycyclic aromatic hydrocarbons (PAHs)**.

drains, pits, and sumps, **wastewater treatment plant (WWTP)** lines, and unknown lines possibly related to TNT production (USACE 2008a).

- Screening Level Ecological Risk Assessment (2008). The **Screening Level Ecological Risk Assessment (SLERA)** evaluated potential risk to ecological receptors that may be exposed to contaminants (USACE 2008b).
- Human Health Risk Assessment (2008). The **Human Health Risk Assessment (HHRA)** evaluated ten **exposure units (EUs)** to estimate the nature and probability of adverse health effects in humans who may be exposed to contaminants (USACE 2008c).
- Niagara Falls Storage Site Historical Photographic Analysis (2009). This study evaluated historical aerial photographs of NFSS and a section of the Lewiston-Porter Central School District property. It expanded upon the area of research from the examination of historic aerial photographs conducted in 2002.
- Lewiston-Porter School Site Inspection (2011). Lewiston-Porter Central School District parcels were investigated to determine if previous DoD activities at LOOW resulted in impacts to soils and to an adjacent section of the Southwest Drainage Ditch. The SI was performed under two DoD programs. Chemical contaminants were evaluated under DERP-FUDS (USACE 2011a). Radionuclides were evaluated under the Formerly Utilized Sites Remedial Action Program **(FUSRAP)** (USACE 2011b).
- Ground Disturbances Site Inspection (2014). Ground disturbances in the LOOW undeveloped zone were inspected to determine if potential environmental impacts from DoD activities may be present. Evidence of potential contamination source areas or releases to environmental media was not identified. The report recommended no further action (USACE 2014).
- Management Action Plan (2015). Initially published in 2009, the Management Action Plan presented a strategy for completing and closing, on a real property basis, parcels on LOOW that are eligible for restoration under DERP-FUDS. Update 1.2 (2013) and 2.1 (2015) to the plan were based on progress made.

4.0 CHARACTERISTICS OF THE LOOW SITE

4.1 TOPOGRAPHY AND SURFACE DRAINAGE

Ground surface topography at LOOW and the surrounding area is relatively flat. Most near-surface soils have low permeability that restrict infiltration and result in a swampy landscape with poor surficial drainage. During the operation of LOOW, a system of ditches was used to drain surface water runoff across the site to a Central Drainage Ditch. The ditches are no longer maintained, and flow has been impeded. The Southwestern Drainage Ditch separates LOOW from the Lewiston-Porter Central School District campus. It discharges to Four Mile Creek north of Balmer Road.

Six Mile Creek originally flowed north across LOOW. It was diverted to the Southwest Drainage Ditch and discharges into Four Mile Creek. Four Mile Creek is a NYSDEC Class B water body from its mouth at Lake Ontario to approximately 0.9 mile upstream (located 0.3 mile

southeast of the intersection of Lake Road and Creek Road). The remaining upstream portion is a NYSDEC Class C water body. A Class B water body is suitable for primary and secondary recreational use and is not considered suitable as a potable water source. Class C surface water is suitable for fishing and non-contact recreation.

4.2 GEOLOGY AND HYDROGEOLOGY

LOOW is underlain by approximately 30 to 60 feet (ft) of unconsolidated glacial deposits that overlie shale bedrock of the Queenston Formation. Eight distinct stratigraphic units have been identified: fill, alluvium, upper glacial till, middle silt till, **glaciolacustrine** clay, glaciolacustrine silt and sand, lodgment till and bedrock.

Four units encountered during the RIs are described below in descending order.

- Alluvium: A discontinuous layer that is typically no greater 5 ft thick. It consists of fine sands, silt, and silty clay.
- Upper Glacial Till: This unit underlies the alluvium or is present at the ground surface. It is typically between 15 ft to 20 ft thick. It consists of two distinct strata; an upper silt till which overlies an upper clay till. The upper silt till is composed of compact to very dense, silt and fine sand with little gravel. The upper clay till is composed of stiff to hard silty clay with fine to coarse sand and fine gravel. Occasional discontinuous deposits of cobbles, gravel, sand, and silt layers typically less than 6 inches thick are present in lower portions of the unit.
- Middle Silt Till: This unit is composed of a well graded, compact to very dense silt and coarse to fine sand.
- Glaciolacustrine Clay: This unit consists of very soft to firm silty clay with traces of fine sand. It is typically high in natural moisture content, averaging approximately 28 percent.

Groundwater at LOOW occurs within two zones that are separated by a confining layer. Unconfined groundwater is present within the alluvium and upper glacial till. It lacks a continuous, dominant flow system. Groundwater flow is generally northwest and has localized and seasonal variations. A low permeability glaciolacustrine clay forms an **aquitard** that confines a lower water bearing zone that is continuous across LOOW. The lower water-bearing zone consists of sand and gravel and upper bedrock (Queenston Formation). Flow within this zone is generally to the northwest. Site groundwater is not used as a potable source.

4.3 LAND USE

A comprehensive plan for the Town of Porter identifies current land use as undeveloped and proposed future land use as industrial (Peter.j.smith & company, inc. 2004). The eastern section of LOOW is zoned general industrial and the western section is zoned agricultural and rural residential.

5.0 SCOPE AND ROLE OF THE ACTION

This proposed plan addresses Six Mile Creek, the Southwest Drainage Ditch, and a section of the 30-inch outfall line between the former LOOW WWTP and the Southwest Drainage Ditch (Figure 1). It does not include or directly affect other areas at LOOW. Environmental investigations, evaluations, and risk assessments were conducted by USACE to ensure that no unacceptable risk posed by contaminants exist at the sites. Based on investigation results and results of human health and ecological risk analysis, as described in Section 5, USACE has determined that no further action is necessary to protect human health and the environment at these areas.

6.0 30-INCH OUTFALL LINE

The section of the 30-inch outfall line addressed in this proposed plan is located between the WWTP and Southwest Drainage Ditch (Figure 3). This portion of the line is located on the former LOOW.

6.1 BACKGROUND

The 30-inch outfall line conveyed discharge from an on-site WWTP to the Niagara River. During TNT manufacturing, the outfall accepted untreated TNT wastewater, acid neutralized wastewater, and treated sanitary wastewater. It also received wastewater from other GOCO operations after TNT manufacturing had ceased. The Town of Lewiston purchased the outfall and WWTP in 1961. The line traverses properties owned by the Town of Lewiston, National Grid, Occidental Chemical Corporation, and the Lewiston-Porter Central School District.

The outfall was a concrete encased terracotta drain pipe. Burial depths varied from approximately 4 to 5 ft below ground surface (bgs) at the WWTP to approximately 14 to 16 ft bgs at its western end. It was tied into the Town of Lewiston's sanitary sewer system via a manhole west of River Road. The line has been relined, plugged, cut, and sealed by the Town of Lewiston on several occasions.

- A manhole at the WWTP was plugged where the line exited a mixing tank.
- In 1975 the line was sealed where it entered the WWTP.
- In 1976 the outfall was relined with polyethylene, diverted west of the Lewiston-Porter Central School District campus, and used for stormwater management.
- Sandbags were placed in a manhole on Lewiston-Porter Central School District property, immediately east of the Southwest Drainage Ditch.
- In 2004 the line was cut and plugged just east of Creek Road.
- In 2011 the line was cut and plugged where it crossed the Southwest Drainage Ditch. This was performed to mitigate a public safety hazard associated with falling into the ditch and used funds provided by the DoD Office of Economic Adjustment.

The LOOW Management Action Plan (USACE 2015) determined that there may be environmental impacts caused by **potentially responsible parties (PRPs)** to the section of the 30-inch outfall line and associated easement that is outside (west) of the LOOW boundary. This area was placed in a separate DERP-FUDS site-wide project that was established to resolve DoD

liability for contaminants that may be attributed to PRP or DoD and PRP activities. It is not included in this proposed plan.

6.2 CHARACTERISTICS

6.2.1 Phase I RI

The Phase I RI collected subsurface soil samples from seven locations along the line between the WWTP and the Southwest Drainage Ditch (Figure 3). All samples were field screened for TNT and samples from six locations were also analyzed for DoD marker compounds. Results were compared with background levels and NYSDEC standards or guidance values that are discussed below. The comparison incorporated a conservative approach that used one-tenth of the applicable standard or guidance value to identify **constituents of potential concern (COPCs)**.

- TAGM No. 4046, *Determination of Soil Cleanup Objectives and Cleanup Levels* (NYSDEC 1994a, 1995) was used as the regulatory guidance criteria for constituents other than explosives.
- TAGM No. 3028, *"Contained-In" Criteria for Environmental Media* (NYSDEC 1992) was used for explosives.

TNT and other explosives were not detected in any of the samples. Boron and lithium concentrations were consistent with background levels. The RI concluded that there were no adverse impacts to subsurface soil from DoD use (USACE 1999).

6.2.2 Phase III RI

The Phase III RI focused on a section of the outfall line between the WWTP and Lewiston-Porter Central School District property (Figure 3). A total of 31 samples were collected from below or within the line. They included subsurface soil outside of the line and sludge and water from within the line.[3] All samples were analyzed for DoD marker compounds and other non-DoD constituents (VOCs, PAHs, PCBs, pesticides, and metals).

Soil and sludge analytical results were screened against **U.S. Environmental Protection Agency (USEPA)** Region 9 **preliminary remediation goals (PRGs)** in effect at the time for residential use (USEPA 2004). The approach resulted in a conservative retainment of COPCs for further evaluation during risk assessment. Both **carcinogenic risk** and non-carcinogenic risk to human health were considered. To account for potential additive or cumulative effects of multiple non-carcinogenic contaminants, one-tenth of the acceptable non-carcinogenic threshold criteria was used for screening. For contaminants with both carcinogenic and non-carcinogenic PRGs, the lower of the two screening values was used. Constituents with no PRG or no PRG for a similar and appropriate chemical surrogate were compared to the NYSDEC screening values in TAGM No. 4046. Only those values that were derived for protection of human health were considered. Metals results were also compared to site-specific background concentrations. Screening results are summarized below.

- Subsurface soil: Six COPCs were identified based on the residential soil PRGs; metals (aluminum, arsenic, chromium, manganese, and vanadium) and a PAH (benzo(a)pyrene).

[3] Groundwater was not encountered, and surface soil samples were not collected because the outfall was greater than 4 ft. bgs.

Two COPCs (aluminum and arsenic) were identified based on industrial soil screening values from TAGM 4046 and background concentrations.

- Sludge: 12 COPCs were identified based on the residential soil PRGs; metals (aluminum, arsenic, chromium, manganese, mercury, and vanadium) and PAHs (benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene). Eight COPCs were identified based on industrial soil screening values from TAGM 4046; metals (aluminum, arsenic, and chromium) and PAHs (benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene).

Water sample results were screened against USEPA PRGs for tap water. Although water from within the line would not be used as a drinking water source, the approach resulted in a conservative retainment of COPCs for further evaluation during risk assessment. The NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1., *Ambient Water Quality Standards and Guidance Values* (NYSDEC 1998), was also used as a secondary comparison criteria. Six COPCs were identified based on comparison to the tap water PRG. They included metals (aluminum, arsenic, chromium, manganese, and vanadium) and a pesticide (Aldrin).

6.3 SUMMARY OF SITE RISKS

6.3.1 Human Health Risks

The HHRA evaluated potential risks to humans at the former LOOW (USACE 2008c). Underground utilities were designated as EU10, which included a segment of the 30-inch outfall line between the WWTP and the Southwest Drainage Ditch, and other utilities.

The HHRA was prepared following USEPA guidance and considered people who may come in contact with the COPCs. It determined reasonable maximum exposures and baseline risks associated with exposure by residents (adult and child) and construction workers. Exposure pathways that were considered included inhalation of fugitive dust from soil, dermal contact with soil, sludge, and water, and incidental ingestion of soil, sludge, and water.

Based on a review of the data and exposure pathways, the HHRA evaluated carcinogenic and non-carcinogenic risks. For carcinogenic risk, the HHRA used USEPA's acceptable risk range of 1-in-10,000 ($1x10^{-4}$) to 1-in-1,000,000 ($1x10^{-6}$) for CERCLA sites when making risk-based decisions. Non-carcinogenic health effects were evaluated in terms of a **hazard index (HI)**. Risk is considered acceptable if the HI is 1 or less.

The HHRA determined that there were no exceedances of carcinogenic and non-carcinogenic risks thresholds for the resident adult, resident child, and construction worker from exposure to COPCs at the 30-inch outfall line.

6.3.2 Ecological Risks

Ecological risks were not assessed due to the depth of the outfall line (4 to 16 ft bgs), which would preclude exposure to most plants and animals (ecological receptors).

6.3.3 Re-evaluation of Risks

Due to the time that has lapsed since the original risk assessment was performed, the conclusions were re-evaluated to ensure that there were no changes in risk assessment methodology or

toxicity criteria that would change the risk characterization conclusions. The risk assessment conclusions were reviewed and found to be still valid (USACE 2021). There have not been any significant changes in risk assessment methodology or toxicity criteria for any of the constituents detected that would change the previous risk characterization conclusions. There is no current indication that any of the compounds previously measured in or around the 30-inch outfall would pose an unacceptable risk to human health or the environment.

7.0 SIX MILE CREEK

7.1 BACKGROUND

This drainage feature originates in a DERP FUDS ineligible area and crosses LOOW parcels that are DERP FUDS eligible. There are two branches of Six Mile Creek (western and eastern) that drain the northeastern portion of LOOW (Figure 1). TNT and chemical warfare agents were stored in the Six Mile Creek drainage area.

7.2 CHARACTERISTICS

The Phase I RI collected sediment samples from one location (C9-6-SD-2) on the western branch and two sediment samples (C9-6-SD-3, -4) from the eastern branch (Figure 4). A surface water sample was also collected from a downstream location (C9-6-SW-2) on the western branch.

All sediment samples were field screened for VOCs, PAHs, PCBs, TNT, and radioactivity. Sediment samples from the eastern branch and the surface water sample were also analyzed for DoD marker compounds and chemical warfare degradation products.[4]

Sediment results were compared with background levels and criteria presented in NYSDEC *Technical Guidance for Screening Contaminated Sediments* (NYSDEC 1994b). Surface water analytical results were compared to USEPA PRGs for tap water and TOGS 1.1.1. (secondary criteria which are also protective of aquatic life). The field screening did not identify VOCs, PCBs, and elevated radioactivity in sediment. Field screening identified PAHs in the sediment samples. TNT was identified in the eastern branch downstream sample at 0.1 part per million (ppm), which was below its screening criterion. Laboratory analytical results identified boron and lithium in the sediment and water samples at concentrations below background levels and screening criteria. Chemical warfare degradation products were not identified.

7.3 SUMMARY OF SITE RISKS

Preliminary screening conducted during the RI did not identify COPCs or COPECs in Six Mile Creek. Based on these results, a HHRA and SLERA were not performed for this area. Due to the time that has lapsed since the original risk assessment was performed, the conclusions were re-evaluated to ensure that there were no changes in risk assessment methodology or toxicity criteria that would change the risk characterization conclusions. This screening was updated to

[4] Chemical warfare degradation products were analyzed because this area was near the former Northeast Chemical Warfare Depot. Degradation products analyzed included 1,4-dithiane, p-chlorophenylmethylsulfide, p-chlorophenylmethylsulfoxide, p-chlorophenylmethylsulfone, diisopropylmethylphosphonate, dimethylmethylphosphonate, isopropylmethylphosphonic acid, methylphosphonic acid, thiodiglycol, fluoroacetic acid, 1,4-oxathiane, dimethyldisulfide, chloroacetic acid, and benzothiazole.

compare to current human health and ecological risk-based screening criteria, as well as site-specific background concentrations (USACE 2021). Based on the updated comparison, no new COPCs or COPECs were identified in Six Mile Creek. The results did not warrant sampling of groundwater or soil beneath the creek channel.

8.0 SOUTHWEST DRAINAGE DITCH

8.1 BACKGROUND

The Southwestern Drainage Ditch traverses multiple parcels within LOOW and discharges to Four Mile Creek north of Balmer Road (Figure 1). It received surface water runoff from LOOW when TNT manufacturing and other GOCO operations were active.

8.2 CHARACTERISTICS

Sampling of the Southwest Drainage Ditch occurred over several SI and RI programs.[5]

8.2.1 Phase I RI

The Phase I RI collected three sediment samples and one surface water sample (Figure 4). The sediment samples were taken upgradient, adjacent to, and downgradient of a slurry pond that was used as a potable water treatment structure during TNT manufacturing and subsequent GOCO operations. They were field screened for VOCs, PAHs, PCBs, and TNT. Sediment and surface water samples taken adjacent to the slurry pond were also analyzed for DoD marker compounds.

Field screening identified PAHs in the sediment samples. Boron and lithium were detected in the sediment and water from the sample adjacent to the slurry pond. The sediment results were below background levels. The surface water results were below USEPA PRGs for tap water and NYSDEC TOGS 1.1.1 criteria.

8.2.2 Niagara County Health Department Sampling

In 2002 the Lewiston-Porter Central School District collected three sediment and surface water samples adjacent to the school campus. The samples were taken from points where the Southwest Drainage Ditch enters the campus, exits the campus, and at a location mid-way between these points. The downstream sample (i.e. where the ditch exits the campus) was analyzed for VOCs, SVOCs, PCBs, metals, and lithium. All other samples were analyzed for SVOCs and lithium. The Niagara County Health Department reviewed the results and determined that the concentrations of metals and lithium were typical of background levels, and detected organic compounds were below levels of concern (Niagara County Department of Health 2002).

8.2.3 Phase III RI

The Phase III RI collected one surface water and one sediment sample where the 30-inch outfall line crossed the ditch (Figure 3). Both samples were analyzed for DoD marker compounds. Water sample results were screened against background levels, USEPA Region 9 PRGs, and NYSDEC TOGS 1.1.1. criteria. Sediment results were compared to background levels and

[5] Groundwater was not encountered during the investigations.

USEPA Region 9 PRGs (USEPA 2004). Explosives were not detected. Boron and lithium in the water and sediment samples did not exceed the screening criteria.

8.2.4 Lewiston-Porter Central School District Sampling

In 2010 USACE conducted a SI on Lewiston-Porter Central School District property that included collecting six surface water, sediment, and subsurface soil samples from the Southwest Drainage Ditch (Figure 5). The samples were analyzed for VOCs, SVOCs, PCBs, metals, and DoD marker compounds.

Surface water results were compared to background threshold values, USEPA PRGs for tap water (USEPA 2010), and ecological risk-based screening levels.[6] PCBs were not detected. Three organic compounds (carbon disulfide, bis (2-ethylhexyl) phthalate, and 2-nitrotoluene) were detected above one or more of their screening levels. These compounds were not found in the upstream sample. Carbon disulfide and bis (2-ethylhexyl) phthalate were also present in their associated laboratory blank samples and their detected concentrations in water were attributed to laboratory contamination. One sample contained 2-nitrotoluene at 2.1 micrograms per liter (µg/L), slightly above the tap water PRG (0.31 µg/L). This result was also compared to a risk-based screening level developed for NFSS (25,000 µg/L) that was considered to be protective for a hypothetical child living on-site (USACE 2007b). Based on this comparison, the single detection of 2-nitrotoluene was not considered to represent a risk to human health. Lithium was detected in all samples below the tap water PRG and not considered to represent a risk to human health.

Sediment results were compared to background levels, USEPA consensus threshold effects concentrations, and USEPA soil PRGs for residential use. VOCs, PCBs, and DoD marker compounds were not detected. Metals were not detected above their background levels. PAHs were found in all of the samples. The highest concentrations were present in the central portion of the ditch. Most of the PAHs were attributed to urban sources from the surrounding area. The investigation concluded that probable exposure frequencies and durations would not result in risk to human receptors.

Subsurface soil results were compared to background levels and USEPA Region 9 PRGs. VOCs, SVOCs, PCBs, and DoD marker compounds were not detected. Metals were not detected above background levels. One PAH (dibenz[a,h]anthracene) was slightly above its background level and PRG. It was not considered to represent an unacceptable risk because the default and conservative residential exposure assumptions used to develop the PRG (now known as "regional screening level" or RSL) did not reflect the actual exposure a person would have to sediments in the ditch at this location.

Split samples were also collected for analysis of radionuclides. The results were compared to background levels, screening values developed for the protection of human health, and ecological screening values (USACE 2011b). The SI concluded that there were no radiological concerns from past U.S. Atomic Energy Commission activities on LOOW.

[6] Ecological surface water screening levels were compiled for the NFSS and are found in Table C-3 (USACE 2007b).

8.3 SUMMARY OF SITE RISKS

Preliminary screening conducted during the SI and RI programs did not identify COPCs or COPECs in the Southwest Drainage Ditch. Based on these results, a HHRA and SLERA were not performed for this area. Due to the time that has lapsed since the original risk assessment was performed, the conclusions were reevaluated to ensure that there were no changes in risk assessment methodology or toxicity criteria that would change the risk characterization conclusions. The risk reevaluation compared previous screening results to updated ecological and human health risk-based screening levels. No new COPCs or COPECs were identified in the Southwest Drainage Ditch (USACE 2021).

9.0 PREFERRED ALTERNATIVE

USACE has determined that no further action is warranted to protect human health and the environment at the 30-inch outfall line, Six Mile Creek, and Southwest Drainage Ditch; therefore, no remedial action objectives and no alternative remedial actions were developed and considered. The basis for this recommendation includes the following information that was gathered and evaluated in the investigations and HHRA.

- 30-inch outfall line: This area was investigated in the Phase I and Phase III RIs. Subsurface soil outside of the line and sludge and water within the line were sampled. COPCs were established using residential and industrial screening criteria and were further evaluated in a HHRA. The HHRA determined that there were no exceedances of risk thresholds for hypothetical residents and construction workers that would be exposed to these media. The depth of the line (4 to 16 ft bgs) precluded the need for a SLERA.
- Six Mile Creek: This area was investigated in the Phase I RI. Sediment and surface water samples were collected from two branches of the creek. All field screening and laboratory analytical results were below background levels and screening criteria. Risk-based screening criteria were protective of both ecological receptors and human health. COPCs and COPECs were not identified.
- Southwest Drainage Ditch: This area was investigated in multiple SIs and RIs. Analytical results for surface water, sediment, and subsurface soil samples were below background levels and screening criteria or were determined to not represent a risk to human and ecological receptors. COPCs and COPECs were not identified.

Based on the investigations, HHRA, as well as a recent review of human health and ecological risk assessment methods and conclusions, no remedial action is necessary to protect human health and the environment at these areas on the former LOOW. This recommendation is not a final decision. USACE, in coordination with NYSDEC, will make a final decision after reviewing and considering all comments submitted during the public comment period. For sites with a no further action decision, future re-examination is allowable if new or additional information concerning potential DoD contamination provides credible evidence of likely FUDS-eligible projects or reactivation of the existing project.

10.0 COMMUNITY PARTICIPATION

USACE will provide information to the public regarding this proposed plan for three areas on the former LOOW through a public meeting and the Administrative Record file.

10.1 PUBLIC COMMENT PERIOD

The public comment period for this proposed plan is May 30, 2025, to July 30, 2025. Members of the public who wish to comment may submit their comments by sending an email to *derpfuds@usace.army.mil*. Please refer to this proposed plan or LOOW in any comments.

Comments may also be submitted in writing to USACE at the following address:

U.S. Army Corps of Engineers
Special Projects Branch, Environmental Project Management Team
478 Main Street
Buffalo, NY 14202-3278

If there are any questions regarding the comment process or the proposed plan, please direct them to the address noted above or call 1-800-833-6390 (Option 4).

10.2 PUBLIC MEETING

The public meeting will be held on June 24, 2025 @ 6:30 PM Eastern Standard Time at the following address:

Town of Lewiston Senior Center
4361 Lower River Road
Youngstown, NY 14174

10.3 ADMINISTRATIVE RECORD

For more information, the administrative record file is accessible electronically at:

Lewiston Public Library
305 South 8th Street
Lewiston, NY 14092

Youngstown Free Library
240 Lockport Street
Youngstown, NY 14174

The administrative record file is also accessible by appointment only at:

U.S. Army Corps of Engineers Buffalo District
478 Main Street
Buffalo, NY 14202-3278
1-800-833-6390 (Option 4)

11.0 REFERENCES

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12.0 GLOSSARY OF TERMS

Administrative Record	The body of documents that informs the public of the site investigation and forms the basis for the selection of a particular response at a site. Included are relevant documents that were relied upon in selecting the response action as well as relevant documents that were considered but ultimately rejected.
Aquitard	A geologic formation or group of formations through which virtually no water moves.
Carcinogenic risk	The likelihood that an individual will develop cancer from direct exposure to chemicals classified as carcinogens or known to cause cancer. The USEPA defines acceptable cancer risk ranges resulting from chemical exposure as one additional cancer case in a population of 1,000,000 ($1x10^{-6}$) to no more than one additional cancer case in a population of 10,000 ($1x10^{-4}$).
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	A federal law enacted in 1980 and amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA) and in 2001 by the Small Business Liability Relief and Brownfields Revitalization Act, which concerns investigation and response actions regarding hazardous substances, pollutants, and contaminants.
Constituents of potential concern (COPCs)	Constituents that could potentially give rise to unacceptable human health risks, based on theoretical upper-bound exposure estimates for exposure pathways.
Constituents of potential ecological concern (COPECs)	Constituents that could potentially give rise to unacceptable risks to the environment (ecological risks), based on theoretical upper-bound exposure estimates for exposure pathways.
Defense Environmental Restoration Program (DERP)	The DoD environmental restoration program authorized as a section of SARA in 1986. DERP authorizes and governs the evaluation and cleanup of contamination and other environmental conditions at DoD installations and Formerly Used Defense Sites.
Department of Defense (DoD)	An executive branch department of the U.S. federal government charged with coordinating and supervising all agencies and functions of the government concerned directly with national security and the U.S. Armed Forces.
Exposure unit (EU)	An area over which receptors at a contaminated site are expected to integrate exposure when routinely present at the site.

Formerly Used Defense Sites (FUDS)	Properties that, prior to October 16, 1986, were owned, leased, or otherwise possessed by the U.S. government and were the responsibility of the DoD.
Formerly Utilized Sites Remedial Action Program (FUSRAP)	A program initiated in 1974 to identify, investigate, and, if necessary, clean up or control sites throughout the United States that have been contaminated as a result of the nation's early atomic weapons and energy programs.
Glaciolacustrine	Related to or coming from lakes in which much or all of the water came from the melting of a glacier.
Hazard index (HI)	Noncancer causing health effects are expressed as a hazard index, which is a ratio of estimated exposure deemed acceptable. Any hazard index above 1 indicates the potential for adverse (noncancer) health effects to occur.
Human Health Risk Assessment (HHRA)	An evaluation of the risk posed to human health should remedial activities not be implemented.
National Oil and Hazardous Substances Pollution Contingency Plan (NCP)	Revised in 1990, the NCP is a regulation promulgated by USEPA that provides the regulatory framework for response actions under CERCLA, as well as National and Regional Response Teams that respond to releases of national or regional significance (40 CFR Part 300). The NCP designates the DoD as the removal response authority for DoD installations, and incidents involving DoD military weapons and munitions or weapons and munitions under the jurisdiction, custody, or control of DoD (40 CFR § 300.120(c) and (d)).
New York State Department of Environmental Conservation (NYSDEC)	A department of New York State government created in 1970 to protect and enhance the environment.
Nitroaromatics	Organic compounds that are relatively rare in nature and have been introduced into the environment mainly by human activities. They have been widely used in the synthesis of many diverse products including dyes, polymers, pesticides, and explosives.
No further action	A designation for a site that has been determined to require no further investigation or remedial action to address unacceptable risk posed by potential hazardous substances, pollutants, or contaminants.
Polychlorinated biphenyls (PCBs)	Organic chlorine compounds that were once widely used as dielectric and coolant fluids in electrical apparatus, carbonless copy paper, and in heat transfer fluids. According to the USEPA, PCBs cause cancer in animals and are probable human carcinogens.
Polycyclic aromatic hydrocarbons (PAHs)	Chemical compounds containing only carbon and hydrogen arranged in multiple six-carbon rings. They are found naturally in coal and crude oil and are also present in products made from fossil fuel. Many PAHs have toxic or carcinogenic properties.

Potentially responsible party (PRP)	Any individual or organization, including owners, operators, transporters, or generators who are potentially responsible for, or contributing to, a spill or other contamination at a CERCLA or DERP-FUDS site.
Preliminary remediation goals (PRGs)	The average concentration of a chemical in an exposure area that will yield the specified target risk in an individual who is exposed at random within an exposure area.
Proposed Plan	In the first step in the remedy selection process, the lead agency identifies the remedial action alternative that best meets the requirements in the NCP § 300.430(f)(1) and (f)(2) and presents that preferred alternative to the public in a proposed plan. The purpose of the proposed plan is to supplement the RI/FS and provide the public with a reasonable opportunity to comment on the preferred alternative for remedial action, as well as alternative plans under consideration, and to offer comments on the proposed remedial action at a site.
Public comment period	The time allowed for the members of an affected community to express views and concerns regarding an action proposed to be taken by the Corps of Engineers.
Radionuclides	Atoms that have excess nuclear energy that makes them unstable and undergo radioactive decay.
Remedial Investigation (RI)	A step in the CERCLA process. It involves a study that determines the nature and extent of chemical releases, evaluates the fate and transport of those releases, and estimates the associated current and long-term risks.
Screening Level Ecological Risk Assessment (SLERA)	A determination of whether site chemicals have the potential to cause adverse effects to sensitive ecological features found at a site.
Semi-volatile organic compounds (SVOCs)	A subgroup of volatile organic compounds that tend to have a higher molecular weight and higher boiling point temperature. Polycyclic aromatic hydrocarbons are included in this group.
Site Investigation	The first step in the CERCLA process in which information is gathered and samples are analyzed to determine the risk that a site might pose to people of the environment.
Superfund Amendments and Reauthorization Act of 1986 (SARA)	The Superfund Amendments and Reauthorization Act of 1986 (SARA) amended CERCLA by making numerous changes and expanding the scope of the Superfund program.
Trinitrotoluene (TNT)	An organic chemical compound that is best known as an explosive material with convenient handling properties.
U.S. Army Corps of Engineers (USACE)	A branch of the U.S. Army with special expertise in carrying out CERCLA/NCP investigations and response actions at former DoD sites.

U.S. Environmental Protection Agency (USEPA)	An agency of the federal government established in 1970 and charged with protecting human health and the environment. The USEPA is responsible for setting the procedures for evaluating risks to human health and the environment, and for defining when the risks are unacceptable and therefore remedial action is warranted.
Volatile organic compounds (VOCs)	Organic compounds that have a high vapor pressure at room temperature. Some VOCs are dangerous to human health or cause harm to the environment.
Wastewater treatment plant (WWTP)	Process facility to remove contaminants from wastewater, sewage, or stormwater and convert it into an effluent that can be returned to the water cycle with minimum impact on the environment.

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FIGURES

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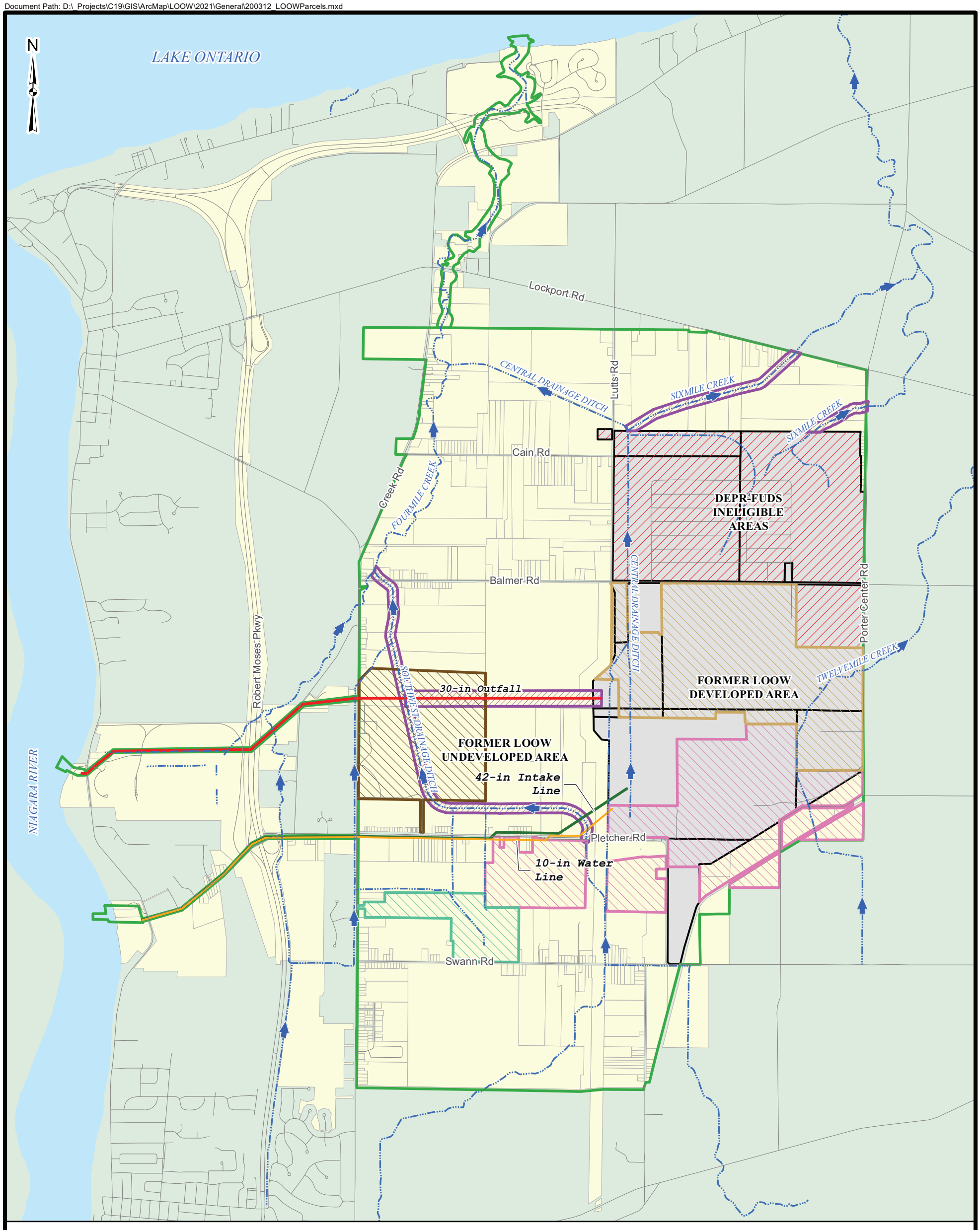

Legend

- Former LOOW Boundary with Easements
- Former LOOW Developed Areas
- Proposed Plan Area
- DERP-FUDS Ineligible Areas
- Parcel Boundary
- 30-Inch Outfall Line
- 42-Inch Intake Line
- 10-Inch Water Line
- Surface Water Flow Direction
- Lewiston-Porter Central School
- Modern Disposal
- Shrine of Fatima
- Waste Management TSDF

0 1,500 3,000 6,000 Feet

US Army Corps of Engineers Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

FORMER LOOW PARCELS AND PROPOSED PLAN AREAS

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LAKE ONTARIO ORDNANCE WORKS
NIAGARA COUNTY, NEW YORK

FIGURE 1

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Lockport Rd
Lutts Rd
Cain Rd
Creek Rd
Balmer Rd
Porter Center Rd
Robert Moses Pkwy
Pletcher Rd
Swann Rd

BKGD-10
BKGD-2
BKGD-14
BKGD-7
BKGD-7A
BKGD-8
BKGD-8B
BKGD-15
BKGD-SD-1
BKGD-SW-1
BKGD-9
BKGD-9A
BKGD-17
BKGD-18
SWBKGD-4
SDBKGD-4
SWBKGD-5
SDBKGD-5
SWBKGD-6
SDBKGD-6
SWBKGD-3
SDBKGD-3
BKGD-16
PZ-7M
SWBKGD-7
SDBKGD-7
BKGD-3
SWBKGD-8
SDBKGD-8
W-3
PZ-8M
PZ-8D
BKGD-11
SWBKGD-1
SDBKGD-1
SWBKGD-9
SDBKGD-9
PZ-18S
PZ-18M
PZ-25S
MW-17
BKGD-1
BKGD-5
SWBKGD-2
SDBKGD-2
PZ-21S/M/D
PZ-23S
SP-14D
SP-9M/D
SP-2D
SP-5M
SWBKGD-10
SDBKGD-10
SP-1M/D
W-11
BKGD-4
MW-14D
GW-2A
GW-2B
MW-13D
W-12
MW-12D
BKGD-6
BKGD-SD-2
BKGD-SW-2
BKGD-12
BKGD-13

Legend

- Groundwater Sample
- Surface/Subsurface Soil Sample
- Surface Water Sample
- Sediment Sample
- NFSS Site Boundary
- Developed Portion of LOOW
- Undeveloped Portion of LOOW

0 1,250 2,500 5,000 Feet

US Army Corps of Engineers
Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

BACKGROUND SAMPLE LOCATIONS

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LAKE ONTARIO ORDNANCE WORKS
NIAGARA COUNTY, NEW YORK

FIGURE 2

N

SOUTHWEST DRAINAGE DITCH

X000 X001 X002 X003 X004 X005 X006 X007 X008 X009 X010 X011 X012 X013 X014 X015 X016 X017 X018 X019 X020 X021 X022 X023 X024 X025 X026

C7-30-12 C7-30-13 C7-30-14 C7-30-15 C7-30-16 C7-30-17 C7-30-18

30-in Outfall

Town of Lewiston

Lewiston-Porter Central School

Legend

- Phase I RI Sampling Locations
- Phase III RI Sampling Locations
- 30-Inch Outfall Line
- Former LOOW Boundary with Easements
- Former LOOW Developed Areas
- Parcel Boundary

0 250 500 1,000 Feet

US Army Corps of Engineers Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

30-INCH OUTFALL PHASE I & III REMEDIAL INVESTIGATION SAMPLING LOCATIONS

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LAKE ONTARIO ORDNANCE WORKS
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FIGURE 3

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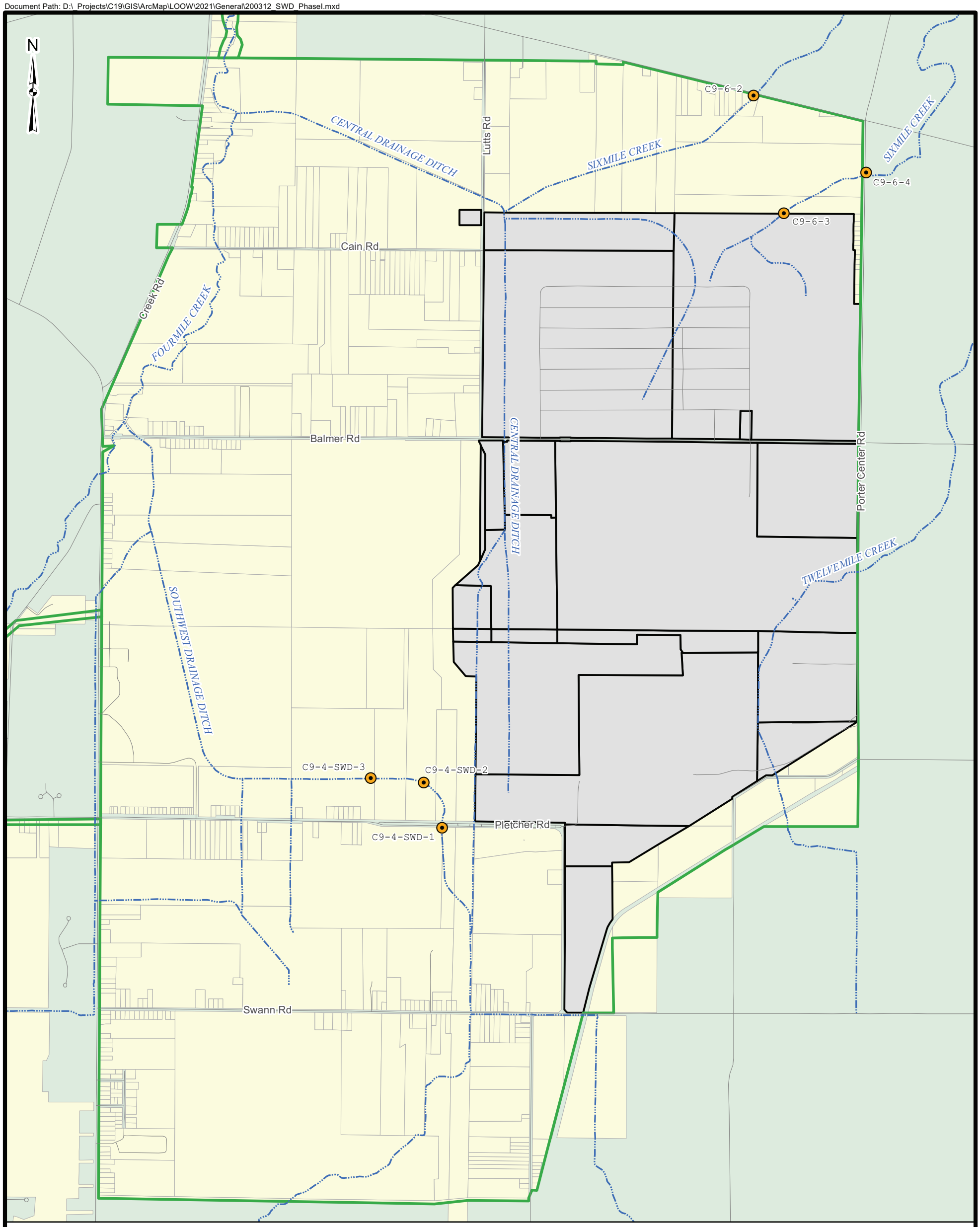

Legend

- Phase I RI Sampling Locations
- Former LOOW Boundary with Easements
- Former LOOW Developed Areas
- Parcel Boundary

0 1,000 2,000 4,000 Feet

US Army Corps of Engineers Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

SIX MILE CREEK AND SOUTH WEST DRAINAGE DITCH
PHASE I REMEDIAL INVESTIGATION SAMPLE LOCATIONS

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LAKE ONTARIO ORDNANCE WORKS
NIAGARA COUNTY, NEW YORK

FIGURE 4

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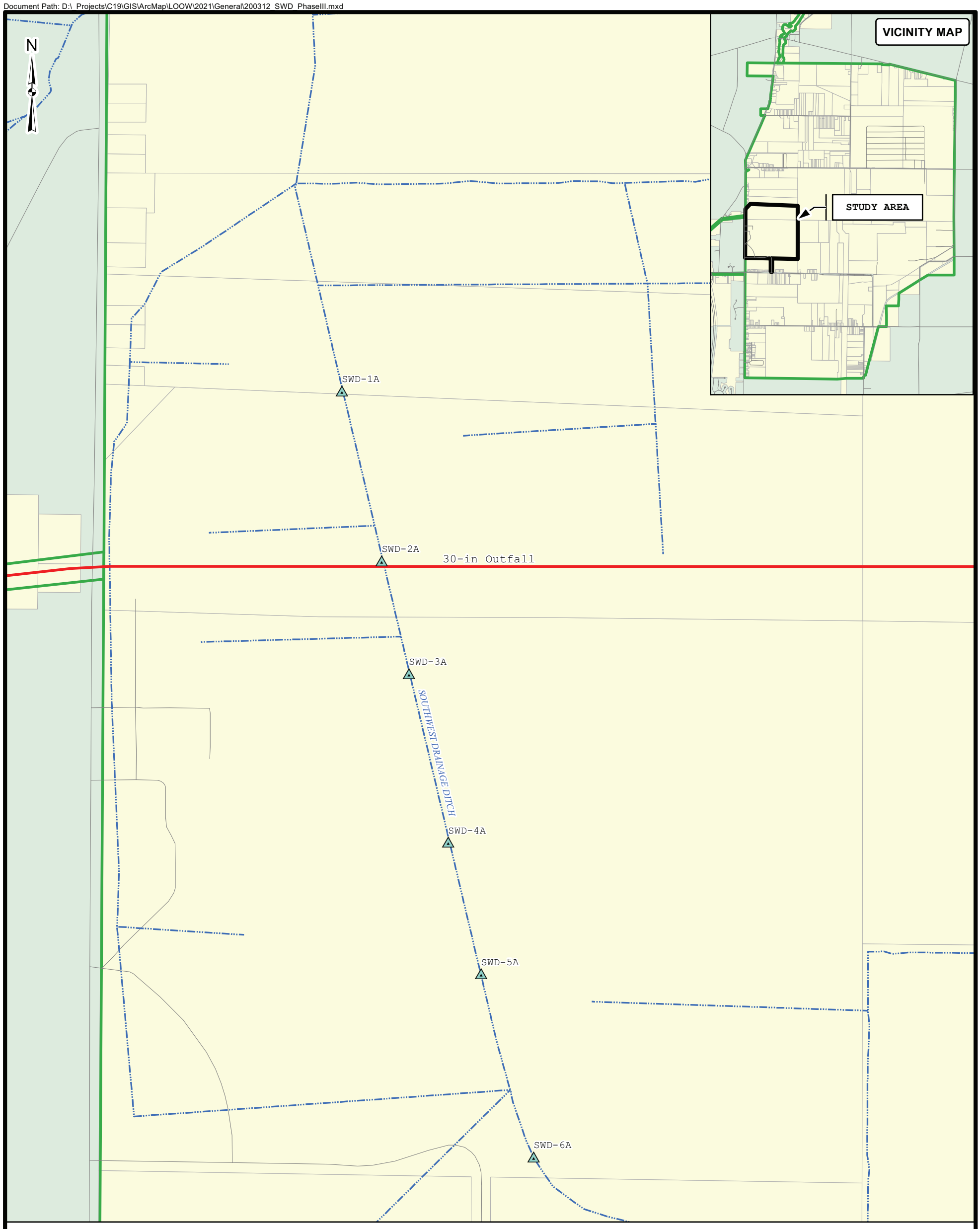

Legend

- Phase III RI Surfacewater/Sediment/Soil Sample Location
- 30-Inch Outfall Line
- Parcel Boundary

0 250 500 1,000 Feet

US Army Corps of Engineers
Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

SOUTHWEST DRAINAGE DITCH SURFACE WATER, SEDIMENT AND SOIL SAMPLES COLLECTED DURING THE LEWISTON-PORTER CENTRAL SCHOOL DISTRICT SITE INVESTIGATION

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LAKE ONTARIO ORDNANCE WORKS
NIAGARA COUNTY, NEW YORK

FIGURE 5

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