Eighteen Mile Creek Superfund Site
Operable Unit 3
Niagara County, New York

July 19, 2024

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the remedial alternatives considered to address contaminated sediment and floodplain soil in a discrete portion of the Eighteen Mile Creek Superfund site (Site) referred to herein as Operable Unit 3 (OU3), and also identifies its preferred remedial alternative with the rationale for this preference. OU3 is comprised of the portion of the Eighteen Mile Creek (Creek) beginning from Harwood Street and extending downstream for approximately 5.3 miles, referred to herein as the sediment transitional area (STA), as well as certain floodplain soil adjacent to the STA[1]. In September 2016, EPA issued a Record of Decision (ROD) for OU2 at the Site in which it selected a remedy addressing soil and sediment in the Creek Corridor, which is the approximately 4,000-foot-long segment of the Creek that extends from the New York State Barge Canal (Canal) to Harwood Street in the City of Lockport. Refer to the Scope and Role Section on the next page for details regarding that ROD, referred to as the OU2 ROD. The STA is the portion of the Creek commencing immediately downstream of OU2. A Site location map is provided as Figure 1.

This Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA), the lead agency, in consultation with the New York State Department of Environmental Conservation (NYSDEC), the support agency. EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also known as Superfund), as amended, and Section 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of contamination at OU3 of the Site and the remedial alternatives summarized in this Proposed Plan are more fully described in the Remedial Investigation (RI) Report, dated February 2022, and the Feasibility Study (FS) Report, dated January 2023, as well as other documents in the Administrative Record file for this decision. EPA encourages the public to review these documents to gain a more comprehensive understanding of the Site, the Superfund activities that have been conducted, the remedial alternatives that have been considered, and the remedial alternative that is being proposed.

The purpose of this Proposed Plan is to inform the public of EPA's preferred alternative and to solicit public comments pertaining to all of the remedial alternatives evaluated, including the preferred alternative. The preferred alternative for the contaminated sediment, referred to as Alternative STA5, includes the following: excavation and off-Site disposal of contaminated sediment, placing clean backfill over disturbed areas, long-term monitoring and institutional controls, such as existing fish consumption advisories. The preferred alternative for floodplain soil at properties adjacent to the STA, referred to as Soil3, includes the excavation and off-Site disposal of lead and polychlorinated biphenyl (PCB) contaminated floodplain soil at 17 discrete areas encompassing approximately 11 acres. During the pre-design investigation, sampling of additional floodplain soil would be performed at properties adjacent to the STA, including properties that have not yet been sampled, and separate risk evaluations would be conducted for each of these areas. The FS includes estimates that this sampling and the separate risk evaluations could reveal up to an additional 11 acres requiring remediation.

In addition, investigations of groundwater at the Site focused on the sources of contamination within the Creek Corridor (OU2) since groundwater predominantly flows

[1] Although EPA's OU3 investigation of the Creek initially included the full length of the Creek downstream of Harwood Street (Reaches 9 through 1), and adjacent floodplains to this portion of the Creek, EPA has redefined OU3 to consist of the Creek (bank to bank) starting at the downstream end of OU2 (beginning of Reach 9) and extending approximately 3,800 feet downstream of the convergence with the East Branch in Reach 6 at Station 312+93, and adjacent floodplains. The STA extends for approximately 5.3 miles (28,000 ft) and includes Reaches 9, 8, 7, and the upper portion of Reach 6. The station number refers to the length of the centerline of the Creek starting from the headwaters at the Canal. The downstream extent of the STA was determined based on an assessment of the mixing and depositional zone downstream of the confluence between the East Branch and the Creek. Portions of the Creek downstream of OU3 will be addressed in a future operable unit(s).

toward the Creek. Studies initiated by NYSDEC in 1999 revealed generally low-level concentrations of volatile organic compounds (VOCs) in groundwater. As part of EPA's investigation of groundwater at properties along the Creek Corridor, additional groundwater monitoring wells were installed, and sampling revealed results consistent with NYSDEC's investigation. Refer to the *Results of EPA's Groundwater Investigation* section below for more details regarding the contaminant concentrations detected. For the reasons discussed on Page 7, EPA is recommending that no action is necessary to address groundwater within the Creek Corridor at the Site.

The proposed alternatives described in this Proposed Plan to address the sediment and soil contamination are the preferred alternatives for OU3 of the Site. Changes to the preferred alternative, or a change from the preferred alternative to another remedial alternative described in this Proposed Plan, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selection of a remedy will be made after EPA has taken into consideration all public comments. For this reason, EPA is soliciting public comments on all of the alternatives considered in the Proposed Plan and on the detailed analysis section of the FS Report because EPA may, after consideration of comments, select an alternative other than the preferred alternative.

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
July 19, 2024 to August 19, 2024
EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING:
August 1, 2024 at 6:00 pm
EPA will hold a public meeting to explain the Proposed Plan. Oral and written comments will be accepted at the meeting. The meeting will be held at Newfane Town Hall located at 2737 Main Street, Newfane, NY 14108.

COMMUNITY ROLE IN SELECTION PROCESS

EPA relies on public input to ensure the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, this Proposed Plan has been made available to the public for a public comment period which begins on July 19, 2024 and concludes on August 19, 2024.

A public meeting will be held on August 1, 2024 at Newfane Town Hall located at 2737 Main Street, Newfane, New York at 6:00 p.m. to present the conclusions of the RI/FS, elaborate further on the reasons for recommending the preferred alternative, and receive public comments (see the "Mark Your Calendar" box above).

Comments received at the public meeting, as well as written comments received during the public comment period, will be documented in a Responsiveness Summary that will be a portion of a Record of Decision (OU3 ROD), the document that will memorialize the selection of a remedy for this OU3. Written comments on the Proposed Plan should be addressed to:

Christopher O'Leary
Remedial Project Manager
Western New York Remediation Section
U.S. Environmental Protection Agency
290 Broadway – 19th Floor
New York, New York 10007-1866
Telephone: (212) 637-4378
Email: oleary.christopher@epa.gov

PUBLIC INFORMATION REPOSITORIES

Copies of the Proposed Plan and supporting documentation are available at the following information repositories.

Lockport Public Library
23 East Avenue
Lockport, New York 14094
Telephone: (716) 433-5935

Newfane Public Library
2761 Maple Avenue
Newfane, New York 14108
Telephone: (716) 778-9344

USEPA – Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, New York 10007-1866
Telephone: (212) 637-4308
Hours: Monday – Friday: 9 AM to 5 PM

EPA's website for the Eighteen Mile Creek Superfund Site:
www.epa.gov/superfund/eighteenmile-creek

SCOPE AND ROLE OF ACTION

Site remediation activities are sometimes separated into different phases, or Operable Units (OUs), so that remediation of different aspects of a site can proceed separately, resulting in a more efficient and expeditious cleanup of the entire site. EPA is addressing the Eighteen Mile Creek Site in multiple OUs.

OU1 addressed the risks associated with the residential soil contamination at nine residential properties located on Water Street and the threats posed from the deteriorating Flintkote Plant building. On September 30, 2013, EPA selected a final cleanup plan for OU1 (OU1 ROD). As part of EPA's selected remedy for OU1, residents on Water Street were permanently relocated from their homes because of the presence of PCB-contaminated soils in residential yards and the likelihood of recontamination based on recurring flooding of the properties with PCB contaminated water and sediments from the Creek, given their properties' location within the Creek's floodplain. It was determined that the OU1 soil excavation work would be performed at the time of the cleanup of the OU2 sediments to prevent the Creek from re-contaminating the above-referenced residential properties subsequent to their cleanup. Following the relocations, the structures at the OU1 properties were demolished. The buildings at the Flintkote property were also demolished.

On January 19, 2017, EPA selected the OU2 remedy, which addressed the contaminated soil at the following properties adjacent to the Creek: the former Flintkote Plant property (Flintkote), Upson Park, the White Transportation property, and the former United Paperboard Company property. The remedy set forth in the OU2 ROD also addressed contaminated sediment within the Creek Corridor. An overview of the Creek Corridor is included in Figure 2. As discussed further below, the highest levels of PCB contamination in sediments, and the presence of PCBs on adjacent properties, occurs within the Creek Corridor, which is why this portion of the Creek is being addressed first. The cleanup plan for OU2 includes bank-to-bank excavation of sediment in the Creek Corridor and a combination of soil excavation and capping at the upland properties. This remedy is currently in the remedial action phase and construction is scheduled to begin in Summer 2024.

OU3 is the subject of this Proposed Plan and is comprised of sediments within a portion of the Creek, referred to as the STA. The STA is a subset area of the full length of the Creek comprising the portion of the Creek beginning from Harwood Street and extending downstream for approximately 5.3 miles (upper portion of Reach 6 through Reach 9; see Figure 2). Floodplain soils impacted by the Creek adjacent to the STA are also included within this OU. Evaluations conducted during EPA's investigation of OU3 revealed that the STA contains approximately 21% of the overall mass of PCBs in the Creek, as well as the highest contaminant concentration in the sediment downstream of OU2. The sediment in this area is erodible during major flow events or other disturbances to the sediment, and it is considered a source of contamination downstream. The downstream cutoff point for this area, approximately 3,800 feet downstream of the convergence with the East Branch (Station 312+93), was based on an assessment of the mixing and settlement zone downstream of the convergence of the Creek and the East Branch. Based on this assessment, the area downstream of the STA is beyond the influence of the East Branch flow, including the resettling of sediment onto the Creek bed that was resuspended. This Proposed Plan describes the remedial alternatives considered for an interim remedy to address the sediments within the STA and a final remedy to address floodplain soils impacted by the Creek adjacent to the STA. The RI included an investigation of the nature and extent of groundwater contamination within the Creek Corridor; a decision related to Creek Corridor groundwater will be included in the OU3 ROD.

OU4 addresses lead-contaminated soils at certain residential properties in the vicinity of the former Flintkote Property. EPA selected a cleanup plan for OU4 (in the OU4 ROD) in 2019, which calls for the excavation and off-Site disposal of lead-contaminated soils found to be located at the residential properties. The remedy for the first phase of the OU4 remediation includes 33 residential properties, and construction is scheduled to begin in Summer 2024. Soil sampling at additional residential properties, referred to as Phase 2 of OU4, is ongoing.

Future Operable Unit(s)

The remaining areas of the Creek (commencing immediately downstream of the STA to the Creek's discharge at Lake Ontario) that are not addressed by this Proposed Plan would be addressed under separate, future action(s). The impoundment areas upstream of Newfane Dam and Burt Dam have historically acted as sinks for contaminated sediment, and as such these areas have been identified as potential pockets of downstream contamination in the event of a change in the flow regime of the Creek. Figure 3 depicts the location of these two dams. These remaining areas require additional evaluation to establish a final remedy for the full length of the Creek. This evaluation will identify and address the following:

- data gaps including the nature and extent of contamination within these remaining areas;

- the characteristics of the sediment bed behind the Newfane and Burt dams;
- a study of the impacts from having addressed the source areas;
- an assessment of the fate and transport mechanisms of the remaining contamination in the Creek, including residual soil contamination following excavation of floodplain soil in the STA;
- bathymetry monitoring of sediment to evaluate recovery, accumulation and/or erosion; and
- a long-term monitoring program.

After a comprehensive evaluation of the full length of the Creek is conducted, a final remedy for the entire length of the Creek will be established. The final remedy would include final remediation goals for contaminated sediment, including the Creek Corridor (OU2) and the STA (OU3) as well as any additional remedial action objectives that are determined necessary, including remedial action objectives for additional media such as surface water. In addition, floodplain soil sampling will be conducted downstream of the STA as part of a separate investigation. Separate response actions or a future operable unit(s) would address risks identified in floodplain soil downstream of the STA.

SITE BACKGROUND

The Site is located in Niagara County, New York. The main channel of the Creek originates just south of the Canal and flows north for approximately 15 miles until it discharges to Lake Ontario in Olcott, New York. The Eighteen Mile Creek watershed includes the two main tributaries: East Branch of Eighteen Mile Creek and Gulf Creek.

The Creek Corridor has a long history of industrial use dating back to the 19th century when it was used as a source of hydropower. Various industrial plants operated at properties within the Creek Corridor, including the former United Paperboard Company, the White Transportation Company, the former Flintkote Company, and various operations at Upson Park. Damaged drums, ash, slag material, and contaminated fill material have been observed at these properties. Aerial photographs also suggest that by 1938, fill was disposed in the section of 300 Mill Street between the Creek and the Millrace, which is a small segment of the Creek that splits and flows around an area of soil and fill on the Flintkote property, known as the Island.

Downstream of Harwood Street, Eighteen Mile Creek drops down the Niagara Escarpment and passes through approximately 12 miles of rural Niagara County. Land use within this portion of the Creek watershed consists primarily of cropland and orchards, with residential, commercial, and small industrial areas located closer to the city of Lockport and further downstream around Newfane. Several other industrial facilities are located along Eighteen Mile Creek, including the City of Lockport Wastewater Treatment Plant, VanChlor Inc., Twin Lakes Chemical, and Van De Mark Chemical.

Several dams were constructed to provide power near Newfane, two of which remain today. Newfane Dam was originally built in the 1830s near the end of McKee Street and Ewings Road to provide power for the Newfane mill district; the current dam was built in 1912 and is not in service. Burt Dam was built farther north of Newfane in 1924, creating a 95-acre impoundment that extends approximately two miles upstream of the dam. The original dam generated power until the 1950s. It was restored in 1988 and still operates.

To date, EPA has not identified any viable potentially responsible parties at the Site. As a result, EPA elected to investigate the Site using federal funds.

According to EPA's EJScreen: Environmental Justice Screening and Mapping Tool (www.epa.gov/ejscreen), there are no demographic indicators for communities on each side of the Creek along OU3 of the Site that would indicate a community with environmental justice concerns. However, an EJScreen analysis of the local community upstream of OU3, including the area encompassing OU1, OU2 and OU4, found that this area exceeded the 80th percentile relative to the rest of New York State for air toxics cancer risk and lead-based paint. The Air Toxics Cancer Risk results are based upon lifetime cancer risk from inhalation of air toxics, as risk per lifetime per million people. The proposed remedy is not anticipated to result in adverse impacts to environmental resources that would affect the populations living within the vicinity of the Site. During the design, a community health and safety plan would be developed to evaluate risks to surrounding communities and to adopt practices to mitigate these short-term risks. Risks that would be evaluated include those associated with potentially increased levels of traffic, the potential for air emissions, issues associated with the transportation of contaminated materials, and potential issues associated with noise and lighting.

SUMMARY OF PREVIOUS INVESTIGATIONS

Creek Corridor:
Beginning in 1999, NYSDEC conducted several investigations at the Site related to the Creek Corridor. NYSDEC investigations of the former United Paperboard Company property, Upson Park, and the White

Transportation property documented the presence of fill material on these properties, with surface and subsurface soil and fill contaminated with PCBs, metals, and semi-volatile organic compounds (SVOCs). The erosion and runoff of contaminated fill material from properties adjacent to the Creek appears to be the primary mechanism for transport of contamination to the Creek. PCBs and lead concentrations in soil at these properties are as high as 630 parts per million (ppm) and 77,300 ppm, respectively. Sediment samples collected in the Creek Corridor and the millrace revealed concentrations of PCBs and lead up to 25,400 ppm and 15,000 ppm, respectively. The turbine at the Flintkote property is also believed to be a source of PCBs contamination in the Creek. As mentioned in the Scope and Role section of this Proposed Plan, EPA selected the OU2 remedy to address soil and sediment contamination in the Creek Corridor in 2017. The remedial design that provides the detailed specifications for the performance of that remedy has been completed, and construction activities for this work are anticipated to begin this summer.

Sediment:

Several studies were completed under projects funded by EPA Region 2, the EPA Great Lakes Legacy Act (GLLA), and the EPA Great Lakes Restoration Initiative (GLRI). EPA's Great Lakes National Program Office (GLNPO) has identified part of the Eighteen Mile Creek as an area of concern (AOC) for Lake Ontario as part of its GLRI because of its sediment contamination and poor water quality. In March 2015, a report summarizing data collected for the characterization of the AOC under the GLLA program was prepared for the EPA's GLNPO. The RI report included sediment data collected under investigations performed by various agencies from Olcott Harbor (mouth of the Creek) upstream through the city of Lockport to the Canal and including the Creek Corridor. The results of the RI are presented in the 2015 report entitled "*Final Remedial Investigation Report, Eighteen Mile Creek, Remedial Investigation/Feasibility Study*".

Surface Water:

While surface water in the Creek has not been extensively sampled as part of previous sediment investigations, water quality has been evaluated as part of regional studies conducted by EPA and NYSDEC. Historical samples collected to measure concentrations of PCBs, mercury, and dioxins/furans were obtained in 1993 and 1994 as part of a NYSDEC study to track contaminants to Lake Ontario. Results of this study are presented in a report entitled, "*Trackdown of Chemical Contaminants to Lake Ontario from New York State Tributaries".*

GLNPO conducted semiannual monitoring of the surface water discharge from Eighteen Mile Creek and several other tributaries from 2002 to 2010. Results from these monitoring events are presented in the 2011 report entitled, *"Field Data Report, Lake Ontario Tributaries".*

The data indicate that Eighteen Mile Creek had the highest PCB concentrations (0.043 - 0.093 micrograms/liter (µg/L)) in surface water compared to other major tributaries to Lake Ontario.

Bioaccumulation:

The U.S. Army Corps of Engineers performed two studies in 2003 that focused on bioaccumulation and food web modeling that established a significant bioaccumulation potential for PCBs in fish tissue by collecting sediment and fish samples in the Creek. The earliest studies focused on the area downstream of Burt Dam, and more recent investigations included collecting sediment and fish tissue data from upstream of Burt Dam and Newfane Dam. In part, the studies found that PCBs were highly bioavailable and predicted to cause wildlife bioaccumulation risks. Results from these studies are presented in the following 2004 reports: "*Volume I (Project Report Overview): Sediment Sampling, Biological Analyses, and Chemical Analyses for Eighteenmile Creek", "Volume II: Laboratory Reports Sediment Sampling, Biological Analyses, and Chemical Analyses for Eighteenmile Creek AOC",* and *"Final Bioaccumulation Modeling and Ecological Risk Assessment, Eighteenmile Creek Great Lakes Area of Concern".*

For the Niagara County Soil and Water Conservation District, several studies were completed to evaluate beneficial use impairments in the Eighteen Mile Creek AOC. A study was performed in 2006 to evaluate whether PCBs and metals continued to migrate from upstream source areas and to identify other potential sources of contamination. Another investigation was conducted in 2007 downstream of Burt Dam to determine (a) whether the Eighteen Mile Creek AOC was impaired based upon the existence of fish tumors and other deformities, (b) the status of fish and wildlife populations, and (c) the status of any bird or mammal deformities or reproductive impairment. Finally, baseline benthic community and fish sampling and a pilot study on the use of powdered activated carbon to reduce PCB bioavailability in Eighteen Mile Creek sediment were completed in 2012.

More recent studies assessing beneficial use impairments in the Eighteen Mile Creek AOC are also included in the Administrative Record file.

New York State Department of Health (NYSDOH) has also monitored fish populations in the Creek, and there is currently a fish consumption advisory for the entire Eighteen Mile Creek issued by NYSDOH because of the presence of PCBs. For more information regarding the advisory, please refer to the following website: https://www.health.ny.gov/environmental/outdoors/fish/health_advisories/by_county.htm?county=niagara

All reports referenced in this Proposed Plan can be found in the Administrative Record file for this action.

RESULTS OF EPA'S OU3 REMEDIAL INVESTIGATION

In 2018, EPA initiated a separate investigation of sediments, surface water, biota, and floodplain soil along the Creek. Groundwater within the Creek Corridor was further investigated as part of EPA's investigations in an effort to define the nature and extent of the groundwater contamination and locate the source(s) of the low-level concentrations detected during previous studies.

Consistent with previous investigations, the Creek was divided into smaller investigation areas, or reaches, based on the following physical characteristics (see Figure 2):

- **Reach 1** consists of the Creek channel from Burt Dam to the mouth of the Creek in Olcott Harbor where the Creek discharges into Lake Ontario.
- **Reach 2** consists of the impoundment immediately upstream of Burt Dam.
- **Reach 3** is the historical channel that was flooded after the Burt Dam was installed.
- **Reach 4** is the section of the Creek located immediately downstream of Newfane Dam.
- **Reach 5** consists of the impoundment immediately upstream of Newfane Dam.
- **Reach 6** extends from the upstream end of the Newfane Dam impoundment to the confluence of the main channel and the East Branch.
- **Reach 7** runs from the confluence of the main channel and the East Branch to the downstream portion of the Niagara Escarpment.
- **Reach 8** is a 2,000-foot-long section of the Creek that cascades down the steep gradient of the Niagara Escarpment.
- **Reach 9** is an approximately 1,000-foot-long section of the Creek immediately downstream of OU2.

The following provides an overview of the sampling conducted by EPA in the Creek over multiple phases.

Phase IA, conducted from May to June 2018, included surface water, floodplain soil, and soil sampling of agricultural areas that were irrigated with Creek water. Bathymetric surveys and light detection and ranging (LiDAR) surveys were also conducted. Five groundwater monitoring wells were installed on the west side of the Creek Corridor.

Phase IB, conducted from October to November 2018, included surface water sampling. Game and forage fish from the Creek were collected, and tissue samples were analyzed. Groundwater sampling was conducted from monitoring wells installed in Spring 2018 as well as existing wells in the Creek Corridor.

Phase IIA, conducted in July 2019, included surface water sampling targeting high-flow events and floodplain soil.

Phase III, conducted from October to November 2020, included the following: surface water sampling targeting high-flow and low-flow events; a filtration study to examine the relationship between particle size and PCB concentrations in surface water; floodplain soil sampling; surface sediment sampling; sediment core collection and analysis; additional bathymetric surveys; and young-of-year[2] fish sampling.

The results indicate that chemical contamination of the sediment in the Creek generally decreases in concentration moving downstream (the Reach numbers descend from Reach 9 to Reach 1 as they flow downstream to Lake Ontario). For Reaches 1 through 9, the highest concentrations of PCBs were detected in Reaches 6 and 7 where a significant portion of the contaminated sediment has settled. A maximum PCB concentration at 97 ppm was detected in Reach 7. Elevated concentrations of PCBs and lead are found in shallow and deeper sediments behind Burt Dam and Newfane Dam. Lead concentrations ranged from 3.8 ppm in Reach 5 to a maximum concentration of 6,760 ppm in Reach 2. The higher concentrations in the sediment at depth behind the dams indicate that the major contributions of PCBs and lead were from historical sources. However, high concentrations of PCBs in both the total and dissolved phases of surface water indicate that PCBs in the shallow sediments of Reaches 6 and 7 are being transported and deposited downstream by sediment resuspension and resettling.

Floodplain soil sampling in areas prone to flooding revealed maximum PCB and lead concentrations of 26 ppm and 2,630 ppm, respectively. The higher concentrations for both PCBs and lead were primarily on properties within Reach 7. Areas with steeper banks were not impacted by deposition of contaminated sediment. Soil sampling

[2] "Young-of-year" refers to all the fish species that are younger than one year of age.

conducted in nearby areas irrigated with water from the Creek did not reveal PCB detections.

Surface water was analyzed over three years under a range of flow conditions. Additional studies designed to understand contaminant sources and migration pathways included passive sampler and filtration studies. While PCBs were consistently detected in both the whole-water and field-filtered samples, based on the absolute magnitude of total PCB concentration in whole-water samples compared to the total PCB concentration in the field-filtered samples, suspended solids contribute the largest load of PCBs into the water column. For example, total PCB concentrations ranged from 20 to 160 ng/L for whole-water samples collected from 2018 to 2020, whereas the corresponding field-filtered samples, where suspended solids were removed, had reported total PCB concentration of less than 7 ng/L. Lead was consistently detected in the total phase in all reaches of the Creek at concentrations that exceed background levels. Lead was not consistently found in the dissolved phase. Lead concentrations in Reaches 1 to 7 are comparable to the concentration in the OU2 source area. Except for the lead concentrations collected during very high flows, resuspension of the contaminated sediment does not appear to be a mechanism to transport lead in the water column. Metals in surface water are not a significant contaminant source or migration pathway. In addition, other contaminants such as polycyclic aromatic hydrocarbons also are not a significant contaminant source or migration pathway in surface water.

The uptake of PCBs from sediment and surface water has resulted in elevated concentrations of PCBs in fish tissue and biota. Sampling of game fish including largemouth bass, northern pike, and walleye revealed PCB concentrations ranging from 0.26 ppm to 27 ppm. Sampling of forage fish including pumpkinseed fish, common shiner, and rock bass revealed maximum PCB and lead concentrations of 8.5 ppm and 8.3 ppm, respectively. Mercury detections in the fish from the Creek are generally low.

RESULTS OF EPA'S GROUNDWATER INVESTIGATION IN THE CREEK CORRIDOR

The most recent groundwater sampling conducted in 2018 and 2019 generally showed low level concentrations of VOCs, including trichloroethylene (TCE), with some exceedances of federal maximum contaminant levels (MCLs) and state standards in some monitoring wells. For example, in 2019, the highest concentration of TCE was detected in well MW-14, at a concentration of 11 μg/L, compared to the federal MCL and state standard of 5 μg/L. This represents a decline from 2007, when TCE was detected in MW-14 at a concentration of 20 μg/L.

The results also show fluctuating concentrations in TCE daughter products (*cis*-1, 2-dichloroethylene, trans-1, 2-dichloroethylene, and vinyl chloride), with higher concentrations of the daughter products occurring downgradient of the TCE detections. For example, at MW-5 *cis*-1, 2-dichloroethylene was detected at a concentration of 8.4 μg/L in 2019, compared to the federal MCL and state standard of 70 μg/L and 5 μg/L, respectively. This represents a decline from 2007. Historically, TCE has not been detected in MW-5. Trend analyses including historical data collected by NYSDEC beginning in 2007 show an ongoing reduction in concentrations of chlorinated VOCs. Based on the groundwater investigation conducted within the Creek Corridor, no historical or active source of VOCs has been identified, and groundwater is not expected to be a significant source of groundwater contamination to the Creek. Furthermore, the City of Lockport is the provider of potable water to residents within the Creek Corridor and surface water from the east branch of the Niagara River is its primary source.

The groundwater investigation within the Creek Corridor identified a limited area of contamination with no historical or active source of VOCs and evidence of on-going natural attenuation of the contaminants in the groundwater. Since groundwater is not expected to be a significant source of contamination to the Creek, it was determined that groundwater in the Creek Corridor would not be addressed further as part of the FS.

CONTAMINANT FATE AND TRANSPORT

The main transport method of contaminated material in the Creek is through sediment movement in the surface water with deposition in sediment beds and on floodplains. This sediment transport has been identified to occur through the following two processes: (1) transport of fine-grained sediment through resuspension of fine sediment in the water column, with the suspended fine sediments being transported downstream, and the settling of suspended sediments in quiescent conditions; and (2) movement of sand as bed load and resettlement.

The transport of contaminants throughout the Creek is influenced by the geology, hydrology, and geomorphology of the surrounding area along with the presence of wetlands, structures, and obstructions in the Creek.

An analysis of sediment erosion and deposition and contaminant movement at the Site revealed the following:

- Upstream sources of PCBs in OU2 likely contribute to PCB concentrations in surface water and sediment in the STA and further downstream; and

- High flows or other disturbances can mobilize the elevated concentrations of PCBs in Reaches 7 and 6 and redistribute them downstream.

PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a Site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. Source material includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to ground water, surface water, or air, or acts as a source for direct exposure. Principal threat wastes are source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or that would present a significant risk to human health, or the environment should exposure occur. For residential areas, principal threats will generally include soils contaminated with PCBs at concentrations greater than 100 ppm. EPA's findings to date in OU3 have not revealed the presence of principal threat wastes in floodplain soil or elsewhere in OU3.

RISK SUMMARY

A site-specific Baseline Human Health Risk Assessment (BHHRA) for the full length of the Creek was developed to quantitatively evaluate both cancer risks and noncancer health hazards from exposure to contaminants. The BHHRA is part of the RI/FS to assess Site-related cancer risks and noncancer health hazards to chemicals including lead and PCBs. Risks were evaluated under baseline conditions, in the absence of any response action and/or institutional controls. A copy of the *Final Baseline Human Health Risk Assessment for OU3*[3], dated May 2022, is available in the Administrative Record file for this decision. A four-step human health risk assessment process was used for assessing Site-related cancer risks and noncancer hazards. The four-step process is comprised of Hazard Identification/Data Collection and Evaluation, Toxicity Assessment, Exposure Assessment, and Risk Characterization (see the "What is Human Health Risk and How is it Calculated" box on page 10).

The BHHRA quantitatively evaluated cancer risks and noncancer health hazards from exposure to chemical contaminants in sediment, soil, surface water, and fish tissue within the length of the Creek beginning at the end of the Creek Corridor (Harwood Street) and continuing to where the Creek discharges into Lake Ontario in Olcott, New York. The BHHRA evaluated current and future risks to recreational users of the Creek, anglers, visitors/ trespassers on a reach-specific basis, and residents based on sampling transects along the Creek. The BHHRA included floodplain soil sampling data for the separate exposure areas representing individual properties along the Creek. While the BHHRA encompassed an area greater than the subject of this Proposed Plan, the following risk assessment summary focuses on the STA and floodplain soils adjacent to the STA.

The BHHRA followed EPA guidelines, guidance, and policies, and more specifically the Risk Assessment Guidance for Superfund. EPA evaluated risks to the reasonable maximum exposed (RME) individual in the BHHRA that are expected to occur under current and/or future land use. The RME individual is defined as "the highest exposure that might reasonably be expected to occur" and is well above the average case of exposure but within the range of possibility.

Hazard Identification/Data Collection and Evaluation

Soil, sediment, surface water, and fish tissue data relied upon in the BHHRA were collected during the 2018/2019 field investigations. Sediment data from historical investigations were also used to support the BHHRA.

Toxicity Assessment

The toxicity assessment estimates the relationship between the extent of exposure to a contaminant and the likelihood and/or severity of adverse health effects. The toxicity assessment has the following two parts:

- Hazard identification – a qualitative description of the potential toxicity of Site chemicals of potential concern (COPCs).
- Dose-response – a quantitative estimate of toxicity for each COPC. For carcinogenic effects, the slope factor (SF) is determined for oral and dermal exposure and the inhalation unit risk (IUR) is used for inhalation exposure; for noncancer effects, the reference dose (RfD) is used to evaluate oral and dermal exposures while the reference concentration (RfC) is used to evaluate inhalation exposures.

[3] While the BHHRA document included in the Administrative Record file specifies OU3 in its title, this document assesses cancer risks and non-cancer hazards for the full length of the Creek (Reaches 9 to 1). However, the information provided in the Risk Summary section of the Proposed Plan focuses on the results for the STA.

Chemical-specific toxicological parameters (*i.e.*, RfDs, RfCs, SFs, and IURs) are obtained following EPA's tiered process for selecting toxicity values. The SF for chemicals identified with a Mutagenic Mode of Action were evaluated but did not exceed the risk range or a hazard index (HI) of 1.

Exposure Assessment

Exposure parameters used to calculate intakes and doses were obtained from the Superfund standard default exposure assumptions, EPA's Exposure Factors Handbook, and the 2014 standard default exposure assumptions. Parameters, such as the quantity of sediment and surface water ingested, or exposure durations for recreational users, anglers, and visitor/trespasser, are estimates based on professional judgment. Exposure parameters were selected to be health-protective consistent with the definition of RME discussed above.

The exposure assessment evaluated individuals who may contact environmental media in the Creek (*e.g.*, sediment, soil, surface water, and fish tissue) based on a review of current and reasonably foreseeable future land use at the Site. Receptors or individuals who may be exposed include:

- **Recreational users**: Adult (older than 18 years), adolescent (7 to 18 years), and children (6 years and younger) exposed through incidental ingestion and dermal contact with surface water; incidental ingestion and dermal contact with sediment; and inhalation of dust particles from floodplain soil and exposed Creek nearshore sediment.

- **Visitor/trespasser**: Adult, adolescent, and children exposed through incidental ingestion, dermal contact, and inhalation of dust particles with floodplain soil.

- **Resident**: Adult and children exposed through incidental ingestion, dermal contact, and inhalation of dust particles from floodplain soil.

- **Angler**: Adult and adolescent exposed through incidental ingestion of and dermal contact with surface water, incidental ingestion, dermal contact, and inhalation of dust particles from floodplain soil and nearshore sediment in the Creek.

- **Fish Consumers:** Adult, adolescent, and child exposed through ingestion of fish caught in the Creek.

Risk Characterization

Risk characterization, the final step of the risk assessment process, combines the information from the exposure assessment and toxicity assessment to yield estimated cancer risks and noncancer hazards from exposure to chemicals in the media of concern (*e.g.*, soil, sediment, groundwater, and fish tissue). The risk characterization step also involves an evaluation of the uncertainty associated with the quantified cancer risks and noncancer health hazards.

EPA uses the cancer risks and the noncancer hazard quotient (HQ) for individual chemicals and the hazard index (HI) for total chemicals calculated based on RME exposures to determine whether Site risks and hazards are above or below the risk range established under the NCP (1 x 10^{-6} to 1 x 10^{-4}, or one in a million to one in ten thousand cancer risk) and the goal of protection of an HQ/HI less than or equal to 1. A separate assessment was conducted for lead using Region 2's lead approach described below.

Sampling was conducted per the designated reaches and the results were further broken down into transects to aid in organizing data collection, present results, and calculate cancer risks and noncancer hazards for upland residential and commercial properties. This was needed to inform risk management decisions.

The assessment of the transect data included the following assumptions:

- Properties zoned as residential were assessed individually under a residential exposure scenario.
- Creek bank/floodplain soil samples were collected along 13 total soil transects located in five of the nine reaches, with the transects extending in a perpendicular direction away from the banks of the Creek. The sample locations were selected based on the potential for exposure from flooding.
- Soil samples collected from the floodplain areas were used in the risk assessment to assess exposures of residents on a property-by-property basis, as well as exposures of the angler or recreational user who are exposed on a less frequent basis than the resident.
- In some limited instances, a transect traversed more than one property.

Table 1 provides a summary of cancer risks exceeding the risk range and a noncancer HI of 1 from fish consumption in Reaches 6 and 7. Table 2 provides a summary of the risk assessment results for floodplain soil for the transects evaluated in Reaches 6 and 7. The assessment for floodplain soil revealed the cancer risks were within the risk range and the noncancer HQ varied across properties. As discussed in more detail below, lead was evaluated separately.

Table 1: **Summary of Current/Future Angler Cancer Risks and Noncancer Hazards from Fish Consumption**

Reach	Receptors	Cancer Risk	Noncancer Hazard
6	Child	2.0×10^{-3}	567
	Adolescent	2.3×10^{-3}	328
	Adult	3.7×10^{-3}	320
7	Child	2.0×10^{-3}	566
	Adolescent	2.3×10^{-3}	327
	Adult	3.7×10^{-3}	319

*In Reach 6, the chemical drivers for the cancer risk and noncancer hazards is PCBs, while PCBs and mercury are the drivers in Reach 7.

Table 2: Summary of Noncancer HIs Greater than 1 from Exposure to Soil

Transect #	Reach #	Basis for HQs > 1 Based on Effects on the Same Target Organ.
06	6	Aluminum, manganese, and mercury are associated with potential impacts on the nervous system with a target organ HI of 1.1, and PCBs are associated with potential impacts on the immune system with a target organ HI of 1.1
08	6	PCBs are associated with potential impacts on the immune system with a target organ HI of 3.9
10	7	PCBs are associated with potential impacts on the immune system with a target organ HI of 5.5
13	7	Cobalt is associated with potential impacts on the endocrine system with a target organ HI of 1.2, and PCBs are associated with potential impacts on the immune system with a target organ HI of 2.9
15	7	PCBs are associated with potential impacts on the immune system with a target organ HI of 8.4
19	7	PCBs are associated with potential impacts on the immune system with a target organ HI of 3.5
20	7	PCBs are associated with potential impacts on the immune system with a target organ HI of 3.5
20	7	Mercury and manganese are associated with potential impacts to the nervous system with a target organ HI of 1.5, and PCBs are associated with potential impacts on the immune system with a target organ HI of 1.3
22	7	Mercury and manganese are associated with potential impacts to the nervous system with a target organ HI of 1.5, and PCBs are associated with potential impacts on the immune system with a target organ HI of 1.3
23	7	PCBs are associated with potential impacts on the immune system with a target organ HI of 9.4
25	7	Mercury and manganese are associated with potential impacts to the nervous system with a target organ HI of 1.4. PCBs are associated with potential impacts on the immune system with a target organ HI of 1.4

Lead
Lead in sediment and floodplain soils were evaluated consistent with EPA Superfund guidance. Concentrations in surface water were compared with the EPA's Office of Water Lead Action Level of 15 micrograms per liter. Per EPA Region 2's approach to evaluating lead, sediment and residential soil concentrations were compared with a screening level of 200 ppm and those concentrations greater than the screening level were identified for further evaluation; non-residential soil concentrations were compared to 800 ppm.[4]

The adult lead model (ALM) was used to predict the maternal blood lead level (BLLs) for adult non-residential exposures, and the Integrated Exposure Uptake Biokinetic (IEUBK) model was used to evaluate BLLs for the residential child (seven years and younger[5]). Both models are designed to determine the probability of the BLL exceeding five micrograms per deciliter (µg/dL) based on the average or mean lead concentration.

IEUBK Model Results for Soil and Sediment
A summary of the lead risk assessment results are provided below for exposure to sediment in each of the reaches and floodplain soils in each of the transects. Tables 3 and 4 provide the maximum, mean (average) sediment/soil and IEUBK model results. The maximum lead concentrations at Transects 02, 07, and 21 did not exceed the screening level of 200 mg/kg; therefore, risk from lead exposure was not further evaluated. Based on soil concentrations, the IEUBK modelling resulted in a conclusion that at Transects 10, 11, 13, 16, 20, 23, and 24, the probability of child blood level exceeding 5 µg/dL was less than 5%, while at Transects 5, 6, 8, 15, 17, 18, 19, 22, and 25 the probability of child blood level exceeding 5 µg/dL was greater than 5%.

The probability of the blood lead level exceeding 5 µg/dL in Reach 1 was less than 5%, and the probability of exceeding 5 µg/dL greater than 5% in all other reaches.

[4] Since the risk assessment was performed, EPA released new guidance for lead in residential soils: Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities. The evaluation described here is consistent with this new guidance.

[5] While the IEUBK model guidance standard default value for lead evaluations of the child receptor is seven years, the BHHRA provides for an age range of six years for the child exposed to other chemicals.

Table 3: Summary of Maximum and Average Lead Concentrations in Sediment by Reach Based on Blood Lead Levels (BLL) Greater than 5 µg/dL and IEUBK Model Results

Reach	Maximum Concentration Lead Level (mg/kg)	Average (Mean) Lead Concentration (mg/kg)	Percent of Individuals with BLLs > 5 µg/dL
6	4,383	623	100
7	2,940	613	99

Table 4: Lead Transect Evaluation Providing Maximum Concentration in Soil, Average Blood Level, and IEUBK Model Results

Transect	Maximum Soil Concentration (mg/kg)	Predicted Blood Lead Level (µg/dL)	IEUBK Model Results with BLLs > 5% above 5 µg/dL
05	375	19	Yes
06	498	32	Yes
08	278	10	Yes
15	450	27	Yes
17	208	5.4	Yes
18	242	7.6	Yes
19	256	8.7	Yes
22	291	11	Yes
25	287	11	Yes

In summary, the HHRA demonstrated unacceptable risk and hazard throughout the Creek from fish consumption (Table 1) primarily attributed to PCBs. Additionally, exposures to floodplain soil in the transects identified in Table 3 demonstrate hazards at or above the goal of protection, as well as predicted BLLs above the goal of no more than 5% of the population with BLLs above 5 µg/dL. Sediment exposures in Reaches 6 and 7 are also associated with predicted elevated BLLs in young child receptors.

Ecological Risk Assessment

In July 2018, a screening level ecological risk assessment (SLERA) was completed for the full length of the Creek. The purpose of the SLERA was to assess risk posed to ecological receptors because of Site-related contaminants. The SLERA indicates that ecological risks may be present for benthic macroinvertebrates and wildlife that consume invertebrates from soil or sediment. A copy of the *Final Screening Level Ecological Risk Assessment*, dated July 2018, is available in the Administrative Record file for this Operable Unit.

In an effort to better define risks, in 2019 and 2020 additional sampling was conducted to investigate sediment toxicity and bioaccumulation of contaminants from soil and sediment into invertebrates that reside in those media. The results were incorporated in a baseline ecological risk assessment (BERA).

While the BERA evaluated the portion of the Creek beginning at the end of the Creek Corridor (Harwood Street) and continuing to where the Creek discharges into Lake Ontario in Olcott, the evaluation of potential ecological hazards and chemical of potential ecological concerns (COPECs) was separated into three distinct areas of the Creek. The three areas are: (1) Downstream from Burt Dam, (2) Between Burt Dam and Newfane Dam, and (3) Upstream from Newfane Dam. For the purposes of this Proposed Plan, the results presented below are for the area upstream of Newfane Dam, including the STA.

Surface Soil

Terrestrial invertivores wildlife (e.g., American robin and shrew) are highly at risk to surface soil exposure. Through direct exposure, incidental ingestion of contaminated soil and consumption of contaminated food items it was determined that several contaminants of concern (COCs) pose a risk to terrestrial invertivores that feed and dwell within the flood plain soils (i.e., HQs exceeded 1.0 for one or more contaminants). COCs, including PCBs and lead, can accumulate in soil fauna and subsequently put American robin and shrew at risk to COCs exposures.

Sediment

Insectivorous aquatic-dependent wildlife (e.g., tree swallow and little brown bat) and fish-eating wildlife (e.g., great blue heron and mink) are highly at risk to sediment exposure. Through direct exposure, incidental ingestion of contaminated sediment and consumption of contaminated food items it was determined that several COCs, including PCBs and lead, pose a risk to insectivorous aquatic-dependent life and fish-eating wildlife that feed and dwell within the contaminated sediment (i.e., HQs exceeded 1.0 for one or more contaminants). COCs accumulated in benthic macroinvertebrates and forage fish population can put tree swallow, little brown bat, blue heron and mink at risk to COCs exposures.

Overall, the BERA results revealed a wide range of contaminants that present risks to various ecological receptors. The major source of risk from Site-related contaminants are PCBs and metals. The affected ecological receptors are insectivorous aquatic dependent wildlife (*e.g.*, tree swallow and little brown bat), terrestrial insectivorous wildlife (*e.g.*, American robin and shrew), and fish-eating wildlife (*e.g.*, great blue heron and mink). Based on the results of the BERA, ecological receptors in areas upstream from Newfane Dam are greatly affected by contaminants.

It is EPA's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from this Site that may present an imminent and substantial endangerment to public health or welfare.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to protect human health and the environment. RAOs are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs), to-be-considered (TBC) guidance, and site-specific risk-based levels.

The following interim RAOs have been established for OU3:

Sediment Interim RAOs:

- Reduce the mass, transport, and exposure to PCBs in sediment throughout the Creek channel by remediating areas that serve as sources of COCs to the Creek system.

Floodplain Soil Final RAOs:

- Minimize human exposure risk from contact with contaminated floodplain soil by reducing COC concentrations in soil to remedial goals.
- Minimize risks to ecological receptors from contact with contaminated floodplain soil by reducing the COC concentrations in soil to remedial goals.
- Minimize the transport of floodplain soil containing COCs by reducing the potential for interaction with adjacent areas and the Creek.

PRELIMINARY REMEDIATION GOALS

To achieve the RAOs, EPA has identified a soil cleanup goal, or Preliminary Remediation Goal (PRG), for contaminated soil to attain a degree of cleanup that ensures the protection of human health and the environment. The two-tiered PRG for lead in soils described below is based on the New York State's 6 NYCRR Part 375 Residential Soil Cleanup Objectives and EPA Region 2's lead approach consistent with OLEM Directive 9200.2-167. The PRG is also consistent with the 2024 "OLEM Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities," which establishes a regional screening level (RSL) of 200 ppm where there are no additional sources of lead (e.g., lead water service lines, lead-based paint

WHAT IS HUMAN HEALTH RISK AND HOW IS IT CALCULATED?

A Superfund human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substances releases from a site in the absence of any actions to control or mitigate these releases; it estimates the "baseline risk" in the absence of any remedial actions at the site under current and future land uses. To estimate this baseline risk at a Superfund site, a four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: The hazard identification step identifies the contaminants of concern at the site in various media (*i.e.*, soil, groundwater, surface water, air, etc.) based on such factors as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil. Factors relating to the exposure assessment include but are not limited to the concentrations that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: The toxicity assessment determines the types of adverse health effects associated with chemical exposures, and the relationship between the magnitude of exposure (dose) and severity of adverse effects (response). Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other noncancer health effects such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and noncancer health effects.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk for developing cancer and the potential for noncancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current federal Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk). For noncancer health effects, a "hazard index" (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding RfDs. The key concept for a noncancer HI is that a "threshold level" (measured as an HI of 1) exists below which noncancer health effects are not expected to occur.

non-attainment areas where lead concentrations exceed the National Ambient Air Quality Standards) are present.[6]

The following PRGs have been identified for adjacent floodplain residential, including agricultural, properties within the STA:

- Lead: 400 ppm
  In addition to targeting detections of lead above 400 ppm, the average soil concentration across each residential property will be at or below 200 ppm.
- PCBs: 1 ppm

By remediating floodplain soils to an average concentration at or below 200 ppm, the goal of protection (target blood lead level of 5 ug/dL) outlined in the 2024 Updated Residential Soil Lead Guidance will be met. These levels would also be protective of recreational users and ecological receptors.

The following PRGs have been identified for adjacent surface (0 to 2 ft) floodplain commercial properties within the STA:

- Lead: 1,000 ppm
- PCBs: 1 ppm

The PRGs for surface commercial soils are consistent with the PRGs established in the OU2 remedy.

It is EPA's expectation that by targeting PCBs and lead, risks posed by other contaminants found in floodplain soil, such as mercury, would also be addressed. The remedy to be selected for floodplain soils in the STA is intended to be a final remedy. However, the proposed interim remedy for sediments in the STA is not intended to attain acceptable COC levels in all media throughout the Creek. A future, final remedy will establish acceptable COC levels in sediments that are protective of human health and the environment. An interim remedy should be consistent with and not preclude a final protective remedy. Interim action remediation goals are associated with the interim actions and reflect the limited scope of the interim action.

To achieve the interim remedy RAOs, a remedial action level (RAL) of 1 ppm for PCBs will be used to delineate PCB source sediments within the STA for remediation. The RAL of 1 ppm is consistent with other sediment cleanups in New York State. This RAL is not a final PRG for the Creek sediments, however, and the practical outcome of this RAL is that a large mass of source material that is acting as a continuing source to the rest of Eighteen Mile Creek will be addressed. The RAL of 1 ppm for PCBs satisfies interim Site objectives of source control and PCB migration reduction. In addition, given the widespread presence of PCBs, addressing PCBs above the RAL in the STA is also expected to address other potential COCs, such as lead and mercury.

As indicated in the Scope and Role of Action section above, a separate comprehensive evaluation would be conducted for the full length of the Creek. A subsequent or final remedy will identify the final RAOs and remediation goals for sediment along the entire length of the Creek.

SUMMARY OF REMEDIAL ALTERNATIVES

Section 121(b)(1) of CERCLA, 42 U.S.C. § 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, be cost-effective, comply with ARARS, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions that employ, as a principal element, treatment to reduce permanently and significantly the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. Section 121(d) further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4).

To address the RAOs, the FS identified three primary areas that have the greatest potential for transporting significant contamination downstream based upon transport modeling and data identifying the areas with the highest levels of contamination. The three primary areas identified in the FS Report are the STA and two sediment depositional areas (SDAs) located immediately upstream of Newfane Dam and Burt Dam (represented by Reaches 2 and 5, respectively). While the STA was identified as the primary source of continuing contamination related to elevated contaminant concentrations that occur with sediment erosion and surface water flow from the East Branch, contaminated sediments have accumulated and are present behind the impoundment areas of both Newfane Dam and Burt Dam. While the FS Report included remedial alternatives for the two SDAs and floodplain soil adjacent

[6] See Updated Scientific Considerations for Lead in Soil Cleanups, December 22, 2016 https://semspub.epa.gov/work/08/1884174.pdf and Updated Residential Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities https://www.epa.gov/system/files/documents/2024-01/olem-residential-lead-soil-guidance-2024_signed_508.pdf

to the SDAs, for the purposes of this Proposed Plan, alternatives for the two SDAs and floodplain soil not adjacent to the STA are not being addressed at this time. As indicated in the Scope and Role of Action section, above, further evaluations and long-term monitoring of these areas is needed before a cleanup plan for these remaining portions of the Creek can be developed.

In this Proposed Plan, as discussed below, EPA has considered alternatives for sediment contamination within the STA as well as contaminated floodplain soil at properties adjacent to the STA. Detailed descriptions of all the remedial alternatives for addressing the contamination associated with OU3 can be found in the FS Report.

The construction time for each alternative reflects only the actual time required to construct or implement the action and does not include the time for other activities, such as that required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, obtain funding or procure the contracts for design and construction.

Sediment Alternatives

Common Elements of the Sediment Alternatives

All of the sediment alternatives, with the exception of STA1 (No Action) and STA2 (Monitored Natural Recovery, Long-Term Monitoring, and Institutional Controls), would include the following common components:

Sediment Delineation and Cultural Resource Evaluation: Based on data collected to date, an estimated 80% of the STA Creek bed area exceeds the RAL. During the remedial design, additional sampling would be conducted to refine the areas requiring remediation. In addition, a Phase 1B cultural resource investigation would be performed to assess the presence or absence of archaeological deposits.

During implementation of the remedial action, temporary cofferdams or other barriers would be installed to divert water around active work areas to allow for excavation in dry conditions. Diversion piping would be used to divert water around the work area. Excavated sediment would be transferred from the Creek to the staging area. Confirmation samples would be collected at the bottom of excavation to verify the RAL has been met. Confirmation samples would be analyzed for PCBs, and additional excavation and sampling may be required to demonstrate the RAL has been met.

Access Roads: Access roads and staging areas would be constructed in upland areas to allow equipment access and facilitate implementation of the proposed remedial activities along the Creek. A staging area for contaminated material storage and dewatering, wastewater treatment, and clean fill material storage would be established. Construction would require clearing and grubbing of vegetation. Following remediation of the Creek, the access roads and staging areas would be removed, and the areas restored in accordance with the habitat reconstruction plan.

Off-Site Disposal of Contaminated Sediment: Excavated sediment exceeding RALs would be transported off-Site for disposal at a RCRA or TSCA regulated landfill, as appropriate, based on the concentrations of contaminants in the excavated sediment. If necessary to meet the requirements of the disposal facilities, contaminated material would be treated prior to land disposal.

Construction Monitoring*:* Water quality downstream of the work areas would be monitored during construction activities. Air quality would be monitored throughout construction activities to protect workers and the public.

Long Term Monitoring: A monitoring plan would be developed during the remedial design to track PCB concentrations in sediment, surface water and fish tissue. The monitoring plan would evaluate remaining residual soil contamination in the floodplain soil, the potential for bank erosion, and an assessment of the fate and transport mechanisms of the remaining contamination to contaminate sediments in the Creek. Results would be used to assess the effectiveness of the remedial alternative in reducing PCB concentrations in fish tissue and to develop a final remedy for the Creek.

Institutional Controls: Institutional controls refer to non-engineering measures intended to ensure the protectiveness of a remedy and to restrict human activities so as to prevent or reduce the potential for exposure to contaminated media. Institutional controls in the form of informational devices, such as NYSDOH fish consumption advisories, would be implemented to limit exposure to PCBs. NYSDOH periodically reviews fish PCB data to ensure the advisories are up to date and considers whether the fish consumption advisories need modification.

STA1: No Action

The NCP requires that a “No Action” alternative be developed as a baseline for comparing other remedial alternatives. Under this sediment alternative, there would be no remedial action conducted at the Site for sediments in the STA. This alternative does not include monitoring.

Capital Cost:	*$0*
Annual Operation and Maintenance (O&M) Costs:	*$0*
Present-Worth Cost:	*$0*
Construction Time:	*Not Applicable*

STA2: Monitored Natural Recovery, Long-Term Monitoring, and Institutional Controls

The Monitored Natural Recovery (MNR) alternative for sediments relies on the naturally occurring transport and deposition of cleaner upstream material to reduce exposure to contaminant concentrations over time through burial.

A MNR monitoring program would be developed to document and evaluate the performance of natural recovery, including the evaluation of changes in PCB concentrations over time as clean sediment from upstream areas is deposited within the STA. This alternative also includes institutional controls and long-term monitoring, as described in the Common Elements of the Sediment Alternatives Section, above.

Capital Cost:	$0
Annual O&M Costs:	$337,000
Present-Worth Cost:	$1,999,000
Construction Time:	*Not Applicable*

STA3: Excavation, Long-Term Monitoring, and Institutional Controls

Alternative STA3 includes the excavation of all sediment within the STA, consistent with the response selected in the OU2 remedy of bank-to-bank excavation down to native material, followed by backfilling with up to two feet of clean sand and covered with a suitable habitat layer to create conditions for the reestablishment of natural conditions in the Creek. The RI investigation found that PCBs above the RAL are present in sediments in Reach 7 down to 4 feet below the sediment surface. In addition to targeting deeper sediments that exceed the RAL, this alternative would include removal of PCBs at concentrations lower than the RAL of 1 ppm.

For the conceptual design, it is estimated that the average depth of sediment to native material is less than two feet, resulting in the removal of an estimated 96,000 cubic yards of sediment. Contaminated material would be sent for off-Site disposal.

Capital Cost:	$102,273,000
Annual O&M Costs:	$268,000
Present-Worth Cost:	$82,440,000
Construction Time:	*16 months*

STA4: Pre-Dredge to Accommodate Cap, Capping, Long-Term Monitoring, and Institutional Controls

Alternative STA4 includes the excavation of approximately one foot of contaminated sediment in areas within the STA that exceed the RAL followed by the placement of clean sand and suitable habitat material to create a cap over the remaining contaminated sediment.

For the conceptual design, it is estimated that the removal of approximately one foot of existing sediment is needed to support the placement of a cap that would minimize the potential for mobilization of contaminated sediment without creating adverse impacts associated with flooding. In addition, contaminated sediment with PCB concentrations greater than 50 ppm would be removed regardless of the depth. Under this alternative, an estimated 41,000 cubic yards of contaminated sediment would be excavated and sent for off-Site disposal.

Capital Cost:	$61,940,000
Annual O&M Costs:	$296,000
Present-Worth Cost:	$53,025,000
Construction Time:	*12 months*

STA5: Excavation to RAL, Long-Term Monitoring, and Institutional Controls

Alternative STA5 includes the excavation of contaminated sediment above the RAL within the STA followed by backfilling with clean sand and covering with a suitable habitat layer to create conditions for the reestablishment of natural conditions in the Creek.

For the conceptual design, it is estimated that the average depth of the excavation to meet the RAL would be approximately 1.3 feet, resulting in the removal of an estimated 54,000 cubic yards of contaminated sediment. Contaminated material would be sent for off-Site disposal. While estimated excavation depths across the STA were calculated in the FS, the estimated excavation depth was based on the average depths of samples exceeding the RAL. Post-excavation sampling would be performed prior to backfilling to confirm that the RAL has been met.

Capital Cost:	$75,104,000
Annual O&M Costs:	$237,000
Present-Worth Cost:	$60,769,000
Construction Time:	*9 months*

Floodplain Soil Alternatives

Common Elements of the Floodplain Soil Alternatives

Each of the floodplain soil alternatives, with the exception of SOIL1 (No Action), include the following common components:

Remediation Areas*:* Sampling in flood-prone areas conducted as part of the RI revealed 17 areas adjacent to the STA that are impacted by Site-related contamination requiring remediation. The FS Report divides remediation areas into the following two categories.

- Adjacent floodplain soil areas (not farmland or developed residential areas); and
- Adjacent farmland and developed residential floodplain soil areas.

The purple-colored sections within the STA on Figure 2 represent the floodplain soil remediation areas. Refer to Figures 5-18 through 5-22 in the FS Report for the specific areas targeted for remediation depicted by creek reach.

During the remedial design, additional sampling of floodplain soil adjacent to the STA would be conducted to further delineate nature and extent and refine volume estimates. The additional sampling would also provide a better estimate of the residual contamination remaining in the floodplain soil, thereby providing data needed to conduct the assessment of the fate and transport mechanisms of the remaining contamination in the Creek, as outlined in the discussion on future operable units and the long-term monitoring plan as outlined in the common elements section for the sediment alternatives. EPA conservatively assumed that contaminated soil extends to 2 feet deep although samples in the remedial investigation only went to a depth of 1 foot.

Floodplain soils that were not sampled during the RI but are prone to river flooding would also be sampled as part of the remedial design. This additional data would be used for risk evaluations to determine if, based on land use designations or the potential for floodplain soil to re-contaminate sediments in the Creek, additional properties or areas require remediation. EPA has conservatively estimated, for cost estimation purposes, that additional sampling may identify up to 11 additional acres that would require remediation as part of this OU. In addition, floodplain soil sampling would also be conducted downstream of the STA as part of a separate investigation. Separate response actions or a future operable unit would address risks identified in floodplain soil downstream of the STA.

Excavation and Soil Management: Construction of the active floodplain soil alternatives would require clearing and grubbing of vegetation. Temporary access roads from the remediation areas to nearby public roads and the staging area would be constructed. Excavated contaminated floodplain soil would be transported to a staging area for storage and dewatering prior to off-Site disposal. Erosion and sediment controls at each remediation area would be installed to prevent the migration of floodplain soil to the Creek. Water and air quality would be monitored during construction. In areas requiring excavation, verification samples would be collected to confirm that contaminated soil in excess of the PRGs has been removed and the remedial action objectives have been met. Excavated areas would be backfilled by placing clean fill material and topsoil. Following remediation of the Creek, access roads and staging areas would be removed, and impacted areas would be restored in accordance with the habitat reconstruction plan.

Site Management Plan (SMP): Development of a SMP to provide for management of floodplain soil post-construction, including the use of institutional controls and periodic reviews.

Soil1: No Action

As mentioned above, the NCP requires that a "No Action" alternative be developed as a baseline for comparing other remedial alternatives. Under this alternative, there would be no remedial action conducted to address floodplain soil adjacent to the STA at the Site. This alternative does not include monitoring.

Capital Cost:	$0
Annual O&M Costs:	$0
Present-Worth Cost:	$0
Construction Time:	*Not Applicable*

Soil2: Limited Floodplain Soil Excavation, Soil Cover, and Institutional Controls

Under this alternative, lead and PCB-contaminated floodplain soil would be addressed through a combination of excavation and/or installation of a cover system based on land use. While floodplain soil areas in residential and farmland areas would be excavated to remove all contaminated soil above the PRGs and backfilled with clean topsoil, non-developed areas including commercial areas would have a soil cover system installed. The cover system, with an estimated thickness of two to three feet, would be vegetated and constructed to isolate floodplain soil exceeding the PRGs from erosion, transport, and/or migration to surrounding areas. In areas with steep slopes, riprap would be placed as the top layer to prevent erosion. During the remedial design, investigations would be conducted to determine the need for the addition of amendments, such as activated carbon, as well as to evaluate the impact of the cover system on wetlands.

Because contaminated soil would remain at the impacted properties adjacent to the STA above levels that would otherwise allow for unrestricted use following remediation, institutional controls would be implemented. Institutional controls may include environmental easements/restrictive covenants, deed notices, and/or zoning restrictions to limit future use of the properties and would require maintenance of the cover material and impose restrictions on excavation of these properties.

Because this alternative would result in contaminants remaining at the Site that are above levels that would otherwise allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, additional response actions may be implemented.

Capital Cost:	$42,941,000
Annual O&M Costs:	$51,000
Present-Worth Cost:	$39,363,000
Construction Time:	*2 years*

Soil3: Floodplain Soil Excavation and Off-Site Disposal

This alternative includes the excavation and off-Site disposal of PCB and lead contaminated floodplain soil exceeding the PRGs adjacent to the STA regardless of the land use designation. These areas would be backfilled with clean fill and topsoil.

Because contaminated soil would remain at the impacted commercial properties adjacent to the STA above levels that would otherwise allow for unrestricted use following remediation, institutional controls would be implemented. Institutional controls may include environmental easements/restrictive covenants, deed notices, and/or zoning restrictions to limit future use of the commercial properties and impose restrictions on excavation.

Capital Cost:	$149,125,000
Annual O&M Costs:	$0
Present-Worth Cost:	$131,307,000
Construction Time:	*2 years*

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria set forth in the NCP, namely, overall protection of human health and the environment, compliance with applicable or relevant and appropriate requirements, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, cost, and state and community acceptance. Refer to the text box, below, entitled "Evaluation Criteria for Superfund Remedial Alternatives", for a description of the evaluation criteria.

This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how each compare to the other options under consideration. A more detailed analysis of alternatives can be found in the FS Report.

Overall Protection of Human Health and the Environment

A threshold requirement of CERCLA is that the selected remedial action be protective of human health and the environment. An alternative is protective if it reduces current and potential risk associated with each exposure pathway at a site to acceptable levels.

<u>*Sediment:*</u>
Alternative STA1 (No Action) is not protective of human health and the environment because it does not eliminate, reduce, or control risk of exposure to contaminated sediment. STA2 relies on natural processes, such as sedimentation to cover the surface sediment with cleaner sediment from upstream, in order to reduce the PCB concentration at the sediment surface and reduce risk. While sedimentation of clean backfill material from the cleanup of upstream Creek Corridor as part of OU2 is expected to result in some reduction of contaminant concentrations within the STA over time, because sediment within the STA is prone to resuspension, the redistribution and redeposition of contaminated sediment to downstream areas is likely. As a result, Alternative STA2 would not achieve the RAOs.

While Alternatives STA3, STA4, and STA5 each include removal of contaminated sediments, under Alternative STA4, only contaminants within the top one foot would be removed followed by the installation of a cap to prevent mobilization or exposure to underlying contaminated sediment. Therefore, while Alternatives STA3, STA4, and STA5 would achieve the RAOs, under Alternative STA4 monitoring and maintenance of the cap would be required to ensure protection over the long term.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES

Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the Site, or whether a waiver is justified.

Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

Reduction of Toxicity, Mobility, or Volume (TMV) of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost includes estimated capital and annual operations and maintenance costs, as well as present-worth cost. Present-worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

State/Support Agency Acceptance considers whether the State agrees with EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.

Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Floodplain Soil:
Alternative Soil1 (No Action) is not protective of human health and the environment because it does not eliminate, reduce, or control risk of exposure to contaminated floodplain soil. Alternative Soil2 and Alternative Soil3 would be protective of human health and the environment as contaminated material would either be removed from the Site or capped. Under Alternative Soil2, contaminated soils would remain in place above the PRGs in non- developed areas or areas not used as farmland, and protection would be achieved through the placement of cover material and implementation of institutional controls.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Sediment:
There are currently no federal or state promulgated standards for contaminant levels in sediments. There are, however, other federal or state advisories, criteria, or guidance (which are used as TBC criteria). Specifically, NYSDEC's "Screening and Assessment of Contaminated Sediment Guidance" (2014) sediment screening values are a TBC criteria. The RAL of 1 ppm for PCBs is consistently evaluated and often applied at contaminated sediment sites in New York State. This value is also supported by NYSDEC's "Technical Guidance for Screening Contaminated Sediments."[7]

Because the contaminated sediments would not be addressed under Alternative STA1, the RAL for PCBs would not be achieved. Under Alternative STA2, a long-term monitoring program would track if there were progress toward achieving the RAL over the long term. Alternative STA3 would achieve the RAL through the full removal of sediment. Alternative STA4 would achieve the RAL through a combination of isolation and removal of sediment. STA5 would achieve the RAL through the removal of sediments that exceed the RAL.

Because there is no active remediation associated with the sediment for Alternative STA1 or STA2, action-specific and location-specific ARARs do not apply. Alternatives STA3 through STA5 are expected to comply with action-specific and location-specific ARARs for water quality monitoring during excavation of sediments and wastewater discharge resulting from sediment dewatering. Mitigation may be required to address location-specific ARARs in relation to the construction of access roads through the floodplains and wetlands.

[7] NYSDEC Technical Guidance for Screening Contaminated Sediments, June 24, 2014. https://www.dec.ny.gov/docs/fish_marine_pdf/screenasssedfin.pdf

Pursuant to Section 106 of the National Historic Preservation Act, a Stage 1B Cultural Resource Investigation would be performed during the design phase to evaluate the existence of cultural and archaeological resources within the STA that could be impacted by the implementation of this alternative.

The Resource Conservation and Recovery Act (RCRA) and the Toxic Substances Control Act (TSCA) are federal laws that mandate procedures for managing, treating, transporting, storing, and disposing of hazardous wastes and PCBs, respectively. All portions of RCRA that are applicable or relevant and appropriate to the proposed remedy for the Site would be met by Alternatives STA1 through STA5, and all portions of TSCA would be met by Alternatives STA1 through STA5 as well.

Floodplain Soil:
EPA has identified NYSDEC's 6 NYCRR Part 375 soil cleanup objectives as an ARAR, a TBC, or an 'other guidance' to consider in addressing contaminated soil at OU3. Alternative Soil1 would not achieve PRGs for soil because no measures would be implemented and contaminated soil would remain in place. Alternative Soil2 would prevent direct contact with PCB and lead contaminated soil exceeding the PRGs through a combination of removal and capping. Under Alternative Soil2, in order to comply with location-specific ARARs related to the protection of wetlands and floodplains, mitigative measures or modification to the conceptual design of the cover system may need to be evaluated during the design for areas that receive a cap because of the impacts to wetlands and floodplain soils. Areas receiving a cover system would require long-term monitoring and maintenance to verify continued compliance with ARARs. Soil3 complies with ARARs through the removal of PCB and lead contaminated soil exceeding the PRGs.

RCRA and TSCA are federal laws that mandate procedures for managing, treating, transporting, storing and disposing of hazardous wastes and PCBs. All portions of RCRA and TSCA that are applicable or relevant and appropriate to the proposed remedy for OU3 would be required to be met with Alternatives Soil2 and Soil3.

Long-Term Effectiveness and Permanence

Sediment:
Alternatives STA1 and STA2 remove no PCBs from the Creek and include no active measures to reduce residual risk at the Site. Neither option would prevent mobilization of PCBs in sediment that are vulnerable to erosional forces. Each of these alternatives therefore would allow for the continued exposure of PCBs over the long-term and thus do not promote long-term effectiveness and permanence.

Alternative STA3 and Alternative STA5 reduce residual risk through excavation of PCB contaminated sediment. Alternative STA3 and Alternative STA5 are considered more permanent than Alternative STA4. Alternative STA4 includes limited excavation of sediment followed by capping to isolate the contaminated sediment, and long-term monitoring of the cap.

Low-lying areas within the City of Lockport are subject to flooding. The *Resilient New York Flood Mitigation Initiative Report for Eighteen Mile Creek*, dated November 2020, states that more frequent and intense precipitation events are expected because of climate change, resulting in a higher likelihood of flooding along the Creek. The increased flooding may reduce the lifespan of capping and backfill material through increased erosional forces from faster flow. If Alternative STA4 is selected, an evaluation of the need for additional armoring would need to be performed during the remedial design to ensure that the cap would withstand such events. In addition, inspections of the cap would be conducted periodically, including after major storm events, and any necessary maintenance of the cover system would be performed.

Floodplain Soil:
Alternative Soil1 would not provide a permanent or long-term effective solution to contaminated floodplain soil as no remediation would occur. Under Alternative Soil2, long-term risks at the residential and farming properties would be permanently removed since contaminated floodplain soil would be permanently removed and disposed of off-Site. At the commercial properties, Alternative Soil2 provides long-term effectiveness through effective maintenance of a cover system and institutional controls such as land-use restrictions. Under Alternative Soil3, long-term risks would be permanently removed since contaminated floodplain soil would be excavated and disposed of off-Site.

Reduction of Toxicity, Mobility, or Volume through Treatment

Sediment:
For Alternatives STA1 and STA2, the only possible way to reduce contaminant concentrations in sediment would be natural recovery processes. Under these alternatives, there would be no reduction of toxicity, mobility, or volume through treatment. Alternatives STA3, STA4, and STA5 would permanently remove various volumes of sediment from the Creek through excavation, although not through treatment. Off-Site treatment, if required, would reduce the toxicity of the contaminated sediment prior to disposal. Placement of a cap, which is a component of Alternative

STA4, would provide reduction of mobility of the contaminated sediment through isolation of contaminants, but would not reduce mobility through treatment.

Floodplain Soil:
Alternative Soil1 would not achieve any reduction in the mobility, toxicity, or volume because contaminated soil would remain in place as is. Alternative Soil2 would use a combination of capping and removal to achieve a reduction in mobility, volume, and exposure to contaminants, but not through treatment. Alternative Soil2 would not reduce the toxicity of the contaminants at properties that are capped. Under Alternative Soil3, the mobility, volume, and exposure to contaminants would be reduced but not through treatment. Furthermore, off-Site treatment, if required, would reduce the toxicity of the contaminated soil prior to disposal.

Short-Term Effectiveness

Sediment:
Alternatives STA1 would not create new, adverse short-term impacts because no remediation activities would take place. Alternative STA2 would have few adverse short-term impacts since the only activities would be monitoring of conditions in the Creek to assess changes in site conditions. Alternatives STA3, STA4, and STA5 involve active remediation, similar in size and scope, and have the potential for similar short-term risks. Based on the higher volume of sediment that would be removed, Alternative STA3 would have the greatest duration of impacts given the longer project schedule. No time is required for construction of Alternative STA1 or Alternative STA2. Alternatives STA3, STA4, and STA5 are estimated to take 16, 12, and 9 months, respectively.

The risks to remediation workers and nearby residents under all of the active alternatives would be mitigated by following appropriate health and safety protocols, by exercising sound engineering practices, and by utilizing proper protective equipment.

Floodplain Soil:
Alternative Soil1 would have no adverse short-term impacts or risks since no remediation activities would take place. Both Alternatives Soil2 and Soil3 would have similar adverse short-term risks associated with construction activities. Similar to the sediment alternatives, the risks to remediation workers and nearby residents under all of the active alternatives would be mitigated by following appropriate health and safety protocols, by exercising sound engineering practices, and by utilizing proper protective equipment.

No time is required for construction of Alternative Soil1. Time required for implementation of Alternative Soil2 is estimated to take two years. Alternative Soil3 is also estimated to take two years.

Implementability

Sediment:
There are no implementability issues with Alternative STA1 and STA2, which do not involve any active remediation. The technologies and methods to perform the active alternatives, STA3, STA4, and STA5, are well established. Given the topography, steep slopes, presence of heavy woods or wetlands, and in water structures (*e.g.*, bridges and culverts) in some sections of the STA, some of the remediation areas may be difficult to access. Construction of temporary access roads for multiple access points in addition to siting of the material stockpile and processing area for excavated material may be logistically, but not necessarily technically, challenging because this work would likely require use of a large area of private land in the vicinity of the STA. Under Alternative STA4, one foot of contaminated sediment would be removed to facilitate the installation of a cap. The design of this cap would need to take into consideration that the total thickness of the cap should not impact the depth of open water or increase the potential for flooding, both while ensuring that the cap would weather erosional forces resulting from storm events. The cap specifications would be evaluated further during the remedial design. In addition, in order to perform excavation activities under Alternatives STA3, STA4, and STA5, temporary cofferdams or other barriers would be installed to divert water around active work areas to allow for excavation in dry conditions. Because the release of water from the upstream Canal impacts water flow in the Creek, coordination with the Canal Corporation regarding these releases is essential. As it relates to the design and implementation of the OU2 selected remedy, EPA has already been coordinating closely with the Canal Corporation on this matter.

Floodplain Soil:
Alternative Soil1 would be the easiest to implement as there are no construction activities to implement. Both Alternatives Soil2 and Soil3 use common construction technologies and are technically feasible to implement. Alternative Soil2 may be slightly more difficult to implement as the areas receiving the cover system would require long-term monitoring and maintenance.

Cost

The estimated capital, operation and maintenance, and present worth costs assuming a 7% discount rate over a period of 30 years are presented in the table below and discussed in detail in the FS Report. The cost estimates are based on the best available information. Alternative 1 has no cost because no activities are implemented. The present worth cost for the preferred sediment alternative, Alternative STA5, is $60,769,000. The present worth cost for the preferred floodplain soil alternative, Alternative SOIL3, is $131,307,000.

Alternative	Capital Cost	Annual O&M Costs*	Present Worth**
Sediment			
STA1	$0	$0	$0
STA2	$0	$337,000	$1,999,000
STA3	$102,273,000	$268,000	$82,440,000
STA4	$61,940,000	$296,000	$53,025,000
STA5	$75,104,000	$237,000	$60,769,000
Floodplain Soil			
Soil1	$0	$0	$0
Soil2	$42,941,000	$51,000	$39,363,000
Soil3	$149,125,000	$0	$131,307,000

* Annual cost is for the first five years. Refer to the FS for details regarding subsequent periodic costs.
** 30-year present worth cost calculations includes a 7% discount rate.

State/Support Agency Acceptance

NYSDEC concurs with the preferred alternatives for sediments and floodplain soil.

Community Acceptance

Community acceptance of the preferred alternatives for sediments and floodplain soil will be evaluated after the public comment period ends and will be described and responded to in the Responsiveness Summary section of the Record of Decision for this OU. The Record of Decision is the document that formalizes the selection of the remedy for an OU.

PREFERRED REMEDY AND BASIS FOR PREFERENCE

Basis for the Remedy Preference

Based upon an evaluation of the remedial alternatives, EPA, in consultation with NYSDEC, proposes Alternative STA5: Excavation to RAL, Long-Term Monitoring, and Institutional Controls as an interim remedy for the STA.

The preferred remedy for the STA has the following key components:

- Excavation of contaminated sediment that exceeds the RAL of 1 ppm for PCBs within the STA followed by backfilling with clean sand and covered with a suitable habitat layer to create conditions for the reestablishment of natural conditions in the Creek.
- Construction of access roads and staging areas in upland areas. Following remediation of the Creek, the access roads and staging areas would be removed and the areas restored in accordance with the habitat reconstruction plan.
- Water and air quality monitoring during construction.
- Development of a monitoring plan to track PCB concentrations in surface water and fish tissue.
- Institutional controls in the form of informational devices to limit exposure to PCBs. EPA is relying on existing NYSDOH fish consumption advisories. NYSDOH periodically reviews fish PCB data to ensure the advisories are up to date and considers whether the fish consumption advisories need modification. Other informational devices could include outreach programs to inform the public to promote knowledge of and voluntary compliance with the fish consumption advisories.

For Floodplain Soil, EPA, in consultation with NYSDEC, proposes Alternative Soil3: Floodplain Soil Excavation and Off-Site Disposal. The preferred remedy is considered a final remedy for floodplain soil in the STA, and has the following key components:

- Excavation and off-Site disposal of PCB and lead contaminated floodplain soil exceeding the PRGs adjacent to the STA regardless of the land use designation. Backfill of excavated areas with clean fill material and topsoil.
- Construction of temporary access roads from the remediation areas to the closest public roads and the staging area.
- Implementation of erosion and sediment controls at each remediation area to prevent the migration of floodplain soil to the Creek.
- Water and air quality monitoring during construction.
- Following remediation of the Creek, access roads and staging areas would be removed, and impacted areas would be restored in accordance with the habitat reconstruction plan.
- Development of a SMP to provide for management of floodplain soil post-construction, including the use of institutional controls and periodic reviews. Institutional controls would limit future use of the commercial properties and impose restrictions on excavation.

During the remedial design, additional sampling of floodplain soil adjacent to the STA would be conducted.

Risk evaluations, based on land use designations, would be performed to determine if additional properties or areas require remediation. The preferred alternative is a final remedy for addressing floodplain soil in the STA.

The estimated present worth of the preferred alternative remedy is $192,076,000. Further detail of the cost is presented in Appendix D of the FS Report.

In addition, EPA's investigations of groundwater within the Creek Corridor have not revealed a source of the generally low-level VOC concentrations detected in groundwater. As a result, EPA is recommending taking no action to address Creek Corridor groundwater.

The environmental benefits of the preferred alternative may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with both the EPA Region 2's Clean and Green Energy Policy and NYSDEC's Green Remediation Policy[8]. This would include consideration of green remediation technologies and practices.

While Alternative STA5 is more expensive than Alternatives STA2 and STA4, Alternative STA5 permanently removes contaminated sediment exceeding the RAL and would not require the maintenance of a cover system over large areas required under STA4, or the monitoring of elevated PCB concentrations in sediment prone to erosional forces required under STA2. Although Alternative STA3 removes the greatest volume of sediment, the additional sediment excavation results in substantial cost increase while providing comparable risk reduction to Alternative STA5. Alternative STA5 has a present net worth of $60,769,000. Similarly, Alternative Soil3 would permanently remove the contaminated floodplain soil from the banks of the Creek, thereby eliminating the potential for contaminated floodplain soil to find its way into the Creek and allow the properties to be used without restrictions. EPA has conservatively estimated, for cost estimation purposes, that additional sampling may identify up to 11 additional acres that would require remediation as part of this OU. Alternative SOIL3 has a present net worth of $131,307,000.

Based upon the information currently available, EPA believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing criteria. EPA expects the preferred alternative to satisfy the following statutory requirements of CERCLA §121(b): 1) is protective of human health and the environment; 2) complies with ARARs; 3) is cost effective; 4) utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The preferred alternative may satisfy the preference for treatment, since, if necessary to meet the requirements of the disposal facilities, contaminated material would be treated to address lead concentrations prior to land disposal. Long-term monitoring and five-year reviews would be performed to assure the protectiveness of the remedy. With respect to the two modifying criteria of the comparative analysis, state acceptance and community acceptance: NYSDEC concurs with the preferred alternative; community acceptance will be evaluated upon the close of the public comment period.

[8] See http://www.epa.gov/greenercleanups/epa-region-2-cleanand-green-policy and http://www.dec.ny.gov/docs/remediation_hudson_pdf/der31.pdf

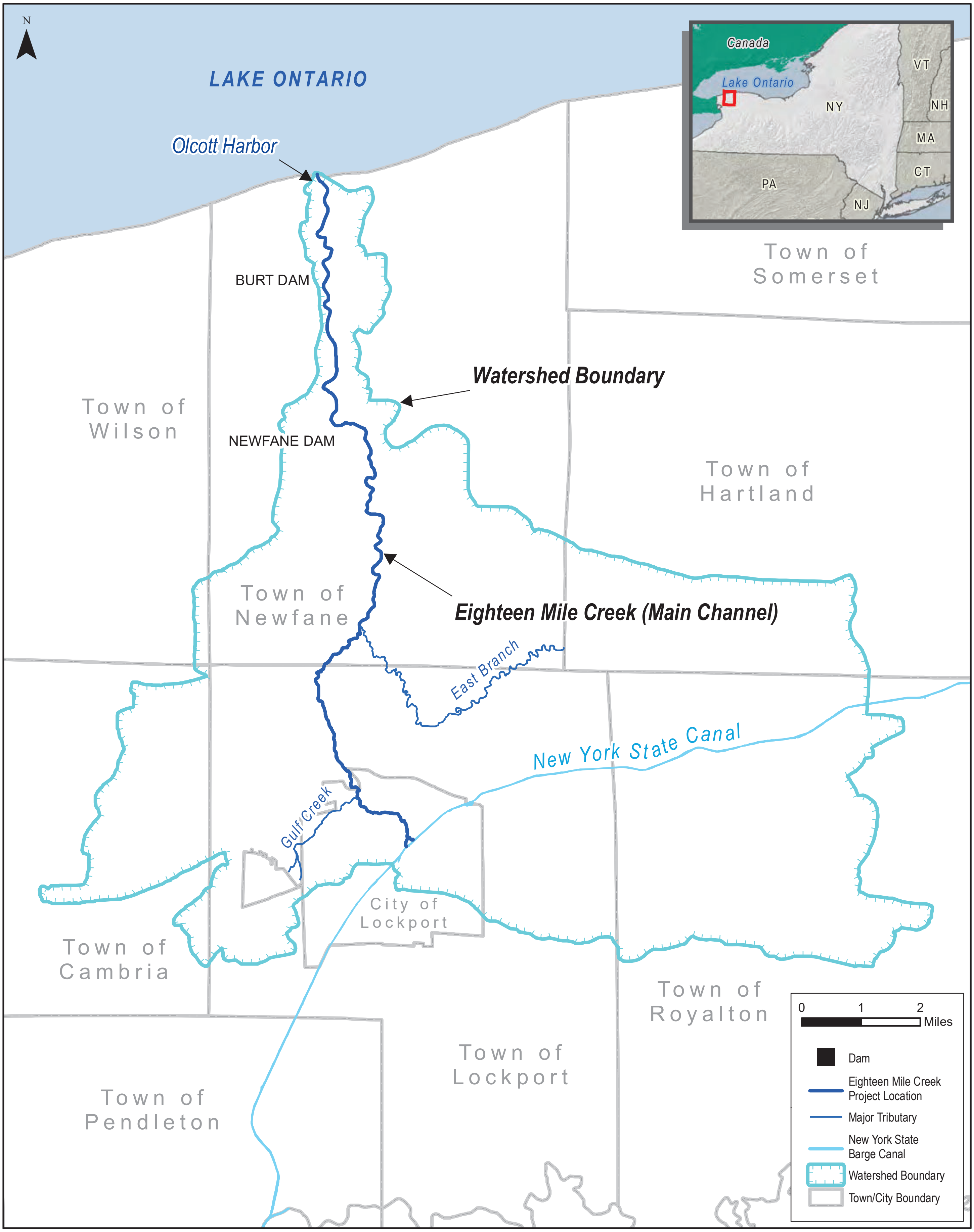

Figure 1 - Site Location Map

Eighteen Mile Creek Superfund Site OU3 Proposed Plan

Niagara County, New York

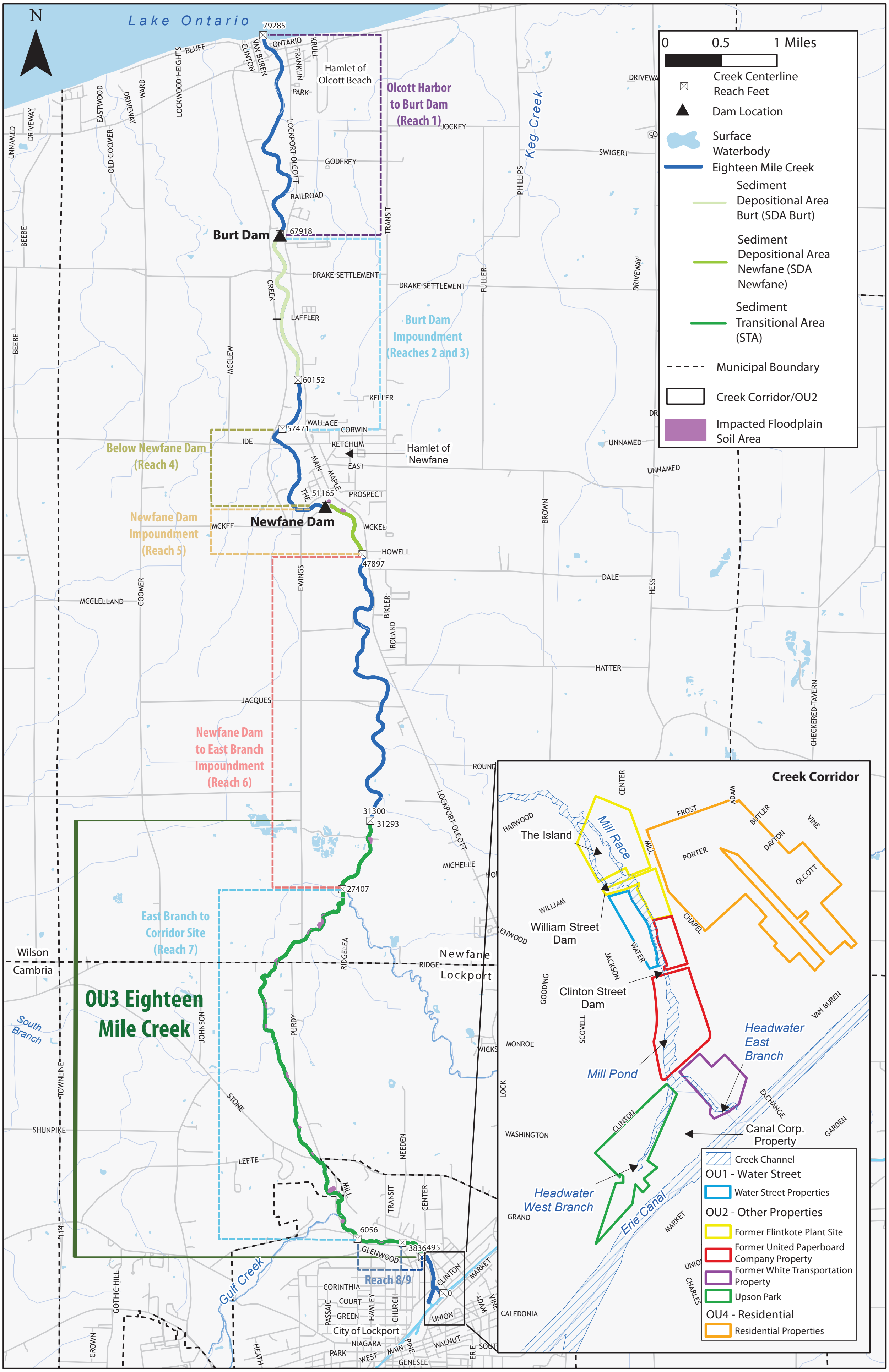

Figure 2 - Overview Map

Eighteen Mile Creek Superfund Site OU3 Proposed Plan

Niagara County, New York

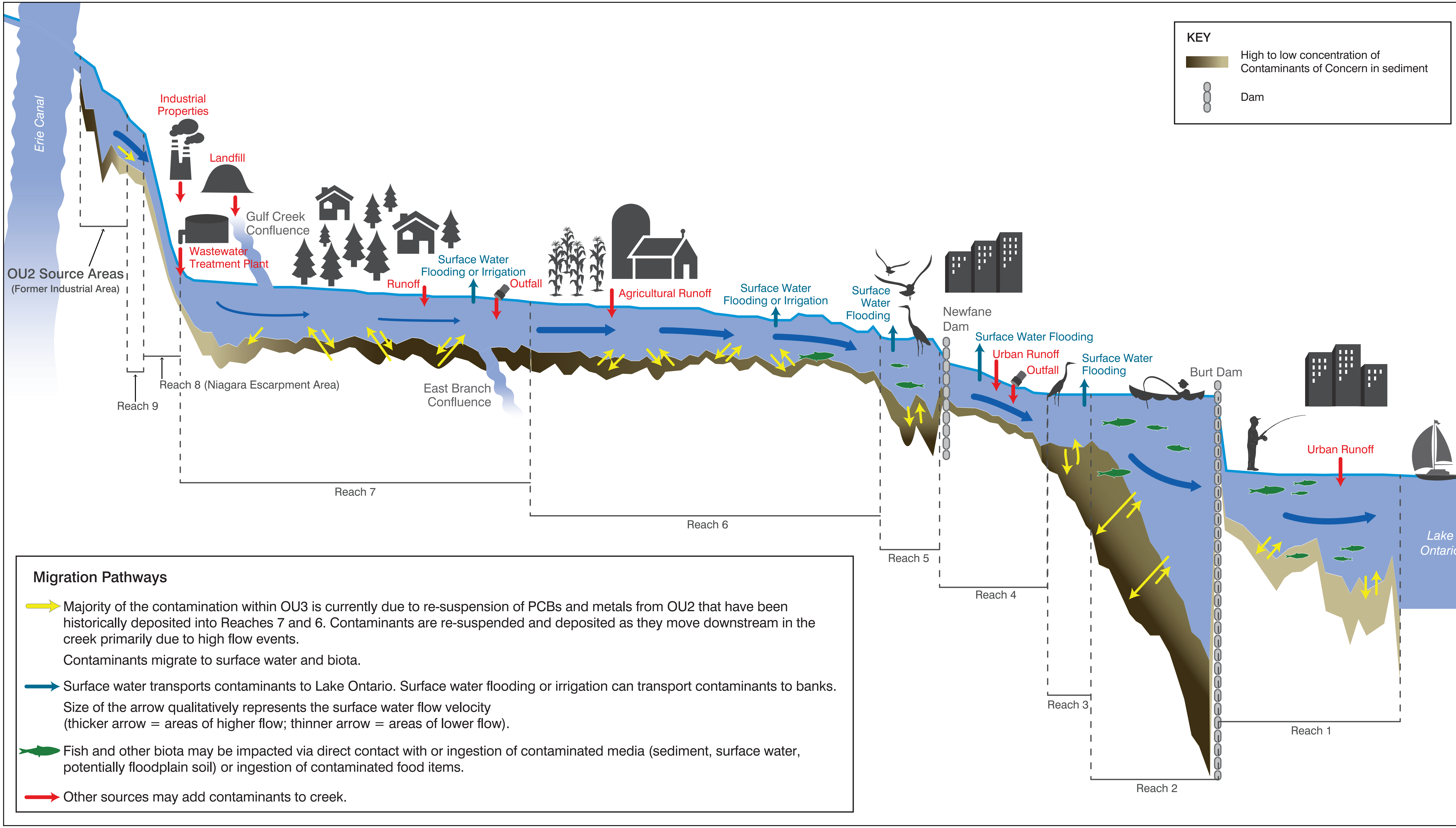

Figure 3- Conceptual Site Model
Eighteen Mile Creek Superfund Site OU3 Proposed Plan
Niagara County, New York