



Department of
Environmental
Conservation

EIGHTEENMILE CREEK AREA OF CONCERN

Restrictions on Dredging Activities
Beneficial Use Impairment Removal Report

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This Beneficial Use Impairment (BUI) Removal Report was prepared by the New York State Department of Environmental Conservation (NYSDEC) in cooperation with the Niagara County Soil and Water Conservation District (NCSWCD) and was substantially funded by the United States Environmental Protection Agency (USEPA) through the Great Lakes Restoration Initiative (GLRI). The NYSDEC and NCSWCD acknowledge the significant efforts of the Remedial Action Committee (RAC) in engaging stakeholders and the public throughout the BUI removal process. For more information, please contact either the Remedial Action Plan Coordinator at NCSWCD or the AOC Coordinator at NYSDEC Division of Water.

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1. Introduction

This Beneficial Use Impairment (BUI) Removal Report identifies the background, criteria, supporting data, and rationale to remove the *Restrictions on Dredging Activities* BUI from the Eighteenmile Creek Area of Concern (AOC). The status of this BUI is currently listed as “Impaired” due primarily to historic concerns from the Eighteenmile Creek Remedial Action Committee (RAC) over sediment contamination and associated restrictions placed on dredging and disposal activities in Olcott Harbor at the mouth of Eighteenmile Creek.

The New York State Department of Environmental Conservation (NYSDEC), Great Lakes Program recommends the removal of the *Restrictions on Dredging Activities* BUI from the Eighteenmile Creek AOC, based on an evaluation of applicable data sets and evidence gathered to address this impairment. This recommendation is made with the support of the Niagara County Soil and Water Conservation District (NCSWCD), the Eighteenmile Creek RAC, and staff from the United States Environmental Protection Agency (U.S. EPA), Great Lakes National Program Office (GLNPO).

2. Background

Under Annex One of the Great Lakes Water Quality Agreement (GLWQA), in 1987 the International Joint Commission (IJC) identified 43 Areas of Concern (AOCs) in the Great Lakes Basin where pollution from past industrial production and waste disposal practices has caused significant ecological degradation. Up to fourteen Beneficial Use Impairments (BUIs), or indicators of poor water quality, are used to evaluate the condition of an AOC.

The Eighteenmile Creek AOC encompasses the lower portion of Eighteenmile Creek, from just below Burt Dam to Olcott Harbor on the outlet to Lake Ontario (**Figure 1**). The IJC originally designated Eighteenmile Creek as an AOC due to the known or suspected presence of multiple BUIs, including *Restrictions on Dredging Activities*. This BUI is generally considered impaired when “contaminants in sediments exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities” (IJC, 1991).

Olcott Harbor is a shallow draft recreational harbor and serves as a critical harbor of refuge by offering a safe shelter to vessels during storm events. Navigational dredging in Olcott Harbor benefits various stakeholders including the Town of Newfane, private marinas, charter boats, charter fishing interests, and the recreational boating community. As in many other Great Lakes harbors, the federal navigation channel is maintained by the United States Army Corps of Engineers (USACE), while areas outside of the federal channel are periodically maintained by non-federal entities. The AOC includes Olcott Harbor in the village of Olcott within the town of Newfane in Niagara County, New York (**Figure 2**).

Under Annex One of the GLWQA, all AOCs are mandated to develop a Remedial Action Plan (RAP) in three stages;

- Stage I, which collectively identifies specific BUIs and their causes,
- Stage II, which outlines the restoration work needed to address the root problems and restore the identified BUIs, and
- Stage III, which documents completion of these restoration activities and the delisting of the AOC.

Currently, the Eighteenmile Creek RAP consists of a combined Stage I/II RAP (NYSDEC, 1997) as well as several RAP updates. The most recent comprehensive Stage II RAP addendum was published in December 2011. Of the five confirmed BUIs for the Eighteenmile Creek AOC, *Restrictions on Dredging Activities* will be the first BUI proposed for removal.

2.1 Rationale for BUI Listing

The *Restrictions on Dredging Activities* BUI was originally listed as impaired in the Stage I/II RAP due to the documented presence of multiple contaminants at concentrations exceeding established guidance values. The specific contaminants of concern include: organic compounds including polycyclic aromatic hydrocarbons (PAHs), chlorinated pesticides, polychlorinated biphenyls (PCBs), dioxins/dibenzofurans (PCDD/Fs), and metals such as chromium, copper, lead, manganese, mercury, nickel, zinc, and cyanide (NCSWCD, 2007). In the original RAP, the potential sources of contamination to Eighteenmile Creek were listed as: the NY Barge Canal, municipal and industrial wastewater discharges, inactive hazardous waste sites, bottom sediments, and combined sewer overflows (NYSDEC, 1997).

Since at least the time of the publication of the Stage I/II RAP, the conceptual site model for the Eighteenmile Creek AOC has distinguished a “source area” and an “impact area” with respect to the origin and movement of AOC contaminants of concern. In this model, the “source area” is described as the reach of the creek spanning roughly from the Erie Canal at the city of Lockport downstream to Burt Dam, as well as the broader Eighteenmile Creek watershed, and the “impact area” is described as the reach of the creek spanning downstream of Burt Dam to the Lake Ontario outlet, thus encompassing the AOC.

This conceptual site model is largely influenced by the location of sources and the hydrodynamics of Eighteenmile Creek, which play an important role in the overall distribution of sediment and sediment-bound contaminants. Put simply, material from known contaminant sources in the upper watershed are transported as water and sediment migrate from upstream to downstream, bringing contaminants picked up along the way. There are several impoundments on Eighteenmile Creek, including the dam at Burt, NY, which creates a backwater pool that acts as a deposition basin where much of the transported sediment settles out and remains behind the dam. Thus, Burt Dam is considered the dividing line between the “source area” and “impact area.”

However, some fine-grained suspended material is transported over the dam where it may settle out in the AOC, or alternatively be carried out to Lake Ontario. To a limited extent there is also transport of material in the opposite direction, where at the downstream end of the AOC, water

and sediment may move from Lake Ontario back into the AOC under the right conditions. Much of the material that moves from the Lake into the AOC is fine grained sand that is captured between the Federal navigation piers.

The Stage I/II RAP justified the original impairment designation for the *Restrictions on Dredging Activities* BUI based on sediment data from six studies with dates ranging from 1977 to 1994. Of these studies, three were conducted by USACE in 1977, 1981, and 1987. The other three studies were conducted by NYSDEC, with one in 1987 and two separate studies in 1994. The three USACE studies were conducted for the purpose of sediment characterization for dredge material management and were limited to harbor and lake reference locations, whereas the three NYSDEC studies were exploratory in nature and included additional samples in upstream sections of Eighteenmile Creek. All six studies included analysis of bulk sediment chemistry, however there were differences between the USACE and NYSDEC studies according to their intended purpose. For example, the USACE studies followed procedures consistent with characterizing dredged material including compositing of samples and use of additional tests such as elutriate analysis and bioassays. These additional tests are designed to predict potential impacts to water quality and aquatic biota as a result of in-water disposal of dredged sediment. The NYSDEC studies analyzed sediment cores at discreet depth intervals to gain insight into deposition history and in-situ bioavailability. The relevant sample locations from the 1977, 1981, and 1987 USACE studies are shown in **Figure 3** (reprinted from Stage I/II RAP). Several sample locations had levels of metals including lead, zinc, and occasionally copper and mercury which exceeded EPA and NYSDEC guidelines for open lake disposal of dredged sediment. In all harbor samples, sediment PCBs levels were either non-detect or low.

Documented restrictions placed on dredging and disposal activities in Eighteenmile Creek first appeared in the Draft Environmental Impact Statement for a major expansion of Olcott Harbor (USACE, 1975). The proposed project included new construction of over 2,700 linear feet of detached breakwaters, 800 additional mooring spaces, and over 3,000 feet of new navigation channel. Included was a 1500-foot extension of the existing federal navigation channel into Eighteenmile Creek (see **Figure 4**). The project was expected to generate upwards of 30,000 yards of dredged material, some of which was classified as polluted and restricted from open lake disposal based on sampling by EPA in 1972 (EPA, 1973). Disposal restrictions were confirmed in the Final Environmental Impact Statement (EIS) report as a result of additional sampling in 1977 (USACE, 1978). Construction of the proposed expansion of Olcott Harbor was authorized by congress in 1986 by Section 601(a) of the Water Resources Development Act of 1986. A preconstruction engineering and design phase reevaluation report issued in 1991 contains additional details on restrictions on disposal activities for a portion of dredged material in the proposed channel between the existing federal channel and the Route 18 bridge based on updated sampling with bulk chemical analysis conducted in July, 1989 (USACE 1991). Of 25,000 - 30,000 cubic yards of material, approximately 4,000 was considered polluted. Later that year, these same samples were evaluated by bioassay analysis. Although the bioassay analysis conducted pre-date current guidance for evaluation of dredged material in the Great Lakes, mortality to test species was generally low (Aquatech 89). Mean percent mortality in a 96-hour sediment bioassay of *Pimephales promelas*, *Hexagenia limbata*, and *Daphnia magna* was 0, 10, and 13, across the eight harbor sites (n=14 per test species) and 0, 5, and 6.5 for the reference sediments (n=2 per test species), respectively. In the end, an official determination regarding dredging restrictions was not made because the preferred harbor plan eliminated all dredging in

the inner portion of Olcott Harbor (USACE 1991). After years of consideration, the proposed Olcott Harbor expansion project was not constructed due to an unfavorable cost/benefit ratio and because the project was assigned low federal priority due to its primarily recreational nature.

A second instance of restrictions on dredging occurred in 1988 when the Town of Newfane proposed to dredge material from the inner harbor in a location within the same footprint as being considered for the proposed expanded federal channel. Based on the USACE sampling completed in 1987 for the proposed Olcott Harbor expansion project a small portion of the proposed dredging area was restricted and was not dredged by the Town of Newfane.

The resolution of the two known or potential instances of restrictions on dredging activities cited above is further discussed in Sections III & IV of this report.

2.2 BUI Removal Criteria

In order to address Eighteenmile Creek AOC BUIs, the RAC established restoration targets or “removal criteria” that define success for each BUI. The removal criteria for the *Restrictions on Dredging Activities* BUI were first reported in the 2006 RAP status update and were later revised in the 2008 Delisting Targets Report (NCSWCD, 2008). The final removal criteria are presented in the Eighteenmile Creek Remedial Action Plan Stage II Update (NCSWCD, 2011) and are as follows:

“When contaminants in AOC sediments (located within the actual or potential dredging areas identified for the improvement of ship navigation) do not exceed standards, criteria, or guidelines such that there are restrictions on dredging or disposal activities.”

The above BUI removal criteria are consistent with U.S. EPA Delisting Guidance (USPC, 2001) and the International Joint Commission (IJC) delisting guidelines (IJC, 1991).

The endpoint to restore this BUI is achieved by satisfying the above criteria. As further described in Section III, the presence of contaminated sediments in the upstream source area should not result in this beneficial use being impaired if it does not impact navigational dredging activities (Krantzberg & Montgomery, 2007). Additionally, other types of dredging restrictions related to environmental windows, seasonal limitations, and normal State and Federal permit requirements do not constitute a beneficial use impairment.

3. BUI Indicator Status Resolution

3.1 Assessment of Dredging Activities

The policy of New York State, set forth in Title 5 of Article 15 of the Environmental Conservation Law (ECL), is to preserve and protect the State’s lakes, rivers, streams and ponds. The Protection of Waters Regulatory Program was developed by the NYSDEC to prevent undesirable activities

on water bodies by establishing and enforcing regulations. According to the Protection of Waters regulation 608/608.5 (Use and Protection of Waters/Excavation or placement of fill in navigable waters), a permit is required for excavation or placement of fill in navigable waters of the State, below the mean high-water level, including adjacent and contiguous marshes and wetlands. Similarly, the USACE, NYS Office of General Services (NYSOGS), and the NYS Department of State (NYSDOS) have similar laws and permitting requirements which regulate in-water projects. To ensure individual projects obtain all necessary permits, across multiple regulatory agencies, a Joint Application was developed. The application is utilized by these agencies to ensure permitting requirements and appropriate methodologies are incorporated into the dredging projects. These controls and regulatory processes ensure that all projects abide by all regulatory requirements, are protective to the environment, and incorporate appropriate best management practices for all stages of the project.

This section contains a review of dredging activities in Olcott Harbor going back to approximately 1985. This review includes a search of the NYSDEC permit database, project documents, laboratory sampling results and analysis, review of state and federal guidance for evaluation of sediment quality, and conversations with state, local, and federal officials. A compilation of data on both federal and non-federal dredging projects in the AOC were compared to dredging projects around the Great Lakes and to the BUI removal criteria. These comparisons support the removal of this BUI.

3.1.1 Federal Dredging Activities

Prior to the construction of a federal navigation project at Olcott, the entrance to Eighteenmile Creek at Lake Ontario was originally less than one-foot-deep. Harbor improvements, authorized by the River and Harbor Act of 1867, connected deep water in Lake Ontario with deep water in Eighteenmile Creek by the construction of two parallel piers from the mouth of the creek to the 11-foot depth contour in the lake and with the formation of a dredged channel between the piers. Since first constructed, the project has been modified several times; these modifications have included extension and repair of the piers, as well as changes in channel dimensions and in dredge depths. The current layout of the Federal navigation project at Olcott Harbor includes 12 feet deep, 140 feet wide and approximately 1,400 feet long entrance channel that runs between east and west concrete and sheet pile piers authorized under the River and Harbor Act of 1913 (USACE, 1981).

Maintenance dredging of the Olcott Harbor federal channel is infrequent due to a combination of limited shoaling, and a federal funding paradigm which tends to prioritize commercial harbors over recreational harbors. When considering maintenance dredging, the USACE is required to choose the least expensive option for dredging and disposal of dredged sediment, so long as the option meets environmental requirements (Clean Water Act Section 404(b) (1); 33 CFR Parts 335-338). In Lake Ontario, open-lake placement has been the option relied on for “clean” material (i.e. without contamination). Any material deemed unacceptable for aquatic deposition due to potential environmental contamination would not be suitable for open-lake placement. As discussed below, the federal portion of Olcott Harbor has been dredged three times over the last 35 years.

USACE dredging in 1985

In 1985, maintenance dredging by contract removed 5,315 cubic yards of sediment from the federal navigation channel at Olcott Harbor at a cost of \$60,243. Although the original permit for the 1985 dredging operation could not be located during this report preparation, the dredged material was disposed of at the open-lake disposal site without contaminant related restrictions (personal communication USACE). The existing Olcott Harbor open-lake disposal site for the harbor maintenance dredged material is in deep water of Lake Ontario approximately 1.5 miles due north of the mouth of Olcott Harbor.

USACE dredging in 1997

In 1997, NYSDEC issued a Water Quality Certification Permit Under Section 401 – Clean Water Act to the Buffalo District Corp of Engineers for maintenance dredging of up to 20,000 cubic yards of sediment from the federal navigation channel, with disposal of sediment at the pre-existing open-lake placement area (DEC Permit # 9-2928-00023/00001). The dredging permit contained standard permit conditions related to appropriate dredging and disposal requirements, environmental windows for fish spawning, and best management practices, but did not cite any contaminant related restrictions. In total, 9,874 cubic yards of shoaled material was dredged at a cost of \$75,583 (USACE personal communication).

USACE dredging in 2014

After a 17-year gap in channel maintenance, the federal channel in Olcott Harbor was dredged again in 2014 using Superstorm Sandy recovery funds. Prior to dredging, the USACE conducted a tiered evaluation of sediment quality according to guidance provided in the Great Lakes Dredged Material Testing and Evaluation Manual (GLTM), and Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. -Testing Manual (Inland Testing Manual). The tiered evaluation includes an assessment of available information, sediment physical and chemical data, and biological-effects testing to reach a determination on potential adverse impacts to the environment associated with a dredged material discharge to the open-lake placement site (data provided in **Appendix A**). A contaminant determination is made by comparing the dredged material to the sediments at the disposal site and an open-lake reference site. Based on this comparison a conclusion was reached that channel sediments are suitable for open-lake placement. NYSDEC concurred with the USACE conclusion and issued a Water Quality Certification Permit Under Section 401 – Clean Water Act to the Buffalo District Corp of Engineers for maintenance dredging and placement at the open-lake site.

Olcott Harbor Expansion Project (70s-90s)

As discussed in Section II A. above, during the 1970s through 1990s the USACE conducted a feasibility study for the expansion of Olcott Harbor, including an extension of the federal navigation channel. Based on testing in the 1970s and 1980s, material which would have been dredged to construct the extended channel would have been precluded from open lake placement due to concerns over sediment quality. However due to several factors, the expansion project was not

constructed, and the previously restricted material was never dredged under any federal action. As will be discussed below, a portion of the formerly restricted material was re-tested in 2014 and was dredged by the Town of Newfane.

Future USACE dredging

Based on previous testing, sediments from the federally maintained channel are suitable for open lake disposal. Due to the relatively consistent processes which result in harbor shoaling at Olcott there is no reason to believe sediment quality will decrease in the federal channel over time. This is a result of regional nearshore processes, whereby sands and gravels eroded from updrift bluffs are generally transported from west to east along the lake shore by waves and currents, with some material becoming trapped between the navigation structures. Likewise, these energetic conditions generally prevent settling of fine-grained material transported from the upstream watershed. Because the federal navigation channel sediments are generally coarse in nature, with a sand content ranging from 87 to 95 percent, and are relatively uncontaminated, future dredged material may be eligible for beach nourishment or another beneficial reuse.

3.1.2 Non-Federal Dredging Activities

Eighteenmile Creek AOC is relatively unique among Great Lakes AOCs in that the dredging BUI has historically been applied to any navigational dredging, including dredging projects located in areas outside of the established federal navigation channel. This convention may have originated in relation to the previously proposed harbor expansion project. In recent years, the RAC has primarily considered the portion of the AOC downstream from the Route 18 bridge, since upstream areas contain protected wetlands making any dredging unlikely. Areas outside of the federal navigation channel within Olcott Harbor have been dredged periodically by local entities, including the Town of Newfane and Olcott Yacht Club, to support the recreational boating and fishing community. Locations of dredging projects outside of the federal channel are shown on **Figure 5**.

Olcott Yacht Club

In May 1995, a permit (NYSDEC 9-2928-00039/00003) to dredge approximately 100 cubic yards of material was issued to the Olcott Yacht Club to install a travel lift railway. The dredging permit authorized the disposal of the excavated material at the existing boat storage and adjacent parking area. In April 1999, the Olcott Yacht Club received a permit (NYSDEC 9-2928-00039/00007) to dredge approximately 100 cubic yards of sediment at the entrance to the Club's haul out slip. The permit authorized the use of this material as fill on the Club's lot on Van Buren street. During review of the permit application there were no concerns with contaminants for this project, and sediment testing was not required (DEC internal document dated March 25, 1999). In July 2004, the Olcott Yacht Club received a permit (NYSDEC 9-2928-00039/00011) to dredge approximately 260 cubic yards of material to be used as fill behind an onsite sheet pile wall; any excess shale was to be disposed of at McVie Storage Area in Youngstown.

Town of Newfane Marina

In 1988, the Town of Newfane was authorized to dredge approximately 10,500 cubic yards of material from the local navigation channel upstream of the federal channel in the area designated as Site A in **Figure 5** (USACE permit 88-230-4). This material was placed at the pre-existing open-lake placement area. Based on the 1987 USACE testing (reference 88 report), material from Site B was considered unsuitable for open lake disposal and consequently was not dredged.

In August 2014, the Town again planned to dredge areas of the inner harbor, including a portion of the formerly restricted Site B. In preparation for this dredging project, the Town conducted a screening assessment of harbor sediments through analysis of bulk sediment chemistry. This assessment included collection of 22 sediment cores in and around the proposed dredge area, including several samples from Site B. After review of the sample results, the Town of Newfane was issued a permit for the dredging of approximately 6,300 cubic yards of sediment within and adjacent to the Town-owned marina (including the portion of Site B), with placement in an upland location west of the marina parking lot. In March of 2015, the Town of Newfane received a modification to the earlier Permit (NYSDEC 9-2928-00049/00006) to move and beneficially reuse the dredged material to make a privacy berm at the Town-owned composting facility. Since the original placement site in the Town of Newfane Marina upper parking lot offered an efficient and effective drying basin for dredged material, the town plans to use this area in a similar fashion if it conducts future marina dredging operations (Wendel engineers letter to DEC Permits 2/19/2015).

When compared to NYSDEC screening criteria, the sediments represented by the 22 cores can be broadly classified as Class B which is considered slightly to moderately contaminated. Most parameters fell on the lower side of the Class B range, indicating slight contamination is likely. Many of the sediment samples initially exceeded NYS screening criteria for chlordane, a legacy pesticide not typically associated with the Eighteenmile Creek AOC. However, based on updated guidance those samples would now be considered uncontaminated (NYSDEC 2014). Per NYSDEC guidance, Class B sediments are generally discouraged from open water disposal without additional lines of evidence such as biological testing. The purpose of additional tiers of analysis is to reclassify sediments as either A (no toxicity to aquatic life) or C (acute toxicity to aquatic life). The Town did not conduct a biological assessment of the sediment due to project cost constraints, instead planning on upland reuse for this and future dredging projects (project narrative Wendell Engineers). See **Appendix B** for sediment data related to the 2014 Town of Newfane dredging project.

Future Non-federal dredging

In the past, sediments dredged by the Town were occasionally placed in the open lake, for example during the 1988 dredging project. However, current NYSDEC guidance would generally require a tiered testing approach for any sediments proposed for open lake disposal exceeding Class A screening criteria. Through a review of previous dredging projects in Olcott Harbor outside of the federally maintained channel, it is evident that sediments have been suitable for upland beneficial reuse. Future upland beneficial use would follow NYSDEC's recently promulgated solid waste regulations, 6 NYCRR Part 360 Series (effective date November 4,

2017), which includes the use of navigational dredged material (NDM) through a case specific beneficial use determination for upland management of NDM in a beneficial manner (unless included under a dredging permit). NYSDEC can either permit or approve case specific beneficial use determinations for the reuse of dredged material in upland settings when the material meets the technical requirements for the intended use. Additionally, reuse approval is based on an approved sampling plan and chemical analytical results must meet criteria set by the Regulations for reuse options. Future dredging projects in Olcott Harbor will be evaluated on a case by case basis as part of these and other State and Federal permitting process.

3.2 Assessment of Harbor Conditions

Several additional lines of evidence were pursued to evaluate the *Restrictions on Dredging Activities* BUI. These are described below.

3.2.1 Geophysical Survey

In summer 2017, NYSDEC Great Lakes Program and NCSWCD collaborated with USACE Engineering Research and Development Center (ERDC) and Buffalo District to delineate fine-grained sediment regions from coarse-grained regions in Olcott Harbor and Eighteenmile Creek via a geophysical survey. Through this effort the surface transition from the coarser-grained sediment in the outer harbor to the finer-grained sediment in the inner harbor was mapped. In addition to the survey data, seven surface sediment samples were collected to help characterize the geophysical data. The surficial distribution of most of the fine-grained sediment and associated submerged aquatic vegetation growth was primarily limited to within the inner harbor. Outside of this region, the sediment was coarse-grained sands and gravels (**Figure 6**).

The physical characteristics of sediments often provide information on sediment movement and origin. The fine-grained sediments in the lower energy environment of the inner harbor likely originated in the Eighteenmile Creek watershed, whereas the coarser material in the higher energy outer harbor is likely a result of the entrapment of Lake Ontario littoral sands by the existing Federal East and West Piers. The limited contamination associated with the littoral Entrance Channel material has its source in the open-lake (USACE 1991). There is a greater relative risk that inner harbor sediments would have elevated contaminant levels, both because of their upstream origin, and because contaminants preferentially adsorb to finer-grained particles. Fortunately, harbor shoaling rates are relatively low as a result of the Burt and Newfane dams. The upstream dams serve as sediment traps and limit the need for frequent dredging (USACE 1981).

3.2.2 Landowner Survey

To gauge the potential for future dredging projects outside of the federal navigation channel, in 2017 the NCSWCD mailed a questionnaire to landowners bordering inner Olcott Harbor. A review of tax parcel maps identified 20 separate properties with some length of shoreline owned by twelve distinct landowners. The intent of the questionnaire was to gauge how or if shoreline

owners or tenants may experience restrictions on dredging to find out if private property owners or tenants along the shoreline have any interest in dredging near private docks, marinas, etc. because of reduced navigability. Out of the twelve landowners, eight responded to the survey. Survey results indicated some interest, but dredging projects are too costly for individual home or business owners to afford permitting, testing and dredging. Summarized survey results are contained in **Appendix C**.

3.3 Source Reduction

The Eighteenmile Creek Remedial Action Plan Stage II – Update (NCSWCD 2011) identified several projects or actions within the Eighteenmile Creek watershed which when implemented, will directly address the root problems associated with the original listing of the Eighteenmile creek AOC. Below are brief highlights of some of those activities which will contribute to overall source reduction to Eighteenmile Creek.

3.3.1 Upper Mountain Road and Gulf Creek

The Old Upper Mountain Road site is a seven-acre site that was operated as a municipal dump by the city of Lockport until the 1950s. The site includes the former municipal dump area and a portion of Gulf Creek (between Old Upper Mountain Road and Niagara Street in Lockport, NY), a tributary of Eighteenmile Creek. A site investigation conducted at the Old Upper Mountain Road site in 2007 revealed that consequential amounts of hazardous wastes (D008 - lead) were present at the site. The investigation report suggested that these hazardous wastes had adversely impacted surface water and sediment in Gulf Creek adjacent to the site. The Old Upper Mountain Road site was listed on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site (932112). A supplemental Remedial Investigation was completed in 2011 to further define the nature and extent of contamination in the sediment and surface water of Gulf Creek. A Record of Decision was issued for the Old Upper Mountain Road site in 2013; the remedy includes capping of the landfill and complete excavation of sediments in Gulf Creek (NYSDEC 2013). In addition, an existing combined sewer that runs through the former dump site and Gulf Creek will be relocated outside of the project site as part of the remedy. The site is currently in the design phase with completion of the Remedial Design for the sewer relocation and for the former dump site and associated portion of Gulf Creek estimated by early 2021. The remedial action for the sewer relocation is anticipated to be executed during the 2021 construction season, while the remedial action for the former dump site and associated portion of Gulf Creek is anticipated to be executed over the course of two construction seasons, proposed for 2022 and 2023.

3.3.2 VanDeMark Chemical, Inc.

VanDeMark Chemical (VDM) is a custom chemical batch manufacturer located in Lockport, New York, and manufactures phosgene and phosgene derivatives at this location. The company is located just downstream of the creek corridor (Federal Superfund Operable Unit 2) on the east bank of the creek. VDM completed remedial activities at the plant site in 2012 including Interim

Corrective Measures to remove coal tar and address dense non-aqueous phase liquid (DNAPL) contamination of the groundwater (Golder 2012). VDM identified coal tar residuals and solidified coal tar seeps along the creek bank that historically could have impacted the creek. VDM completed a Corrective Measures Implementation with remediation activities to address the cleanup and containment of coal tar residuals and DNAPL located in soil and bedrock along a portion of VDM's property adjacent to the north bank of Eighteenmile Creek and located south of VDM's manufacturing facility in Lockport, New York (Golder 2012). The activities included construction of a DNAPL interception trench on the bank. Additional monitoring activities have been completed to verify no impacts on the creek.

3.3.3 Eighteenmile Creek Federal Superfund Site

Due to the cost and extent of contamination in Eighteenmile Creek, the NYSDEC requested the Eighteenmile Creek Sediment Site be nominated to the National Priorities List (also known as Superfund). Eighteenmile Creek was placed on the National Priorities List (NPL) in 2012, dividing the site into four different Operable Units (OUs) (**Figure 7**). A major ongoing action is the wholesale remediation of the upstream source areas believed to be the primary contributors of contaminants which are the root cause of the BUIs. This remediation is occurring under the authority of the USEPA Superfund program (USEPA 2013, USEPA 2017, USEPA 2018). The Eighteenmile Creek Superfund site consists of contaminated sediments, soil and groundwater. The main contaminants of concern are lead and polychlorinated biphenyls (PCBs). The Eighteen Mile Creek Superfund site contains the creek and certain upland areas from the New York Barge Canal in Lockport, to the outlet at Lake Ontario approximately 15 miles downstream in Olcott, New York.

OU1 – Residential Soil Contamination

This part of the cleanup addresses soil contamination at nine residential properties located on Water Street in Lockport, NY. EPA issued a cleanup plan for OU1 in 2013 (USEPA 2013). As part of EPA's selected remedy, residents were permanently relocated due to the impact of recurring flooding of PCB contamination at the properties. The structures at these properties have been demolished. The soil excavation remedy at OU1 will be performed during the cleanup of sediments in the Creek Corridor to prevent the creek from re-contaminating the residential properties. In the interim, EPA installed a fence and a temporary soil cover to reduce the risk of exposure to contaminated soil at these properties.

OU2 – Contaminated Soil and Sediment within the Creek Corridor

Commonly referred to as the Creek Corridor, this part of the cleanup work addresses the contaminated sediment within the 4,000-foot segment of the creek that extends from the canal to Harwood Street in the City of Lockport. OU2 also addresses contaminated soil at the former United Paperboard property, the former White Transportation Company property, the former Flintkote property, and Upson Park. In 2017, EPA issued a cleanup plan for OU2, which includes bank-to-bank excavation of sediment in the Creek Corridor, and a combination of soil excavation and capping at the commercial properties (USEPA 2017). As part of EPA's selected remedy, the buildings at the former Flintkote property were demolished. The design for the remaining

components of EPA's remedy for OU2 is underway and is expected to take about one to two years to complete.

OU3 – Contaminated Sediment outside of the Creek Corridor

EPA will address contaminated sediments in the creek that are not included in OU2, from approximately Harwood Street to the creek's discharge into Lake Ontario in Olcott, New York. EPA is currently performing a remedial investigation and feasibility study at OU3 to define the nature and extent of contamination and to assess if there are unacceptable risks to human health and/or the environment as a result of the contamination. Depending on the outcomes of the studies, the RI/FS will also evaluate potential cleanup actions and other remedies to safeguard human health and the environment. This process will take several years.

OU4 – Lead Contaminated Soils

This part of the cleanup will address lead-contaminated soil at residential properties located adjacent to the former Flintkote property in the City of Lockport. EPA issued a cleanup plan in September 2018, which includes removal of approximately 14,000 cubic yards of lead-contaminated soil from approximately 28 properties in the vicinity of the Flintkote property (USEPA 2018).

4. Conclusions

4.1 Removal Statement

The BUI criteria chosen by the RAC are met because there are currently no restrictions on dredging or disposal practices in areas of the AOC which have previously been routinely dredged or have been identified for future dredging. Previous restrictions on navigational dredging and disposal activities in Olcott Harbor are primarily related to a formerly authorized, but unconstructed Federal navigation channel extension. This proposed channel extension project has since been deauthorized. Multiple dredging projects have been implemented without disposal restrictions including within portions of the harbor that formerly carried such restrictions. Normal permit conditions including requirements related to environmental dredging windows, prevention of barge overflow, specification of appropriate dredging equipment and disposal location, siltation prevention during the dewatering period, etc., are standard and do not constitute restrictions under the dredging BUI.

Further, geophysical mapping of the harbor indicates that sediments within the federal navigation channel are primarily coarse sandy material typically not associated with the types of contaminants found in upstream areas of Eighteenmile Creek. Based on the federal channels physical and chemical properties, sediments may be suitable for beneficial reuse options, such as beach nourishment (GLDT 2013).

Although inner harbor sediment is generally finer grained in nature, the primary contaminants of concern related to the Eighteenmile Creek AOC and Superfund site (PCBs, lead, and zinc) are low in comparison to upstream source areas. This has allowed dredged material from the inner harbor to be beneficially reused in several instances. As source areas continue to be addressed through existing State, Federal, and local initiatives, overall harbor sediment quality is expected to trend upwards.

4.2 BUI Removal Steps

	<i>Completed</i>	<i>Date</i>	<i>Step Taken</i>
1.	√	8/1997	BUI first designated as “impaired” in Stage I/Stage II RAP.
2.	√	12/2011	Final BUI removal criteria established with RAC consensus.
3.	√	2/2018	RAC agreed to proceed with BUI removal
4.	√	4/2020	Initial Draft BUIRR provided to USEPA GLNPO Technical Review Lead
5.	√	6/2020	Receive comments from USEPA GLNPO Technical Review Lead and revise BUI removal report accordingly
6.	√	8/2020	Hold public outreach meeting to present BUI removal rationale to local stakeholders (including a 30-day public comment period).
7.	√	9/2020	NYSDEC (in consultation with USEPA Region 2 and GLNPO) completes final modifications to the <i>Restrictions on Dredging Activities</i> BUI removal document, based on public comments received.
8.	√	9/2020	Coordinate the formal transmittal of the BUI removal report with USEPA GLNPO.
9.		TBD	Communicate results to RAC for appropriate recognition and follow-up.

4.3 Post Removal Responsibilities

4.3.1 New York State Department of Environmental Conservation

NYSDEC will continue to evaluate dredging projects throughout the Eighteenmile Creek AOC and will continue using TOGS 5.1.9 as well as GLTM in the issuance of permits for dredging proposals. TOGS 5.1.9 provides a blueprint on all project components necessary in obtaining a dredging permit through New York State that is consistent with all regulations and regulatory requirements, to ensure water quality and environmental conditions are managed and maintained. NYSDEC will continue to require implementation of best management practices including operational controls for turbidity reduction, and adherence to environmental windows to manage dredging during fish migration and spawning periods. Future upland beneficial use of dredged material would follow NYSDEC's solid waste regulations, 6 NYCRR Part 360 Series. This will also ensure that the BUI removal criteria are sustained into the future.

4.3.2 United States Army Corps of Engineers

The USACE will continue to use GLTM as a technical guidance resource in the assessment of dredging projects in the Eighteenmile Creek AOC, and follow NYSDEC permitting process for upland placement of dredged material, as appropriate. USACE will continue to perform routine navigational dredging in the federal Navigation Channel at the mouth of Eighteenmile Creek, and will do so in accordance with all applicable procedures, standards, and guidance.

4.3.3 Local Community Dredging Applicants

Local entities (e.g. Town of Newfane, Olcott Yacht Club, and others) will be required to comply with permitting requirements which regulate in-water projects. Applicant are encouraged to contact the NYSDEC Region 9 office early in the planning phase of potential dredging projects. Staff can address problems and concerns relating to the application, the design of a sediment sampling plan (if required), analysis of sediment samples, and potential material placement or beneficial reuse options.

4.3.4 United States Environmental Protection Agency

The USEPA will continue to provide funding for RAP/RAC Coordination and technical assistance to the extent that resources are available to support the removal of remaining BUIs and ultimately the delisting of the Eighteenmile Creek AOC. NYSDEC Great Lakes Program staff are anticipated to assist with these efforts.

4.3.5 Niagara County Soil and Water Conservation District

With EPA/GLRI funding, NCSWCD currently provides a Coordinator for the Eighteenmile Creek AOC RAP, facilitation with RAC efforts, and technical assistance for AOC documentation and project design. With ongoing funding support, NCSWCD will continue in these roles to assist the RAC and USEPA in achieving the long-term goal of delisting the Eighteenmile Creek AOC.

4.3.6 Remedial Advisory Committee

The RAC will continue to forward the objectives of the RAP by evaluating, supporting, and documenting the restoration of the Eighteenmile Creek AOC, until all of the BUIs are restored and the long-term goal of delisting the AOC can be achieved.

5. References

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United States Environmental Protection Agency Region 2. 2013. Record of Decision Operable Unit One Eighteen Mile Creek Superfund Site Niagara County, New York

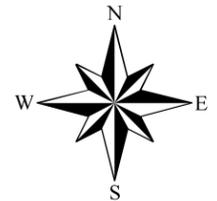
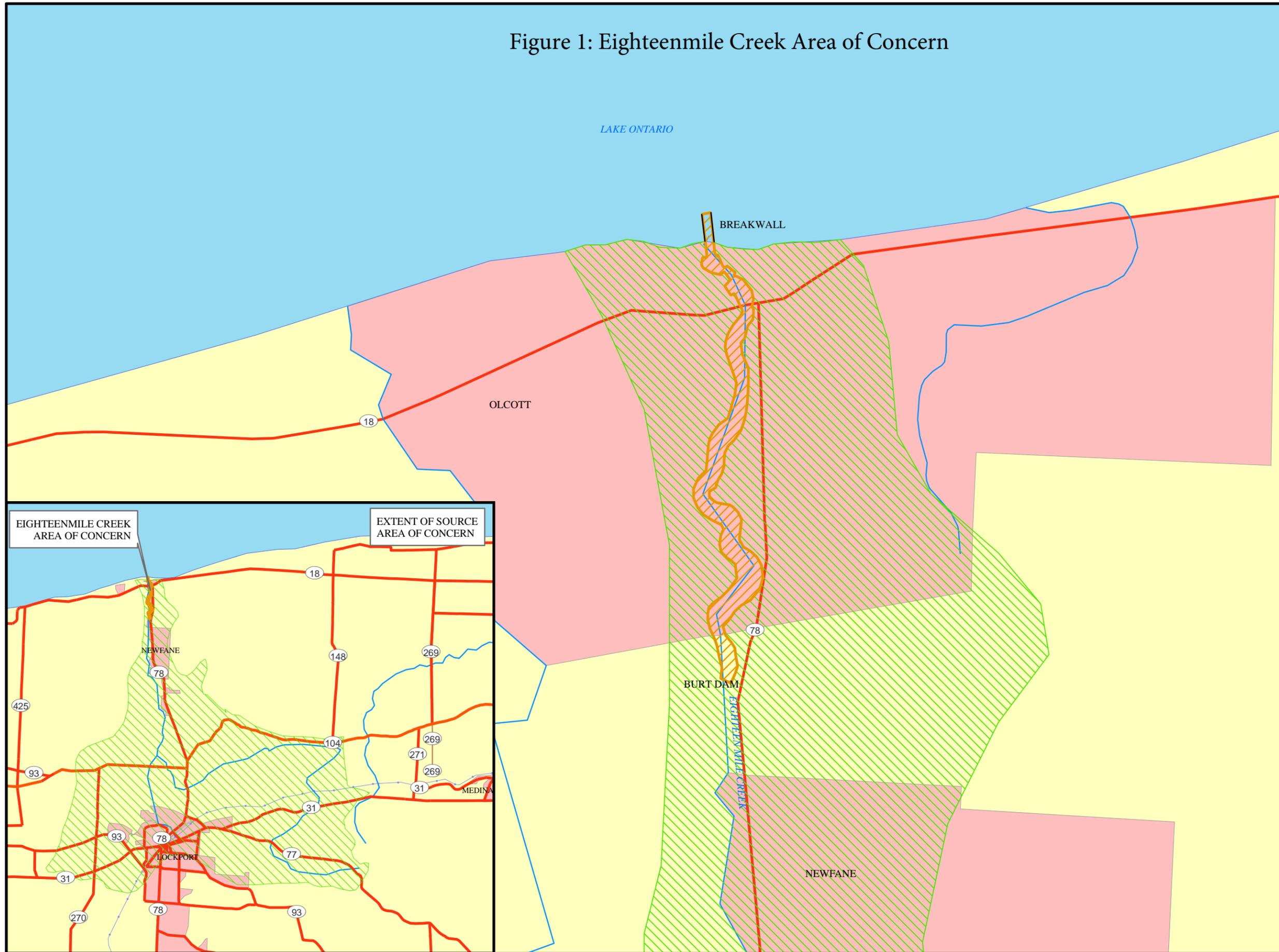
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6. Figures and Appendices

Figure 1: Eighteenmile Creek Area of Concern



LEGEND

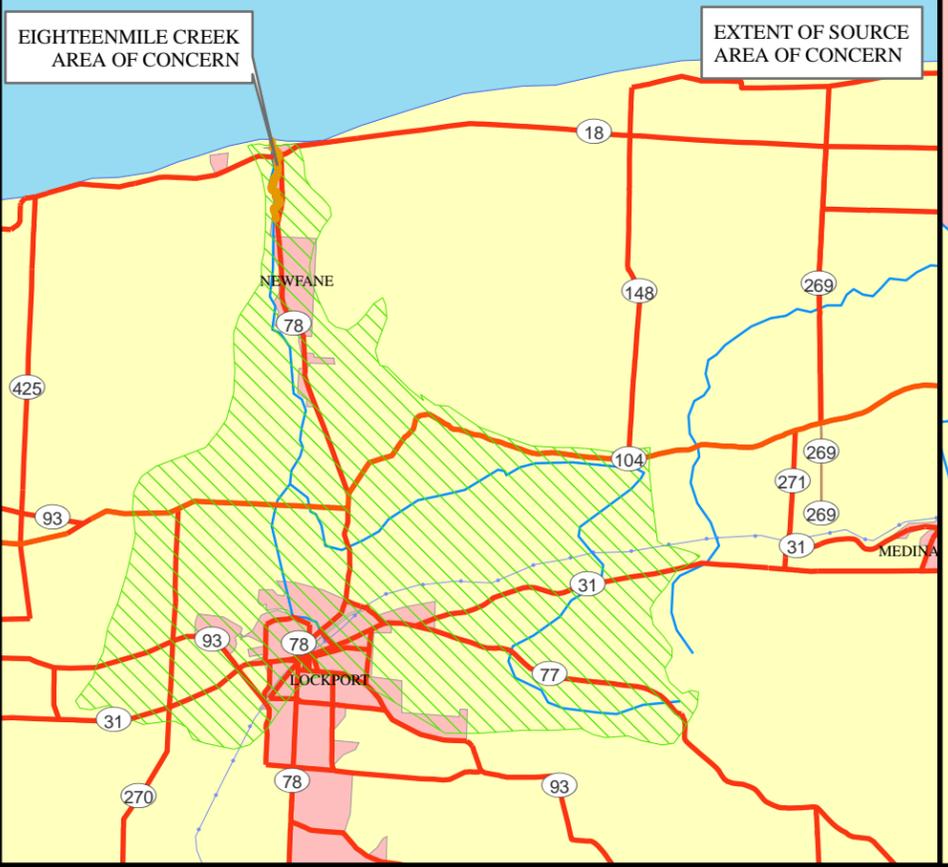
-  MAJOR ROADS
-  SURFACE WATER
-  URBAN AREAS
-  EXTENT OF AREA OF CONCERN (EIGHTEENMILE CREEK REMEDIAL ACTION PLAN, AUGUST 1997)
-  EXTENT OF SOURCE AREA OF CONCERN (EIGHTEENMILE CREEK REMEDIAL ACTION PLAN, AUGUST 1997)

NOTES:

AREA OF CONCERN BOUNDARY AS APPROVED BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION ON JULY 27, 2005.

THE SOURCE AREA OF CONCERN DESIGNATED FOR THE EIGHTEENMILE CREEK AREA OF CONCERN IS DEFINED IN THE 1997 REMEDIAL ACTION PLAN AS THE EIGHTEENMILE CREEK WATERSHED, AND WAS DERIVED FROM FIGURE 2.2 OF THE 1997 REMEDIAL ACTION PLAN.

SOURCE: MODIFIED FROM THE NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION 1997, AND ESRI, 2005.



EIGHTEENMILE CREEK, NEW YORK
AREA OF CONCERN

Great
Lakes
National
Program
Office



Figure 2: Olcott Harbor



Olcott Harbor
Eighteenmile Creek AOC

Legend

-  Olcott Harbor Federal Channel
-  Olcott Inner Harbor (non-federal)



0 250 500 Feet



Figure 3: Locations of Sediment Samples from 1977, 1981, 1987 USACE studies (reprinted from Stage I/II RAP)

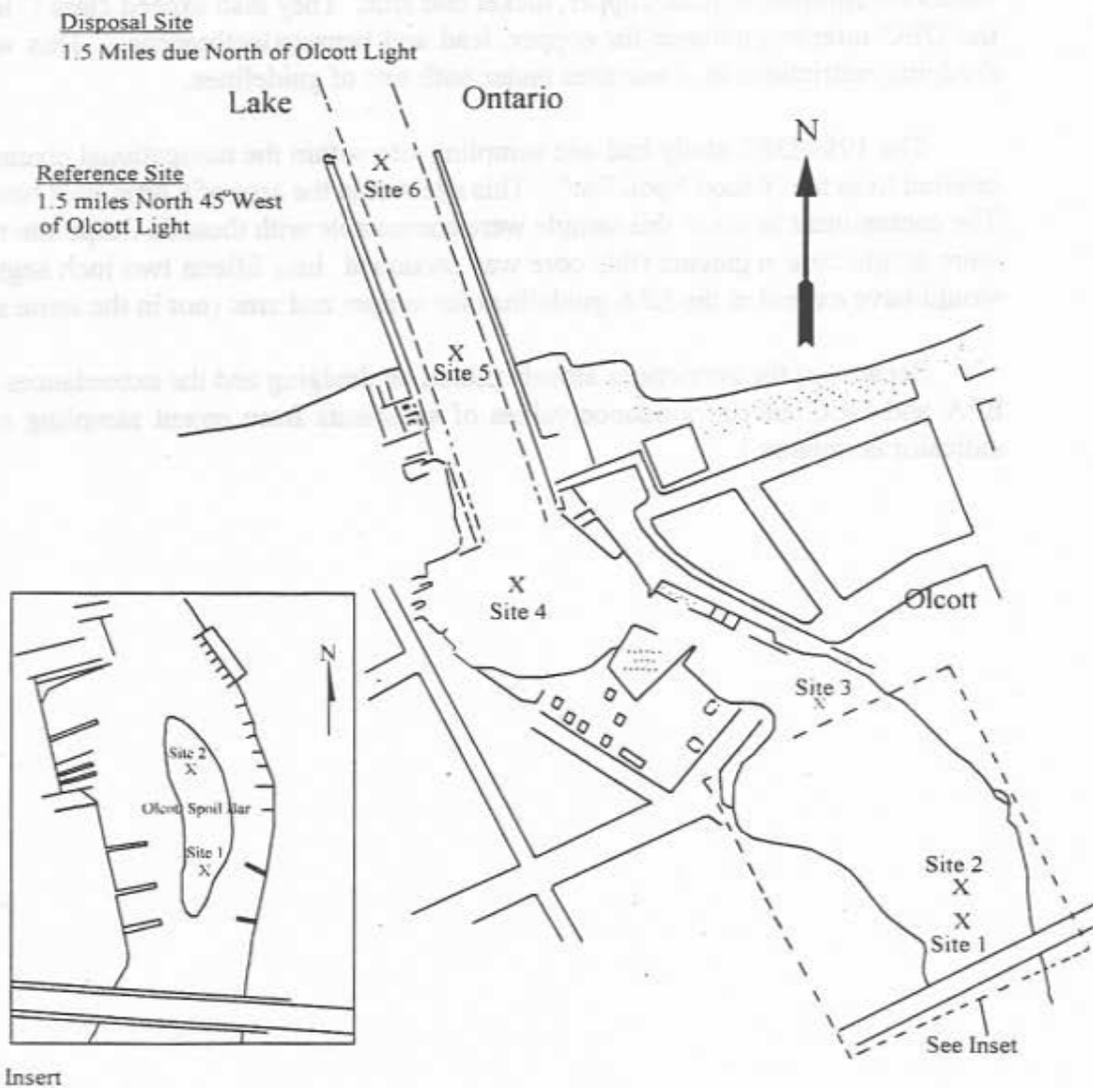


Figure 4: Proposed Olcott Harbor Expansion Project (reprinted from USACE 1991 EIS)

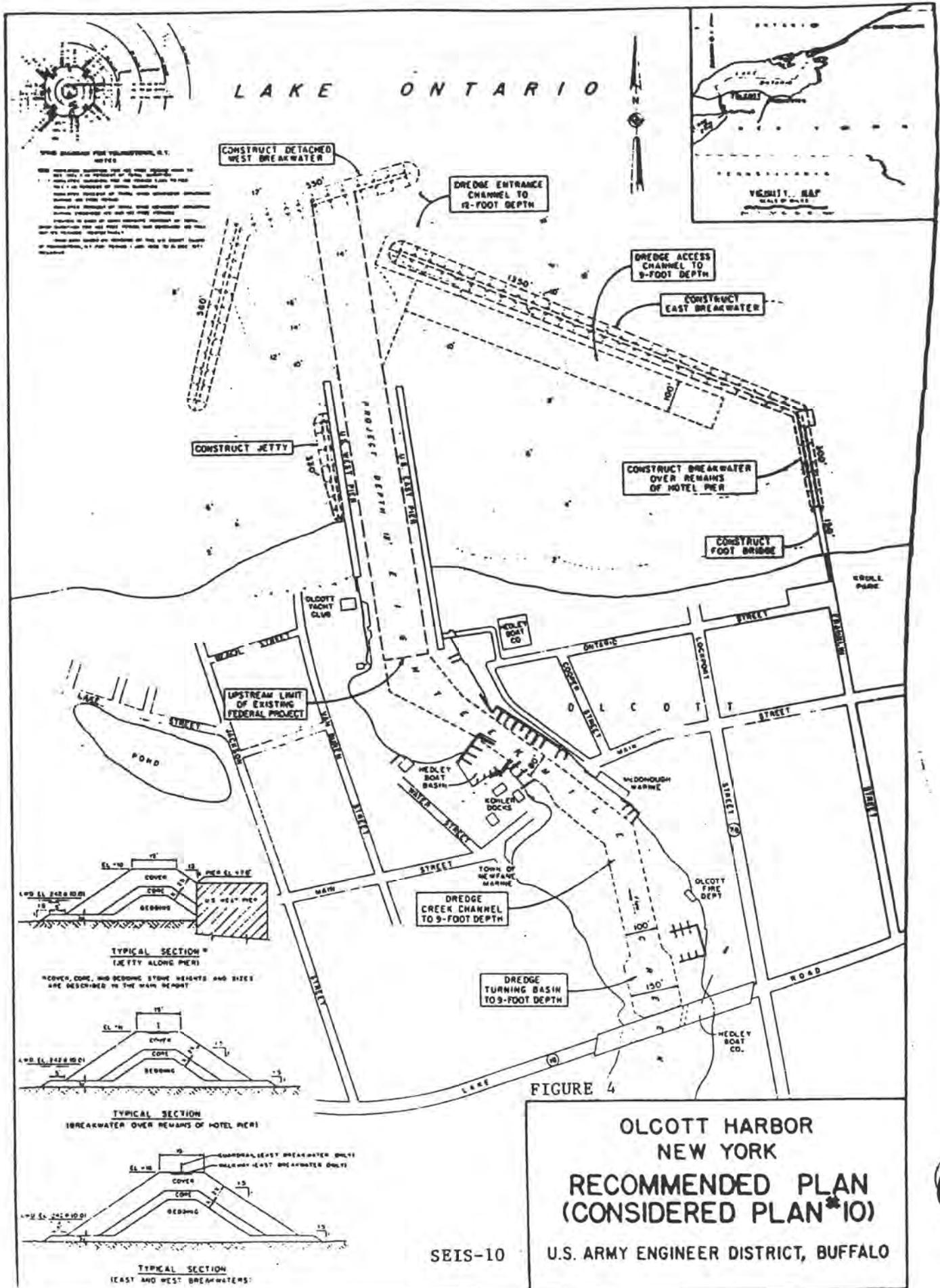


Figure 5: Location of Dredging Projects



NYS ITS GIS Program Office

Olcott Harbor Non-Federal Dredging Projects

Legend

-  Olcott Yacht Club dredging zone (estimated)
-  Town of Newfane restricted 1988, dredged 2014 (inside Site B)
-  Town of Newfane dredged 2014
-  Town of Newfane dredged 1988 (Site A)
-  Olcott Harbor Federal Channel



0 175 350 Feet

Dredging footprints reproduced from georeferenced maps and should be considered approximate

Figure 6: Olcott Harbor Geophysical Survey



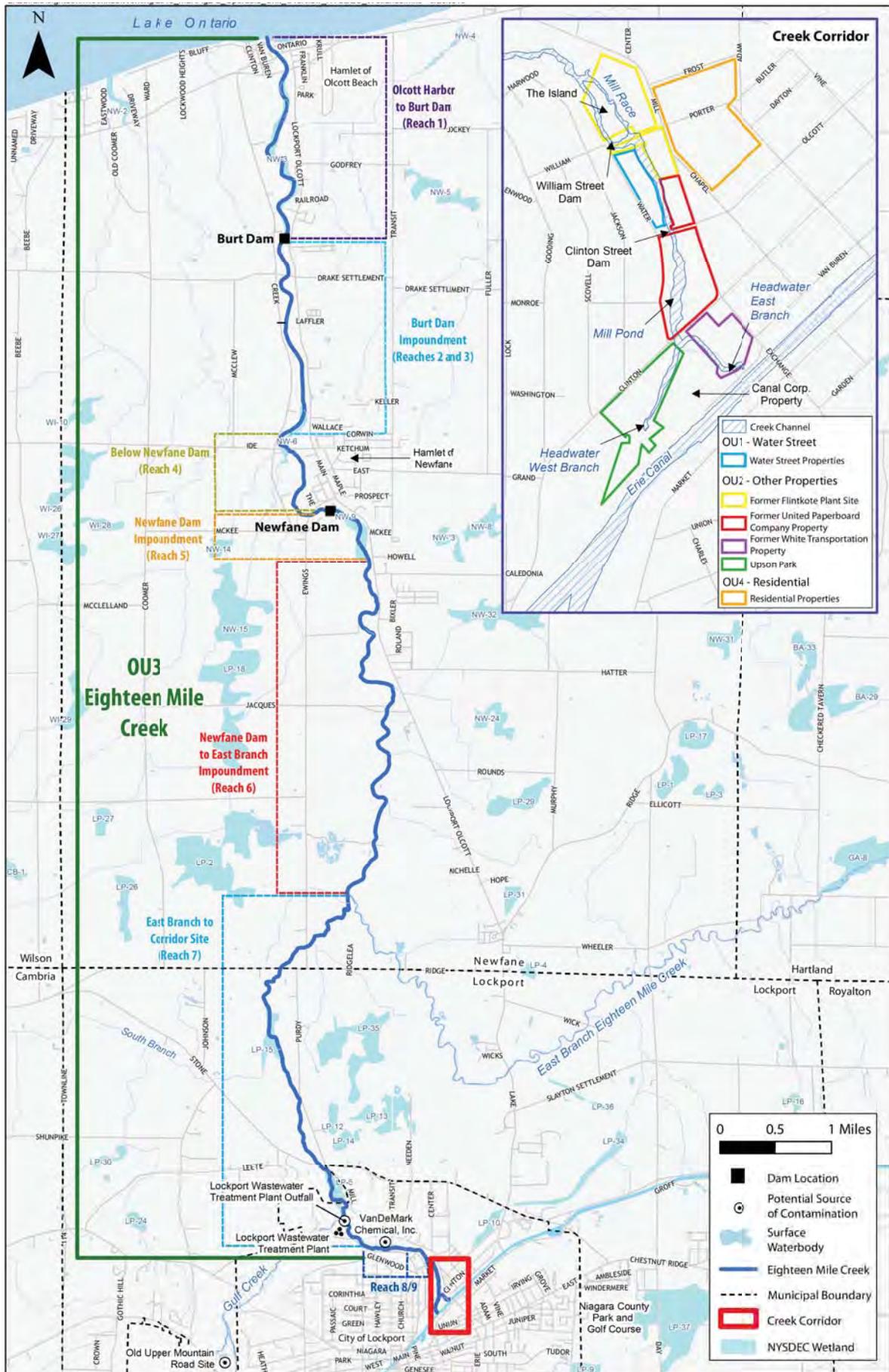
Legend

-  Fine Grain Grab Sample
-  Coarse-Grain Grab Sample
-  Coarse Sediment
-  Fine Sediment

0 200 400 800 Feet



Figure 7: Overview of Federal Superfund Site Operable Units
 (reprinted from EPA OU3 Data Gap report)



**Appendix A: USACE Contaminant Determination for Olcott Harbor 2014
Dredging**



DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO NY 14207-3199

REPLY TO
ATTENTION OF:

MEMORANDUM FOR CELRB-PM-EA

21 November 2013

SUBJECT: Olcott Harbor, Niagara County, New York - 40 CFR 230.11(d) Contaminant Determinations

FROM: CELRB-TD-EE

REFERENCES:

- a. Great Lakes Dredged Material Testing and Evaluation Manual, 1998. Guidance manual prepared by U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers.
- b. Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. – Testing Manual (Inland Testing Manual), 1998. USEPA and USACE.
- c. Analytical Report: Olcott Harbor. RTI Laboratories, Inc. October 2013.
- d. Toxicological Evaluation of Sediment Samples: Olcott Harbor. EnviroSystems, Inc. September 2013.

INTRODUCTION

The objective of this memorandum is to evaluate Olcott harbor federal navigation channel sediments to address the contaminant determination portion (40 CFR 230.11[d]) of the larger Clean Water Act Section 404 (b)(1) evaluation of a proposed dredged material discharge to waters of the United States. This evaluation follows the tiered evaluation prescribed by federal guidance, including an assessment of available information, sediment physical and chemical data and biological-effects testing to reach a determination on potential adverse impacts to the environment associated with a dredged material discharge to the open-lake. This evaluation was conducted according to the protocols and guidelines provided in references (a) and (b).

Section 404(b)(1) Guidelines direct that contaminant determinations be made by comparing the dredged material to the sediments at the disposal site; open-lake reference sediments serve as the point of comparison for potential contaminant effects of the proposed dredged material. Based on this comparison a conclusion is reached regarding the suitability of sediments for open-lake placement, with respect to sediment contamination.

BACKGROUND

Figure 1 presents an overview of the project area. Olcott Harbor is a shallow draft recreational harbor located on Lake Ontario at the mouth of Eighteen Mile Creek in the Village of Olcott, Niagara County, New York. The channel is 140 feet wide and approximately 1,400 feet long; authorized depth is 12 feet in the Federal navigation channel. The harbor was last dredged in 1997 when 9,900 cubic yards (CY) of material was removed and placed in the open-lake; the current sediment backlog within the functional harbor areas is estimated at approximately 10,000 CY. Current hydrographic surveys of the harbor are located at: <http://www.lrb.usace.army.mil/Library/MapsandCharts.aspx>.

Sediment grab samples were collected from the federal navigation channel within the harbor and from the open-lake placement and reference areas from August 20 - 21, 2013. Three samples were collected throughout the harbor, OLC-01 through OLC-03 (Figure 2). Two samples were collected from an open-

lake reference area, OLCR-01 and OLCR-02 and two samples were collected from the open-lake disposal area, OLCD-01 through OLCD-02 (Figure 3). Sediment samples were analyzed for bulk grain size (sieve and hydrometer) and percent moisture, target analyte list (TAL) metals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc), total cyanide (CN), ammonia-nitrogen (ammonia-N or NH₃), total phosphorus (TP), total Kjeldahl nitrogen (TKN), total organic carbon (TOC), total oil and grease, polychlorinated biphenyls (PCBs) (as Aroclors), pesticides and polycyclic aromatic hydrocarbons (PAHs) (16 USEPA priority pollutants and methylnaphthalenes). Elutriate tests were conducted on the harbor sediment samples and were analyzed for the same parameters; site water was analyzed as OLCD-COMP.

Samples from the open-lake reference and disposal areas were composited for samples OLCR-COMP and OLCD-COMP, respectively. Composite samples were subjected to 10-day *Hyaella azteca* and *Chironomus dilutus* whole sediment acute toxicity tests, with survival and survival and growth as measurement endpoints, respectively. The harbor composite samples were also subjected to 48-hour *Ceriodaphnia dubia* and four-day *Pimephales promelas* water column acute toxicity tests.

These data were used to characterize harbor dredged material and open-lake reference area sediments.

RESULTS

Laboratory analyses were provided by RTI Laboratories, Inc (reference [c]); toxicity tests were provided by EnviroSystems, Inc (reference [d]).

Particle Size

Table 1 presents the particle size distribution for each sample. Sediments within the federal channel consist primarily of coarser grained material, with a sand content range of 87.2% to 95.1%. The open-lake reference and disposal areas predominately consist of finer grained material; sediments are about 90% silt and clay and 10% sand.

Inorganics

Table 2 presents the results of inorganic analyses. Cyanide was not detectable throughout the harbor or lake samples. Concentrations of ammonia-N, TKN, total phosphorus and TOC were generally less in harbor sediments, compared to the open-lake disposal and reference areas. Total oil and grease was generally not detectable in harbor or lake samples; sample OLC-1 had a total oil and grease concentration of 170 mg/kg.

PCBs

Table 3 presents the results of PCB analyses for each sample; PCBs were not detectable throughout the harbor or open-lake areas at reporting limits ranging from 3.6 to 7.5 ug/kg.

Pesticides

Table 4 presents the results of pesticide analyses for each sample. Pesticides were generally non-detectable in harbor sediments, with the exception of DDE at 1.5 ug/kg in sample OLC-01. DDD and DDE were detected in lake sediments; among samples with detectable results, total DDT ranged from 3 to 4.7 ug/L.

Metals

Table 5 presents the results of metals analyses for each sample. Harbor sediment metals concentrations are generally lower or comparable to the range measured for the open-lake reference and disposal areas.

PAHs

Table 6 presents the results of PAH analyses for each sample. Total PAH concentrations within harbor sediments ranged from non detectable to 562 ug/kg; these results are below the range measured for the open-lake reference and disposal areas of 2,311 to 2,932 ug/kg.

Benthic Toxicity Tests

The results of the *H. azteca* and *C. dilutus* solid phase toxicity tests are shown below. Toxicity tests measure the response of sensitive organisms to a mixture of sediment contaminants, through survival and growth (measured as ash free dry weight and ash free dry biomass) endpoints.

SAMPLE	<i>H. AZTECA</i> (% SURVIVAL)	<i>C. DILUTUS</i> (% SURVIVAL)	ASH FREE DRY WEIGHT (MG/LARVAE)	ASH FREE DRY BIOMASS (MG/LARVAE)
LAB CONTROL	80.00	93.75	1.702	1.593
OLCD COMP	77.50	91.25	1.423	1.299
OLCR COMP	47.50	95.00	1.255	1.189
OLC-1	91.25	88.75	1.522	1.316
OLC-2	90.00	97.50	1.098	1.067
OLC-3	91.25	93.75	1.138	1.290

Dredged material is considered to not meet guidelines for open-lake placement when the mortality of test organisms exposed to the dredged material is more than 10 percent greater (20 percent for *C. dilutus*) than the mortality of test organisms exposed to the disposal site sediment and is statistically different at the 95% confidence level. The harbor composite samples did not result in a significant reduction in survival compared to the open-lake reference and disposal areas. Significantly reduced *H. azteca* survival is noted for OLCR-COMP; the cause of this result is unknown, however may be due to ammonia concentrations in pore water (ammonia is a common sediment contaminant).

Dredged material is considered to not meet the guidelines when the mean weight of *C. dilutus* exposed to dredged material is less than 0.6 mg/organism (dry weight) and is more than 10 percent less and statistically different than the mean weight of organisms exposed to lake reference sediments; growth was not significantly different between the harbor composite samples and the open-lake reference and disposal areas.

Elutriate

The standard elutriate test is used to predict the release of contaminants to the water column resulting from open-water disposal. Sediment and water from the dredging site are mixed into a slurry with a sediment-to-water ratio of 1:4, and subsequently allowed to settle for 1 hour. The resultant supernatant is sampled, centrifuged to remove particulates and then analyzed as the elutriate. The elutriate results define the concentration of contaminants released during open-water disposal of the dredged material. The results can be compared to water quality standards to determine compliance.

Tables 7 through 11 present the elutriate test results for each harbor sample. PCBs, pesticides and PAHs were not detected in elutriate. Low releases of metals were detected, along with ammonia, TKN, and total phosphorus. The low dissolved releases indicate that open-lake placement of the dredged material would comply with applicable water quality standards.

Water Column Toxicity Tests

Tier 3 evaluation of dredged material effluent quality provides for water column toxicity testing to assess the potential toxicity of effluent to appropriate sensitive water column organisms. Toxicity tests involve exposing test organisms to a dilution series containing both dissolved and suspended components of the effluent associated with a dredged material disposal operation, simulated through an elutriate preparation. Test organisms are added to the exposure chambers and exposed for a prescribed period, surviving organism are examined at specified intervals and/or the end of the test. These bioassays provide information on the toxicity of contaminants not included in water quality standards and indicate possible interactive effects (additive, synergistic or antagonistic) of multiple contaminants. 48 hr *C. dubia* and 96 hr *P. promelas* water column toxicity tests generally showed 100% survival across all management units (OHCMU and WBCMU) and dilution series. Adverse impacts to the water column associated with a dredged material disposal operation are not expected.

CONCLUSION

Olcott harbor sediments are toxicologically comparable to open-lake reference area sediments; based on the available information, open-lake placement of Olcott harbor dredged material is not expected to cause unsuitable, adverse, contaminant-related impacts. Open-lake placement of Olcott Harbor dredged material would comply with applicable water quality standards. Per 33 CFR 336, open-lake placement of dredged material would be designated the federal standard for Olcott harbor as it represents the least costly alternative, consistent with sound engineering practices, selected through the 404(b)(1) guidelines.

ANDREW LENOX
Environmental Engineer

FIGURES

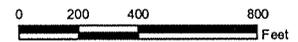


Lake Ontario



Legend

○ Sediment Sample Location



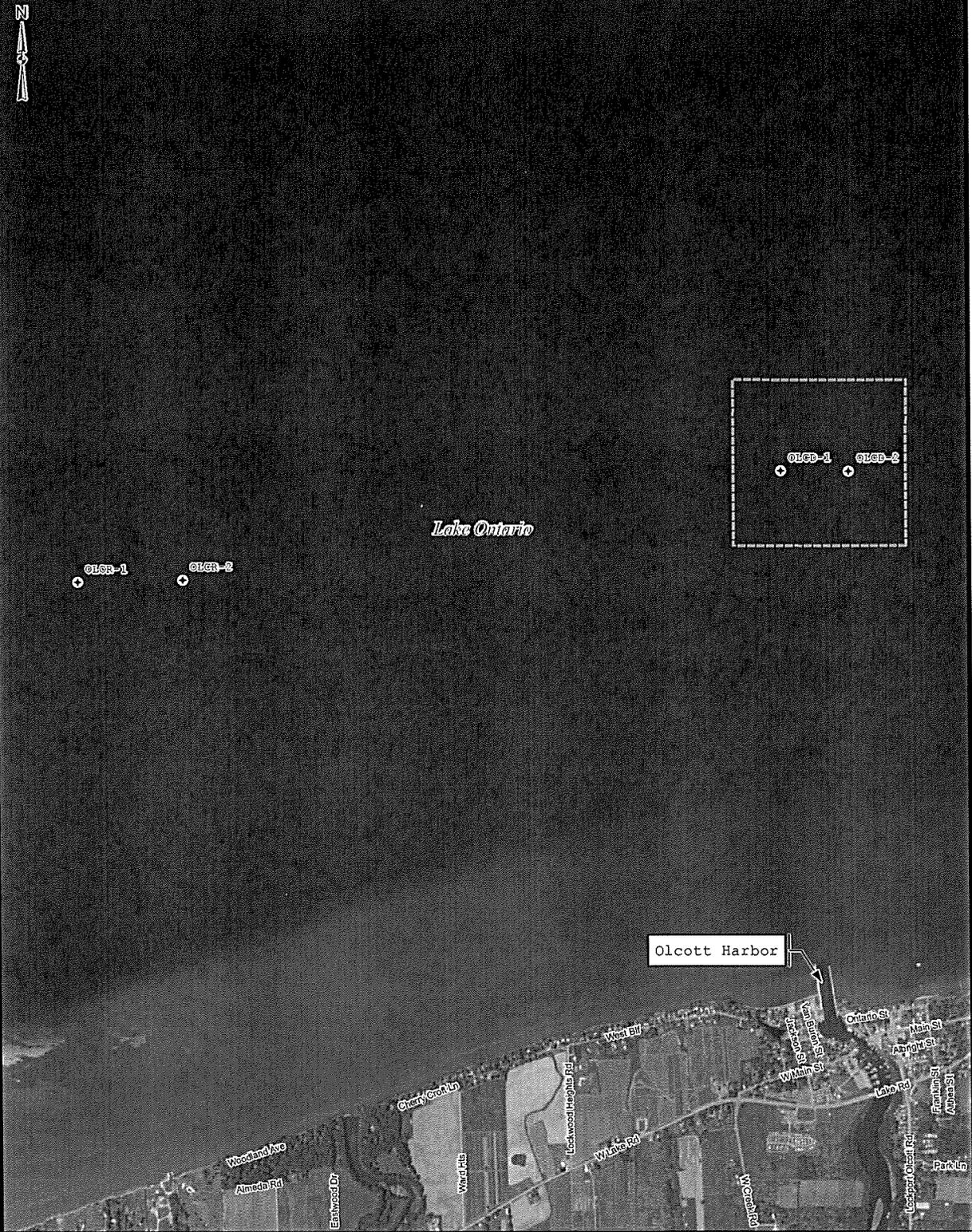
U.S. ARMY ENGINEER DISTRICT
US Army Corps
of Engineers
BUFFALO, NY
Buffalo District

HARBOR SEDIMENT SAMPLE LOCATIONS

Document Name: 101013_OlcottSample.mxd
Drawn By: HST/DESPM
Date Saved: 10 Oct 2013
Time Saved: 1:59:36 PM

OLCOTT HARBOR
OLCOTT, NEW YORK

FIGURE 2



Legend

- ⊕ Lake Sediment Sample Location
- Lake Disposal Area

0 750 1,500 3,000
Feet

 <p>U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS BUFFALO, NY Buffalo District</p>	<p>LAKE SEDIMENT SAMPLE LOCATIONS</p>	
<p>Document Name: 101013_LakeSample.mxd Drawn By: HSTDESPM Date Saved: 10 Oct 2013 Time Saved: 2:05:45 PM</p>	<p>OLCOTT HARBOR OLCOTT, NEW YORK</p>	<p>FIGURE 3</p>

TABLES

TABLE 1: Sediment Particle Size Distribution

PARTICLE SIZE	UNITS	OLC-1	OLC-2	OLC-3	OLCD-1	OLCD-2	OLCD-COMP	OLCR-1	OLCR-2	OLCR-COMP
CLAY	PERCENT	3.4	2.6	2.8	53	40	44	48	34	41
SILT	PERCENT	8.1	2.7	4.8	36	48	46	42	55	49
SAND	PERCENT	87.2	95.1	92.5	10	11.1	9.7	9.1	10.8	10
GRAVEL	PERCENT	0.1U	0.1	0.2	0.2	0.2	0.1U	0.7	0.1U	0.1U

U: Not detected at the specified reporting limit

TABLE 2: Sediment Inorganic Analyses

INORGANIC	UNITS	OLC-1	OLC-2	OLC-3	OLCD-1	OLCD-2	OLCD-COMP	OLCR-1	OLCR-2	OLCR-COMP
CYANIDE	MG/KG	0.43 U	0.41 U	0.42 U	0.83 U	0.86 U	0.83 U	0.81 U	0.83 U	0.85 U
NITROGEN, AMMONIA	MG/KG	54	13	12	320	360	300	310	300	290
NITROGEN, TOTAL KJELDAHL (TKN)	MG/KG	350	160	63	2,400	3,000	2,600	2,300	3,400	2,200
PHOSPHORUS, TOTAL (AS P)	MG/KG	300	140	200	350	240	310	400	430	360
TOTAL OIL & GREASE	MG/KG	170	0.12 U	0.12 U	0.25 U	0.26 U	0.25 U	0.24 U	0.25 U	0.26 U
TOTAL ORGANIC CARBON	PERCENT	0.73	0.47	0.33	2.60	3.60	2.70	2.60	3.00	2.70
PERCENT MOISTURE	PERCENT	24	20	20	60	62	60	59	61	62

U: Not detected at the specified reporting limit

TABLE 3: Sediment PCB Analyses

AROCLOR	UNITS	OLC-1	OLC-2	OLC-3	OLCD-1	OLCD-2	OLCD-COMP	OLCR-1	OLCR-2	OLCR-COMP
PCB-1016	UG/KG	3.9 U	3.7 U	3.7 U	7.5 U	7.8 U	7.6 U	7.4 U	7.6 U	7.7 U
PCB-1221	UG/KG	3.9 U	3.7 U	3.7 U	7.5 U	7.7 U	7.6 U	7.3 U	7.6 U	7.7 U
PCB-1232	UG/KG	5.8 U	5.5 U	5.5 U	11 U	12 U	11 U	11 U	11 U	12 U
PCB-1242	UG/KG	4.8 U	4.6 U	4.5 U	9.3 U	9.6 U	9.4 U	9.1 U	9.4 U	9.6 U
PCB-1248	UG/KG	4.5 U	4.3 U	4.3 U	8.8 U	9.1 U	8.9 U	8.6 U	8.9 U	9 U
PCB-1254	UG/KG	5.5 U	5.2 U	5.2 U	11 U	11 U	11 U	10 U	11 U	11 U
PCB-1260	UG/KG	3.8 U	3.6 U	3.6 U	7.3 U	7.5 U	7.4 U	7.2 U	7.4 U	7.5 U
PCB-1262	UG/KG	5.1 U	4.9 U	4.8 U	9.9 U	10 U	10 U	9.7 U	10 U	10 U
PCB, TOTAL	UG/KG	3.8 U	3.6 U	3.6 U	7.3 U	7.5 U	7.4 U	7.2 U	7.4 U	7.5 U

U: Not detected at the specified reporting limit

TABLE 4: Sediment Pesticides Analyses

PESTICIDE	UNITS	OLC-1	OLC-2	OLC-3	OLCD-1	OLCD-2	OLCD-COMP	OLCR-1	OLCR-2	OLCR-COMP
ALDRIN	UG/KG	0.44 U	0.42 U	0.41 U	0.84 U	0.87 U	0.85 U	0.83 U	0.85 U	0.87 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/KG	0.38 U	0.36 U	0.36 U	0.73 U	0.75 U	0.74 U	0.72 U	0.74 U	0.75 U
ALPHA ENDOSULFAN	UG/KG	0.49 U	0.46 U	0.46 U	0.94 U	0.97 U	0.95 U	0.92 U	0.95 U	0.97 U
ALPHA-CHLORDANE	UG/KG	0.48 U	0.46 U	0.46 U	0.93 U	0.96 U	0.94 U	0.91 U	0.94 U	0.96 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/KG	0.46 U	0.44 U	0.44 U	0.89 U	0.92 U	0.9 U	0.88 U	0.9 U	0.92 U
BETA ENDOSULFAN	UG/KG	0.48 U	0.46 U	0.46 U	0.93 U	0.96 U	0.94 U	0.91 U	0.94 U	0.96 U
BETA-CHLORDANE	UG/KG	0.48 U	0.46 U	0.46 U	0.93 U	0.96 U	0.94 U	0.92 U	0.95 U	0.96 U
CHLORDANE	UG/KG	4.5 U	4.3 U	4.3 U	8.7 U	9 U	8.8 U	8.5 U	8.8 U	9 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	UG/KG	0.7 U	0.67 U	0.66 U	1.5	1.4 U	1.4	1.3 U	1.4 U	1.4 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	UG/KG	1.5	0.39 U	0.39 U	3.2	3.4	3	3	3.3	2.8
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	UG/KG	0.45 U	0.43 U	0.43 U	0.88 U	0.91 U	0.89 U	0.86 U	0.89 U	0.9 U
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/KG	0.38 U	0.36 U	0.36 U	0.73 U	0.75 U	0.74 U	0.72 U	0.74 U	0.75 U
DIELDRIN	UG/KG	0.47 U	0.45 U	0.44 U	0.9 U	0.93 U	0.91 U	0.88 U	0.91 U	0.93 U
ENDOSULFAN SULFATE	UG/KG	0.49 U	0.46 U	0.46 U	0.94 U	0.97 U	0.95 U	0.92 U	0.95 U	0.97 U
ENDRIN	UG/KG	0.5 U	0.47 U	0.47 U	0.96 U	0.99 U	0.97 U	0.94 U	0.97 U	0.99 U
ENDRIN ALDEHYDE	UG/KG	0.51 U	0.48 U	0.48 U	0.97 U	1 U	0.99 U	0.96 U	0.99 U	1 U
ENDRIN KETONE	UG/KG	0.47 U	0.45 U	0.45 U	0.91 U	0.94 U	0.92 U	0.89 U	0.92 U	0.94 U
GAMMA BHC (LINDANE)	UG/KG	0.39 U	0.38 U	0.37 U	0.76 U	0.79 U	0.77 U	0.75 U	0.77 U	0.78 U
HEPTACHLOR	UG/KG	0.47 U	0.45 U	0.45 U	0.91 U	0.94 U	0.92 U	0.9 U	0.93 U	0.94 U
HEPTACHLOR EPOXIDE	UG/KG	0.48 U	0.46 U	0.45 U	0.92 U	0.95 U	0.93 U	0.91 U	0.94 U	0.95 U
METHOXYCHLOR	UG/KG	0.5 U	0.47 U	0.47 U	0.95 U	0.99 U	0.97 U	0.94 U	0.97 U	0.98 U
TOXAPHENE	UG/KG	6.5 U	6.2 U	6.1 U	12 U	13 U	13 U	12 U	13 U	13 U
TOTAL DDT	UG/KG	1.5	ND	ND	4.7	3.4	4.4	3	3.3	2.8

U: Not detected at the specified reporting limit

TABLE 5: Sediment Metals Analyses

METAL	UNITS	OLC-1	OLC-2	OLC-3	OLCD-1	OLCD-2	OLCD-COMP	OLCR-1	OLCR-2	OLCR-COMP
ALUMINUM	MG/KG	4,000	3,300	2,900	16,000	16,000	16,000	16,000	16,000	16,000
ANTIMONY	UG/KG	56 U	54 U	43 U	100 U	95 U	86 U	100 U	110 U	88 U
ARSENIC	MG/KG	2.2	1.6	1.4	11	9.5	11	9.8	8.8	11
BARIUM	MG/KG	30	14	14	96	89	85	92	87	90
BERYLLIUM	UG/KG	30 U	29 U	23 U	180	240	120	240	270	180
CADMIUM	MG/KG	1.4	0.90	1.4	4.7	4.5	4.4	4.4	4.4	4.6
CALCIUM	MG/KG	36,000	46,000	37,000	29,000	28,000	23,000	26,000	27,000	26,000
CHROMIUM, TOTAL	MG/KG	7.0	3.7	5.2	29	27	27	27	28	28
COBALT	MG/KG	2.9	1.8	2.0	11	10	10	10	10	11
COPPER	MG/KG	13	6.2	6.7	35	33	32	32	34	34
IRON	MG/KG	9,300	8,300	10,000	29,000	29,000	29,000	29,000	28,000	30,000
LEAD	MG/KG	11	2.1	2.1	22	20	20	20	22	22
MAGNESIUM	MG/KG	6,100	7,600	6,100	11,000	11,000	11,000	11,000	11,000	12,000
MANGANESE	MG/KG	530	510	550	680	790	670	650	660	700
MERCURY	MG/KG	0.05	0.01	0.01	0.15	0.13	0.13	0.06	0.15	0.10
NICKEL	MG/KG	9.1	5.2	6.0	37	35	34	35	35	37
POTASSIUM	MG/KG	600	370	390	2,600	2,400	2,300	2,700	2,500	2,500
SELENIUM	UG/KG	520 U	500 U	400 U	970 U	890 U	800 U	980 U	1000 U	820 U
SILVER	MG/KG	0.39	0.25	0.67	0.49	0.44	0.39	0.48	0.53	0.44
SODIUM	MG/KG	160	140	130	240	210	190	240	230	210
THALLIUM	MG/KG	0.51	0.67	1.1	1.0	1.7	1.0	1.3	1.6	1.2
VANADIUM	MG/KG	7.8	4.9	12	25	24	23	25	24	25
ZINC	MG/KG	60	18	13	110	100	100	110	110	110

U: Not detected at the specified reporting limit

TABLE 6: Sediment PAHs Analyses

PAH	UNITS	OLC-1	OLC-2	OLC-3	OLCD-1	OLCD-2	OLCD-COMP	OLCR-1	OLCR-2	OLCR-COMP
2-METHYLNAPHTHALENE	UG/KG	11 U	10 U	10 U	23	21 U	21 U	20	20 U	21 U
ACENAPHTHENE	UG/KG	9.6 U	9.1 U	9.1 U	19 U	19 U	19 U	18 U	18 U	19 U
ACENAPHTHYLENE	UG/KG	9.2 U	8.7 U	8.7 U	26	20	18 U	21	26	20
ANTHRACENE	UG/KG	11 U	10 U	10 U	54	53	28	46	63	40
BENZO(A)ANTHRACENE	UG/KG	46	13 U	14	180	170	97	180	220	130
BENZO(A)PYRENE	UG/KG	55	12 U	12 U	250	220	130	240	290	170
BENZO(B)FLUORANTHENE	UG/KG	87	11 U	13	410	380	190	420	410	210
BENZO(G,H,I)PERYLENE	UG/KG	32	14 U	14 U	130	130	62	120	160	93
BENZO(K)FLUORANTHENE	UG/KG	30	21 U	21 U	150	99	69	170	180	120
CHRYSENE	UG/KG	57	12 U	12 U	270	220	130	260	280	160
DIBENZ(A,H)ANTHRACENE	UG/KG	34 U	32 U	32 U	66 U	68 U	67 U	65 U	65 U	67 U
FLUORANTHENE	UG/KG	94	20 U	20	420	330	200	380	450	260
FLUORENE	UG/KG	12 U	12 U	12 U	28	25	24 U	27	30	24 U
INDENO(1,2,3-C,D)PYRENE	UG/KG	27	11 U	11 U	110	90	63	110	150	73
NAPHTHALENE	UG/KG	8.4 U	7.9 U	7.9 U	56	44	32	49	53	47
PHENANTHRENE	UG/KG	40	11 U	11 U	190	170	98	180	200	140
PYRENE	UG/KG	94	12 U	22	400	360	210	420	420	260
TOTAL PAHs	UG/KG	562	NA	69	2,697	2,311	1,309	2,643	2,932	1,723

U: Not detected at the specified reporting limit

TABLE 7: Elutriate PAH Analyses

PAH	UNITS	OLC-1	OLC-2	OLC-3	OLCD-COMP
2-METHYLNAPHTHALENE	UG/L	0.25 U	0.28 U	0.26 U	0.25 U
ACENAPHTHENE	UG/L	0.2 U	0.23 U	0.21 U	0.2 U
ACENAPHTHYLENE	UG/L	0.2 U	0.23 U	0.21 U	0.2 U
ANTHRACENE	UG/L	0.25 U	0.28 U	0.26 U	0.25 U
BENZO(A)ANTHRACENE	UG/L	0.2 U	0.23 U	0.21 U	0.21 U
BENZO(A)PYRENE	UG/L	0.17 U	0.2 U	0.18 U	0.18 U
BENZO(B)FLUORANTHENE	UG/L	0.22 U	0.25 U	0.23 U	0.23 U
BENZO(G,H,I)PERYLENE	UG/L	0.29 U	0.33 U	0.3 U	0.29 U
BENZO(K)FLUORANTHENE	UG/L	0.22 U	0.25 U	0.23 U	0.23 U
CHRYSENE	UG/L	0.22 U	0.24 U	0.22 U	0.22 U
DIBENZ(A,H)ANTHRACENE	UG/L	0.26 U	0.3 U	0.27 U	0.26 U
FLUORANTHENE	UG/L	0.22 U	0.24 U	0.22 U	0.22 U
FLUORENE	UG/L	0.2 U	0.23 U	0.21 U	0.21 U
INDENO(1,2,3-C,D)PYRENE	UG/L	0.25 U	0.29 U	0.27 U	0.26 U
NAPHTHALENE	UG/L	0.22 U	0.25 U	0.23 U	0.23 U
PHENANTHRENE	UG/L	0.14 U	0.16 U	0.14 U	0.14 U
PYRENE	UG/L	0.3 U	0.34 U	0.31 U	0.3 U

U: Not detected at the specified reporting limit

TABLE 8: Elutriate Metals Analyses

METAL	UNITS	OLC-1	OLC-2	OLC-3	OLCD-COMP.
ALUMINUM	UG/L	31	14	11	4.6
ANTIMONY	UG/L	0.56	0.64	0.52 U	0.52 U
ARSENIC	UG/L	2.2	1.8	1	1.3
BARIUM	UG/L	190	140	140	24
BERYLLIUM	UG/L	0.25 U	0.25 U	0.25 U	0.25 U
CADMIUM	UG/L	0.27 U	0.27 U	0.27 U	0.27 U
CALCIUM	UG/L	40000	41000	39000	36000
CHROMIUM, TOTAL	UG/L	0.69	0.97	0.7	0.78
COBALT	UG/L	0.23	0.29	0.13	0.12 U
COPPER	UG/L	1.8	1.5	1.3	2.1
IRON	UG/L	52	48 U	48 U	48 U
LEAD	UG/L	0.32	0.24	0.24 U	0.24 U
MAGNESIUM	UG/L	9400	9700	9500	9700
MANGANESE	UG/L	280	5.6	2.3	0.91
MERCURY	UG/L	0.056 U	0.056 U	0.056 U	0.056 U
NICKEL	UG/L	1.9	2	1.6	1.7
POTASSIUM	UG/L	2200	1800	1800	1700
SELENIUM	UG/L	1.5 U	1.6	1.5	1.5 U
SILVER	UG/L	0.19	0.4	0.18 U	0.18 U
SODIUM	UG/L	16000	16000	15000	13000
THALLIUM	UG/L	0.2	0.22	0.16 U	0.16 U
VANADIUM	UG/L	0.74	0.95	0.74	0.49 U
ZINC	UG/L	41	22	25	8.4

U: Not detected at the specified reporting limit

TABLE 9: Elutriate Inorganics Analyses

INORGANIC	UNITS	OLC-1	OLC-2	OLC-3	OLCD-COMP
CYANIDE, AMENABLE	MG/L	0.002 U	0.002 U	0.002 U	0.002 U
NITROGEN, TKN	MG/L	1.5	0.98	1.1	0.72
NITROGEN, AMMONIA	MG/L	0.98	0.24	0.37	0.022
PHOSPHORUS, TOTAL (AS P)	MG/L	0.19	0.004	0.012	0.001 U
TOTAL OIL & GREASE	MG/L	1.4 U	1.4 U	1.4 U	1.4 U

U: Not detected at the specified reporting limit

TABLE 10: Elutriate PCBs Analyses

AROCLOR	UNITS	OLC-1	OLC-2	OLC-3	OLCD-COMP
PCB-1016	UG/L	0.03 U	0.03 U	0.04 U	0.03 U
PCB-1221	UG/L	0.03 U	0.03 U	0.03 U	0.03 U
PCB-1232	UG/L	0.04 U	0.04 U	0.05 U	0.04 U
PCB-1242	UG/L	0.04 U	0.04 U	0.04 U	0.04 U
PCB-1248	UG/L	0.03 U	0.03 U	0.03 U	0.03 U
PCB-1254	UG/L	0.04 U	0.04 U	0.04 U	0.04 U
PCB-1260	UG/L	0.04 U	0.04 U	0.04 U	0.04 U
PCB-1262	UG/L	0.05 U	0.05 U	0.06 U	0.05 U
PCB-1268	UG/L	0.1 U	0.1 U	0.1 U	0.1 U
PCB, TOTAL	UG/L	0.05 U	0.05 U	0.06 U	0.05 U

U: Not detected at the specified reporting limit

TABLE 11: Elutriate Pesticides Analyses

PESTICIDE	UNITS	OLC-1	OLC-2	OLC-3	OLCD-COMP
ALDRIN	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	UG/L	0.002 U	0.002 U	0.002 U	0.002 U
ALPHA ENDOSULFAN	UG/L	0.003 U	0.003 U	0.004 U	0.003 U
ALPHA-CHLORDANE	UG/L	0.003 U	0.003 U	0.004 U	0.003 U
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
BETA ENDOSULFAN	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
CHLORDANE	UG/L	0.033 U	0.034 U	0.037 U	0.033 U
DDD (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHANE)	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
DDE (1,1-BIS(CHLOROPHENYL)-2,2-DICHLOROETHENE)	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
DDT (1,1-BIS(CHLOROPHENYL)-2,2,2-TRICHLOROETHANE)	UG/L	0.003 U	0.003 U	0.004 U	0.003 U
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	UG/L	0.002 U	0.002 U	0.002 U	0.002 U
DIELDRIN	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
ENDOSULFAN SULFATE	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
ENDRIN	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
ENDRIN ALDEHYDE	UG/L	0.004 U	0.004 U	0.004 U	0.004 U
ENDRIN KETONE	UG/L	0.003 U	0.003 U	0.004 U	0.003 U
GAMMA BHC (LINDANE)	UG/L	0.002 U	0.002 U	0.002 U	0.002 U
GAMMA-CHLORDANE	UG/L	0.003 U	0.003 U	0.004 U	0.003 U
HEPTACHLOR	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
HEPTACHLOR EPOXIDE	UG/L	0.003 U	0.003 U	0.004 U	0.003 U
METHOXYCHLOR	UG/L	0.003 U	0.003 U	0.003 U	0.003 U
TOXAPHENE	UG/L	0.04 U	0.042 U	0.045 U	0.04 U

U: Not detected at the specified reporting limit

Appendix B: Town of Newfane 2014 Dredging Documentation



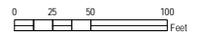
Soil Sampling Plan

Olcott, New York



LEGEND

- GLEC Sample Locations
- ↗ Approx. Sewerline Location Through Creek
- ↘ Approx. Waterline Location Through Creek



NOTE:
Locations Of Buried Utilities Are An Approximate Location Only

* Measurements based off average mean water elevation

"X" ft = Water depth

WD Project # 29550013
Map Created: December, 2013

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Note: Hand drawn arrows represent change in classification if compared to screening criteria from Table 5 of updated NYSDEC guidance "Screening and Assessment of Contaminated Sediment, 2014".



Results and Discussion

Summary of Metals Testing

NYSDEC Quality Level	Arsenic			Copper			Lead			Mercury		
	A	B	C	A	B	C	A	B	C	A	B	C
(mg/kg dry)	<14	14 - 53	>53	<33	33 - 207	>207	<33	33 - 166	>166	<0.17	0.17 - 1.6	> 1.6
Sample 1	3.7				37		9			0.037		
Sample 2	2.4			22			26			0.055		
Sample 3	4				48			53			0.26	
Sample 4	5.3				100			120		← 0.17		
Sample 5	4.5				79			98			0.21	
Sample 6	3.1			30			27			0.08		
Sample 7	3.8				49			48		0.094		
Sample 8	3.3				81			94		← 0.17		
Sample 9	7.5					230			300		0.22	
Sample 10	3.7				52			56		← 0.18		
Sample 11	3				48			50		0.13		
Sample 12	3.4				61			67			0.22	
Sample 13	3				33		31			0.15		
Sample 14	4				54			55		0.14		
Sample 15	3.5				45			45		0.1		
Sample 16	2.5			28				36		0.084		
Sample 17	3				40			37		0.14		
Sample 18	3.2			18			14			0.086		
Sample 19	2.7				33		← 34			0.065		
Sample 20	3.3				61			71			0.22	
Sample 21	2.3			27			32			0.046		
Sample 22	2.9			14			5.3			0.023		

Table 1a: Sediment testing data for Metals

Arsenic, Copper, Lead and Mercury were chosen for testing due to their presence in prior sediment testing data from 2012. Generally the Metals were consistently in the Class A or B range with the exception of Sample 9, which recorded elevated Copper and Lead of Class C. It is likely that reasonable judgment may be applied when interpreting the results to show that the high concentration for a single sample represents a testing anomaly that is not representative of the localized sediment concentrations.



NYSDEC Quality Level	Benzene			Total BTEX			Total PAH		
	A	B	C	A	B	C	A	B	C
(mg/kg dry)	<0.59	0.59 - 2.16	>2.16	<0.96	0.96-5.9	>5.9	<4	4 - 35	>35
Sample 1	0.053			0.501				4.504	
Sample 2	0.0013			0.01116			2.551		
Sample 3	0.00031			0.00671			3.399		
Sample 4	0.068			0.628			3.907		
Sample 5	0.0008			0.005			3.866		
Sample 6	0.00027			0.00617			3.063		
Sample 7	0.00031			0.00741			3.859		
Sample 8	0.00059			0.01099			3.572		
Sample 9	0.00068			0.00538			3.791		
Sample 10	0.00036			0.00646				4.968	
Sample 11	0.073			0.683				4.044	
Sample 12	0.00067			0.00757				4.511	
Sample 13	0.00044			0.00604				4.268	
Sample 14	0.00069			0.01049				4.481	
Sample 15	0.00032			0.00622			3.098		
Sample 16	0.00016			0.00518			2.914		
Sample 17	0.00024			0.00574			3.521		
Sample 18	0.00048			0.00608				4.298	
Sample 19	0.00015			0.00526			3.175		
Sample 20	0.00088			0.00468			3.294		
Sample 21	0.00034			0.00677			2.975		
Sample 22	0.00021			0.00841				5.27	

Table 1b: Sediment Testing Data for PAH's and Petroleum Related Compounds

Benzene, BTEX and Total PAH were also chosen due to their presence in prior sediment testing data from 2012. Generally the Petroleum Related Compounds were consistently in the Class A range with some Class B samples for Total PAH. Given that approximately half of the samples indicated concentrations in the Class B range, it is likely the Petroleum Related Compounds indicate a Class B sediment. Additionally, reasonable judgment may also indicate that Total PAH compounds are on the very lowest level of Class B and therefore present considerably less impact than those near the average of the Class B range. In fact, their environmental effect may likely be more similar to Class A sediment.



NYSDEC Quality Level	Sum of DDT+ DDD + DDE			Mirex			Chlordane			Dieldrin		
	A	B	C	A	B	C	A	B	C	Class A	Class B	Class C
(mg/kg dry)	<0.003	0.003 - 0.03	>0.03	<0.0014	0.0014 - 0.014	>0.014	<0.003	0.003 - 0.036	> 0.036	< 0.11	0.11 - 0.48	> 0.48
Sample 1	←	0.0105		←	0.0015		←	0.03		0.0015		
Sample 2	←	0.019		←	0.001		←	0.02		0.001		
Sample 3	←	0.0158		←	0.0019		←	0.039		0.0019		
Sample 4	←	0.021		←	0.0019		←	0.038		0.0019		
Sample 5	←	0.0219		←	0.002		←	0.04		0.002		
Sample 6	←	0.0141		←	0.0018		←	0.036		0.0018		
Sample 7	←	0.0159		←	0.002		←	0.04		0.002		
Sample 8	←	0.0141		←	0.0019		←	0.038		0.0019		
Sample 9	←	0.0252		←	0.0022		←	0.044		0.0022		
Sample 10	←	0.0211		←	0.0019		←	0.038		0.0019		
Sample 11	←	0.0195		←	0.002		←	0.041		0.002		
Sample 12	←	0.0174		←	0.002		←	0.04		0.002		
Sample 13	←	0.0193		←	0.0018		←	0.037		0.0018		
Sample 14	←	0.0176		←	0.002		←	0.04		0.002		
Sample 15	←	0.0186		←	0.0019		←	0.038		0.0019		
Sample 16	←	0.0237		←	0.0016		←	0.032		0.0016		
Sample 17	←	0.0168		←	0.0017		←	0.034		0.0017		
Sample 18	←	0.0159		←	0.0017		←	0.034		0.0017		
Sample 19	←	0.0167		←	0.0017		←	0.034		0.0017		
Sample 20	←	0.0167		←	0.0018		←	0.036		0.0018		
Sample 21	←	0.0114		←	0.0015		←	0.031		0.0015		
Sample 22	←	0.0114		←	0.0016		←	0.033		0.0016		

Table 1c: Sediment Testing Data for Pesticides

The Pesticide compounds above were chosen due to their presence in prior sediment testing data from 2012. Generally Pesticides were in the Class A or B range with approximately half of the samples testing as Class C, specifically for Chlordane. Even though many of these pesticide components have been banned for almost 10 years it is reasonable to expect they are in the area due to the abundance of farms, especially those growing fruit that require pesticides. Generally the samples that exceed the Class B/C threshold for Chlordane are not significantly higher than those from Class B, therefore reasonable judgment may interpret the pesticide testing data as a Class B type sediment.

NYSDEC Quality Level	PCB's (sum of aroclors)		
	Class A	Class B	Class C
	(mg/kg dry) < 0.1	0.1 -1	> 1
Sample 1	0.059		
Sample 2	0.048		
Sample 3		0.12	
Sample 4		0.21	
Sample 5		0.19	
Sample 6		0.12	
Sample 7		0.11	
Sample 8		0.21	
Sample 9		0.25	
Sample 10		0.19	
Sample 11		0.14	
Sample 12		0.12	
Sample 13		0.14	
Sample 14		0.15	
Sample 15		0.16	
Sample 16		0.13	
Sample 17		0.13	
Sample 18	0.08		
Sample 19	0.066		
Sample 20	0.28		
Sample 21	0.026		
Sample 22	0.064		

Table 1c: Sediment Testing Data for Pesticides

Chlorinated Hydrocarbons, specifically PCB's, were tested due to their presence in prior sediment testing data from 2012. Generally PCB concentrations were all in the Class A or B range. Additionally, it can be noted that the Class B samples were generally at the low end of the range, and based on environmental impact, may be most similar to Class A sediments.



PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
TOWN OF NEWFANE
2737 MAIN ST
NEWFANE, NY 14108-9740
(716) 778-8822

Facility:
TOWN OF NEWFANE MARINA
5834 W MAIN ST
OLCOTT, NY 14126

Facility Location: in NEWFANE in NIAGARA COUNTY

Facility Principal Reference Point: NYTM-E: 198.702 NYTM-N: 4804.872
Latitude: 43°20'10.7" Longitude: 78°43'00.2"

Authorized Activity: Dredging of approximately 2 feet of sediment from Eighteenmile Creek in and adjacent to the marina area. Approximately 6300 cubic yards of sediment will be disposed of in an upland location west of the marina parking lot.

Permit Authorizations

Excavation & Fill in Navigable Waters - Under Article 15, Title 5

Permit ID 9-2928-00049/00006

New Permit

Effective Date: 8/29/2014

Expiration Date: 9/14/2019

Water Quality Certification - Under Section 401 - Clean Water Act

Permit ID 9-2928-00049/00007

New Permit

Effective Date: 8/29/2014

Expiration Date: 9/14/2019

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: DAVID S DENK, Regional Permit Administrator
Address: NYSDEC REGION 9 HEADQUARTERS
270 MICHIGAN AVE
BUFFALO, NY 14203 -2915

Authorized Signature: _____

Date 8/29/14



Distribution List

Law Enforcement
MICHAEL TODD
Mr. Martin Crosson, USACOE
Mr. Ted Donner, Wendel Companies

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS
WATER QUALITY CERTIFICATION SPECIFIC CONDITION
GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS
NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Permit Attachments

Site Plan

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: EXCAVATION & FILL IN NAVIGABLE WATERS; WATER QUALITY CERTIFICATION

- 1. Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Wendel Companies.
- 2. Dredging Prohibition Time Period** All dredging activities are prohibited during the period of April 15 to May 15.
- 3. Mandatory Use of Turbidity Curtain** Dredging activities are authorized during the time period of May 16 to April 14 only if a filter fabric (turbidity) curtain weighted across the bottom and suspended at the top by floats is positioned to enclose the work site before commencing dredging. The curtain shall remain in place and in functional condition during all phases of the dredging operations and remain in place for two hours after dredging termination and turbidity inside the curtain no longer exceeds ambient levels.
- 4. No Overflow from Barges** There shall be no overflow of material from the holding barges.



- 5. Dredgings Disposal** All dredged material shall be disposed of at the on-shore disposal site (upland reuse site) adjacent to the marina parking lot. Dredged materials shall be covered with a minimum of six inches of soil, seeded with a mix of perennial grasses and mulched. Mulch shall be maintained until a suitable vegetative cover is established.
- 6. Siltation Prevention Measures** Siltation prevention measures, such as silt fencing, sediment traps or settling basins, shall be installed and maintained while dredged materials are being dewatered to prevent movement of silt and turbid waters from the project site into any watercourse, stream, water body or wetland.
- 7. Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.
- 8. No Interference With Navigation** There shall be no unreasonable interference with navigation by the work herein authorized.
- 9. State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.
- 10. State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.
- 11. State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.



WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. Water Quality Certification The NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. Facility Inspection by The Department The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC REGION 9 HEADQUARTERS
270 MICHIGAN AVE
BUFFALO, NY 14203 -2915

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Water Quality Certification.



5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

- a. materially false or inaccurate statements in the permit application or supporting papers;
- b. failure by the permittee to comply with any terms or conditions of the permit;
- c. exceeding the scope of the project as described in the permit application;
- d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.



Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.



Received
N.Y.S. DEPT OF

FEB 24 2015



February 19, 2015

David S. Denk, Regional Permit Administrator NYSDEC ENVIRONMENTAL CONSERVATION
NYS Department of Environmental Conservation Region 9 REGION 9
270 Michigan Ave.
Buffalo, New York 14203-2915

RECEIVED

FEB 23 2015

NYS DEC
REGION 9

SUBJECT: OLCOTT HARBOR NAVIGATIONAL DREDGING
DREDGED MATERIAL PROPOSED PERMIT MODIFICATIONS
DEC PERMIT NO. 9-2928-00049/00006
WENDEL PROJECT NO. 2955-00-14

Dear Mr. Denk:

We are sending this letter in reference to NYSDEC Permit # 9-2928-00049/00006 issued to the Town of Newfane on August 29, 2014 for Navigational Dredging Operations in Olcott, New York. The Town of Newfane is proposing the following modifications to the permit for your approval.

Modification No. 1: Installation of Riprap

- Installation of approximately 60 CY of riprap stone along the toe of the boat launch to protect the concrete pad from undermining and act as a warning surface to prevent vehicles from driving off end of the launch pad.
- The stone will be installed as a toe protection strip with approximate dimensions of 80' long x 10' wide x 2' deep along the bottom edge of the boat launch ramp.

Modification No. 2: Beneficial Reuse / Transport of Dredged Material

- Permit modification for the transport of the dredged material to an alternate reuse site at the Town owned composting facility at 1659 Phillips Rd. Appleton NY to allow for future dredged material placement in the harbor parking lot.
- During dredging, the sediment was placed into a temporary drying basin located in the Olcott Marina upper parking lot per the original permit. As required by the permit, the dredged material has been temporarily stabilized until final stabilization with 6 inches of topsoil and native seeding can occur in the spring. The upper parking lot offered an efficient and effective drying basin for the material during dredging. Therefore, the Town of Newfane would like to use the upper parking lot in a similar fashion when they dredge the remaining 3,765 SQ. YDS of the harbor at a later date. To facilitate this, the Town proposes to transport the dried sediment to an alternate upland reuse site at the Town-owned composting facility at 1659 Phillips Rd. Appleton NY. The sediment will be used to create a privacy berm where it will be topsoiled and seeded.

Therefore, we are requesting that, if found acceptable by the Department, a modification to the existing permit be issued to allow for the two modifications as described above. Please contact me at your earliest convenience should you have any questions or would like to discuss this request.

Sincerely,

Ted Donner, E.I.T.

xc: Timothy R. Horanburg, Town of Newfane Supervisor
Efrat Forget, NYSDEC Solid Waste Management
Brian Sibiga P.E., Wendel

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 9
270 Michigan Avenue, Buffalo, NY 14203-2915
P: (716) 851-7165, F: (716) 851-7168
www.dec.ny.gov

March 27, 2015

Honorable Timothy Horanburg
Town of Newfane
2737 Main Street
Newfane, New York 14108

Dear Supervisor Horanburg:

**MODIFICATION TO PERMIT
OLCOTT HARBOR PROJECT
DEC No. 9-2928-00049/00006**

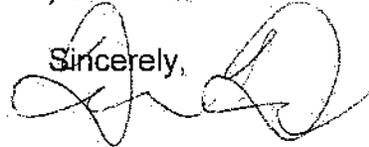
In response to the February 15, 2015 letter from Mr. Ted Donner, the New York State Department of Environmental Conservation hereby modifies the subject permit as follows:

The authorized activity is modified to allow for the placement of approximately 60 cubic yards of riprap stone (approximate measure 80 ft. long, 10 ft. wide and 2 ft. deep) at the waterward edge of the concrete launch pad.

The authorized activity is modified to allow for the transportation of dried sediments to the Town composting facility at 1659 Phillips Road where the material will be shaped into a berm, covered with topsoil and seeded.

This letter shall be considered an official amendment to the permit, and as such, a copy of this letter must be available along with the original permit and modification dated August 29, 2014 at the work site to produce if requested by a DEC representative. All other conditions remain unchanged. If you have any questions in regard to this matter, please contact me at (716) 851-7165.

Sincerely,



David S. Denk
Regional Permit Administrator

DSD/dsd

cc: Captain Frank Lauriclea, NYSDEC Division of Law Enforcement (via e-mail)
Mr. Michael Todd, NYSDEC DFWMR (via email)

Appendix C: NCSWCD Landowner Survey



NIAGARA COUNTY SOIL & WATER CONSERVATION DISTRICT

4487 Lake Avenue • Lockport, NY 14094

Telephone (716) 434-4949

Fax (855) 347-7122

www.niagaraswcd.com

July 24, 2017

Dear Homeowner:

The Niagara County Soil and Water Conservation District is the lead agency in implementing the Remedial Action Plan for the Eighteenmile Creek Great Lakes Area of Concern (AOC). Within the AOC a Remedial Advisory Committee, Remedial Action Plan Coordinator as well as other entities work to evaluate and remove Beneficial Use Impairments (BUIs). We are currently investigating the Restrictions on Dredging BUI.

In general, the Restrictions on Dredging BUI applies to any area within the AOC that requires routine navigational dredging, but may be limited by a regulatory agency such as the New York State Department of Environmental Conservation or United States Army Corps of Engineers because of sediment contamination. In order to better understand how the Restrictions on Dredging BUI can apply to Eighteenmile Creek, we are interested to find out if private property owners or tenants along the shoreline have any interest in dredging near private docks, marinas, etc. because of reduced navigability. We ask that you please fill out our small questionnaire, and mail it back to us before August 11, 2017.

This information will not be made public, and will only be used for our assessment on the impairment status of this BUI. If you have any questions, please contact me at (716) 434-4949 ext. 6258 or visit eighteenmilerap.com for more information on the AOC.

Thank you for your time,

Scott Collins
Remedial Action Plan Coordinator

2017 Dredging Survey Results February 2018



Legend

OwnrName

-  Response
-  No Response
-  NIACO COUNTY 2016

0 125 250 500