REGION 5 RAC2

REMEDIAL ACTION CONTRACT FOR

Remedial, Enforcement Oversight, and
Non-Time Critical Removal Activities at Sites of Release
or Threatened Release of Hazardous Substances in Region 5

REMEDIAL INVESTIGATION REPORT
EIGHTEENMILE CREEK AREA OF CONCERN
Remedial Investigation/Feasibility Study
Niagara County, New York

WA No. 139-RICO-1527/Contract No. EP-S5-06-01

March 2012

PREPARED FOR

U.S. Environmental Protection Agency

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REMEDIAL INVESTIGATION REPORT

EIGHTEENMILE CREEK AREA OF CONCERN
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Acronyms and Abbreviations

AOC	Area of Concern
AVS/SEM	acid volatile sulfides/simultaneously extracted metals
bgs	below ground surface
BUI	Beneficial use impairment
cfs	cubic feet per second
cm/s	centimeters per second
COPC	contaminant of potential concern
CSM	Conceptual Site Model
CSO	combined sewer overflow
DER	Department of Environmental Remediation
E & E	Ecology and Environment, Inc.
EEEPC	Ecology and Environment Engineering, P.C.
ERDC	Engineer Research and Development Center
ESA	Environmental Site Assessments
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FS	feasibility study
FSP	field sampling plan
GIS	geographic information system
GLLA	Great Lakes Legacy Act
GLNPO	Great Lakes National Program Office
GPS	Global Positioning System
IDL	Instrument Detection Limit
IDW	Investigation-Derived Waste
IJC	International Joint Commission

LaMP	Lakewide Management Plan
LEL	lowest effect level
µg/kg	micrograms per kilogram
MDL	method detection limit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NCHD	Niagara County Health Department
NCSWCD	Niagara County Soil and Water Conservation District
NRCS	Natural Resource Conservation Service
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation
OU	Operable Unit
PAC	powdered activated carbon
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCOC	potential constituents of concern
PISCES	Passive In Situ Chemical Extraction Sampler
ppm	Parts per million
PQL	Practical Quantitation Limit
PVC	Polyvinyl chloride
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
RAC	Remedial Action Committee
RAP	Remedial Action Plan
RI	remedial investigation
ROD	record of decision

RPD	Relative Percent Difference
SOW	Scope of Work
SPDES	State Pollutant Discharge Elimination System
SRI	Supplemental Remedial Investigation
SVOC	semivolatile organic compound
TAGM	Technical and Administrative Guidance Memorandum
TAL	target analyte list
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TCL	Target Compound List
TCLP	toxicity characteristic leaching procedure
TEC	threshold effect concentrations
TEC	threshold effect concentration
TEQ	toxic equivalent
TOC	total organic carbon
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	(United States) Environmental Protection Agency

Executive Summary

This remedial investigation (RI) report summarizes the results of investigations performed at the Eighteenmile Creek Area of Concern (AOC) in Niagara County, in western New York State. The investigation area includes Olcott Harbor (mouth of the creek) and extends upstream through the city of Lockport to the Erie Canal (a component of the New York State Canal system) (see Figure 1). This report was prepared for the United States Environmental Protection Agency's (USEPA's) Great Lakes National Program Office (GLNPO) under Work Assignment No. 139-RICO-1527, Contract No. EP-S5-06-01. Supporting data were provided by the Eighteenmile Creek Great Lakes Legacy Act (GLLA) Project Coordination Team, which includes the GLNPO, the Niagara County Soil and Water Conservation District (NCSWCD), the New York State Department of Environmental Conservation (NYSDEC), the United States Army Corps of Engineers (USACE), and USEPA Region 2.

This RI report presents an evaluation of the nature and extent of contamination in sediments throughout the investigation area. The report establishes a baseline of contaminant levels in sediment that can be used to evaluate and select remedial alternatives to reduce risks to human health and the environment posed by exposure to contaminants in the creek sediments. Current and historical data were used to develop a conceptual model of the existing physical and chemical conditions of the sediment.

Summary of Results

Based on the physical characteristics of the creek, Eighteenmile Creek was divided into ten reaches (see Figure 2) with Reach 1 covering the area below Burt Dam; Reaches 2 and 3 covering reservoir behind Burt Dam; Reach 5 covering the impoundment behind Newfane Dam and Reach 10 covering the Corridor Site in the upstream source area investigated by NYSDEC. The other reaches include portions of the main channel between the dams and Corridor Site. Results from recent studies conducted within all Eighteenmile Creek reaches (see Section 4) were evaluated to assess the usability of the sediment chemistry and supporting data for this RI. Polychlorinated biphenyls (PCBs) and metals (particularly lead) were the identified as the primary contaminants of potential concern (COPCs) based on historical studies. Mercury, polycyclic aromatic hydrocarbons (PAHs), DDT metabolites, and dioxins/furans also were considered as COPCs. Site-specific screening criteria were determined based on NYSDEC's Technical Guidance for Screening Contaminated Sediments (NYSDEC 1999) and Soil Cleanup Guidelines (NYSDEC 2010a).

Sediment concentrations for the COPCs were summarized by reach to determine the number of detections, average and maximum concentrations, and number of results that exceed screening criteria. COPCs were detected in sediments of Eighteenmile Creek through the entire length from the Erie Canal to Lake Ontario. PCBs, PAHs, and metals were the most frequently detected COPCs.

All COPC metals show the same average and maximum concentration trends by reach (see Figure 8). The average concentrations are relatively low starting at the Erie Canal and increase significantly in Reach 10 at the Corridor site. The average concentrations of COPCs metals are lower immediately downstream of the Corridor site and increase to Reach 5 in the depositional area behind Newfane Dam. The average concentrations are the highest in Reaches 2 and 3 behind Burt Dam until decreasing to background levels in Reach 1 below Burt Dam. The maximum concentrations follow the same general trend but are highest in Reach 10 in the Corridor site. The high concentrations of lead and other COPC metals in the subsurface sediments in Reaches 2 and 3 result in higher average concentrations behind the dam and indicate a significant historical source prior to 1954.

The lead, copper and zinc were detected in all sediment samples at concentrations that exceed lowest and severe effect screening levels in most samples. In addition, six of the 40 sediment samples analyzed for toxicity characteristic leaching procedure (TCLP) for lead exceed hazardous waste criteria.

PCB concentrations are the highest in Reach 10 at the Corridor site, relatively higher immediately downstream of the Corridor Site and then decrease to levels below 1 mg/kg in Reach 1 below Burt Dam. PCB concentrations do not increase in the Reach 5 depositional area behind Newfane Dam but increase slightly where the creek meets the reservoir waters behind Burt Dam. The PCB concentration profiles with depth indicate a significant amount of mixing in this area. In the deeper sediments of Reach 2 closer to Burt Dam, there is a much more distinct change in PCB concentration with and maximum concentrations at depth indicate a historical source coinciding with deposition in the early 1960s. PCBs were detected in 80 percent of the sediment samples and half of the concentrations exceed the 1 mg/kg low screening criteria (i.e., 40 percent overall). In addition, PCB concentrations in 17 samples in Reach 10 and immediately downstream exceed hazardous waste criteria. Offsite transport of PCBs in the water column is up to 40 times higher than other tributaries in the Lake Ontario basin.

PAH concentrations are relatively higher in Reach 10 at the Corridor Site and show a general decreasing trend toward Lake Ontario. However, PAH concentrations show increases in populated areas that is attributed to urban runoff. PAHs were detected in most sediment samples, but concentrations exceed the low screening levels in less 20 percent of the samples and the high screening criteria in less than 2 percent of samples. The findings suggest that PAH contamination is ubiquitous throughout the watershed and related to common anthropogenic sources. Lower concentrations and more uniform distribution of the other COPCs also indicate anthropogenic sources not directly related to the Corridor Site.

The most significant source contamination is the historical industrial sites in the Corridor Site and the surrounding fill areas. Lead contamination in the fill areas on banks of Eighteenmile Creek has been found at hazardous waste levels and erosion from the fill areas is likely a continuing source of contamination to the downstream sediments. High concentrations of PCB in sediment in the Corridor Site indicate that source of contamination also originates in the historical industrial sites but a specific source area has not been identified. Historical records indicate PCB contaminated waste oil may have been emptied into the creek at the former Flintkote plant in the 1970s. Findings also indicate the

sediments from Erie Canal may contribute to the PCB contamination downstream but is not the primary source.

A formal ecological and human health risk assessment has not been completed, but NYSDOH has documented human risks to the residences on Water Street from exposure to contaminated sediment and to anglers from ingestion of PCB contaminated fish tissue. NYSDOH has included Eighteenmile Creek under its most stringent "Do Not Eat" fish advisory on the basis of PCB contamination (NYSDOH 2011). Ecological risks have been document by USACE studies on bioaccumulation above and below Burt Dam.

Conclusions

The results of RI indicate that chemical contamination of the sediment all reaches of Eighteenmile Creek exceed screening criteria protective of ecological and human health and that hazardous levels of PCBs and lead contamination are present in the Corridor Site and immediately downstream. PCBs and lead are the primary COPCs and sources of contamination have been identified in the Corridor Site. Lower concentrations and more uniform distribution of the other COPCs indicate anthropogenic sources not directly related to the Corridor Site. Higher concentrations of PCBs and lead in deeper sediments behind Burt Dam and Newfane Dam indicate historical sources were more significant than more recent sources, but ongoing transport of PCBs and lead from the Corridor Site has been documented. PCB transport off-site contributes significant loadings to Lake Ontario.

Metal contamination in sediments may exert chronic toxicity throughout the Eighteenmile Creek particularly for lead and zinc but there is little evidence of significant bioavailability risk associated with metal contamination. PCB contamination presents a significant bioaccumulation risk that is well documented with fish tissue analysis. Modeling indicates that PCB contamination poses a measurable but low potential toxicology risk to some fish species and fish-eating wildlife species.

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SECTION 1

Introduction

This remedial investigation (RI) report summarizes the results of investigations performed at the Eighteenmile Creek Area of Concern (AOC) in Niagara County, in western New York State. The investigation area includes Olcott Harbor (mouth of the creek) and extends upstream through the city of Lockport to the Erie Canal (a component of the New York State Canal system) (see Figure 1). This report was prepared for the United States Environmental Protection Agency's (USEPA's) Great Lakes National Program Office (GLNPO) under Work Assignment No. 139-RICO-1527, Contract No. EP-S5-06-01. Supporting data were provided by the Eighteenmile Creek Great Lakes Legacy Act (GLLA) Project Coordination Team, which includes the GLNPO, the Niagara County Soil and Water Conservation District (NCSWCD), the New York State Department of Environmental Conservation (NYSDEC), the United States Army Corps of Engineers (USACE), and USEPA Region 2.

1.1 Purpose of the Report

This RI report presents an evaluation of the nature and extent of contamination in sediments throughout the investigation area. The report establishes a baseline of contaminant levels in sediment that can be used to evaluate and select remedial alternatives to reduce risks to human health and the environment posed by exposure to contaminants in the creek sediments. Current and historical data were used to develop a conceptual model of the existing physical and chemical conditions of the sediment.

The RI data collection activities performed for GLNPO are summarized in Section 2, and supporting reports are provided in Appendices A and B. Current and historical sediment data were compiled to meet the following objectives:

- Characterize the nature and extent of sediment contamination;
- Evaluate the physical conditions between Burt Dam and the Erie Canal, including sediment thickness and water depth;
- Evaluate the contamination in bank soils adjacent to the creek and sediments in major tributaries to identify other potential contamination sources and establish background conditions;
- Evaluate the potential for historic contamination to have migrated to wetlands or historic creek channels during past flooding events;
- Provide the data necessary to assess whether conditions in the creek pose an actual or potential human health exposure risk;
- Provide the data necessary to assess the bioavailability of site contaminants and whether conditions in the creek pose a potential ecological risk; and

- Provide the data needed to identify and evaluate potential remedial alternatives to address contamination that poses threats to public health and/or the environment.

1.2 Site Background

1.2.1 General Site Description

Eighteenmile Creek originates in the city of Lockport in central Niagara County and flows generally north, discharging into Lake Ontario at Olcott Harbor, in Olcott, New York. Olcott Harbor is located approximately 18 miles east of the mouth of the Niagara River. The USACE maintains a federal navigation channel between the breakwalls at the entrance to the harbor. Eighteenmile Creek was designated as an AOC in 1985 by the International Joint Commission (IJC) because of water quality and bottom sediment contamination associated with past industrial and municipal discharge practices, the disposal of waste, and the use of pesticides by local farmers.

The Eighteenmile Creek AOC, as originally designated by the IJC, includes Olcott Harbor and extends upstream to the farthest point at which backwater conditions exist during Lake Ontario's highest monthly average lake level (see Figure 1). This point is located just downstream of Burt Dam, approximately 2 miles south of Olcott Harbor at the end of Fisherman's Park, a major public fishing destination in Lake Ontario (see Figure 2). The Eighteenmile Creek AOC Remedial Action Committee (RAC) was established in 1993, with NYSDEC as the coordinator. The Eighteenmile Creek Remedial Action Plan (RAP), completed in 1997 defined the original AOC as the impact area and the upper watershed boundaries as the source area (see Figure 1) (NYSDEC 1997). Additional information regarding the characteristics of the Eighteenmile Creek AOC and watershed are available in the *Eighteenmile Creek State of the Basin Report* (E & E 2007a; see Appendix C) and in publications and factsheets available from the Eighteenmile Creek RAP website (http://www.eighteenmilerap.com/).

The main branch of Eighteenmile Creek begins at the Erie Canal in Lockport, New York. The headwaters of the creek originate southeast of Lockport, in the Niagara County Park and Golf Course, and flow aboveground to the northwest for one mile until the flow enters an underground pipe on the east side of Lockport. The pipe extends for three-quarters of a mile and empties into a sluice on the Erie Canal, southwest of the Mill Street Bridge. Water from the Erie Canal also flows into this sluice through a spillway in the Canal's south wall. The combined water flows through a culvert under the Canal and exits on the north side of the Canal, forming the Headwater East Branch of Eighteenmile Creek (see Figure 2 insert). (This Headwater East Branch of Eighteenmile Creek should not be confused with the stream known as the "East Branch of Eighteenmile Creek," which is a tributary that flows into Eighteenmile Creek just south of Newfane, New York, approximately 4 miles downstream of the headwaters.)

The Headwater West Branch of Eighteenmile Creek originates in Upson Park at the dry dock on the north side of the Erie Canal and also receives water from two underground flows from the south and southwest. The Headwater West Branch flows north toward Clinton Street. The Headwater East and West Branches converge on the south side of Clinton Street and flow under Clinton Street to the Mill Pond on the north side of Mill Street. The creek flows north through a short length that is bordered on the west by

residential backyards on Waters Street and on the east by industrial properties. This portion of the creek is designated as the Eighteenmile Creek Corridor Site by NYSDEC and has been investigated as part of their RI of the area (see Section 1.2.3.2 and Figure 2 insert).

Downstream of the Eighteenmile Creek Corridor Site, the creek drops down the Niagara Escarpment and winds through approximately 12 miles of rural Niagara County to Burt Dam. This portion of Eighteenmile Creek passes through the towns of Lockport and Newfane. The land use within this portion of Eighteenmile Creek watershed consists primarily of cropland and orchards, with residential, commercial, and small industrial areas located closer to the City of Lockport and around Newfane. [Newfane is the hamlet of Newfane is on Route 78, centrally located in the town and on the east bank of Eighteenmile Creek (sees Figure 2)]. This portion of the creek was investigated by GLNPO as part of the site characterization project described in Section 2.

Two major tributaries flow into the main channel of Eighteenmile Creek: the stream that drains the northwestern part of Lockport and flows through a ravine known as The Gulf (hereinafter referred to as Gulf Creek) and the East Branch of Eighteenmile Creek. Gulf Creek enters the main channel just north of the Lockport Wastewater Treatment Plant. The East Branch of Eighteenmile Creek enters the main channel just north of Ridge Road.

1.2.2 Site History

Eighteenmile Creek has a long history of industrial use dating back to the 19th century. The *State of the Basin Report* (E & E 2007a; see Appendix C) provides an overview of the creek's history, which is summarized briefly here. The original Erie Canal was constructed in New York State between 1817 and 1825. Lockport was founded where the canal traversed a 60-foot rise in the Niagara Escarpment with a set of five locks. During the 1800s, numerous millraces and millponds provided power for a variety of industries located along the banks of Eighteenmile Creek. The millraces were constructed to take advantage of water from the canal traveling down the escarpment. Early industries facilities included the pulp mills, gristmills, tanneries, and sawmills. The remnants of this industrial era include three former industrial sites (i.e., the Flintkote Plant, the United Paperboard Company site, and the White Transportation property) and an industrial fill area (i.e., Upson Park), which are located adjacent to the creek along the Eighteenmile Creek Corridor Site (see Figure 2 insert).

Two dams are located on the creek within the Corridor Site (NYSDEC 2006a; see Appendix C). The first dam, located at Clinton Street, forms Mill Pond. Water from Mill Pond leaks around the west side of the dam and flows adjacent to or over the top (during high flow conditions) of the abandoned transformer pad on the south side. Sediments are trapped behind the dam Clinton Street Dam. Approximately 1,000 feet further downstream, the creek is diverted westward from its apparent natural course for approximately 300 feet along William Street by a dam approximately 10 feet high. William Street traverses the top of this dam. The creek then continues northward through cross-culverts beneath William Street to return to its original natural channel farther downstream. A pair of sluice gates located at the east end of the dam formerly allowed water from Eighteenmile Creek to enter a millrace. These sluice gates have been closed for at least 30 years. Both dams are dilapidated and unpermitted (see Figure 2 insert).

Several other industrial facilities and inactive hazardous waste sites are located along or in the vicinity of Eighteenmile Creek, including the City of Lockport Wastewater Treatment

Plant, VanDemark Chemical, Inc., and the Old Upper Mountain Road Landfill site on Gulf Creek.

Several dams were also constructed to provide power in the more level areas near Newfane, two of which two remain today. Newfane Dam was built in the 1830s near the end of McKee Street and Ewings Road to provide power for the Newfane mill district. Burt Dam was built farther north of Newfane in 1924, creating a 95-acre reservoir within the creek gorge; the reservoir extends approximately 2 miles upstream of the dam. The original dam generated power until the 1950s; it was restored in 1988 and still operates.

Following the creek's listing by the IJC as a Great Lakes AOC, the Eighteenmile Creek RAP was prepared by NYSDEC in 1997 and implementation of the plan began. The NCSWCD is the current Eighteenmile Creek RAP Coordinator, having assumed management of the RAP in 2005 with funding support from GLNPO. The most recent RAP update (i.e., Eighteenmile Creek AOC RAP Stage II report) was completed by NCSWCD in 2011 (NCSWCD 2011).

1.2.3 Previous Investigations/Data Summary

1.2.3.1 Previous Investigations in the AOC

A majority of previous environmental studies and investigations of the AOC focused on the northern portion of the drainage basin and creek's confluence at Lake Ontario. Early investigations completed in the 1980s and 1990s were led by NYSDEC as part of their watershed research program and AOC RAP implementation, and by USACE as a part of their authority to dredge the navigation channel. The results of these investigations showed that the sediments of Eighteenmile Creek within the AOC are contaminated with metals and polychlorinated biphenyls (PCBs).

NYSDEC conducted a systematic investigation of the sediments in 1994 in support of development of the RAP (NYSDEC 1998; see Appendix C). The results of the investigation confirmed the presence of high levels of metals and PCBs and identified DDT metabolites, dioxins/furans, and polycyclic aromatic hydrocarbons (PAHs) as additional contaminants of potential concern (COPCs). The investigation detected high concentrations of contaminants immediately upstream the Burt and Newfane Dams and in upstream sediments close to the Erie Canal. An additional sediment study was conducted in 1998 as a follow-up to the 1994 sampling work (NYSDEC 2001a; see Appendix C).

Three sediment cores were collected in 1998 and radiometrically dated to establish a chronology of contamination in the Erie Canal and the depositional pools immediately upstream of the Burt and Newfane Dams. This 1998 study, which confirmed the results of the 1994 investigation, found that the highest concentrations of contaminants were in subsurface sediments dating from the mid-1950s to early 1960s (NYSDEC 2001a; see Appendix C). Both studies identified upstream areas and the Erie Canal as potential sources of contamination. As part of the RAP implementation, additional studies were conducted to investigate the sources of the PCBs; evaluate PCB concentrations in the surface sediments and water column; and determine potential risks to humans, aquatic organisms, and terrestrial wildlife.

The RAP (NYSDEC 1997) describes historical studies of fish tissues, the results of which indicated high levels of PCBs. The New York State Department of Health (NYSDOH) has

included Eighteenmile Creek under its most stringent "Do Not Eat" fish advisory on the basis of PCB contamination (NYSDOH 2011). Lake Ontario is subject to other less stringent, species-specific advisories related to the presence of PCBs, Mirex, and dioxins. In 2003 the USACE Buffalo District conducted an evaluation of the toxicity and bioaccumulation of persistent organic compounds in surface sediment samples collected from below Burt Dam (USACE 2004a, 2004b, 2008; see Appendix C). This study indicated that metals and DDE presented a potential chronic toxicity risk relative to selected freshwater toxicity threshold values and DDE was bioaccumulating at higher than anticipated levels (USACE 2008; see Appendix C). PCBs were found to be highly bioavailable and predicted to cause wildlife bioaccumulation risks. Dioxins were detected in sediment samples and predicted to cause potential wildlife bioaccumulation risks based on the equilibrium partitioning approach used by New York State.

Studies of the water column conducted by the USEPA from 2002 to 2010 found that PCB concentrations downstream of Burt Dam were up to 40 times higher than levels observed in any other tributary of Lake Ontario on the American side of the lake (USEPA 2011). These findings support the bioaccumulation potential for PCBs in the lower reach of Eighteenmile Creek. The USEPA also collected three surface sediment samples in this area, but the results did not confirm the levels of PCBs previously found by the USACE.

A Beneficial Use Impairment (BUI) investigation was conducted in 2007 (E & E 2009; see Appendix C) in the reach of the creek below Burt Dam to determine whether Eighteenmile Creek is impaired with regard to the existence of fish tumors and other deformities; the status of fish and wildlife populations; and the status of bird or mammal deformities or reproductive impairment. A wide range of data was collected from Eighteenmile Creek and a similar background stream (Oak Orchard Creek), and the data from the two creeks were compared. The data collected from the BUI investigation suggest that bird and amphibian populations at Eighteenmile Creek are not impaired, but that fish and mammal populations likely are. The possible impairment of fish and mammal populations results from high levels of PCBs in fish. Whole-body concentrations of Aroclors 1248, 1254, and 1260 and total PCBs were an order of magnitude greater in brown bullheads from Eighteenmile Creek than in brown bullheads from Oak Orchard Creek (E & E 2009; see Appendix C). Whole-body concentrations of dioxins/furans (expressed as the 2,3,7,8-tetrachlorodibenzo-p-dioxin [TCDD] toxic equivalent [TEQ]) in bullheads from Eighteenmile Creek were approximately five times greater than in bullheads from Oak Orchard Creek.

In 2005 the Buffalo State Great Lakes Center conducted sediment modeling for the Eighteenmile Creek Watershed (BSGLC 2005; see Appendix C). The Soil Water Assessment Tool model was used to determine sediment yields at the watershed outlet and identify sub-basins and stream reaches that contributed high sediment yields.

A PCB trackdown study was performed in 2006 to evaluate whether PCBs and metals were continuing to migrate from upstream source areas and to identify other potential sources of contamination (E & E 2007b; see Appendix C). Grab samples were collected for PCB screening at 80 locations from the end of the Corridor Site (i.e., at Harwood Street) to Stone Road (8,000 feet of the creek). Approximately 2,000 feet of creek within this area was not investigated because the gradient of the creek cascading down the Niagara Escarpment was too steep to ensure the safety of the sampling crews. In addition, the amount of sediment in

this area available for sampling is minimal due to high flow velocities and steep gradient. The detectable PCB concentrations in 53 of the 80 screening samples ranged from 0.59 to 4.3 milligrams per kilogram (mg/kg). A total of 12 cores were collected to confirm PCB screening levels. Three samples were collected at various depths. The PCB concentrations in the core samples ranged from 0.012 to 69 mg/kg; only six samples had results that were non-detect.

The results of the trackdown study indicate that most of the sediment in Eighteenmile Creek is contaminated with PCBs, and only the native material in the creek bed is free of PCB contamination. Most of the positive PCB results show a relatively uniform concentration of PCBs at a level that exceeds the screening criteria based on the NYSDEC's Soil Cleanup Guidance (NYSDEC 2010a). Two "hot spots" were found close to the Flintkote property and in the area near the intersection of Old Niagara Road and Plank Road. The surface samples from all 12 cores were also analyzed for select metals, including mercury, arsenic, chromium, copper, lead, and zinc. The metals concentrations were relatively uniform and exceeded soil cleanup objectives. The results indicate that metals continue to be a source of concern in the creek and need to be evaluated relative to background concentrations in other areas (E & E 2007b; see Appendix C).

In 2008, the NCSWCD entered into a project agreement with the GLNPO to implement a GLLA project in the Eighteenmile Creek AOC focusing on characterizing the sediments in section of the creek between the Corridor Site and reach below Burt Dam. The project leveraged RI activities implemented by NYSDEC in the Corridor Site (see Section 1.2.3.2). A reconnaissance survey was completed in winter 2008 and spring to investigate site access, identify areas of sediment deposition, measure sediment thickness, and map sensitive habitats and other areas of potential ecological concern 2009 (CH2M HILL and EEEPC 2009a; see Appendix A). The Eighteenmile Creek Field Sampling Plan (FSP) and the Quality Assurance Project Plan (QAPP) defined the overall scope for site characterization activities and evaluation of COPCs in sediments (CH2M HILL and EEEPC 2009b). The investigation approach was revised to address data gaps and included additional data collection in 2010. The results of this investigation are described in Section 2 and presented in the Data Summary Report (CH2M HILL and EEEPC 2011; Appendix B).

In 2011, the USACE Engineer Research and Development Center (ERDC) completed a Trophic Trace Food Web model for Eighteenmile Creek (e Risk Sciences 2012; see Appendix C). The objective of the project was to evaluate organic contaminant bioaccumulation, trophic transfer, and consequent risks in creek sections above and below Burt Dam. The project included collection of surface sediments from below Burt Dam and fish tissue from creek sections above and below the dam. The report and supporting data are provided in Appendix C.

1.2.3.2 Previous Investigations in the Corridor

Between 1987 and 1998, NYSDEC collected 10 sediment samples from Eighteenmile Creek between Remick Parkway south of the Erie Canal and the former Flintkote Plant site in the city of Lockport (see Figure 2). In 1996, NYSDEC's Division of Environmental Remediation collected six additional sediment samples from the area between Clinton Street and the former Flintkote Plant site. PCBs were detected in all samples, and concentrations in 11 samples exceeded NYSDEC's sediment criterion for chronic toxicity to benthic aquatic life

(0.606 mg/kg) and NYSDEC's surface soil cleanup objective (1.0 mg/kg). Lead concentrations exceeded the sediment criterion for the severe effect level (110 mg/kg) in 10 samples, and lead concentrations exceeded the NYSDEC soil cleanup objective (400 mg/kg) in five samples. The most contaminated sample was a sediment sample collected in the mill race near the former Flintkote Plant site. Other inorganic contaminants also detected in Eighteenmile Creek sediment at concentrations exceeding sediment criteria included arsenic, cadmium, chromium, and iron (one sample each); nickel (two samples); mercury (three samples); silver (four samples); copper (nine samples); and zinc (10 samples) (NYSDEC 2006a; see Appendix C).

Investigations at the former Flintkote Plant site continued in 1999. NYSDEC determined that the Flintkote property had received various wastes, refuse, and debris over the years, with much of the waste being exposed at the surface and along the Eighteenmile Creek embankments and millrace (NYSDEC 2000; see Appendix C). In 2003, an investigation was conducted by Niagara County under NYSDEC's Brownfield program to fill in data gaps in NYSDEC's 1999 investigation (TVA 2005). The results of the Niagara County site investigation were consistent with NYSDEC's investigation results. A Record of Decision (ROD) for the former Flintkote Plant site was issued in March 2006 (NYSDEC 2006b; see Appendix C).

In April 2002, the owner of the 143 Water Street property submitted a request to the Niagara County Health Department (NCHD) for sample collection and evaluation of soils from their property. In response to this request, the NCHD and NYSDEC conducted an inspection of the property. Discussions with the property owners revealed that (1) a family case of cancer inspired research into available environmental data regarding the creek; (2) due to debris or ice blocking the cross-culverts under William Street, Eighteenmile Creek occasionally floods the yard of 143 Water Street (severe flooding once every two years and lesser flooding several times per year); and (3) a small strip of wooded property (about 20 feet wide) between Eighteenmile Creek and the 143 Water Street property also frequently floods. The property owners raised concerns over potential contaminant migration from Eighteenmile Creek (especially elevated levels of PCBs) and over the poor maintenance of the creek by the City of Lockport, which contributes to the flooding issues. During the site visit, the NCDH identified a portion of the 143 Water Street yard that would flood during high water events, and a small vegetable garden was observed within the reported flood area. At the NCHD's request, NYSDEC collected four samples (SS-1 through SS-4) from the property. Based on the results of this sampling event, the NYSDOH requested 15 additional samples from properties along Water Street, including one sediment sample from Eighteenmile Creek and two waste samples from the wooded property south of the former Flintkote Plant site on Mill Street (NYSDEC 2004). These samples (SS-5, and SS-8 through SS-21; SED-6; and SS-6 and SS-7, respectively) were collected on July 23, 2002 and the results are summarized in the 2004 Scope of Work (SOW) for the Corridor Site (NYSDEC 2004; Appendix C). In November 2002, NYSDEC collected two soil samples (SS-6 and SS-7) and three sediment samples (SED-7, SED-8, and SED-9) near the Clinton Street dam from an area identified as a potential source of PCBs to Eighteenmile Creek.

In the fall of 2005, NYSDEC completed an RI of the Eighteenmile Creek Corridor Site in order to (1) better define the nature and extent of sediment contamination in the creek and the millrace, (2) further evaluate the impact of creek flooding on residential properties along

Water Street, and (3) evaluate potential sources of contaminants to the creek (NYSDEC 2006a; see Appendix C). During the RI, elevated concentrations of PCBs and metals (i.e., arsenic, chromium, copper, lead, and zinc) were detected in sediment samples from the creek and the millrace adjacent to the former Flintkote Plant site. In addition, contaminated sediment was found in the Erie Canal upstream of Eighteenmile Creek. PCBs, arsenic, chromium, copper, lead, and zinc levels detected in fill material at Upson Park and the former White Transportation property, United Paperboard Company property, and Flintkote Plant site may adversely impact Eighteenmile Creek.

In 2007, NYSDEC performed a Supplemental Remedial Investigation (SRI) at the Eighteenmile Creek Corridor Site (EEEPC 2009a; see Appendix C). The primary purpose of this investigation was to further evaluate sediment contamination in the section of Eighteenmile Creek between the Erie Canal and Harwood Street in the city of Lockport and to determine the lateral and vertical extent of contamination in the properties adjacent to the creek. The results of the investigation were also used to assess whether site conditions pose a potential threat to human health or the environment. During the SRI, coring transects were established perpendicular to the creek at approximately 200-foot intervals, and hundreds of sediment, surface soil, and subsurface soil samples were collected along these transects. Soil borings were also installed and sampled at the three upland properties, and several monitoring wells were installed, developed, and sampled. PCBs and lead were detected in the creek and canal sediments and surface soil samples collected across the site, often at concentrations above the screening levels. The distribution of chromium and other metals closely followed the distribution of lead in the surface soil samples and the distribution of copper in the sediment samples. PAHs were prevalent in the sediment and surface soil samples collected across the site. PCBs, lead, and other related metals were found in the subsurface soils at concentrations exceeding the screening levels. Select samples were analyzed for lead by Toxicity Characteristic Leaching Procedures (TCLP) and data compared to the total lead concentrations showed inconsistent correlation, suggesting that the leachability of the lead varies with the type of source material. High levels of lead contamination were detected in all fill areas, but PCB contamination was found only in some of the fill areas. The transport of fill material via erosion and runoff was suspected to be the primary mechanism for the movement of PCBs and lead contamination further downstream.

An additional field investigation was performed at the Corridor Site in late 2008/early 2009 to facilitate the feasibility study (FS) (EEEPC 2009b; see Appendix C). The purpose of the study was to better characterize the Erie Canal as a source of contaminated sediments and survey sediment thickness to estimate the sediment volumes. The additional investigation included flow measurements and sampling in the Erie Canal, as well as delineation of the creek width and sediment thickness along the corridor. Based on the results of this additional investigation, it was concluded that, in general, the likelihood of re-contamination from the Erie Canal after creek sediments have been remediated is small, but that further evaluation of the sediment transport mechanisms at the site would be required to investigate the impacts of one-time events and significant discharges from combined sewer overflows that were not studied. In 2009, NYSDEC conducted a study to evaluate whether the PCBs present in the Canal sediments were being discharged into Eighteenmile Creek (NYSDEC 2010c; see Appendix C). NYSDEC analyzed both the suspended sediment and the water containing that sediment and determined that PCBs were present only in the

water column downstream of the former Flintkote Plant site. The FS for the Corridor Site was completed in September 2009 (E & E 2009c), and NYSDEC issued a ROD for the site in 2010 (NYSDEC 2010b; see Appendix C).

1.3 Report Organization

Following this introductory section (Section 1.0), the remaining sections of this report are organized as follows:

Section 2

Section 2 presents a summary of the site characterization activities performed for the GLNPO. The section summarizes work originally presented in the *Phase I Site Reconnaissance Report* (see Appendix A) and the *Data Summary Report for the Site Characterization Investigation* (see Appendix B). Section 2 also includes a discussion of the sediment thickness model.

Section 3

Section 3 presents the physical characteristics of the Eighteenmile Creek AOC, including features and challenges unique to the project, demographics and land use, surface water, geology, soils, and hydrology, as well as a discussion of threatened and endangered species that have been identified in the area.

Section 4

Section 4 presents the nature and extent of contamination sediment contamination in Eighteenmile Creek from Olcott Harbor upstream to the Erie Canal. The section includes a discussion of the COPCs; data usability evaluation of the current and historical data and development of site-specific evaluation criteria. Where relevant, other media (i.e., water, groundwater, and tissue) are also discussed.

Section 5

Section 5 presents a discussion of contaminant fate and transport, contaminant sources, the conceptual site model, and contaminant persistence and migration.

Section 6

Section 6 presents a summary of the nature and extent of contamination, contaminant sources, and fate and transport. It also discusses data limitations, the need for future work, and recommendations from the project team.

Section 7

Section 7 presents the references to materials used to prepare this report.

SECTION 2

Characterization Investigation Approach

2.1 Site Characterization

Site characterization activities were conducted by GLNPO at the Eighteenmile Creek AOC from November 2008 through November 2010. The investigation area included the impoundment at Burt Dam and extended upstream to the just below the Niagara Escarpment (see Figures 1 and 2). The purpose of the investigation was to collect data to evaluate the nature and extent of contamination in the sediments, focusing on the unevaluated area between the city of Lockport and Burt Dam. The data collected during this effort were used to develop a conceptual model of the existing physical and chemical conditions, which will provide the basis in the identification of potential remedial alternatives for the creek sediment.

Sediment samples were collected from almost the entire length of the creek from Burt Dam to just downstream of the Corridor Site. Samples were not collected in the Corridor Site or downstream of Burt Dam to the mouth of the creek at Lake Ontario because these areas were previously investigated.

The creek was divided into the following 10 reaches during the planning phases based on physical characteristics of the creek (see also Section 2.2.1 and Figure 2). The reach designations were refined during Phase 1.

- Reach 1 – Mouth of the creek to Burt Dam
- Reach 2 – the Burt Dam impoundment
- Reach 3 – the confluence of Eighteenmile Creek with the upstream extent of the Burt Dam impoundment
- Reach 4 – the bedrock/gravel channel downstream of Newfane Dam
- Reach 5 – the Newfane Dam impoundment
- Reach 6 – the gravel channel upstream of the Newfane Dam impoundment
- Reach 7 – the meandering reach with large woody debris downstream of the Niagara Escarpment
- Reach 8 – the high-gradient run down the Escarpment
- Reach 9 – the short run downstream of the Corridor Site
- Reach 10 – the Eighteenmile Creek Corridor Site

Field activities were conducted in phases and included the following:

- Mobilization and planning activities for Phase 1 in November 2008;
- A Phase 1 site reconnaissance survey in December 2008 and April/May 2009 (Reaches 3 to 7);
- A bathymetric survey performed by Aqua Survey, Inc., in June 2008 in the impoundment behind Burt Dam (Reaches 2 and 3);
- An additional two-day reconnaissance survey and Phase 2 planning activities in October 2009 (Reaches 6 and 7);
- An initial hand-coring sampling effort in November and December 2009 (Reaches 4, 6, and 7);
- Vibracore sampling and Ponar grab sampling in May 2010 (Reaches 2, 3, and 5);
- A data gap investigation, including hand coring and Ponar grab sampling (Reaches 4, 6, and 7) in June and July 2010; and
- A sediment thickness and bankfull survey in November 2010 (Reaches 4 to 7).

The *Phase 1 Site Reconnaissance Report* was completed July 2009 and is included in Appendix A. The *Data Summary Report for the Site Characterization Investigation* was completed in March 2011 and is provided in Appendix B.

2.1.1 Project Objective and Technical Approach

The data collected during the site characterization were used to:

- Evaluate the horizontal and vertical extent of sediment contamination of selected COPCs (PCBs and metals) within and adjacent to the creek;
- Correlate PCB concentrations to percent organic carbon;
- Evaluate concentrations of COPCs in upstream locations in major tributaries of the creek to identify other potential sources and establish background conditions;
- Evaluate ecologically significant chemicals (e.g., PCB congeners, metals) in the surface sediment to determine the bioavailability of COPCs;
- Evaluate the potential for historic contamination to have been transported to wetlands or relict creek channels during past flooding events;
- Evaluate the potential sources of additional chemicals previously detected in the sediment (e.g., pesticides and PAHs) and establish the correlation of these chemicals with the COPCs; and
- Evaluate the geotechnical characteristics of the sediment.

The sampling design and collection procedures are described in Section 2.2 of the Data Summary Report (see Appendix B). The sampling analytical program is described in Section 2.4 of the Data Summary Report (see Appendix B).

2.1.2 Site Reconnaissance and Bathymetric Surveys

The reconnaissance survey focused on the area from Burt Dam south to Lockport, an area for which there is little historical data regarding depositional areas or sediment characteristics and quality. The first phase of the reconnaissance survey was conducted in a 9.4-mile-long stretch of the creek just north of Ide Road upstream of Stone Road. This stretch of the creek is relatively isolated, and little information has been developed regarding habitats, stream channel conditions, or sediment characteristics. In June 2008, a bathymetric sediment thickness survey was performed by Aqua Survey, Inc., in the 1.5-mile-long impoundment from Burt Dam upstream to just north of Ide Road (CH2M HILL and EEEPC, 2009a; see Appendix A). This portion of the creek is relatively wide and deep, and there was little information on water depth and sediment thickness. In October 2009, a supplemental reconnaissance survey was performed in areas not previously visited; the results are integrated into the Data Summary Report.

2.1.3 Sediment Sampling and Analysis

The sediment sampling was conducted in November and December 2009 and May 2010, and a data gap investigation was conducted in June and July 2010.

In November and December 2009, 83 hand core sediment samples were collected in Reaches 4, 6, and 7 from the main creek channel and tributaries and 21 surface soil samples were collected from historic channels and wetlands along Reaches 3, 4, 5, 6, and 7. All of the cores, but one, were collected by advancing a clear polyvinyl chloride (PVC) sleeve into the sediment by hand using a pushing and twisting motion. At each coring location within the main creek channel, one composite sample was collected from the top of the sediment to refusal, representing the entire sediment column. As described in the FSP, when refusal was reached, the remaining empty portion of the acetate sleeve was topped with water and the sleeve was capped. The sleeve was then slowly removed from the sediment, resulting in the collected core. The water was then decanted and the sediment was extracted, logged, and composited for sampling.

In May 2010, a total of 298 samples, including 13 duplicate samples, vibracore samples, and Ponar dredge samples, were collected. These samples were collected from deeper areas behind Burt Dam and Newfane Dam. Vibracore sampling was conducted at all locations with two exceptions. Due to shallow water that prohibited vibracore vessel access, two sample locations (R3-019-V and R5-039-V) were accessed by jon boat and cored by hand following procedures similar to those used in November and December 2009. Surface and subsurface samples were collected from the sediment cores. At each coring location, initial probing was performed to measure water depth. Following water depth measurement, a grab sediment sample was collected from the top 0 to approximately 1 foot depth using a petite Ponar dredge. After surface sediment sample collection was completed, a Rossfelder P-3 electrical vibracore collection system mounted to a winch was used to collect cores. The operator lowered the core barrel loaded with dedicated 4-inch wide clear polycarbonate liners to the top of the sediment, started the vibracoring system, and cored into the sediment to refusal.

The sediment and soil samples collected in November and December 2009 and May 2010, were analyzed for Target Compound List (TCL) PAHs, total organic carbon (TOC), and grain size, in addition to PCBs and Target Analyte List (TAL) metals. Representative

portions of samples were also analyzed for semi-volatile organic compounds (SVOCs) and pesticides, PCB congeners, and acid volatile sulfides/simultaneously extracted metals (AVS/SEM). Sediment samples collected within the tributaries were analyzed for the full suite of COPCs (including PCBs as Aroclor mixtures, TAL metals, TOC, grain size, PAHs, and pesticides).

In June and July 2010, a data gap investigation in Reaches 4, 6 and 7 was performed, which included collection and analysis of 126 samples, including seven duplicates. Of the 126 samples collected, 12 samples were collected from 9 locations in Reach 4, 50 samples were collected from 28 locations in Reach 6, and 64 samples were collected from 34 locations Reach 7. During the data gap investigation, sample locations were added in areas with large distances between sample locations (i.e., greater than 500 feet) to provide better coverage.

The data gap sediment sampling included the collection of surface sediment samples (representing the top 0.5 foot of sediment) and composite core samples (from surface to refusal) to evaluate contamination within the thicker sediment deposits. Specifically, at coring locations where the top sediment layer was clearly distinguished, surface samples were collected from the top 0.5 foot portion of the core and the remaining core material was composited for the subsurface sample (0.5 foot to refusal). At coring locations where sediment layering was not clearly observed (e.g., in areas where the sediment was too soft to preserve layering within the core), the surface sample was collected using a petite Ponar or AMS Ekman dredge, and the entire core was composited (surface to refusal) for the subsurface sample. At locations where total sediment thickness was less than 1 foot, a single sample was collected from the entire core.

Data gap sediment samples collected in 2010 were analyzed for PAHs, TOC, and grain size, in addition to PCBs and TAL metals. Approximately 30 percent of the data gap sediment samples were also analyzed for the expanded list of PAHs (34 PAHs), instead of the standard 16 PAHs included in the TCL analysis.

2.1.4 Sediment Thickness Survey

A sediment thickness survey was conducted in November 2010. The survey was conducted for Reaches 3 through 7 and included taking measurements of bank-to-bank (bankfull) width (i.e., the width that water begins to leave the channel and discharge onto the floodplain), water depths, and sediment thickness. The bankfull measurements were obtained using the same methodology as used in the SRI for the Corridor site in 2008.

2.2 Results Summary

2.2.1 Site Reconnaissance Report

The Eighteenmile Creek AOC was divided into smaller investigation areas, or reaches, based on the physical characteristics of the creek observed during the Phase 1 reconnaissance planning effort (see Figure 2). The creek length was determined by digitizing a center line based on review of aerial photographs. The center line was used to establish distance markers along the length of the creek, with zero starting at the headwaters of the creek at the Erie Canal (using the Headwaters West Branch) and ending at the mouth of the creek at Lake Ontario.

- Reach 1 consists of the AOC as originally defined by the IJC and includes the area from Burt Dam to the discharge point of the creek into Lake Ontario. This reach was not included in the GLNPO investigation, but historical results are presented in Section 4.

- Reach 2 consists of the impoundment immediately upstream of Burt Dam. The bathymetric survey conducted during Phase 1 reported shorelines with steep to near vertical slopes and water depths ranging up to about 37 feet. The historic creek channel is still evident throughout most of the survey area. Measurements along transects at the upstream end of the impoundment found sediment thicknesses averaging about 13 feet. Similar to other deep lake environments, exposure to PCBs in the surficial sediments is the main exposure route, and the concentrations of PCBs in this biologically active layer are the critical data needed for evaluating potential remedial alternatives. Based on the hydrology of the impoundment, the potential for the subsurface sediments to be exposed by scour or high-flow events in this reach is low. However, there is potential for Burt Dam to be removed at some point in the future. Subsurface sediment samples were collected to evaluate the contaminated sediment mass behind the dam and the depth of contamination. Historical studies indicate that PCBs are present at depth (28 to 56 centimeters [cm], or approximately 1 to 2 feet) in the center of the impoundment (NYSDEC 2001a; see Appendix C). None of the historical sampling included locations on the sides of the impoundment.

- Reach 3 is characterized by the historic stream channel that was flooded after installation of the dam. The delineation between Reaches 2 and 3 was an estimated boundary marking the separation of the deeper water from the portion of the creek where the impounded water meets the upstream creek flow. Large sediment deposition areas have formed where the swiftly moving upstream creek flows into the impoundment area and the flow velocities drop quickly. Because surface and subsurface sediments in this reach could be subject to erosion and transport, contaminant concentrations in the surface and at depth were investigated. PCB-contaminated sediments also may have been deposited in surrounding marsh and forested wetland areas during historic flooding events. Therefore, a representative number of surface soil samples from these features were also collected.

- Reach 4 is relatively swift moving and includes comparatively few sediment depositional areas of shallower depths. Limited sediment sampling, consisting of surface grabs, was conducted in this reach. Sampling locations include areas where sediment was deposited due to obstructions or decrease in flow velocities, near the marshes and old floodplains, and near outfalls. These areas were sampled because contaminated sediment may have been deposited in the forested wetland areas and marshes near Ide Road during historic flooding events.

- Reach 5 consists of the impoundment area behind Newfane Dam and includes deep water and thick sediment. Because of the potential for the dam to be removed in the future, the investigation of this impoundment area included surface and subsurface sediment characterization. The thick sediment layer indicated a higher potential for contamination to be present throughout the sediment profile. In addition, contamination may have been deposited in sediments in a number of historic creek

channels, marsh areas, and wetlands during historic overbank flooding. A representative number of surface sediment/soil samples were collected from these features.

- Reach 6 is characterized by limited access, relatively shallow sediment deposition areas, and higher flow velocities. There are two historic creek channels and one forested wetland where contaminated sediment may have been deposited during historic overbank flooding. Several outfalls from the Newfane area and agricultural drainage areas may have also contributed contaminants other than PCBs to the creek. Sample locations were selected in areas where sediment was observed, or near obstructions or upstream and downstream of tributaries.
- Reach 7 is characterized by limited access and large stretches of slowly moving water and high sediment deposition. The depth of the sediment in the depositional areas and potential scour suggest that remedial options might target removal of sediment to native material. Samples were collected from the areas of deep sediments near obstructions and outfalls. A 1-mile-long stretch of the creek sampled during the PCB trackdown study (E & E 2007b; see Appendix C) required less sampling than the other areas of the creek. Soil and sediment samples were collected from floodplains and near drainage areas not previously sampled. One hot spot near Plank Road that was identified during the trackdown study was re-sampled.
- Reach 8 is an approximately 2,000-foot-long section of the creek cascading down the steep gradient of the Niagara Escarpment. This area was not sampled because the amount of sediment in this area available for sampling is minimal due to the water velocity, and because doing so would jeopardize the safety of the field sampling crews.
- Reach 9 is a short run of the creek between the Niagara Escarpment and what has historically been defined as the downstream end of the Eighteenmile Creek Corridor Site, (i.e., parallel to the end of Harwood Street). The sediment in this reach is shallower than in the Corridor Site (6 to 15 inches) and tends to have a coarser grain size. The area was investigated during the PCB trackdown study and was not sampled during this investigation.
- Reach 10 is defined as the Eighteenmile Creek Corridor Site, which was investigated by NYSDEC. Reach 10 is considered the upstream source area.

In addition to the reach designations, other physical features of Eighteenmile Creek were identified during Phase 1.

- Wetland Areas identified adjacent to the creek could potentially be impacted by contaminated sediments due to flooding. Wetland areas that were directly on the banks of the main channel were identified. Representative areas in each wetland were sampled by collecting surface grabs in depositional areas.
- Historic Creek Channels and 35 drainage areas that were directly connected to the main channel of the creek were identified during the Phase 1 reconnaissance. The historic creek channels represent areas that may have been influenced by historic creek flows. Sampling locations were selected based on review of historic aerials

and drainage locations. Samples were collected from locations biased on observations of where sediment has accumulated on the surface. If multiple sediment areas are present in a wetland, the sediment was composited to characterize a larger area.

- Tributaries of Eighteenmile Creek were identified during the Phase 1 reconnaissance and verified on aerial photographs. A total of seven samples were collected from sediment deposits located about 50 feet upstream from the mouth of each tributary. The selected sampling location in each tributary was from an area that is not influenced by the main stem of the Eighteenmile Creek and represents background conditions. One surface sample (0 to 6 inches below top of sediment) and a composite of the remaining sediment column were collected at each sampling location.

2.2.2 Data Summary Report

A Data Summary Report was prepared that includes a summary of the sample results and a discussion of analytical results and usability of the data. The Data Summary Report is included as Appendix B. The results of the investigation are presented in Section 4.

2.2.2.1 Physical Results

Physical observations were made during Phase 1 reconnaissance and the sampling phases. Observations and field notes were recorded in the handheld Trimble global positioning system (GPS) unit, which also automatically recorded location information. Photographs were taken and noted in the GPS unit as photo points, and photo logs are provided as appendices to the reports. GPS locations and field notes were imported into an ArcGIS geodatabase. Detailed physical observations are listed in Section 2.6 of the Data Summary Report (see Appendix B). During the three sampling efforts, 464 samples collected for TOC analysis and 461 samples were collected for grain size analysis.

2.2.2.2 Analytical Results

The analytical results for the investigation are presented by reach in Section 4 of the Data Summary Report (see Appendix B). PCB totals were determined by summing positive results for all PCB Aroclors detected. For PCB Aroclors that were not detected in the samples, a value of 0 was used. For a percentage of the samples, PCB congener analysis was performed, and the total PCB congeners were determined by summing the positive results. PAH analysis consisted of analyzing samples for 16 individual PAHs, not including 2-methyl naphthalene. Total PAH concentrations in each sample were calculated by summing up the concentrations of the 16 of the individual PAHs. If an individual PAH was not detected in the sample, then a value of 0 was used in the sum. In addition, an extended list of PAHs was analyzed for a percentage of the samples.

2.2.2.3 QA/QC Summary

Data were reviewed according to applicable procedures outlined in the FSP and QAPP. Overall, the data quality was acceptable and the laboratory analysis and reporting procedures were representative of the appropriate methodologies for sediment and soil samples. The objectives for completeness were above 99 percent for all samples. Results that were qualified as estimated are considered usable for the purposes of this project, while results qualified with an R (rejected), or a UR (not detected and rejected), are not usable.

Detailed information on the site characterization analytical results is included in Section 3 of the Data Summary Report (see Appendix B).

2.2.3 Additional Investigation Reports

Additional investigations performed in the Eighteenmile Creek AOC are discussed in Section 1.2.3 and the reports are included in Appendix C. The data were evaluated for use in the RI and imported into the database. The data from investigations conducted by others are discussed in Section 4.2.

2.2.4 Sediment Thickness Model

The creek boundaries and sediment thickness "bottom" layer and "top" layer information were used to model the volume of sediment present. The creek boundaries were determined based on the sediment survey and aerial photography. The right bank and left bank GPS survey points captured by the field crew at 500-foot intervals served as a starting point for shoreline delineation in a geographic information system (GIS) database. Bank points, which were recorded using a Trimble GPS unit on the ground, are used in GIS as a guide for digitization of the linear shoreline features. A GIS layer of the shoreline of Eighteenmile Creek first began with the left and right bank points; then, the shoreline was fleshed out into a line feature manually through photo-interpretation of high-resolution (1-foot and 2-foot pixel resolution) digital orthophotography (NYS GIS Clearinghouse 2008). The shoreline is an important input to the sediment thickness model and can be conceptually thought of as a "container" for running the calculation. The digitized shoreline is shown on Figure 4. It should be noted that the centerline is the same center that was established during Phase 1. The centerline was not updated based on the new shoreline.

ArcGIS extension "spatial analyst" was used in GIS to perform a spatial interpolation of thickness points. The method of interpolation used was inverse-distance weighted (IDW). IDW is an interpolation method based on the assumption that an unknown values is most alike to its nearer neighbors, rather than to points farther away. In this way, known points (field data) are treated as nearest neighbors and are the predictors of the unknown (interpolated) points. A sediment thickness model was predicted on a 5-foot grid spacing throughout the creek. The model output is provided electronically in Appendix D on Table D-6.

The delineation of the edge of the bankfull and the sediment thickness measurements were conducted concurrently. A total of 136 transects were surveyed in Reaches 4, 6, and 7 and shallow areas of Reaches 3 and 5. A slight variation of "systematic point sampling" was implemented in the field to collect the additional sediment thickness data. Systematic point sampling uses a regular sampling interval and results in an unbiased and proportionally representative dataset of evenly spaced measurements across the study area. The sediment thickness was measured by probing at an average of five locations along each transect, including the edges of both banks, at the thalweg or midpoint, and at two points between the thalweg and left and right banks. Summary statistics on sediment thickness, water depth, and creek width measured during the sediment delineation effort and are presented in Table 2-4 of the Data Summary Report (see Appendix B).

The sediment thickness, water depth, and area were modeled for Reaches 2 through 7 and volume was estimated for based on the model. The creek was divided into 500-foot

intervals (because that length was the basis for the sampling design), and the average sediment thickness and water depth was determined. The volume was calculated for each interval based on the area of the 500-foot interval and average sediment thickness. The intervals were adjusted based on creek features and sampling locations. The 500-foot intervals are identified on Figure 4. The average sediment thickness and water depth, areas and estimated sediment volumes are presented in Table D-6. The average sediment thickness in the depositional areas behind the dams is 11.6, 6.5 and 3.0 feet in Reaches 2, 3 and 5 respectively. The average sediment thickness in rest of the main channel is 0.6, 0.8 and 1.4 feet in Reaches 4, 6, and 7, respectively. The average water depth behind the dams is 14.3, 2.5 and 3.5 feet in Reaches 2, 3, and 5, respectively. The average water depth in rest of the main channel is 1.3, 1.8 and 2.3 feet in Reaches 4, 6, and 7, respectively.

Although elevation measurements were not collected or included as inputs to the sediment thickness model, the elevation is used as a way to characterize the creek from its headwaters near the Erie Canal to its mouth at Lake Ontario. The elevation was estimated in GIS using the most precise elevation data available: 2008 LIDAR (Light Detection And Ranging) data that was originally developed by the Federal Emergency Management Agency (FEMA) for floodplain delineation and is now in the public domain. The elevations contours from the LIDAR for the entire Niagara County are shown on Figure 3 and the elevations along the creek are shown in Figure 4. The sediment model grid spacing and points used to determine the sediment thickness also are shown on Figure 4. The elevations at each 5-foot grid spacing were estimated based on the LIDAR data, and then the average of values in each 500-foot interval were determined to establish the elevation change over the length of creek. In areas were the sediment thickness model did not apply, the elevation was estimated based on the elevation of the center line at 500-foot intervals. These results are shown on Figure 5.

SECTION 3

Physical Characteristics of the Study Area

3.1 Features and Challenges Unique to the Project

The Great Lakes represent approximately 21 percent of the fresh water supply on the planet and 84 percent of the fresh surface water of the North America, and they are the largest single source of fresh surface water in the Western Hemisphere (http://www.eighteenmilerap.com/index.html). Each of the five lakes supports world-class cold- and warm-water fisheries, a diverse agricultural sector, and tourism and recreational industries. The Eighteenmile Creek watershed is part of the larger Southwestern Lake Ontario Basin, an area encompassing over 2 million acres of land in western and central New York that drains into Lake Ontario (NYSDEC 2005).

The most prominent topographic feature in the Eighteenmile Creek watershed is the Niagara Escarpment (see Figure 3). The watershed is located within both the Ontario and Huron Plains, two relatively flat plains that are separated by the escarpment, which runs generally east-west along the northern portion of the city of Lockport. Within the Ontario Plain (from Lake Ontario to the Niagara Escarpment), elevations range from 245 feet above mean sea level (amsl) at the shoreline to approximately 400 feet amsl at the toe of the escarpment. At the escarpment, the main channel of Eighteenmile Creek rises over 100 feet to the Erie Canal (see Figure 5). This greater than 250-foot elevation change is a unique feature of the creek and has a significant impact on surface water hydrology. Figure 5 provides a cross section of the elevation change.

The Eighteenmile Creek AOC is also uniquely influenced by man-made structures on the creek, including the Erie Canal and four dams. The Erie Canal is located at the most upstream portion of the Corridor Site. Most of the water in the western portion of the canal comes from Tonawanda Creek via the Lockport locks. During normal operating and drawdown periods, water is discharged from the canal into Eighteenmile Creek, resulting in an increase in natural flow volumes. Drawdown primarily occurs in November after the canal is closed for the winter and the canal is drained into the creek. During dry periods, the canal contributes the majority of the flow for the portion of Eighteenmile Creek in the city of Lockport (NYSDEC 1997). The increased flow to Eighteenmile Creek contributed by the early Erie Canal led to the construction of mills and dams on the creek. The significance of the Erie Canal and the historic features along creek will need to be addressed as cultural resources during the development of future remedial alternatives.

Burt Dam is a 600-kilowatt hydro-generating facility currently owned by the Algonquin Power and Utilities Corporation. This run-of-river facility consists of a dam with an integrated intake structure, powerhouse, and tailrace. The facility was reconstructed in 1987 from an old hydroelectric generating plant at the site of an existing dam. Under terms of an agreement with the Federal Energy Regulatory Commission (FERC), the New York State Department of Transportation (NYSDOT) issued a permit in which they agreed to provide a diversion of excess water from the Erie Canal to augment the natural flow of Eighteenmile

Creek to maintain a flow of 400 cubic feet per second (cfs) at the dam. The maintenance of this flow to the dam will need to be considered during the development of any remedial alternative. The top of Burt Dam is at an elevation of 304.5 feet and the spillway is at a crest elevation of 297 feet (USGS Datum) (Burt Dam Associates 1983). The height of the dam at the crest elevation is 49 feet which raises the water elevation up to 49 feet above the natural elevation of the creek. The bathymetry survey behind the dam indicates the current water depth is 30 to 35 feet.

Newfane Dam and two smaller dams in the Corridor Site are not operational, but they do restrict flow and retain water and sediment behind them. The NYSDEC ROD for the Corridor Site calls for the removal of the two smaller dams and identifies the need to address contaminated sediment behind the dams (NYSDEC 2010a; see Appendix C). The removal of the Newfane Dam has not been addressed.

Eighteenmile Creek also provides important fish and wildlife habitat along Lake Ontario. A portion of Eighteenmile Creek 1.5 miles downstream of Burt Dam is designated by the New York State Department of State (NYSDOS) as a Significant Coastal Fish and Wildlife Habitat (SCFWH), and the creek's estimated 65 acres of emergent and submergent aquatic vegetation comprise one of the largest coastal wetlands along the southwestern shore of Lake Ontario (NYSDOS 1987; see Appendix C). The portion of Eighteenmile Creek downstream of Burt Dam is considered a significant recreational resource due to the large numbers of coho and chinook salmon and brown trout that migrate into the creek from Lake Ontario each fall, when the salmonids ascend the stream to spawn. Because of the fish habitat, Eighteenmile Creek is the second most visited fishing destination in the Lake Ontario basin, attracting up to 15,000 anglers annually (NYSDEC 2007a ; see Appendix C). The creek habitat in most of the upstream reaches has not been characterized, and the potential impacts of remediation on habitat have not been addressed.

Sediment contaminated with PCBs and metals has been identified along the entire 15-mile length of the main branch of Eighteenmile Creek. The bioaccumulation of PCBs in fish and the potential impacts of the contaminated sediment on wildlife have been well documented (e Risk Sciences 2012; E & E 2007b; see Appendix C). The BUIs at Eighteenmile Creek AOC are a direct result of the large inventory of PCBs in sediment upstream of Burt Dam and subsequent bioaccumulation of PCBs in fish. The remediation of source areas in Lockport and in-stream sediments between Lockport and the mouth of the creek at Lake Ontario have been identified as the primary actions needed to delist the AOC (E & E 2011; see Appendix C).

The 15-mile length of Eighteenmile Creek and the limited public access to many of its reaches, including the two major impoundments behind Burt Dam and Newfane Dam, present unique challenges to developing alternatives for remediating contaminated sediment in the creek. In addition, in most of the upper reaches of the creek, large amounts of woody debris and strainers, etc., cover a portion or the entire creek channel. The debris inhibits navigation of creek and acts as temporary sediment traps.

3.2 Demographics and Land Use

The Eighteenmile Creek watershed encompasses portions of the towns of Cambria, Lockport (including a portion of the city of Lockport), Royalton, Hartland, Newfane, and

Wilson, all of which are located in Niagara County. Land use in the watershed consists primarily of cropland and orchards, with residential, commercial, and industrial areas located in and around Lockport, Newfane, and Olcott Harbor. The city of Lockport is the most densely populated area within the watershed.

The investigation area is located primarily in a rural/residential area. The major sources of sediment contaminants are believed to be the Erie Canal, historically industrialized areas of Lockport, and the Lockport wastewater treatment plant. The Burt and Newfane dams are areas where contaminated sediments accumulate in the creek. The *Eighteenmile Creek State of the Basin Report* (E & E 2007a; see Appendix C) provides a more detailed description the demographics of the watershed.

3.3 Surface Water

There are approximately 230 miles of streams within the Eighteenmile Creek watershed, with the largest being Eighteenmile Creek, the East Branch of Eighteenmile Creek, Gulf Creek, and the Erie Canal.

U.S. Fish and Wildlife Service National Wetland Inventory maps and NYSDEC freshwater wetland maps were evaluated as part of the *Eighteenmile Creek State of the Basin Report* (see E & E 2007a, Section 7.2, in Appendix C). More than 4,300 acres of wetlands at 698 locations are mapped within the watershed. The largest groups of freshwater ponds are located approximately 0.5 to 1 mile west of Eighteenmile Creek on both sides of Ewings Road, south of Chestnut Road. Several other smaller lakes/ponds are located within 1,000 feet of Eighteenmile Creek.

USGS stream flow gage data are not available for the Eighteenmile Creek watershed. The flow in the main channel is relatively stable because of the diversion of excess water from Erie Canal to maintain a flow of 400 cfs at Burt Dam. The artificially controlled flow presents unique challenges to modeling the hydrology within the Eighteenmile Creek watershed. However, a preliminary model of hydrology and sediment transport within the watershed was developed for the USACE in 2005 using the Soil and Water Assessment Tool (BSGLC 2005). The model estimated the annual total surface water runoff to the creek from precipitation from the watershed to be 412 millimeters (mm), while the annual runoff ratio (i.e., total surface water runoff divided by precipitation amounts) was 0.45 mm. The sub-basins with the largest proportion of urban development produced the greatest amounts of runoff. Across all sub-basins, the annual average runoff ranged from 369 to 461 mm (BSGLC 2005).

The *Eighteenmile Creek State of the Basin Report* (E & E 2007a; see Appendix C) provides a more detailed description the creek's surface water hydrology.

3.4 Regional Geology

The Eighteenmile Creek AOC falls within the Ontario Lowlands physiographic province. The advance and retreat of glaciers during past ice ages have largely defined regional topography, geology, and soils. The surficial geology of the watershed consists mostly of glacial deposits formed about 10,000 to 15,000 years ago during the Pleistocene, when glaciers covered the area. These glacial deposits are generally less than 50 feet thick in the

watershed area (La Sala 1968). The most common deposits found in the watershed area are glacial tills and lacustrine silts and clays. The glacial tills have a variable texture and consist of non-sorted clay, silt, sand, and gravel. The lacustrine silt and clay deposits generally consist of laminated silt and clay and are usually calcareous with low permeability (NYS Museum 2004; La Sala 1968). The bedrock in the watershed consists of Ordovician and Silurian rocks that dip gently southward at 20 to 60 feet per mile (La Sala 1968). The bedrock found in the watershed from north to south (and also from oldest to youngest) includes the Queenston Formation, the Thorold Sandstone, the Irondequoit Limestone, the Decew Dolostone, and the Guelph Dolostone.

The Supplemental Remedial Investigation for the Eighteenmile Creek Corridor Site Report (EEEPC 2009a; see Appendix C) provides a detailed description the creek's regional geology.

3.5 Soils

The Niagara County area soils, including the Eighteenmile Creek watershed soils, have been mapped by soil type by the United States Department of Agriculture, Natural Resource Conservation Service [NRCS] (formerly the Soil Conservation Service). Sensitive soil types include hydric soils, prime farmland, farmland of statewide importance, and soils with high erosion potential. The soil survey identifies 94 soil types within the Eighteenmile Creek watershed (NRCS 1972).

Approximately 57 percent of the land within the Eighteenmile Creek watershed is classified as prime farmland. The United States Department of Agriculture (USDA) defines prime farmland as areas containing soils that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. A majority of the prime farmland is found adjacent to Eighteenmile Creek and its major tributaries. Seventeen soil types within the watershed are designated as farmland of statewide importance. These seventeen soil types comprise approximately 24 percent of the land area within the watershed, half of which is adjacent to Eighteenmile Creek and its major tributaries.

The Niagara County Soil Survey indicates that there are three soil types (Dunkirk, Arkport, and Ontario) in areas adjacent to Eighteenmile Creek, the East Branch of Eighteenmile Creek, and Gulf Creek that are considered to have high erosion potential. Dunkirk and Arkport soils (12 to 20 percent slope, eroded) and Ontario loam (15 to 30 percent slope, eroded) have potential for erosion due to their locations in steeply sloped areas and evidence of past and continuing erosion. Although Dunkirk silt loam (6 to 12 percent slope, eroded) is not necessarily located in areas with steep slopes, this soil type displays historic and continuing erosion.

Approximately 14 percent of the land within the Eighteenmile Creek watershed is classified as hydric soil. The NRCS defines hydric soil as "a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (NRCS 2004). An additional 20 percent of the land contains soils with the potential for hydric inclusions, meaning that small areas of a hydric soil may be present within the larger mapped unit.

The *Eighteenmile Creek State of the Basin Report* (E & E 2007a; see Appendix C) provides a detailed description of the creek's soils.

3.6 Sediment

Numerous samples of sediment from along Eighteenmile Creek have been collected and described during previous investigations. Reach 1 sediment surface grab samples were collected by the USACE Buffalo District in October 2010 as part of the bioaccumulation modeling sampling activities (e Risk Sciences 2012; see Appendix C). Sediments in Reaches 2 through 7 were investigated from October 2009 through November 2010. Details of the sediment investigation are included in the Data Summary Report included in Appendix B. Reach 10 sediments were sampled during the SRI at the Eighteenmile Creek Corridor Site (EEEPC 2009a; see Appendix C). Descriptions of the Eighteenmile Creek sediments presented in these investigations are summarized below by Reach.

Reach 1 sediments are described as brown silty clay with some sand. Cores retrieved from the sediments along this reach contained variable amounts of organic material (higher organic content in the southern part of the reach). Black silty sediments were encountered in the middle part of the Reach, and gravel was encountered near Burt Dam.

Sediment in Reaches 2, 3, and 5 consisted of varying amounts of decayed organic material (mostly rootlets, leaves, wood, and other vegetative matter), grading into varying proportions of fine sand, silt, and clay, with occasional fine gravel (less than 10 percent). Sediment color usually ranged from gray to brown or black. Particle size analysis of Reach 2 sediments indicated the presence of primarily silty/clayey sediments with approximately 20 percent of sandy mixes of silt and/or clay. Particle size distribution of the sediments in Reaches 3 and 5 is similar to that in Reach 2, with predominantly silty/clayey sediments and some sandy mixtures. Gravel (over 10 percent) was found at more locations in these reaches. Sediment thickness was found to be the greatest in Reach 2, followed by Reaches 3 and 5. The maximum sediment depths observed were: 15 feet in Reach 2; 12 feet in Reach 3; and 9 feet in Reach 5.

Sediment in Reaches 4, 6, and 7 consisted of varying amounts of decayed organic material (mostly rootlets, leaves, wood, and other vegetative matter), grading into varying proportions of fine sand, silt, and clay, with occasional fine gravel. Sediment color usually ranged from gray to brown. In most cases, stratification was not observed. At some locations, sand or fine gravel were found without sufficient fine-grained sediment to yield an adequate sample. Reach 4 is characterized predominantly by silt or clay sediments (more than 90 percent fines present in the sample). Some sandy sediment mixed with varying amounts of gravel and silt-size material is also present in Reaches 4, 6, and 7. Sediment containing more than 10 percent gravel is very rare in Reach 4 but is found at some locations along Reaches 6 and 7. The maximum sediment depths observed were: 1.8 feet in Reach 4; 5.6 feet in Reach 6; and 4.5 feet in Reach 7.

The sediment in Reach 9 is thinner than in the Corridor Site (6 to 15 inches) and tends to have a coarser grain size than the sediments in Reaches 2 through 7.

Reach 10 sediments are described as gray silt underlain by native black clays or bedrock (encountered at less than 1 foot in some areas), with varying amounts of sand and gravel

along the former White Transportation property and Upson Park. Brown and orange clay is found along the former United Paperboard property and the former Flintkote Plant site. Fill, black slag, and shell fragments are also present in the Reach 10 sediment. Consistent with the observations in the other reaches, organic matter (wood, rootlets, aquatic plants) is mixed in the sediments in Reach 10. Sediment thickness in this reach ranges from less than 0.5 foot to approximately 4 feet.

Figure 5 presents an estimate of the sediment thickness and water depth based on the sediment thickness model described in Section 2.2.4 and field measurements. The sediment thickness and water depths have been increased by a factor of 5 in order to visualize the differences on the scale of the entire creek. Figure 5 shows the increase in sediment behind the dams as well as higher depositional areas in the slower moving reaches.

3.7 Regional Hydrogeology

Water-bearing zones in the Lockport area include unconsolidated glacial deposits and bedrock. Most of the unconsolidated deposits in the area consist of fine-grained glacial deposits with hydraulic conductivities of roughly 10^{-7} centimeters per second (cm/s) or less (Earth Dimensions 1980). These deposits, however, often contain horizontal laminations and sand lenses that can produce perched water table conditions, or if areally extensive, can be utilized as sources of water (La Sala 1968). Because the unconsolidated deposits in the vicinity of the former Flintkote Plant site are relatively thin and horizontal laminations and sand lenses are uncommon, groundwater yields from these deposits would be too low for domestic or industrial purposes. Overburden groundwater flow near Eighteenmile Creek, therefore, is expected to be highly localized and sporadic, with an overall flow toward Eighteenmile Creek (NYSDEC 2000; see Appendix C).

Groundwater occurs primarily within the bedrock in the following types of openings: (1) weathered surface fractures, (2) bedding joints, (3) vertical joints, and (4) small cavities and vugs. The principal controls on bedrock groundwater flow, however, are the vertical and horizontal bedding plane fractures. The latter are expected to be the primary groundwater flow pathways in the Grimsby Formation, especially in the upper unit, which is extensively fractured. Some horizontal groundwater flow, however, could also occur through small cavities and vugs. Vertical movement of groundwater also occurs, especially in the upper 10 to 25 feet of rock, where vertical fractures, created by stress relief from tectonic events and glacial rebound (Gross and Engelder 1991) have been enlarged by dissolution and/or glacial scour. The extent of the vertical groundwater movement within the Grimsby Formation is unknown. The groundwater in the Upper Grimsby Formation likely flows toward Eighteenmile Creek (NYSDEC 2000; see Appendix C).

3.8 Threatened and Endangered Species

In January 2012, NYSDEC's Division of Fish, Wildlife and Marine Resources was contacted for information on species listed as endangered, threatened, or of special concern in Niagara County that may occur in the site vicinity. NYSDEC indicated that the New York Natural Heritage Program database identified one threatened reptile, the Blandings Turtle (*Emydoidea blandingii*), as being documented within 0.6 miles of the creek. The Blandings Turtle can move 0.6 miles or more from the documented locations. It is listed as threatened

(New York legal status) in Niagara County in the Town of Newfane (NYSDEC 2012; see Appendix C).

The U.S. Fish and Wildlife Service's Environmental Conservation Online System was reviewed in January 2012 for the presence of threatened or endangered species. None of the plant and animal species were listed as known to occur or believed to occur in Niagara County.

SECTION 4

Nature and Extent of Contamination

This section summarizes the analytical results for sediment samples collected in the Eighteenmile Creek AOC and evaluates the nature and extent of contamination. The section is organized as follows:

- Overview of the COPCs;
- Overview of the quality of applicable sediment data for the purposes of the RI;
- Description of the standards and criteria (i.e., screening criteria) used to evaluate the sampling results;
- Summary of analytical results by reach; and
- Summary of supporting data.

4.1 Contaminants of Potential Concern

The Lakewide Management Plan (LaMP) for Lake Ontario identifies six critical contaminants that contribute to impairments based on their toxicity and persistence in the environment: PCBs, dioxins and furans, DDT and metabolites, dieldrin, Mirex, and mercury (Environment Canada et al. 2011). In the 1997 RAP, NYSDEC and the RAC identified the following contaminants as impacting sediments based on the results of previous investigations: pesticides, specifically DDT and metabolites; dieldrin; PCBs; dioxins/furans; and metals (NYSDEC 1997). Based on investigations in the upstream source areas, PAHs were added as COPCs as part of the RI for the Corridor Site (NYSDEC 2006s; see Appendix C). Historically, contaminants were identified as COPCs based on comparison to NYSDEC sediment screening values and evaluation of ecological impacts on fish and wildlife. Section 4.3 provides a discussion of NYSDEC's sediment screening values.

The COPCs for this RI report were evaluated as follows:

- PCBs are a primary COPC because they were detected in sediments from all reaches of Eighteenmile Creek, at concentrations exceeding the hazardous waste criterion (50 mg/kg). PCBs were also detected in tissue from fish collected from above and below Burt Dam.
- Metals are a primary COPC because select metals were detected in sediments from all reaches of Eighteenmile Creek at concentrations exceeding screening criteria. The primary metal COPCs identified by NYSDEC as part of the RI for the Corridor Site include lead, arsenic, chromium, copper, and zinc. The USEPA GLLA project analyzed all sediment samples from Reach 2 to Reach 7 for TAL metals.
- PAHs are a primary COPC because PAHs were frequently detected in select sediments samples analyzed from the Corridor Site under the NYSDEC RI at

concentrations exceeding screening criteria. The USEPA GLLA project analyzed all sediment samples from Reach 2 to Reach 7 for PAHs.

- Mercury is a COPC because this contaminant is identified as critical in the LaMP for Lake Ontario. Mercury was included in the Eighteenmile Creek AOC RAP, and select sediment samples from several studies were analyzed for mercury. Mercury was not analyzed as part of the NYSDEC RI for the Corridor Site. The USEPA GLLA project analyzed all sediment samples from Reach 2 to Reach 7 for mercury as part of the TAL metals analysis. In general, mercury was detected at low concentrations in the sediments, and the results tend to correlate with other metals. No upstream sources of mercury were identified.
- The pesticides DDT (and metabolites) and dieldrin are COPCs because these contaminants are identified as critical in the LaMP for Lake Ontario. These pesticides were included in the Eighteenmile Creek AOC RAP, and select sediment samples from several studies, including the USEPA GLLA project and NYSDEC RI for the Corridor site, were analyzed for pesticides. In general, pesticides were detected at low concentrations in the sediments, and the results tend to correlate with higher PCB concentrations. No upstream sources of pesticides were identified.
- Dioxin and furans are COPCs because these contaminants are identified as critical in the LaMAP for Lake Ontario. Dioxin and furans were included in the Eighteenmile Creek AOC RAP, and select sediment samples from several early NYSDEC investigations were analyzed for dioxin and furans or 2,3,7,8--TCDD only. No sources of dioxin and furans in the Eighteenmile Creek AOC were identified, except potentially the Erie Canal (NYSDEC 2001a; see Appendix C). Dioxin and furans were not analyzed as part of the NYSDEC RI for the Corridor Site because dioxin and furans were not detected in the ash waste samples collected during the site investigation at the former Flintkote Plant site (NYSDEC 2000; see Appendix C) or the USEPA GLLA project because those projects focused on determining the extent of primary COPCs identified in the Corridor Site.

4.2 Data Quality Evaluation

Recent studies conducted within the Eighteenmile Creek AOC (see Section 1) were evaluated to assess the usability of the sediment chemistry data for this RI. The sediment data were considered usable if the following criteria were met.

- Sampling locations were within the Eighteenmile Creek AOC and the coordinates of the locations were provided or mapped with sufficient detail so that the locations could be digitally recorded in a GIS database;
- The depths at which the samples were collected were provided or could be easily inferred based on the sampling technique (e.g., samples collected with a Ponar were assumed to be from a depth of 0 to 0.5 feet);
- Analytical data were reported for the COPCs and analytical methods and reporting limits were comparable to those used during the USEPA GLLA characterization efforts;

- Analytical data were available in electronic format, or on tables that could be easily translated to electronic format, and could be imported to the existing USEPA GLLA project database;
- Samples were collected under an approved sampling plan and samples were analyzed by a government laboratory or certified commercial laboratory; and
- The report indicates a data quality review process was completed.

A summary of the reports reviewed and data quality assessment is presented in Table 1. The data were imported into the USEPA GLLA RI database and checked for transcription errors. Although historical data sets may have contained results from other media or contaminants, only sediment data for the primary COPCs for this RI were imported or entered. Some of the available electronic data contain samples collected prior to 1994; but these results were excluded because evaluation criteria could not be easily verified. Table 2 summarizes the total number samples for each analytical method from the various studies that are included for use in this RI. Table 2a summarizes the total number of samples by reach. The totals do not include any field duplicate samples. Electronic copies of the reports are provided in Appendix C.

In addition to the analytical results, data related to the sediment location and depth were also included. The sediment locations were established based on GPS coordinates provided in the individual reports, and the locations were verified on the GIS-derived Eighteenmile Creek base map developed as part of the sediment thickness survey and bathymetric studies. Each sample location was coded by reach or whether the location was in the Erie Canal or upstream. The distance of the sample location relative to the start of Eighteenmile Creek's main channel at the Erie Canal also was determined. Figure 4 shows the location of samples, color coded by study, along the entire length of the creek from Olcott Harbor to the start of the main channel at the Erie Canal. The figure also includes a channel center line that shows the distance, in feet, from the start for reference. Individual sample locations included in the figure are summarized on Table D-2 in Appendix D.

For each sample collected at a location, the sample start and end depths were added in units of feet, and the sample was coded as to whether the depth was surface or subsurface. The sample also was coded to indicate the type of sample collected (i.e., creek, canal, tributary, historical creek channel, or wetland). An electronic version of the database is provided in Appendix D. The sample results for COPCs are summarized on Table D-1.

4.2.1 PCB Total Data Usability

PCBs were analyzed as PCB Aroclors and PCB congeners. The Aroclor and congener data were both included in the RI database. The analysis of the data from 97 samples that were analyzed for both Aroclors and congeners indicate that total PCBs calculated using Aroclors did not correlate with the total PCBs estimated using the congener data. A comparison of the data showed over half of the samples had relative percent differences (RPDs) of over 50 percent with the total PCB based on congener data being generally higher than the Aroclor total.

PCB Aroclor data was used for evaluating the nature and extent of contamination, because the majority of the sediment samples were analyzed for Aroclors. PCB congener data was

used for the bioaccumulation modeling performed by USACE in 2008 and 2010 (USACE 2008; e Risk Sciences 2012). PCB congeners were analyzed in place of PCB Aroclors in situations where the Aroclor patterns are expected to be weathered (e.g., in low-level water analysis and fish tissue analysis). The PCB data for total Aroclors and total congeners are presented separately on tables in RI and PCB as total Aroclors is used on all figures.

4.3 Evaluation Criteria/Sediment Guidelines

Sediment concentrations were evaluated using the NYSDEC's *Technical Guidance for Screening Contaminated Sediments* (NYSDEC 1999) as was done in previous studies. This guidance document provides sediment quality criteria for several levels of protection for non-polar organic compounds, including: (1) human health bioaccumulation, (2) wildlife bioaccumulation, (3) acute toxicity to benthic aquatic life, and (4) chronic toxicity to benthic aquatic life. These sediment quality criteria are derived using water quality criteria and equilibrium partitioning methodology calculated as a function of the organic content of the sediment. For metals, two levels of risk have been established based on aquatic toxicity: the Lowest Effect Level (LEL) and the Severe Effect Level (SEL). Sediment is considered contaminated if only the LEL is exceeded; if the SEL is exceeded, the sediment is considered severely impacted. Numerical sediment quality guidelines developed by other government agencies were evaluated by MacDonald (et. al) to establish consensus-based sediment quality standards (MacDonald 2000). These consensus-based sediment quality guidelines reflect concentrations below which harmful effects are unlikely to be observed (i.e., threshold effect concentrations [TEC]). These consensus-based sediment quality standards also were considered. Numerical standards related to determination of hazardous waste or soil remediation were considered for the evaluation of high concentrations of COPCs in sediment.

The sediment quality criteria for the non-polar organic COPCs are summarized in Table 3, and the evaluation criteria for the metals are summarized in Table 4. For PCBs, PAHs, and pesticide compounds, NYSDEC screening values are normalized to organic carbon content so in order to compare screening values to sediment concentrations the screening values must be converted to units of mg/kg. The TOC results from sediments collected within the creek were averaged and the lower confidence limit of the average (i.e., 54,600 mg/kg) was used to calculate site-specific criteria (see Table 3). Preliminary screening values for the primary COPCs were derived as follows:

- PCBs have very low screening values based on human health or wildlife bioaccumulation because of their high potential to accumulate in fish. A detected PCB result would exceed these screening criteria because the detection limits were higher than the screening criteria. Therefore, the bioaccumulation values are not effective screening criteria for a nature-and-extent evaluation. PCB screening values based on aquatic toxicity are higher than the bioaccumulation values. The site-specific PCB criterion for evaluating chronic toxicity to benthic aquatic life determined from average TOC concentrations in sediment is 1 mg/kg (see Table 3). A criterion of 1 mg/kg for PCBs is comparable to the sediment criteria used by NYSDEC in the RI for the Corridor Site (NYSDEC 2006b). NYSDEC used a sediment criterion of 0.606 mg/kg, which is based on chronic benthic toxicity, and a second screening value of 1 mg/kg based on NYSDEC's Soil Cleanup guidelines (NYSDEC

2010a). Although the soil cleanup objectives are not intended for use with sediments, NYSDEC determined they are appropriate because the deposition of contaminated sediment onto residential properties during flooding events could potentially result in direct human contact exposures. Therefore, a site-specific screening value of 1 mg/kg was selected for the nature-and-extent evaluation of PCB contamination in sediments (see Table 5).

- PCB concentrations in several samples exceed the hazardous waste criterion for PCBs of 50 mg/kg. The potential for sediment to be designated as hazardous waste is important for the evaluation of remedial alternatives. Therefore, a second screening criterion of 50 mg/kg was chosen for the evaluation of high concentrations of PCB contamination in sediments (see Table 5).

- For the metals COPCs, NYSDEC criteria for evaluation of aquatic toxicity are available for both the LEL and SEL (see Table 4). NYSDEC used the LEL and SEL to evaluate metals concentrations in sediments for the Corridor Site RI. Therefore, site-specific screening values of the NYSDEC LEL and SEL sediment criteria were chosen for the nature-and-extent evaluation of metals contamination in sediments (see Table 5).

- Total lead concentrations in many of the sediment samples were high enough (i.e., greater than 1,000 mg/kg) to potentially exceed a characteristic hazardous waste level (6 NYCRR 371). However, hazardous waste levels for metals are determined based on the TCLP method. The TCLP method involves extracting the sample with an aqueous extraction fluid to assess the leaching potential. Total concentrations do not always predict hazardous waste levels because the leaching potential of sediment is variable. Therefore, select samples with high concentrations of lead were analyzed by the TCLP method, and the results were compared to hazardous waste levels (6 NYCRR 371).

- NYSDEC has not established a sediment screening criterion for total PAHs in sediment. NYSDEC has criteria for evaluating acute and chronic benthic toxicity for individual PAHs. Site-specific criteria for individual PAHs were determined based an average TOC concentration in sediments (see Table 3). To determine a site-specific criterion for total PAHs, the average of the individual PAH values was calculated (see Table 3). NYSDEC has established a soil cleanup criterion of 500 mg/kg for total PAHs in subsurface soils (NYSDEC 2010a). This criterion was not selected because most of the PAH sediment concentrations were lower than this value. Therefore, site-specific criteria of 15 mg/kg and 100 mg/kg for acute and chronic benthic toxicity, respectively, were selected for the nature-and-extent evaluation of PAH contamination in sediments for this RI (see Table 5).

- For pesticide COPCs in sediment, NYSDEC has criteria for evaluating acute and chronic benthic toxicity for total DDT metabolites and benthic toxicity for dieldrin. As with the other non-polar organics, NYSDEC has very low screening values for these contaminants based on human health or wildlife bioaccumulation, which are below typical detection limits. Therefore, site-specific criteria for the pesticides were determined for benthic toxicity based an average TOC concentration in sediments (see Table 5).

Site-specific criteria were not determined for dioxin and furan, because these contaminants were not a COPC for NYSDEC or USEPA GLLA investigations.

4.4 Sediment Results by Reach

Sediment results included in the RI database described in Section 4.2 are summarized by reach and type for each COPC and TOC in Tables 6 through 12. The statistical average, minimum, and maximum were determined for detected results only. Non-detected results were not included in the statistical summary; only the number of detected results is presented in Tables 6 through 11. The sediment results also were compared to the low and high site-specific sediment criteria presented on Table 5. If a criterion was established, the number of results exceeding the criterion also is presented in the tables. Table 12 summarizes the percent of samples with sediment concentrations that exceed criteria for the primary COPCs.

Sediment results for the primary COPCs (total PCBs, lead, and total PAHs) are presented by depth on Figures 6 and 7. PCBs, lead, and PAHs were mapped because these contaminants were most frequently analyzed for and detected. The results indicate that the concentrations of other contaminates tend to correlate with the concentrations of these three COPCs. The concentrations at depth are color coded based a range of concentrations determined by the distribution of the results and sediment screening criteria. Figure 6 presents only the results for the cores collected in Reaches 2 and 3 during the EPA GLLA investigation. The location and color-coded concentration of each sample in the core is presented. Figure 7 presents the results for Reaches 4 to 10, with the length of the sample on the vertical axis (assuming the top of sediment is zero) and the location of the sample on the horizontal axis as distance from the Erie Canal in the main channel. Figure 7 includes all results in the RI database.

4.4.1 Reach 1

Reach 1 is located from Burt Dam downstream to Lake Ontario and its length encompasses the original AOC as designated by IJC. The first comprehensive study of Reach 1 was conducted by NYSDEC in 1994 and included collection of both surface and subsurface sediments samples. The investigation found that the subsurface sediments contained higher concentrations of metals, but PCBs were only detected in the surface sediments. Subsequent studies by USACE focused only on surface sediments and included analysis of PCBs congeners to assess the bioaccumulation potential of the surface sediments. Sediment concentrations in Reach 1 have the lowest average concentrations for PCBs and metals. PCBs (total Aroclors) were detected in 56 percent of the samples and all of the concentrations were below the screening criteria (see Tables 6a and 12). Total PCB congeners were detected at slightly higher concentrations than PCB Aroclors and sediment concentrations in two samples were just above the screening criteria (see Table 6b). The maximum concentrations for PCBs in Reach 1 are over 20 times lower than the reaches upstream of Burt Dam.

Metals were detected in most of Reach 1 sediment samples with average and maximum concentrations 10 to 15 times lower than the reaches upstream of Burt Dam (see Table 7a to 7e). Concentrations of lead, copper, and zinc exceeded the LEL screening criteria in 60 to 70 percent of samples and the SEL screening criteria in 30 to 50 percent of the samples.

Chromium concentrations in most of the Reach 1 sediments exceeded the LEL screening criteria but less than 20 percent exceeded the SEL screening criteria. Eight samples contained arsenic concentrations exceeding the LEL screening criteria and none exceeded the higher SEL screening criteria. The numbers of samples that exceeded screening criteria for metals in Reach 1 are about 30 percent less than the reaches above Burt Dam (see Table 7a to 7e and 12).

PAHs were not analyzed for samples in Reach 1 (see Tables 2 and 2a).

The concentrations of mercury and DDT metabolites in sediments are lower in Reach 1, but on the same order of magnitude as concentrations found in the upstream sediments (see Table 9 and 10a).

4.4.2 Reaches 2 and 3

Reaches 2 and 3 comprise the impoundment area behind Burt Dam. Sediments in the reservoir were sampled by NYSDEC in 1994 and 1998. The 1994 results from one sediment core indicated that PCBs and metals concentrations were higher in the subsurface sediments. In 1998, sediment cores were collected at multiple locations within the impoundment and the cores were subsampled at smaller intervals and analyzed for all COPCs. Sediment from one core was also dated by radiochemical methods. Radiochemistry dating concluded that sediment at 2 feet (65 to 70 cm) in depth was deposited in the early the 1960s and sediment below 2.5 feet (80 cm) was deposited before 1954. The deposition rate between 1954 and 1997 was calculated to be about 1.8 cm/year (1 inch per year) (NYSDEC 2001a; see Appendix C). The maximum concentrations of PCBs were detected in subsurface sediments between 2 and 3 feet deep coinciding with deposition in the early 1960s. The maximum concentration of lead is lower than PCBs in many locations coinciding with deposition prior to 1954.

The next significant sampling in the Burt Dam impoundment was conducted by the USEPA GLLA in 2010 (see Table 2 and 2a). The sediment cores collected for the USEPA GLLA project are shown on Figure 6. Concentration profiles for PCBs, PAHs and lead at approximately 1-foot depth intervals are presented for each sediment core. PCB concentrations profiles of the sediment from the 2010 cores are consistent with the 1998 study. The maximum concentrations of PCBs were for samples between 2 and 4 feet and the concentrations in the deeper sediments dropped to below than 1 mg/kg. The surface sediments in Reach 2 contained PCB concentrations of less than 1 mg/kg. The surface sediments in Reach 3 had higher concentrations than Reach 2 and one sample exceeded screening criteria. In Reach 3, the higher PCB concentrations were detected in shallower core samples. These findings are consistent with 1998 study and suggest a greater mixing of sediment upstream from the dam.

Lead concentration profiles in the cores are similar to the PCB profiles and comparable to the 1998 results. As with PCBs in Reach 3, elevated lead concentrations were detected in the shallow samples near the surface. However, high lead concentrations were also found at greater sediment depths than the PCBs. Lead concentrations exceeded 1,000 mg/kg in samples from the 6 to 8-foot interval in cores R2-13 and R2-14. Nine samples from Reaches 2 and 3 with high lead concentrations were submitted for TCLP analysis.

PAH concentrations showed less variability with depth than the PCBs and lead concentration profiles. Concentrations of PAH in sediment are less than 40 mg/kg. These results are comparable to the 1998 findings.

A total of 127 samples were collected in Reach 2 and 80 samples were collected in Reach 3 (see Table 2a). PCBs (total Aroclors) were detected in 90 percent of the samples in Reach 2 and 79 percent of the samples in Reach 3 and PCBs concentrations exceeded the screening criteria of 1 mg/kg in 29 and 43 percent of the samples in Reach 2 and Reach 3, respectively (see Tables 6a and 12). Maximum concentrations of PCBs were similar for both reaches and none of the concentrations exceeded the higher screening criteria of 50 mg/kg.

Metals were detected in all of the sediments samples with average and maximum concentrations similar in both reaches (see Table 7a to 7e). Concentrations of lead, copper, and zinc exceeded both LEL and SEL screening criteria in over 90 percent of samples. The numbers of samples with concentrations that exceed screening criteria are slightly less in Reach 3. Chromium concentrations exceeded LEL screening criteria for over 90 percent of the samples but only 70 percent exceeded the SEL screening criteria. Arsenic concentrations exceeded LEL screening criteria in 75 percent of the samples but do not exceed higher SEL screening criteria. The numbers of samples that exceeded screening criteria for metals in Reaches 2 and 3 are comparable to other reaches above Burt Dam (see Table 7a to 7e and 12). Of the nine samples submitted for TCLP analysis, lead was detected in the extract but concentrations were below hazardous waste levels (6 NYCRR 371). TCLP results are included in Appendix D in Table D-7.

PAHs were detected in over 95 percent of sediment samples collected from Reaches 2 and 3 and the average and maximum concentrations are lower than Reaches 4 and 7 that are downstream of more populated areas (e.g., Newfane and Lockport). Concentrations of PAHs exceed the low chronic screening criteria in only seven samples, but did not exceed the higher acute screening criteria (see Table 8).

The concentrations of mercury and DDT metabolites in sediments in Reaches 2 and 3 are similar to concentrations found in the sediments in Reaches 4 to 6 (see Table 9 and 10a). Mercury concentrations exceeded LEL screening criteria in most sediment samples from Reaches 2 and 3 and 50 to 60 percent of the samples also exceeded higher SEL screening criteria. Concentrations of DDT metabolites in sediment samples from Reaches 2 and 3 do not exceed screening criteria.

4.4.3 Reach 4

Reach 4 includes the bedrock/gravel channel immediately downstream of Newfane Dam and extends to approximately 0.3 miles north of Ide Road. Compared to the other reaches, Reach 4 has relatively steep change in elevation and is shallower with less sediment (see Figure 5). Reach 4 was sampled as part of the USEPA GLLA project in 2010.

Figure 7 shows concentration range and depth for PCBs, PAHs and lead at sampling locations in Reaches 4 to 10. Reach 4 compares most directly with Reach 6 in terms of physical characteristics. Figure 7 shows that compared to Reach 6, Reach 4 has similar PCB distributions, but higher PAH and lead concentrations.

PCBs (total Aroclors) were detected in 19 of the 22 samples collected in Reach 4, but PCBs exceeded the screening criteria of 1 mg/kg in only 5 samples. The maximum concentration of PCBs in Reach 4 is similar to Reaches 2 through 6 and no concentrations exceeded the higher screening criteria of 50 mg/kg.

Metals were detected in all of the Reach 4 sediment samples with the average and maximum concentrations slightly lower than the other reaches upstream of Burt Dam (see Table 7a to 7e). Concentrations of lead, copper, and zinc exceeded both LEL and SEL screening criteria in over 90 percent of samples. Chromium concentrations in 90 percent of the samples exceeded the LEL screening criteria, but exceeded the SEL screening criteria in only 27 percent of the samples. Arsenic concentrations exceeded the LEL screening criteria in less than 20 percent of the samples, but did not exceed higher SEL screening criteria. The percentage of samples that exceeded the respective metals screening criteria is slightly lower than for the other reaches upstream of Burt Dam (see Table 7a to 7e and 12). One sample with high concentration lead was analyzed for TCLP metals and the results did not exceed hazardous waste criteria.

PAHs were detected in all Reach 4 sediment samples with the average and maximum concentrations higher than other upstream reaches. The higher PAH concentrations may be because Reach 4 is downstream of the more populated areas of Newfane. Concentrations of PAHs exceeded the lower chronic screening criteria in only six samples and one sample containing 250 mg/kg of PAHs exceeds the higher acute screening criteria (see Table 8). The sample was collected at the downstream end of the multi-use industrial facility (Forrest Creek Business Park and Storage Center) located south of Ide Road in Newfane (see Appendix B).

The concentrations of mercury and DDT metabolites in Reach 4 sediments are similar to concentrations found in the other reaches upstream of Burt Dam (see Tables 9 and 10a). Mercury concentrations exceeded LEL screening criteria in most Reach 4 sediment samples but did not exceed the higher SEL screening criteria. Concentrations of DDT metabolites do not exceed screening criteria.

4.4.4 Reach 5

Reach 5 consists of the impoundment immediately upstream of Newfane Dam. Sediments in the reservoir were sampled by NYSDEC 1998. Sediment cores were collected at three locations and the cores were subsampled at multiple intervals and analyzed for all COPCs. Sediment from one core was also dated by radiochemical methods. Radiochemistry dating concluded sediment at 0.6 feet (20 to 24 cm) in depth was deposited in the early the 1960s and sediment below 1 foot (28 to 32 cm) was deposited before 1954. The estimated deposition rate between 1954 and 1997 was calculated to be about 0.65 cm/year (<1 inch per year) (NYSDEC 2001a, see Appendix C). The highest concentrations of PCBs and metals were found in the surface interval and relatively low concentrations in the deeper sediments.

The next significant sampling event behind Newfane Dam was conducted by the USEPA GLLA in 2010 (see Table 2 and 2a).

Figure 7 shows concentration range and depth for PCBs, PAHs, and lead at sampling locations in Reaches 4 to 10. Reach 5 compares most directly with Reaches 2 and 3 as shown

on Figure 6. Figure 7 shows that PCB concentrations in the sediment accumulated behind Newfane Dam are lower than concentrations in sediment accumulated behind Burt Dam. PCBs were detected less frequently in the Reach 5 subsurface sediment and concentrations were typically below 1 mg/kg. Similar to Reach 3, higher PCB and lead concentrations were detected in shallower core samples and PAH concentrations showed less variability with depth than the PCBs and lead concentration profiles. The sample core results collected under the USEPA GLLA project in 2010 are comparable to the findings of the 1998 NYSDEC study.

A total of 82 samples have been collected in Reach 5 (see Table 2a). PCBs (total Aroclors) were detected in about 50 percent samples, but less than 20% of the samples contained concentrations that exceeded the screening criteria of 1 mg/kg and none exceed the higher screening criteria of 50 mg/kg. The maximum concentration of PCBs is lower than detected in other reaches upstream of Burt Dam.

Metals were detected in all Reach 5 sediment samples with the average and maximum concentrations slightly higher than the other reaches upstream of Burt Dam (see Table 7a to 7e). Concentrations of lead, copper, and zinc exceeded LEL screening criteria in over 85 percent of samples and exceeded the SEL screening criteria in 75 percent of samples. Chromium concentrations exceeded LEL screening criteria for over 85 percent of samples but less than 50 percent exceeded the SEL screening criteria. Arsenic concentrations exceeded LEL screening criteria in 70 percent of the samples and only one sample concentration exceeds the higher SEL screening criteria. The numbers of samples that exceed screening criteria for metals in Reach 5 is higher for arsenic but slightly lower for the other metals compared to other reaches upstream of Burt Dam (see Table 7a to 7e and 12). Ten samples with high lead concentrations were analyzed for TCLP metals and the results did not exceed hazardous waste criteria.

PAHs were detected in 80 of the 81 sediment samples analyzed from Reach 5. The average and maximum concentrations of PAH are lower than reaches upstream of Reach 5. Concentrations of PAH exceed the low chronic screening criteria in three samples and did not exceed the higher acute screening criteria (see Table 8).

The concentrations of mercury and DDT metabolites in Reach 5 are similar to concentrations found in the sediments from the other reaches upstream of Burt Dam (see Table 9 and 10a). The maximum mercury concentration is slightly higher in Reach 5 compared to other reaches. Mercury concentrations exceed the LEL screening criteria in most sediment samples and 60 percent exceed the higher SEL screening criteria. Concentrations of DDT metabolites do not exceed screening criteria.

4.4.5 Reach 6

Reach 6 includes the gravel channel upstream of the Newfane Dam impoundment. Reach 6 is split into two sections (i.e., 6.1 and 6.2) based on the Jaques Road crossing (see Figure 2). The delineation between Reaches 6 and 7 was originally determined based on the physical characteristics of the creek bottom (see Appendix A). Based on data collected during Phase 2 of the USEPA GLLA investigation, it appears the difference between Reaches 6 and 7 is due to the influence of the East Branch of Eighteenmile Creek, that enters the main branch at about 5.3 miles (see Figure 5). Compared to Reach 7, Reach 6 is shallower with less sediment depositional areas. Reach 6 was sampled by the USEPA GLLA in 2010.

Figure 7 shows that compared to Reach 7, the sediment concentrations of PCB, PAH, and lead are generally lower in Reach 6. Higher concentrations of PAH and lead are only evident downstream of the East Branch, which may indicate that the surface runoff from the eastern watershed may be a contributing source of these contaminants.

PCBs (total Aroclors) were detected in over 75 percent samples collected in Reach 6, but PCB concentrations exceed the screening criteria of 1 mg/kg in less than 20 percent of the samples. None of the concentrations exceeded the higher screening criteria of 50 mg/kg. The maximum concentration of PCBs in sediment is similar to Reaches 2 to 5.

Metals were detected in all of the Reach 6 samples with the average and maximum concentrations slightly lower than the other reaches upstream of Burt Dam (see Table 7a to 7e). Concentrations of lead, copper, and zinc exceeded LEL screening criteria in over 93 percent of samples and exceeded the SEL screening criteria in over 75 percent of samples. Chromium concentrations exceeded LEL screening criteria in over 90 percent of samples but only 29 percent of the concentrations exceeded the SEL screening criteria. Arsenic concentrations of arsenic exceeded LEL screening criteria in 23 percent of samples but do not exceed higher SEL screening criteria. The numbers of samples that exceed screening criteria for metals in Reach 6 are similar to other reaches upstream of Burt Dam (see Table 7a to 7e and 12). One sample with high lead concentrations collected almost to Reach 5 was analyzed for TCLP metals and the results exceeded hazardous waste criteria (see Table D-7). This was only location below the Corridor Site that contained concentrations that exceeded the hazardous level for lead, hazardous waste level (6 NYCRR 371) of 5 milligrams per liter (mg/L).

PAHs were detected in all sediment samples from Reach 6 and show a relatively uniform distribution along the length of reach (see Figure 7). The average and maximum concentrations of PAHs are slightly higher than other upstream reaches. Concentrations of PAH in sediment exceeded the chronic screening criteria in only two samples and exceeded the higher acute screening criteria in one sample (see Table 8).

The concentrations of mercury and DDT metabolites in Reach 6 sediments are similar to concentrations found in the sediments in other reaches upstream of Burt Dam (see Table 9 and 10a). The maximum concentration of mercury in sediments is slightly lower in Reach 6 compared other reaches. Mercury concentrations exceed LEL screening criteria in most sediment samples and exceed the higher SEL screening criteria in 11 samples. Concentrations of DDT metabolites do not exceed screening criteria.

4.4.6 Reach 7

Reach 7 includes the meandering section downstream of the Niagara Escarpment. Reach 7 is split into three sections (i.e., 7.1, 7.2, and 7.3) based on Ewings and Stone Road crossings. Reach 7 is closest to the Corridor site and is influenced by State Pollutant Discharge Elimination System (SPDES) discharges from the Lockport Wastewater Treatment Plant and VanDemark Chemical, Inc., located on the opposite bank from the treatment plant. Gulf Creek drains into the main channel of Eighteenmile Creek in Reach 7 just downstream of the Lockport Wastewater Treatment Plant (see Figure 2).

Reach 7 is deeper and has more depositional areas than Reach 6. Reach 7 was sampled as part of the NCSWCD PCB trackdown investigation in 2006 (Section 7.3 only) and by the USEPA GLLA in 2010 (see Table 2).

Figure 7 shows that compared to Reaches 4 to 6, the concentrations of PCB, PAH and lead in is higher in Reach 7 sediments and several high concentration areas (i.e., "hot spots") were found. Because SPDES and Gulf Creek outfalls are located so close to the escarpment, it is difficult to separate potential specific contaminant contributions from these sources.

PCBs (total Aroclors) were detected in 105 of the 121 samples (87 percent) collected in Reach 7. The maximum concentration of PCBs was detected in the creek downstream of the Corridor site was collected from Reach 7. PCB concentrations exceed the screening criteria of 1 mg/kg in 70 percent of the samples and the higher screening criteria of 50 mg/kg in the 6 samples. The 2006 and 2009 locations were re-sampled in 2010 to confirm the high concentration of PCBs. The PCBs concentrations at the confirmation locations were lower, but high PCBs concentrations were identified at new locations. The results indicate the high variability of the PCB concentrations in the Reach 7 sediment.

Metals were detected in all Reach 7 sediment samples with the average and maximum concentrations at similar levels to the other upstream reaches (see Table 7a to 7e). Concentrations of lead, copper, and zinc exceeded LEL and SEL screening criteria in almost all of the samples. Chromium concentrations exceed LEL screening criteria in almost all of samples but exceed the SEL screening criteria in only 60 percent of samples. Arsenic concentrations exceed LEL screening criteria in 54 percent of samples but did not exceed higher SEL screening criteria. The number of samples with concentrations exceeding screening criteria for metals in Reach 7 is similar to other reaches above Burt Dam (see Table 7a to 7e and 12). Two samples with high concentration lead were analyzed for TCLP metals and the results did not exceed hazardous waste criteria.

PAHs were detected in all sediment samples from Reach 7. The average and maximum concentrations are higher than other upstream reaches and similar to Reaches 4 and 10. The higher concentrations of PAH in these reaches may be because the reaches are downstream of the more populated areas. The highest concentration of PAH was detected in the sample downstream of the Corridor site. The elevated PAH concentrations in this reach also may be related to the SPDES outfalls or Gulf Creek. Concentrations of PAH exceed the chronic screening criteria in 39 of the 66 samples and exceed the higher acute screening criteria in 3 samples (see Table 8).

The concentrations of mercury and DDT metabolites in the Reach 7 sediments are higher found in Reaches 2 to 6 (see Table 9 and 10a). Mercury concentrations exceed LEL screening criteria in most sediment samples and exceed the higher SEL screening criteria in 33 percent of the samples. Concentrations of DDT metabolites did not exceed screening criteria. The highest concentration of DDT metabolites was reported in the sediment with highest concentration of PCBs. The elevated DDT concentrations may be an artifact from interference with the high concentration of PCBs during analysis.

4.4.7 Reaches 9 and 10

Reaches 9 and 10 are upstream of the Niagara Escarpment and downstream of the Erie Canal. Reach 9 was designated separately from Reach 10 at Harwood Street because

NYSDEC used this point to denote the downstream extent of the Corridor site (see Figure 2). This portion of the Eighteenmile Creek is considered the upstream source area and sediment samples were collected in these reaches during several historical studies (see Table 2). These reaches were not sampled during the USEPA GLLA project; however, the historical data were compiled for this RI (see Section 4.2).

Table 2a summarizes the total number of samples collected in Reaches 9 and 10. Samples collected in Reach 10 in the Headwater East Branch are designated as "10 E" in the tables. Most of the samples were only analyzed for PCBs and lead (i.e., 25 samples in Reach 9, 125 samples in Reach 10, and 13 samples in the Headwater East Branch; see Table 2a). Of these samples, 60 percent were analyzed for the other COPC metals; 25 percent were analyzed for PAHs and pesticides and 8 percent were analyzed for mercury (see Tables 2a, and 7b to 7c).

Figure 7 depicts the high density of samples collected in Reaches 9 and 10 compared to the reaches below the Niagara Escarpment. Sediments collected upstream of Clinton Street closer to the Erie Canal have lower concentrations of PCBs and lead than the sediments below Clinton Street dam. PCB and lead concentrations generally increase downstream of the Clinton Street Dam and former United Paperboard property with the highest concentration of PCBs detected just below the Clinton Street dam. High concentrations of PCBs also were found in the mill race adjacent to the former Flintkote Plant property (see Figure 2 insert). These samples results are shown on Figure 7 between 2,500 and 3,500 feet downstream of the Erie Canal.

PCBs (total Aroclors) were detected in 85 percent of the samples collected in Reaches 9 and 10. The highest concentrations of PCBs in Eighteenmile Creek were detected in Reaches 9 and 10. PCB concentrations exceeded the screening criteria of 1 mg/kg in 40 percent of the samples and also exceeded the higher screening criteria of 50 mg/kg in 11 of the samples. The concentrations range of 50 to 1,400 mg/kg with the highest concentration in sediments just below Clinton Street Dam and in the mill race. The elevated levels of PCBs found below the Clinton Street Dam indicate a potential source present downstream of the dam or in the vicinity of the dam.

Lead was detected in all sediments samples in Reaches 9 and 10 with the higher concentrations Reach 10. Concentrations of lead, copper, and zinc exceeded LEL and SEL screening criteria in most of the samples. Concentrations of chromium and arsenic in sediments exceeded LEL screening criteria in about 60 percent of the samples but exceeded the SEL screening criteria in less than 10 samples (see Table 7a to 7e and 12). Select samples with concentrations of lead greater than 1,000 mg/kg were analyzed for TCLP methods to determine if the sample could be classified as hazardous waste. Seven samples in Reach 10 exceeded hazardous waste criteria.

PAHs were detected in all 40 sediment samples from Reaches 9 and 10. The average and maximum concentrations are higher than other upstream reaches and similar to Reaches 4 and 7. The higher concentrations of PAH in these reaches may be because they downstream of the more populated areas. Reach 10 had the highest concentration of PAH in a sediment sample in Eighteenmile Creek. The sample was collected in mill race adjacent to the former Flintkote Plant site property. Concentrations of PAH in sediment exceeded the chronic screening criteria in 32 percent of the samples and exceeded the higher acute screening criteria in 5 percent of the samples (see Table 8).

The concentrations of mercury and DDT metabolites in Reaches 9 and 10 are similar to concentrations found in the sediments in other reaches upstream of Burt Dam (see Table 9 and 10a). Mercury concentrations exceeded LEL screening criteria in most sediment samples and exceeded the higher SEL screening criteria in 30 percent of the samples. Concentrations of DDT metabolites in did not exceed screening criteria.

4.4.8 Erie Canal and Upstream

The Erie Canal and creek sediments upstream of the Erie Canal have been investigated as potential source area during several historical studies (see Table 2). These reaches were not sampled during the USEPA GLLA project; however, the historical data were compiled for this RI (see Section 4.2). Historical data for the Erie Canal and upstream samples were included only if the samples were part of another investigation of Eighteenmile Creek. Additional data from investigations related to the canal were not included in the report.

PCBs (total Aroclors) were detected in 94 percent of the samples collected from the Erie Canal and were not detected in the upstream sediments. The highest upstream concentration of PCBs (310 mg/kg) was detected in a sediment sample collected near the locks in April 2005. A total of nine samples were collected as part of the remedial investigation of the New York State Electric and Gas Substation at South Transit Street and State Road in the city of Lockport, Niagara County, New York. PCB concentrations exceeded the screening criteria of 1 mg/kg in about 50 percent of the samples and exceeded the higher screening criteria of 50 mg/kg in 3 samples.

Metals also were detected in the sediment from the Erie Canal and upstream locations. Concentrations of lead, copper, and zinc exceeded LEL screening criteria in most of the samples and the SEL screening criteria in about 50 percent of the samples. Concentrations of chromium and arsenic in sediments exceeded LEL screening criteria in about 50 percent of the samples but did not exceed the SEL screening criteria (see Tables 7a to 7e and 12).

PAHs were detected in all 15 sediment samples from the Erie Canal and upstream locations. The average and maximum concentrations are lower than many of the downstream reaches and similar to Reaches 2 and 5. Concentrations of PAH in sediment exceeded the chronic screening criteria in four samples and did not exceed the higher acute screening criteria (see Table 8).

The concentrations of mercury and DDT metabolites in the Erie Canal and upstream locations are similar to sediment concentrations in downstream reaches (see Table 9 and 10a). Mercury concentrations exceeded LEL screening criteria in most sediment samples in the canal but did exceed the higher SEL screening criteria. Concentrations of DDT metabolites in sediment samples from the Erie Canal and upstream did not exceed screening criteria.

4.4.9 Sediment – Tributaries

The East Branch of Eighteenmile Creek, Gulf Creek, and several small unnamed tributaries were sampled as part of the NYSDEC 1998 and the USEPA GLLA 2010 investigations to determine if major tributaries could be a potential source of contamination to the main channel (see Table 2). Additional sediments further upstream of Gulf Creek were collected

by NYSDEC as part their investigation of the Old Upper Mountain Road site, but additional investigations of the Gulf Creek sediment are ongoing (EA Engineering 2011).

Low levels (less than 1 mg/kg) of PCBs were detected in two sediment samples; one sample from a small unnamed tributary in Reach 7 and one sample from the upstream portion of Gulf Creek. PCBs were not detected in any of the East Branch samples. Higher concentrations of the lead and PAH were also found it the Gulf Creek samples, but levels were comparable to sediments collected from Reach 7.

Concentrations of the other COPCs in the tributary sediment samples are comparable to or lower than sediments in the main channel (see Tables 7 to 10).

4.5 Other Media

4.5.1 Soils

Soil samples from bank areas have been sampled extensively during several investigations. Soil samples collected in residential backyards of Water Street were analyzed by NYSDEC as part of Corridor Site RI (NYSDEC 2006a; see Appendix C). The results are summarized in Table 13. PCBs and lead were detected at levels exceeding the screening criteria and confirmed that contaminated sediment could be deposited on the banks during flooding events. To assess this potential downstream of the Corridor site, historical creek channels and wetlands were sampled during the USEPA GLLA project (see Table 2).

PCBs were detected 85 percent of the soil samples collected but only three locations had PCB concentrations just greater than the 1 mg/kg screening criteria (see Table 6a).

Concentrations of the COPCs in the soil samples collected during the USEPA GLLA project are comparable to or lower than sediments in the main channel (see Tables 7 to 10). The soil results for the other COPCs indicate that bank soils have not been impacted.

Extensive surface and subsurface soil sampling of the properties adjacent to the Corridor site was completed as part of the NYSDEC RI and SRI (NYSDEC 2006a and EEEPC 2009a, see Appendix C). The results are summarized in the reports provided in Appendix C and will not be discussed in this section.

4.5.2 Surface Water

Additional studies have examined the suspended solids and surface water in the canal to determine if the canal is a potential source of PCBs to Eighteenmile Creek (NYSDEC 2010b; see Appendix C). PCBs were not detected in water from the Barge Canal but were detected in the Eighteenmile Creek water column downstream of areas of known sediment contamination below the Clinton Street dam and the Corridor site. The findings related to whether the PCBs were dissolved or associated with suspended solids was inconclusive.

As part of the LaMP for Lake Ontario, the USEPA has conducted semiannual monitoring of surface water discharge from Eighteenmile Creek and several other tributaries (USEPA 2011). The current analytical program includes PCBs, mercury and total suspended solids (TSS). Earlier monitoring events included DDT metabolites (2002 to 2006) and dioxins (2002 to 2003). NYSDEC evaluated the monitoring data from 2002 to 2008 to provide estimates of loading of synthetic chemicals into Lake Ontario from several New York tributaries with

special emphasis on dioxin (NYSDEC 2009a; see Appendix C). The data indicate that since 2002, the Eighteenmile Creek had the highest PCB concentrations in surface water relative to other major tributaries to Lake Ontario.

4.5.3 Groundwater

A groundwater investigation in the Corridor site was completed as part of the NYSDEC RI and SRI (NYSDEC 2006a and EEEPC 2009a; see Appendix C). The results are summarized in the reports provided in Appendix C and will not be discussed in this section. Concentrations of contaminants found in the groundwater likely represent background concentrations in this area of Lockport. Groundwater is not identified as source, because no site related groundwater contamination of significant concern was identified during the RI/SRI (NYSDEC 2010a). No other groundwater investigations were identified relative to the Eighteenmile Creek AOC.

4.5.4 Tissue

A bioaccumulation and ecological risk model, developed using the *Trophic Trace* food web bioaccumulation model, is presented in the *Bioaccumulation Modeling and Ecological Risk Assessment Report* (e Risk 2012; see Appendix C). The report also summarizes the available fish tissue data. Tissue concentrations in fish collected from upstream and downstream of Burt Dam have shown elevated concentrations PCBs in all historical studies completed since the 1990s.

SECTION 5

Contaminant Fate and Transport

5.1 Contaminant Sources and Release Pathways

The Eighteenmile Creek has been affected by numerous potential sources of contamination including industrial and municipal wastewater discharge, inactive hazardous waste sites, combined sewer overflows (CSOs), and the Erie Canal. The Eighteenmile Creek AOC RAP (NYSDEC 1997, Chapter 5) provides an overview of potential contamination sources to the creek. The RAP identifies upstream sediments as a source of contamination to sediments in the AOC below Burt Dam. Subsequent upstream source investigations focused on the historical industrial operations in the Eighteenmile Creek Corridor Site and the Erie Canal. The potential sources and the release pathways for PCBs, metals (particularly lead) and PAH are discussed in the following sections.

5.1.1 Historical Industrial Waste Sites

Land use of properties within the Eighteenmile Creek investigation area included manufacturing operations (e.g., paper mill, box factory, boat building, and pulp mill) starting as early as the mid-1880s. The findings from source investigations of four of these properties in the Corridor Site (i.e., the former Flintkote Plant site, United Paperboard, White Transportation, and Upson Park) are presented below for the primary COPCs (i.e., PCBs, metals, and PAH). No upstream sources were identified for mercury or DDT metabolites.

Fill Areas

Extensive areas of fill have been identified in the Corridor Site and adjacent properties. The fill material consists primarily of various colored ash and cinder material containing glass, coal, coke, slag, buttons, metal, ceramic, rubber, and brick (commonly called "cinder fill" in reports). Where encountered, the thickness of the fill material ranged from 0.9 to 24.9 feet (NYSDEC 2010a; see Appendix C). A dark gray to black, unconsolidated slag material was also encountered at all properties (commonly called "slag fill" in the reports).

The former Flinkote Plant Site contains more than 46,500 cubic yards of ash fill including up to 10 feet of ash fill along the banks of Eighteenmile Creek. Ash fill was also found on the "Island," area between the mill race and creek, and the western (Water Street side) creek bank. Portions of the fill including the "Island" and western creek bank are characterized as hazardous waste based on lead concentrations that exceed the TCLP criteria (NYSDEC 2010a; see Appendix C).

Ash fill also was observed throughout the former United Paperboard Company property on both sides of the creek. Elevated lead concentrations were found in a ridge of red-brown cinder fill on the creek bank south of the Clinton Street dam. The highest PCB concentration (630 mg/kg) was detected in the near surface sample collected from a layer of ash fill from the southeast corner of the property near Clinton Street.

Extensive slag fill and red-brown cinder fill were observed in Upson Park and former White Transportation property. The reddish-brown ash-like fill was observed in the embankment along Headwaters West Branch and fragments of slag fill were found in sediments in Headwaters East Branch. Elevated lead concentrations were detected in the ash fill samples from both sites but not at hazardous levels. PCBs were found in the subsurface fill areas in Upson Park at concentrations that exceed screening criteria.

Based on the extent of the elevated lead concentrations, particularly the red-brown cinder fill, the fill is a potential source of lead to the Eighteenmile Creek sediments. The historic use of fill in Corridor site may be a primary source of historical lead contamination in the lower reaches and the ongoing erosion and surface runoff may provide an ongoing source of lead to the creek. High concentrations of PCBs were detected in isolated samples from several fill areas. However, the high PCBs concentrations in the fill did not correlate with high lead concentrations. There is no evidence of how the fill was contaminated with PCBs or extent of PCB contamination in the fill. The results from the RI/SRI at Corridor site indicate that the fill areas are not the primary source of PCBs contamination to Eighteenmile Creek sediments, but the potential for PCB contaminated fill to be a partial source cannot be determined.

PAHs were detected in samples from the soil and fill areas throughout the adjacent properties, but there was no clear correlation between PAHs and lead contamination. The findings from the RI/SRI at Corridor provide evidence that the fill areas are not the primary source of PAH contamination to Eighteenmile Creek sediments. High PAH concentrations in surface soils suggest that urban surface runoff is the likely source of PAHs to Eighteenmile Creek.

Former Flintkote Plant

The mill race in Eighteenmile Creek received discharges from the former Flintkote Plant building through an outfall pipe. Any other drains from the plant are no longer visible. Although the understanding of the site's drainage system is limited, contaminated sediment collected from the outfall pipe indicate that the historic discharges from sumps and drains in the Flintkote buildings could have been a potential source for sediment contamination in Eighteenmile Creek. The sediment remaining in the outfall pipe is slated for removal and the outfall will be closed as part of the NYSDEC ROD (NYSDEC 2006b; see Appendix C). The sediment from the pipe and three samples from sediments in the basement were sampled in 2003 by the Niagara County Department of Planning, Development, and Tourism as part of a brownfield investigation (TVGA 2005). One waste sample of a felt/tar-like material from within an on-site building also was sampled. The sediment samples were collected from lower portions of the buildings where contaminants originating from most areas of the building would likely be deposited (e.g., deep basements and sumps). PCBs, metals, and PAH concentrations in these basement sediments and waste exceed screening criteria and NYSDEC soil cleanup guidelines (NYSDEC 2010a, b). The PCB concentration of 108 mg/kg in one sample exceeded hazardous waste screening criteria of 50 mg/kg. PAHs and metals were detected in the sediment sample from the outfall at similar levels. PCBs results from the sediment in the outfall were reported as non-detected, but the reporting limit of 6 mg/kg exceeded screening criteria.

The historical records for the site indicate storage of waste drums in the basement of the former Flintkote buildings at different times. An inspection report from 1979 indicates Aroclor 1254 was found in the two drums of oil at 2.4 to 2.5 percent. Seven drums removed from the site and analyzed in 1983 had less than 2 parts per million (ppm). Based on the historical records, direct discharges of PCB contaminated waste oils from the former Flintkote buildings is a source of PCBs to the Eighteenmile Creek downstream sediments. However, the high concentrations of PCBs in creek sediment upstream of the former Flintkote Plant Site suggest that there are other sources of PCBs to the creek (NYSDEC 2007b; see Appendix C).

Other Potential Sources

As part of the Corridor Site RI, NYSDEC collected samples around a fenced-in containment structure immediately downstream of the Clinton Street dam. This structure may have housed transformers and/or capacitors, which historically contained PCB oil and, therefore, this area was identified as a potential source of PCBs to Eighteenmile Creek. Although PCBs were detected in surface and subsurface samples, the concentrations were relatively low (< 1.2 mg/kg), providing evidence that this area is not currently a significant source of PCBs to Eighteenmile Creek.

5.1.2 Erie Canal

As described in Section 1.2, the Erie Canal provides a constant flow to Eighteenmile Creek. In addition, the canal is drained directly to the Headwaters East Branch through a spillway on the southern side of the canal, just west of Mill Street. According to NYS Canal Corporation personnel, if maintenance is needed in the canal, the water level in the canal is lowered by removing a "plug" located in the middle of the canal bottom. The plug drains into the tunnel that connects the headwaters of the Headwaters East Branch with the junction of the spillway and the upstream waters of Eighteenmile Creek. Maintenance is performed as needed; therefore, the plug is not removed every year. Removing the plug provides a direct conduit of sediment transport from the Erie Canal to the Headwaters East Branch (EEEPC 2009b; see Appendix C).

NYSDEC has conducted additional investigations since the RI/SRI for the Corridor Site was completed to evaluate whether the Erie Canal is a significant ongoing source of contamination to Eighteenmile Creek (EEEPC 2009b; NYSDEC 2010c; see Appendix C). The investigations focused on flow measurements and analysis of PCBs in water (dissolved and total) and suspended solids. The NYSDEC investigation did not detected PCBs in the Erie Canal waters in the dissolved phase as a Passive In Situ Chemical Extraction Sampler (PISCES) or in unfiltered grab samples. PCBs could not be analyzed on suspended sediment because suspended sediments are not being conveyed into Eighteenmile Creek under normal operational flow conditions in measurable amounts. PCBs were detected within the Eighteenmile Creek water column downstream of areas of known sediment contamination in the unfiltered grab samples. This detection of contaminants continued beyond the boundaries of the Corridor site indicating significant transport of contaminants occurring downstream of the corridor (NYSDEC 2010c; see Appendix C). The findings indicate that water from the Erie Canal is not a source of PCBs during normal operation.

The distribution of PCBs in the sediment in the Corridor site show that PCBs concentrations increase downstream of the Clinton Street dam and generally remain elevated throughout

the remainder of the Eighteenmile Creek Corridor Site, although significant fluctuations occur (NYSDEC 2006a; see Appendix C). The lower concentrations of PCBs in sediment between the Clinton Street dam and Erie Canal provide additional evidence that the canal is not an ongoing source of PCBs.

5.1.3 Outfalls and Drainage Areas

City of Lockport CSOs

The City of Lockport combined sewer system periodically discharges untreated stormwater overflow into Eighteenmile Creek during periods of significant precipitation. As noted in the 2011 Eighteenmile Creek RAP update, in the past 15 years, 20 of the city's original 31 CSOs have been separated by installing new sewer line for either the sanitary or storm flow system (NCSWD 2011). Five of the remaining 11 CSOs have the potential to discharge to Eighteenmile Creek. The remaining six CSOs have the potential to discharge into the Erie Canal based on the results of NYSDEC study on the City of Lockport's sewer system using PISCES samplers (NYSDEC 2001b; see Appendix C). The purpose of the study was to track down potential sources of PCBs and study concluded that the CSOs are possible active source of PCBs. In 2006 the City of Lockport began monitoring activities and in 2011, two additional CSO's were closed by the City of Lockport including one that discharged to the Erie Barge Canal and one that discharged to Eighteenmile Creek. The availability of current monitoring data to assess CSOs as a possible source of PCBs to Eighteenmile Creek is unknown.

SPDES Outfalls

There are three industrial and two municipal facilities currently permitted to discharge to Eighteenmile Creek. The RAP Update indicates that the SPDES permit holders are in compliance with their permits but that metals may be released into the water as part of the permit (NCSWD 2011).

Other Outfalls

In support of the additional investigations since RI/SRI for the Corridor Site, NYSDEC and EEEPC conducted a site visit and interviews in September 2008 with NYS Canal Corporation personnel (EEEPC 2009b; see Appendix C). The Town of Lockport Historian and the Niagara County Historical Museum were also contacted regarding information on additional tunnels or conveyances that may discharge or have discharged in the past to the Eighteenmile Creek Corridor. The historians were not aware of any additional conveyances other than those currently present. No additional outfalls were noted.

As part of the Phase 1 reconnaissance conducted for the USEPA GLLA, 36 drainage areas and eight outfalls were identified and mapped along Reaches 3 to 7 (see Appendix B, Table B-5 and B-6 and Figure 2-6B). The potential for these outfalls as sources of contamination were investigated by locating sampling points downstream of the outfalls. Sediment samples from the following areas contained elevated concentrations of PCBs, lead or PAH downstream of a potential source (greater than 10, 1,000, or 50 mg/kg, respectively). These areas are coded orange or red on Figure 7.

- An outfall, culvert and debris were found in Reach 4 behind a multi-use industrial facility (Forrest Creek Business Park and Storage Center) located south of Ide Road

in Newfane (between 55,600 to 57,500 feet from the Erie Canal). Sediment samples collected near this location had elevated lead and PAHs concentrations.

- A drainage area, outfall, and debris were found at the beginning of Reach 6.1 in a stretch of the creek behind several properties on Transit Road (between 48,200 to 49,000 feet from the Erie Canal). Sediment samples collected near this location had consistently elevated lead and PAHs concentrations.
- A drainage area and mudflat were identified in Reach 6 north of Jacques Road stretch of the creek behind several properties on Transit Road (between 40,350 to 40,100 feet from the Erie Canal). Sediment samples collected near this location had consistently elevated PCBs and lead concentrations.
- Several drainage areas were identified in an isolated stretch at the beginning of Reach 7.1 (between 30,500 to 31,325 feet from Erie Canal). The area receives drainage from large wetland complex between Ewings Road and the creek and is downstream of the East Branch confluence. Sediment samples collected near this location had consistently elevated PCBs, lead and PAHs concentrations.
- A drainage area and small tributary were identified in just east of where Ewings Road crosses the creek in Reach 7.1 (between 25,450 to 32,425 feet from the Erie Canal). The tributary drains several businesses and properties on the north side of Ridge road. Sediment samples collected near this location had consistently elevated PCBs, lead and PAHs concentrations. PCBs concentrations exceeded 50 mg/kg in one sample collected from 0.5 to 1.1 feet.
- Several drainage areas were identified in an isolated stretch at the south of Ridge Road in Reach 7.2 (between 18,450 to 19,450 feet from the Erie Canal). The area only receives drainage from large agricultural area west of Purdy Road. Sediment samples collected near this location had consistently elevated PCBs, lead and PAHs concentrations. PCBs concentrations exceeded 50 mg/kg in three samples collected as composites of the entire sediment thickness.
- Observations were not collected in Reach 7.3 because that reach was sampled by NCSCWD in 2005 as part of the track-down study, but additional sediment samples were collected. Elevated PCBs, lead and PAHs concentrations were found in sediments north of Plank Road to just north of Old Niagara Road crossing (9,000 to 12,000 feet from the Erie Canal). PCB concentrations exceeded 50 mg/kg in two samples collected as composites of the entire sediment thickness.

5.1.4 Tributaries and Upstream Sources

Upstream of the Erie Canal

The historical investigations concluded that there are no sources of contamination to Eighteenmile Creek upstream of the Erie Canal.

East Branch of Eighteenmile Creek

Sediment samples were collected from four locations in the East Branch (denoted as R7-120-T, 201 to 202-T, and DEC-10). Sediment samples had lower lead and PAHs concentrations

than the main channel and PCBs were not detected. The results indicate the East Branch sediments are not a potential source of contamination to Eighteenmile Creek.

Gulf Creek

Sediment samples were collected from five locations in the Gulf Creek (denoted as R7-125-T, 203 to 205-T, and DEC-11). Sediment samples had average lead, other COPC metals, and PAHs concentrations that were equivalent to average concentrations in Reach 7 sediments and PCBs were detected at less than 1 mg/kg in one sample. The results indicate the Gulf Creek sediments could be a potential source of contamination to Eighteenmile Creek. Elevated concentrations of lead, zinc, and PAH were found in sediments farther upstream of Gulf Creek as part NYSDEC investigation of the Old Upper Mountain Road site and additional investigations of the Gulf Creek sediment are ongoing (EA Engineering 2011).

5.2 Extent of Contaminated Media

The COPCs were detected in sediments of Eighteenmile Creek through the entire length from the Erie Canal to Lake Ontario. Tables 6-1 to 6-11 provide summary statistics for COPC including the average and maximum of positive results by reach. PCBs, PAHs, and metals were the most frequently detected COPCs. The average and maximums concentrations for these compounds are plotted by reach on Figure 8.

All COPC metals show the same average and maximum concentration trends by reach. The average concentrations are relatively low starting at the Erie Canal and increase significantly in Reach 10 at the Corridor site. The average concentrations of COPCs metals are lower immediately below the Corridor site and increase to Reach 5 in the depositional area behind Newfane Dam. The average concentrations of COPCs metals are lower immediately downstream of the Corridor site and increase to Reach 5 in the depositional area behind Newfane Dam. The average concentrations are the highest in Reaches 2 and 3 behind Burt Dam until decreasing to background levels in Reach 1 below Burt Dam. The maximum concentrations follow the same general trend but are highest in Reach 10 in the Corridor site. The high concentrations of lead and other COPC metals in the subsurface sediments in Reaches 2 and 3 result in higher average concentrations behind the dam and indicate a significant historical source prior to 1954. The average and maximum concentrations also show an increase in Reach 5 behind Newfane Dam, but subsurface concentrations of metals in these cores are lower than Reaches 2 and 3.

The lead, copper, and zinc were detected in all sediment samples at concentrations that exceed LEL screening levels in most samples and SEL screening levels in about 90 percent of samples. In addition, six of the 40 sediment samples analyzed for TCLP for lead exceed hazardous waste criteria (one in Reach 6 and five in Reach 10). Arsenic and chromium were detected in almost all sediments but at concentrations lower than the other COPC metals. Arsenic concentrations exceed LEL screening levels in 50 percent of samples and SEL screening levels in less than 1 percent of samples. Chromium concentrations exceed LEL screening levels in 85 percent of samples and SEL screening levels in less than 50 percent of samples. The similar data trends for lead, copper, and zinc and lower concentrations of arsenic and chromium suggest that lead could be an appropriate indicator of metals contamination for future investigations.

PCBs and PAH show similar average and maximum concentration trends by reach. For PCBs average concentrations are higher starting at the Erie Canal and decrease in the area where the canal drains to Eighteenmile Creek. The decreased concentration in this area may be due to high flow velocities and scour of sediments downstream. PCB concentrations are the highest in Reach 10 at the Corridor site. PCBs average and maximum concentrations are relatively higher in reaches immediately downstream of the Corridor Site and then decrease to levels below 1 mg/kg in Reach 1. PCB concentrations do not increase to Reach 5 depositional area behind Newfane Dam. PCB average and maximum concentration increase slightly in Reach 3 . The data suggest that creek meets the reservoir waters behind Burt Dam there is a significant area of sediment deposition likely caused by the decrease flow rates. The PCB concentration profiles with depth indicate a significant amount of mixing in this area. In the deeper sediments of Reach 2 closer to Burt Dam, there is a much more distinct change in PCB concentration with depth and maximum concentrations at depth indicate a historical source coinciding with deposition in the early 1960s.

PCBs were detected in 80 percent of the sediment samples and half of the concentrations exceed the 1 mg/kg low screening criteria (i.e., 40 percent overall). In addition, PCB concentrations in 17 samples in Reaches 7, 9, and 10 exceed hazardous waste criteria.

PAH concentrations are relatively lower in the Erie Canal, increase in Reach 10 at the Corridor Site, and then show a general decreasing trend toward Lake Ontario. However, PAH average and maximum concentrations increase in Reaches 4 and 7 located in more populated areas, which may be attributed to urban runoff.

PAHs were detected in most sediment samples, but concentrations exceed the low screening levels in less 20 percent of the samples and the high screening criteria in less than 2 percent of samples. The findings suggest that PAH contamination is ubiquitous throughout the watershed and related to common anthropogenic sources. PAHs do not appear to be an appropriate indicator of contamination from specific sources in the Corridor site.

Lower concentrations and more uniform distribution of the mercury and DDT metabolites also indicate anthropogenic sources not directly related to the Corridor Site.

5.3 Conceptual Site Model

A conceptual site model (CSM) was developed as part of the July 2009 SRI report for the Eighteenmile Creek Corridor site (E & E 2009; see Appendix C). The CSM for the Corridor site also would be applicable to the entire Eighteenmile Creek AOC. The pathways for exposure to contaminants in sediment and surface water discussed in the CSM are similar for anglers and other visitors beyond the Corridor Site. The residences on Water Street are the only areas identified as a pathway for potential contact with contaminated soils deposited by flood events. Contaminated soils were not identified in other areas along Eighteenmile Creek.

The Eighteenmile Creek Corridor CSM included potential pathways of human exposure to contaminants. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. An exposure pathway is

considered complete when all five elements are present; a potential exposure pathway is considered incomplete when any one or more of the five elements comprising an exposure pathway is not present or does not exist. Three groups of receptors potentially impacted by contaminated sediments, each with a distinctly different exposure potential, were identified, as summarized below:

- Residents of the homes along Water Street with backyards abutting the creek. Eighteenmile Creek floods periodically and has deposited contaminated sediment in the backyards of some of these residences. Residents of these homes could be exposed to site-related contaminants as a result of direct contact (via dermal contact and/or incidental ingestion) with contaminated soils in their yards, sediments along stream banks, and creek water and through consumption of fish caught from the creek.

- Visitors to the Eighteenmile Creek. This group of receptors includes recreational users of Upson Park and visitors to the banks of the creek and the active and inactive industrial parcels along the creek. These receptors are assumed to visit these areas but not fish in the creek or consume fish from the creek. Exposure of these receptors to site-related contaminants could occur as a result of direct contact with soils, sediment, and creek water.

- Eighteenmile Creek Anglers. This group of receptors is similar to site visitors, but members are assumed to fish in the creek and eat their catch in addition to coming in contact with site soils, sediment, and creek water. Since PCBs are important COPCs in the Eighteenmile Creek, and because they tend to accumulate and concentrate in fish and other biota, consumption of fish from the creek could pose substantially greater health risks than simply contacting contaminated environmental media in the area.

The SRI completed the requirements of a qualitative Human Health Risk Evaluation as described in Appendix 3B of NYSDEC's Draft DER 10: Technical Guidance for Site Investigation and Remediation. Since a number of chemicals exceeded human health screening levels in each of the environmental media investigated, the SRI concluded that contaminants at the Eighteenmile Creek Corridor Site could pose potentially significant risks to human health (EEEPC 2009a; see Appendix C). A qualitative human health risk assessment was not conducted as part of the SRI because NYSDOH had documented public health risks to residents living on Water Street (NYSDEC 2006a) and fish advisories have been established for the creek.

The conclusions of the SRI Human Health Risk Evaluation can be extended to the remainder of the Eighteenmile Creek AOC because the exposure pathways for Eighteenmile Creek visitors and anglers are the same.

5.4 Trophic Trace Food Web Model

A Trophic Trace food web model was developed to evaluate PCB bioaccumulation, trophic transfer, and consequent ecological risks in creek sections above and below Burt Dam (e Risk 2012, see Appendix C). The following points regarding this effort are noteworthy:

- Two sections of Eighteenmile Creek were modeled: (1) Olcott Harbor to Burt Dam; and (2) Burt Dam to Newfane Dam.
- The modeling effort focused on PCBs for a variety of reasons, including: (1) PCBs are thought to be the primary risk driver in the Eighteenmile Creek system; (2) PCBs have the most robust, recent dataset; (3) chlorinated pesticides and dioxins are not particularly elevated or prevalent in sediment in the Eighteenmile Creek system; and (4) focusing on a single contaminant permitted a more intensive sampling effort to support the modeling effort compared to the amount that would need to be conducted if multiple contaminant classes were modeled.
- The modeling effort included an evaluation and compilation of historical data (USACE 2010; see Appendix C) and development of a conceptual site model (USACE 2011; see Appendix C). In addition, new data for PCB congeners in fish tissue and sediments from Reach 1 were collected by USACE in 2010 (e Risk 2012; see Appendix C).
- The model evaluated total PCBs based on a sum of congeners, but also collected data for PCBs as Aroclors, DDT and metabolites, and dioxin.
- The model focused on evaluating risks to fish and fish-eating wildlife from PCBs in the portion of the creek between Newfane Dam and Olcott Harbor. It does not address potential risks to other groups of ecological receptors or human receptors.
- The Trophic Trace model can be used to develop remedial goals for sediment based on the potential risk to receptors and evaluate impact on fish tissue concentrations at various sediment concentrations.

The final modeling report indicated that PCBs may pose a potential risk to some fish species (largemouth bass, bullhead, and pumpkinseed) and fish-eating wildlife species (kingfisher and mink); however, the potential for risk to these receptors was considered to be low (e Risk 2012, see Appendix C).

5.5 Contaminant Persistence and Migration

The NYSDEC SRI report discusses potential routes of migration for the COPCs within the Corridor site. Natural and other man-made mechanisms can result in the migration of contaminants from their source areas which include: surface water flow, infiltration, groundwater flow, subsurface utilities, volatilization, excavation, grading, and vehicular traffic (EEEPC 2009a; see Appendix C). Because PCBs and lead are not readily volatilized, only surface water flow, infiltration, groundwater flow, subsurface utilities, and man-made mechanisms were discussed. The NYSDEC SRI determined that infiltration and groundwater flow are not migration pathways for PCBs and lead.

Migration of the PCBs and lead contamination from the Corridor site downstream to Lake Ontario is well documented. The highest lead contamination in sediments downstream from the Corridor site is detected at depths of 2 to 8 feet in the reservoir behind Burt Dam. Radiochemical dating of the sediment cores indicate the sediment at this depth was deposited prior to 1954. The highest PCB contamination in sediments is shallower and the sediment was deposited in the mid 1960s. Persistent higher concentrations of both PCBs

and lead in surface sediments indicate continued migration of contamination downstream of the Corridor site.

USEPA semiannual monitoring of Lake Ontario tributaries indicate that since 2002 the highest PCB concentrations in surface water were observed in Eighteenmile Creek. In 2008 PCB concentrations in Eighteenmile Creek were more than 40 times greater than observed in any tributary and two to three orders of magnitude higher than observed in any other tributary [i.e., 43,000 to 93,000 picograms per liter (pg/L)] in 2009 to 2010 (USEPA 2011). Both the USEPA and NYSDEC estimated loadings for Eighteenmile Creek based on estimated flow rates because the creek is not gauged by the USGS. The USEPA estimated the PCB loadings to be 10 to 20 grams per day. NYSDEC concluded the PCB loading rates were particularly high on Eighteenmile Creek (NYSDEC 2009a). The NYSDEC report also included the potential migration from the Lake Erie and Tonawanda Creek to Lake Ontario via the Erie Canal and Eighteenmile Creek.

5.6 Contaminant Fate and Transport

The NYSDEC SRI report includes a discussion of the persistence and behavioral characteristics for the COPCs within the Corridor site that also would apply to the rest of Eighteenmile Creek (EEEPC 2009a; see Appendix C). PCBs strongly adsorb to sediment particles, have low water solubility, are persistent in the environment (do not readily break down), and thus do not typically show much migration in a given environment. The adsorption of PCBs onto solids is greatest in solids containing high organic matter and clay, similar to the sediment encountered in portions of Eighteenmile Creek. PCBs do not metabolize easily and readily accumulate in fatty tissue. Several fish tissue studies document high levels of PCBs in fish from Eighteenmile Creek relative to other sites (E & E 2011; see Appendix C). The results of the bioaccumulation testing (USACE; 2008 see Appendix C) indicate that PCB levels in surficial sediments throughout Reach 1 present a bioaccumulation risk. In some portions of Reach 1, PCBs are highly bioavailable in the surficial sediments and are accumulating in benthic organisms, and likely to bioaccumulate in predator fish and high trophic levels. The site-specific biota sediment accumulation factors (BASF) of two areas in Reach 1 were higher than what be expected and the overall mean BASF is comparatively high indicating that PCBs are quite bioavailable in surficial sediments.

Presence of elevated lead concentrations throughout the Eighteenmile Creek is consistent with the behavior of lead. Comparison of TCLP data to their respective total lead concentrations were inconsistent indicating that the leachability of the lead may vary with the type of source material.

Thirty-nine sediment samples were analyzed from Reach 4 through Reach 7 for AVS/SEM and TOC to assess the bioavailability of divalent metals including cadmium, copper, lead, nickel, and zinc and monovalent silver (see Table D-3). The SEM molar concentration is equal to the sum of the molar concentrations of the divalent metals and one half of the molar concentration of silver, based on their stoichiometric relationships to AVS. AVS exceeded the SEM molar concentration in 27 of the 39 samples. However, if the molar concentration of AVS in a particular sediment sample exceeds the summed SEM molar concentration, the metals are not necessarily available, since the equilibrium of the metals in pore water and

interstitial waters is dictated by their solubility and the TOC of the sediment. When the ∑SEM-AVS is normalized, or divided by, the fraction organic carbon, the contamination is 90% certain to be non-toxic at a concentration of 130 µmol per gram organic carbon (goc), and 90% certain to be toxic at a concentration of 3,000 µmol/goc (USEPA 2005). The normalized ∑SEM-AVS was less than 130 µmol/goc for 33 of the 39 samples, while the remaining are slightly greater ranging from 142 to 438 µmol/goc. All normalized ∑SEM-AVS was less than 3,000 µmol/goc. The results indicate that the metals in Eighteenmile Creek sediments are unlikely to be bioavailable or toxic.

SECTION 6

Summary and Conclusions

This section summarizes the results of investigations performed at the Eighteenmile Creek AOC. The historical sediment data were supplemented with data from the recent investigation conducted by the GLNPO to meet the following objectives:

- Characterize the nature and extent of sediment contamination;
- Evaluate the physical conditions between Burt Dam and the Erie Canal, including sediment thickness and water depth;
- Evaluate the contamination in bank soils adjacent to the creek and sediments in major tributaries to identify other potential contamination sources and establish background conditions;
- Evaluate the potential for historic contamination to have migrated to wetlands or historic creek channels during past flooding events;
- Provide the data necessary to assess whether conditions in the creek pose an actual or potential human health exposure risk;
- Provide the data necessary to assess the bioavailability of site contaminants and whether conditions in the creek pose a potential ecological risk; and
- Provide the data needed to identify and evaluate potential remedial alternatives to address contamination that poses threats to public health and/or the environment.

The primary findings related to these objectives are summarized below.

6.1 Summary

Results from recent studies conducted within the Eighteenmile Creek AOC (see Section 4) were evaluated to assess the usability of the sediment chemistry and supporting data for this RI. Electronic copies of the reports and supporting data are provided in Appendices A to C. Sediment chemistry and physical data that were determined to be usable for evaluation of nature and extent were compiled into the site database or spreadsheets and included in Appendix D. The compiled data were evaluated and the findings are summarized below.

6.1.1 Physical Conditions

The physical characteristics of the Eighteenmile Creek AOC are summarized in Section 3. The creek flows generally north through central Niagara County for 15 miles discharging into Lake Ontario via Olcott Harbor. The Eighteenmile Creek AOC was divided into the following smaller investigation areas, or reaches, based on the physical characteristics of the creek (see Figure 2). The significant physical characteristics of Eighteenmile Creek include the following:

- The Erie Canal contributes a significant water flow to the creek and the input increases during annual winter draining and periodic maintenance periods. A constant flow of up to 400 cfs must be maintained at all times for operation of Burt Dam. The Erie Canal also provides a potential connection to Lake Erie and Tonawanda Creek through the Lockport locks. The creek is not gauged by the USGS and limited surface water data are available.
- Natural creek flow is interrupted by four dams. The largest, Burt Dam is an operating hydro-generating facility 2 miles from Lake Ontario. The dam in Newfane and the two smaller dams in Lockport are abandoned and not operational. All four dams retain water and contaminated sediment. The removal of the two smaller dams is included as part of the NYSDEC ROD for the Corridor site.
- Natural creek also has been altered in the city of Lockport by extensive areas of fill. The fill contains various types of slag and ash that altered the native geology of the creek banks between the Erie Canal and the escarpment.
- Several residential backyards on Water Street in the city of Lockport adjacent to the creek are prone to periodic flooding.
- The elevation of the creek drops over 250 feet from the Erie Canal to Lake Ontario through the Niagara Escarpment (see Figure 5).
- The average sediment thickness and water depths in the depositional areas behind the dams increase from upstream to downstream. Sediment thickness behind the dams range from 3 feet in Reach 5 to 11.6 feet in Reach 2 and the water depths range from 3.5 feet in Reach 5 to 14.3 feet in Reach 2. The average sediment thickness and water depths in rest of the main channel decrease from upstream to downstream. Sediment thickness range from 1.4 feet in Reach 7 to 0.6 feet in Reach 4 and the water depths range from 2.3 feet in Reach 7 to 1.3 feet in Reach 4 (see Table D-6).
- Current bathymetry of the reservoir behind Burt Dam shows a significant sediment deposition area where main channel creek flow discharges into the impoundment.
- Access to the creek is limited from the escarpment to Burt Dam and long stretches of the creek meander behind large agricultural fields. Significant woody debris obstructs to water flow throughout these portions.
- Two major tributaries, East Branch of Eighteenmile Creek and Gulf Creek, contribute significant flow to the main channel. Many smaller tributaries and drainage areas throughout the flat agricultural portion of the creek from the escarpment to Newfane have been documented to contribute intermittent flow to the main channel.
- The reach of the creek below Burt Dam is an active recreational and fishing area as well as a significant coastal habitat. Based on the Lake Ontario Tributary Creel Survey from 2005 to 2007, Eighteenmile Creek logged the second highest number of angler hours, behind the Salmon River (NYSDEC 2007a). The survey also identifies Eighteenmile Creek as one of the of four “high use” tributaries.

Additional data have been collected to evaluate the physical characteristics of the sediment within Eighteenmile Creek. The Eighteenmile Creek water depth, bankfull width, and

sediment thickness have been measured from the Erie Canal to Burt Dam and results are included in Table D-6. Most sediment samples collected as part of the USEPA GLLA investigation from the escarpment to Burt Dam were analyzed for particle size (see Table D-5) and TOC (see Table 6-11 and D-1). A limited number of sediment samples in the Erie Canal and Corridor Site were analyzed for particle size (EEEPC 2009b; see Appendix C).

6.1.2 Nature and Extent of Contamination

The nature and extent of contamination within the Eighteenmile Creek AOC have been defined to establish baseline of contaminant levels in sediment that can be used to develop and evaluate remedial alternatives to reduce potential risks to human health and the environment posed by exposure to contaminants in the creek. The horizontal and vertical distribution and extent of contamination in sediment in the Eighteenmile Creek was characterized on the basis of field observations and analysis of sediment samples as follows:

- Over 750 samples have been analyzed to evaluate the nature and extent of PCB and metals contamination in sediments from the Erie Canal to Lake Ontario. Over 500 samples of these samples were also analyzed for PAH and mercury and over 160 samples have been analyzed for pesticides and PCBs as congeners. A smaller subset of samples from historical investigations was analyzed for dioxin and furans.

- Concentrations of all the COPCs in sediments exceed preliminary screening criteria. PCB and lead concentrations in sediment at several isolated locations (i.e., "hot spots") exceed hazardous waste levels.

- The horizontal extent of contamination in sediment has been delineated for PCBs, and metals in all reaches. The current dataset was not sufficient to define the extent of contamination of the other COPCs in all reaches (e.g., sediments from Reach 1 below Burt Dam were not analyzed for PAHs; only a limited number of sediments from the Corridor site was analyzed for mercury and only a few samples from the reaches were analyzed for pesticides and dioxin and furans).

- The extents of the isolated PCB and lead "hot spots" have not been delineated and the results from subsequent confirmatory samples have shown inconsistent results. The findings suggest that the distribution of PCB and lead contamination in sediments varies significantly and conditions change over time.

- Elevated PCB and metals concentrations have been delineated in the deeper sediments in Reaches 2, 3 and 5 (see Figures 6 and 7). Behind Burt Dam, the maximum PCB and lead concentrations were detected in subsurface sediments between 2 and 6 feet and concentrations decreased significantly with increasing depth. The PCB and lead concentrations were higher in the subsurface sediments in Reaches 3 and 5, but did not exhibit consistent trends related to depth. PAH concentrations showed less variability with depth than the PCBs and lead concentration profiles.

- The vertical extent of PCBs and metals contamination was evaluated using data from the thinner sediments deposits in Reaches 4, 6, 7, 9 and 10. PCB and lead concentrations in the surface sediments were generally lower than the subsurface

sediments. The highest concentrations of PCBs and lead were found in the subsurface sediments.

- Lead concentrations is an appropriate indicator of the extent of contamination for the other COPC metals in the sediment based on correlation average and maximum concentrations by reach and the number of samples with concentrations exceeding screening levels.
- Sediments from major tributaries and upstream of the Erie Canal have been collected to establish background conditions and assess potential for other sources. Concentrations of COPCs in sediment upstream of the Erie Canal and the East Branch of Eighteenmile Creek are significantly lower than in the main channel. Sediments from Gulf Creek show elevated lead and PAH concentrations that may be attributable to the Old Upper Mountain Road site.

6.1.3 Contaminant Sources

Historical and ongoing sources of contamination to Eighteenmile Creek are discussed in Section 5. Major findings regarding the assessment sources of the primary COPCs are summarized below.

Lead and Other COPC Metals

The most significant source of lead and metals contamination is the historical industrial sites in the Corridor Site and the surrounding fill areas. Metals contamination in the fill areas and on banks of Eighteenmile Creek has been documented and erosion from the fill areas is likely a continuing source of contamination to the downstream sediments. Lead is present in the fill areas at hazardous waste levels. Higher concentrations of lead and other COPCs metals in the sediments near more urban areas suggest surface run-off and anthropogenic sources typical of urban and industrial areas also contribute to contamination of Eighteenmile Creek sediments.

PAHs

PAHs were found at low levels in all Eighteenmile Creek sediments and no significant source of contamination was identified. Higher concentrations of PAH in the sediments near more urban areas suggest surface run-off and anthropogenic sources typical of urban and industrial areas are the source of contamination of Eighteenmile Creek sediments.

PCBs

Historically, the Erie Canal has been suspected as a major source PCBs to the creek. Potential transport mechanisms of PCB contaminated sediment from the canal to creek are clearly documented. However, recent investigations analyzing canal water and suspended sediment for PCBs during various flow conditions suggest that the Erie Canal is not the primary source of PCBs to the creek. The high concentrations of PCBs in the sediments of the Corridor site suggest the source contamination is downstream of the Erie Canal and the Clinton Street dam.

Several investigations to track down PCBs sources from CSOs, tributaries, a potential former transformer pad and fill areas have not identified a significant source of PCBs. The source of PCBs in the downstream reaches is expected to be associated with the historical industrial

properties in the Corridor Site. Historical records indicate PCB contaminated waste oil may have been emptied into the creek at the former Flintkote plant in the 1970s. However, investigations completed to date have not identified a significant source area of high PCB contamination on the properties. The source of high concentrations of PCBs in the sediments upstream former Flintkote Plant site has not been identified.

6.1.4 Ecological and Human Risks

A human health or ecological risk assessment has not been completed for the entire Eighteenmile Creek although the potential risks have been evaluated for specific site or portions of the creek. NYSDOH has documented human risks to the residences on Water Street from exposure to contaminated sediment and to anglers from ingestion of PCB contaminated fish tissue. NYSDOH has included Eighteenmile Creek under its most stringent "Do Not Eat" fish advisory on the basis of PCB contamination (NYSDOH 2011).

Environment risks to fish and wildlife have been documented as part of the USACE evaluation of the toxicity and bioaccumulation of persistent organic compounds in surface sediment samples collected from below Burt Dam (USACE 2004a, 2004b; see Appendix C) and BUI Assessment of impacts to fish and wildlife populations (E & E 2009). Both studies focused on the area below Burt Dam. Data from these studies was incorporated in the development of a Trophic Trace Trophic Trace Food Web model for Eighteenmile Creek (e Risk Sciences 2012; see Appendix C. The final modeling report indicated that PCBs may pose a low potential risk to some fish species (largemouth bass, bullhead, and pumpkinseed) and fish-eating wildlife species (kingfisher and mink) (e Risk 2012, see Appendix C).

Additional data have been collected to assess the bioavailability of COPCs in contaminated sediments. A large portion of the samples have been analyzed for TOC and results show higher organic carbon content for most sediments (see Table 6-11). The lower confidence limit of the average TOC concentration in the sediments is 54,600 mg/kg. A total of 161 sediment samples have been analyzed for PCB congeners (see Table 6-2). The results for total PCB as congeners do not correlate well with total PCB as Aroclors, but congener data are useful for evaluating risks. Select samples from escarpment to Burt Dam have been analyzed for AVS/SEM to evaluate the bioavailability of metals (see Table D-3) and the results indicate that the metals in Eighteenmile Creek sediments are unlikely to be bioavailable or toxic.

6.1.5 Fate and Transport

Contaminant fate and transport mechanisms for the primary COPCs are well understood and the nature and extent of the contamination in Eighteenmile Creek sediments is generally consistent with the behavioral characteristics of the COPCs except for PCBs contamination in the downstream reaches.

The transport mechanisms for the PCB contamination downstream are not fully understood. PCBs strongly adsorb to sediment particles, have low water solubility, are persistent in the environment (do not readily break down), and thus do not typically show much migration in a given environment. The adsorption of PCBs onto solids is greatest in solids containing high organic matter and clay, similar to the sediment encountered in portions of Eighteenmile Creek. The adsorbed PCBs will be transported downstream with the

sediments they are sorbed to. The PCB concentrations in the water discharging into Lake Ontario indicate that PCBs are being mobilized in the water column throughout Eighteenmile Creek. PCB concentrations in the surface sediments below Burt Dam are relatively low but site-specific bioaccumulation testing indicates PCBs in surface sediments are highly bioavailable. High concentrations of PCBs in fish collected below Burt Dam support this conclusion. If PCBs contamination transport mechanism was primarily on sediment particles, then higher concentrations of PCBs would be expected in sediment depositional areas. Higher PCBs concentrations were found in sediment deposits in Reaches 2, 3, 6, and 7, but PCB concentration in subsurface sediments deposited behind Newfane Dam in Reach 5 are relatively low. The findings indicate additional evaluation of the downstream of PCBs is warranted.

6.2 Conclusions

The results of RI indicate that chemical contamination of the sediment all reaches of Eighteenmile Creek exceed screening criteria protective of ecological and human health and that hazardous levels of PCBs and lead contamination are present in the Corridor Site and immediately downstream in Reach 7. PCBs and lead are the primary COPCs and sources of contamination have been identified in the Corridor Site. Lower concentrations and more uniform distribution of the other COPCs indicate anthropogenic sources not directly related to the Corridor Site. Higher concentrations of PCBs and lead in deeper sediments behind Burt Dam and Newfane Dam indicate historical sources were more significant than more recent sources, but ongoing transport of PCBs and lead from the Corridor Site has been documented. PCB transport off-site contributes significant loadings to Lake Ontario.

Metal contamination in sediments may exert chronic toxicity throughout the Eighteenmile Creek particularly for lead and zinc but there is little evidence of significant bioavailability risk associated with metal contamination. PCB contamination presents a significant bioaccumulation risk that is well documented with fish tissue analysis. Modeling indicates that PCB contamination poses a measurable but low potential toxicology risk to some fish species and fish-eating wildlife species.

6.2.1 Recommendations

The RI investigations have focused on sediment contamination and physical characterizations of the creek. The following additional data needs have been identified:

- Delineation of hazardous waste level contamination in the sediment and fill areas;
- Current sources of PCB contamination in the Corridor Site including the drainage system and buildings of former Flintkote property;
- Evaluation of potential sources downstream of the Corridor Site including Gulf Creek;
- Hydrologic and hydraulic model of the creek and sediment transport;
- PCB bioavailability in contaminated sediments and potential treatment methods to reduce bioavailablity; and

- Baseline ecological structure and function of the creek to assess toxicology impacts from sediment contamination and provide data needed to determine post-remediation restoration needs.

The BUI delisting strategy prepared for USACE recommends a series of actions to improve relevant conditions in the Eighteenmile Creek AOC and document restoration and protection of beneficial uses in support of the eventual delisting (E & E 2011). NCSWCD has received funding for the following three projects:

- A project to evaluate the potential effectiveness of using powdered activated carbon (PAC) to reduce bioavailability of PCBs in Eighteenmile Creek sediment;
- A project to examine contaminant levels in fish from various trophic levels found in Eighteenmile Creek; and
- A project to examine benthic macro-invertebrate community composition, sediment toxicity, and sediment chemistry for at least three locations.

NYSDEC has identified additional studies in the Corridor Site to facilitate design of remedial alternatives including the need to evaluate hydrologic and hydraulic impacts of the proposed sediment excavation and dam removal and additional surveying efforts to accurately map out fill areas, existing building foundation ruins and historical structures. NYSDEC also has identified additional sampling requirements at the 300 Mill property once demolition is complete to determine whether hazardous waste levels of PCBs and metals are present in the soil/fill and outlets in front of the buildings.

SECTION 7

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Table 1
Summary of Historical Data Evaluation
Eighteenmile Creek Area of Concern

Appendix C Report	Database Study Key	Data Summary	Data Evaluation and Use
Previous Investigations in the AOC			
USACE. 2004a. Volume I, Project Report Overview, Sediment Sampling, Biological Analyses, and Chemical Analyses for Eighteenmile Creek AOC	USACE 2004	Sediment and tissue testing for Reach 1 sediments including PCB congener, dioxin, TOC, PCB Aroclors, Metals, Mercury and pesticide analysis.	Data are considered usable for nature and extent of contamination and will be included in the RI database.
USACE. 2004b. Volume II, Laboratory Reports, Sediment Sampling, Biological Analyses, and Chemical Analyses for Eighteenmile Creek AOC	USACE 2004	Laboratory reports of sediment and tissue analysis in Reach 1 Sediments.	Data are considered usable for nature and extent of contamination and will be included in the RI database.
Buffalo State Great Lakes Center. 2005. Sediment Modeling for the Eighteenmile Creek Watershed. Prepared for USACE Buffalo District.		Water flow and sediment yield model for Eighteen Mile Creek Watershed is presented.	No chemical sediment data presented in this model. The model may have future uses for evaluating sediment transport and creek flow.
E & E 2009. Eighteenmile Creek Beneficial Use Impairment Assessment. Niagara County, New York. Prepared for NCSWCD.		Fish and wildlife surveys for Eighteenmile Creek and PCB and Dioxin/furan results for fish tissue from brown bullheads in Reach 1 are included. Tissue results are available electronically and included in the Trophic Trace model database.	No sediment data presented in this report. Tissue results are considered usable for bioaccumulation modeling but the tissue data was not imported into the RI database.
Ecology and Environment, Inc. 2007. Final Report for the Eighteenmile Creek PCB Source Trackdown Project. Prepared for NCSWCD.	NCSWCD 2007	Presents sediment data from Reach 7 and tributaries. PCB and metals results from sediment cores and PCB screening results from sediment grab samples are available electronically.	Sediment data are included in the database for both metals and PCBs. Sediment data from the cores are considered usable for the RI nature and extent evaluation.
USEPA 2008. Field Data Report, Eighteenmile Creek Sediment.	USEPA 2008	Three-sample sediments collected downstream of Burt Dam program and analyzed for PCBs, Metals, Mercury, Pesticides, and TOC.	Only Metals and TOC data are available electronically. PCBs are non-detected in the samples, which is not consistent with other data sets. PCB results will not be included.

Table 1
Summary of Historical Data Evaluation
Eighteenmile Creek Area of Concern

Appendix C Report	Database Study Key	Data Summary	Data Evaluation and Use
NYSDEC. 2009. Toxic Chemicals in NYS Tributaries to Lake Ontario: A Report on Sampling Undertaken in 2007 and 2008 with Special Emphasis on the Polychlorinated Dibenzodioxins and Furans.		Water column sampling was conducted using a modification of the Trace Organics Platform Sampler (TOPS) from known locations within Eighteenmile Creek for dioxins, furans, PCBs, pesticides, and mercury. No sediment data are included in this report.	The water column data may be useful for evaluation of sediment impacts in future risk analysis. Report provides comparability to other tributaries in Lake Ontario.
CH2MHILL and EEEPC 2011. Data Summary Report, Site Characterization, Eighteenmile Creek AOC. Prepared for USEPA GLNPO.	USEPA GLNPO	Sediment data from Reaches 2 through 7 in the AOC, include PCB Aroclor, Metals, PAHs, PCB Congener, and Pesticide data.	Data are considered usable for the nature and extent of contamination and will be included in the RI database.
Ecology and Environment, Inc., P.C. 2011. Interim Eighteenmile Creek AOC Strategic Plan for Beneficial Use Impairment (BUI) Delisting, Prepared for USACE Buffalo District.		Presents a summary of BUIs and a strategy for BUI delisting for Eighteenmile Creek. No new sediment results are presented.	Report presents data needs for delisting of BUIs that may be considered for future projects.
Previous Investigations in the Corridor Site			
NYSDEC 1998. Eighteenmile Creek and Olcott Harbor Sediment Study.	NYSDEC 1998	Sediment sampling at 8 sites on Eighteenmile Creek, tributaries, and Barge Canal. Sampling was completed in 1994.	A partial data set is available electronically for PCBs, Dioxin and Furan and PCB Congener data from Trophic Trace Model. The available data were imported and considered usable for the RI report. Additional data was entered from the original report for missing COPCs. Only total concentrations were entered for PCBs, PAHs, and DDT metabolites.

Table 1
Summary of Historical Data Evaluation
Eighteenmile Creek Area of Concern

Appendix C Report	Database Study Key	Data Summary	Data Evaluation and Use
NYSDEC. 2000. Site Investigation Report, Former Flintkote Plant Site.		Report includes site characterization data for Flintkote Plant site. No sediment samples collected during investigation.	A partial data set is available electronically for PCBs, Dioxin and Furan and PCB Congener data from Trophic Trace Model. The available data were imported and considered usable for the RI report. Additional data was entered from the original report for missing COPCs. Only total concentrations were entered for PCBs, PAHs, and DDT metabolites.
NYSDEC. 2001a. Final Report, Eighteenmile Creek Sediment Study, Summary of August 17-20 and November 3, 1998 Results.	NYSDEC 2001	Sediment sampling at 12 sites on Eighteenmile Creek, tributaries, and Barge Canal, water column sampling to evaluate sediment transport from Barge Canal to Eighteenmile Creek. Sampling was completed in 1998. Some of the sampling sites were the same location as the NYSDEC 1998. Provides a detailed description of dioxin and furan data.	A partial data set is available electronically for PCBs and metals as well as Dioxin/Furan and PCB Congener data from Trophic Trace Model. The available data were imported and considered usable for the RI report. Additional data was entered from the original report for missing COPCs. Only total concentrations were entered for PCBs, PAHs, and DDT metabolites.
NYSDEC. 2004. Site Investigation Scope of Work. Eighteenmile Creek Corridor: New York State Barge Canal to North Transit Road.	NYSDEC 2004	The scope of work summarizes initial data collection for Eighteenmile Creek Corridor site and Water Street residential sampling. Data from historical investigations are compiled for PCBs and lead from select samples from NYSDEC 1998 and NYSDEC 2001.	Sediment data are considered useable for nature and extent of contamination. Sediment results for PCBs and lead were available electronically were imported into the RI database. Additional data was entered from the original report for missing COPCs.
NYSDEC. 2006a. Remedial Investigation Report, Eighteenmile Creek Corridor, Lockport.	NYSDEC RI	Sediment and soil sampling in corridor site between NYS Barge Canal and the Flintkote Plant is presented. Sediment results include PCBs and select metals.	Sediment data are considered useable for nature and extent of contamination. Sediment results for PCBs and lead were available electronically were imported into the RI database. Additional data was entered from the original report for missing COPCs.

Table 1
Summary of Historical Data Evaluation
Eighteenmile Creek Area of Concern

Appendix C Report	Database Study Key	Data Summary	Data Evaluation and Use
EEEPC.2009a. Final Supplemental Remedial Investigation Report for the Eighteenmile Creek Corridor. Prepared for the NYSDEC.	NYSDEC SRI	Sediment, soil, waste, and groundwater samples from Upstream, Barge Canal, Upson Park, White Trans. Property, United Paperboard, Flintkote Plant, and downstream of Flintkote Plant are presented. PCB, TOC, Pesticides, PAH, and metals data are available for the sediments.	Sediment data are included in the RI database, soils and water data can be included in the future. All data available electronically. SE matrix code indicates sediments from creek.
EEEPC. 2009b. Final Additional Investigation Addendum to the Supplemental Remedial Investigation Report for the Eighteenmile Creek Corridor. Prepared for the NYSDEC.	NYSDEC SRI-A	Report presents additional activities to support SRI, including groundwater, PISCES, and sediment samples from the Erie Canal were collected and analyzed for PCB, metals and TOC.	Sediment data from the Erie Canal will be included in the database and are considered usable for RI purposes.
NYSDEC 2010c. Results From The Sampling Of Erie Canal Suspended Sediments And Creek Waters For PCBs. Eighteen Mile Creek Corridor Site.		Additional suspended sediment and water column above sediment sampling for PCB Aroclors in Erie Canal, creek, millrace, and offsite locations.	Data could be usable for PCB comparison in the water column. Suspended sediment sampling was unsuccessful. Filter media used for sediment collection were cut submitted for PCB analysis (extracted, analyzed and reported similar to a “wipe” type samples). There were no positive detections found in these samples. Data were not available electronically and not directly related to nature and extent.

Table 2

Summary of Sediment Chemistry Samples for Remedial Investigation by Study

Eighteenmile Creek Area of Concern

Sample Location	Reach	Study	Sample Date Range		Number of Samples							
					PCB Aroclors	PCB Congeners	Metals	Mercury	PAH	Pesticides	Dioxins/Furans	Total Organic Carbon
Creek	01	NYSDEC 1998	5/25/94	10/12/94	16	--	24	24	--	10	12	--
Creek	01	USACE 2004	8/26/03	8/27/03	--	20	20	20	--	40	30	40
Creek	01	USACE 2010	10/26/10	10/26/10	16	16	--	--	--	--	--	16
Creek	01	USEPA 2008	8/1/08	8/1/08	--	--	3	3	--	--	--	3
Creek	02	NYSDEC 1998	10/11/94	10/11/94	3	--	3	3	--	3	2	--
Creek	02	NYSDEC 2001	8/18/98	8/18/98	11	11	11	11	11	11	11	--
Creek	02	USEPA GLNPO	5/18/10	5/25/10	113	23	113	113	113	--	--	105
Creek	03	NYSDEC 2001	8/18/98	8/18/98	9	9	9	9	9	7	9	--
Creek	03	USEPA GLNPO	5/25/10	5/27/10	71	19	71	71	71	--	--	59
Creek	04	USEPA GLNPO	11/16/09	6/23/10	25	3	22	22	15	4	--	22
Creek	05	NYSDEC 1998	10/12/94	10/12/94	2	--	2	2	--	2	2	--
Creek	05	NYSDEC 2001	8/19/98	8/19/98	10	11	11	10	11	11	11	--
Creek	05	USEPA GLNPO	5/20/10	7/2/10	70	4	70	70	70	--	--	59
Creek	06	USEPA GLNPO	11/17/09	7/2/10	62	6	62	62	51	6	--	62
Creek	07	NCSWCD 2007	8/23/06	9/8/06	30	--	10	10	--	--	--	10
Creek	07	USEPA GLNPO	11/23/09	7/1/10	91	19	91	91	67	15	--	91
Creek	09	NCSWCD 2007	8/24/06	8/24/06	6	--	2	2	--	--	--	2
Creek	09	NYSDEC 2004	8/7/96	12/30/99	2	--	1	1	1	--	--	--
Creek	09	NYSDEC RI	9/1/05	9/1/05	6	--	6	--	--	--	--	--
Creek	09	NYSDEC SRI	4/24/07	4/25/07	11	--	11	--	4	4	--	4
Creek	10	NYSDEC 1998	10/12/94	10/12/94	2	2	2	2	--	2	1	--
Creek	10	NYSDEC 2001	8/17/98	8/17/98	--	2	2	1	2	2	2	--
Creek	10	NYSDEC 2004	1/1/94	11/26/02	13	--	11	5	6	--	--	--
Creek	10	NYSDEC RI	7/23/02	9/1/05	47	--	47	--	--	--	--	--
Creek	10	NYSDEC SRI	4/18/07	4/24/07	63	--	63	--	21	21	--	22
Creek_E	10	NYSDEC RI	9/1/05	9/1/05	2	--	2	--	--	--	--	--
Creek_E	10	NYSDEC SRI	4/20/07	4/25/07	11	--	11	2	6	6	--	4
Canal	Erie Canal	NYSDEC 2001	8/20/98	8/20/98	1	10	10	10	10	3	10	--
Canal	Erie Canal	NYSDEC RI	9/1/05	9/1/05	11	--	11	--	--	--	--	--
Canal	Erie Canal	NYSDEC SRI	6/13/07	6/15/07	6	--	6	--	2	1	--	2
Canal	Erie Canal	NYSDEC SRI-A	12/5/08	12/6/08	18	--	18	--	--	--	--	18
Upstream	Upstream	NYSDEC 2001	8/17/98	8/17/98	--	1	1	--	1	1	1	--
Upstream	Upstream	NYSDEC SRI	4/25/07	4/25/07	2	--	2	--	2	2	--	2
Tributary	04	USEPA GLNPO	11/17/09	11/17/09	1	--	1	1	1	1	--	1
Tributary	07	NYSDEC 2001	8/17/98	8/18/98	--	2	2	2	2	--	2	--
Tributary	07	USEPA GLNPO	11/23/09	6/29/10	19	--	19	19	19	10	--	19
Historic Creek	04	USEPA GLNPO	11/16/09	11/16/09	1	--	1	1	--	--	--	1

Table 2

Summary of Sediment Chemistry Samples for Remedial Investigation by Study

Eighteenmile Creek Area of Concern

Sample Location	Reach	Study	Sample Date Range		Number of Samples							
					PCB Aroclors	PCB Congeners	Metals	Mercury	PAH	Pesticides	Dioxins/Furans	Total Organic Carbon
Historic Creek	05	USEPA GLNPO	11/18/09	11/18/09	1	--	1	1	1	1	--	1
Historic Creek	06	USEPA GLNPO	12/2/09	12/2/09	2	--	2	2	1	1	--	2
Historic Creek	07	USEPA GLNPO	11/23/09	11/30/09	5	1	5	5	1	1	--	5
Wetland	03	USEPA GLNPO	11/16/09	11/16/09	4	1	4	4	1	1	--	4
Wetland	04	USEPA GLNPO	11/16/09	11/18/09	2	--	2	2	1	1	--	2
Wetland	05	USEPA GLNPO	11/18/09	11/19/09	4	1	4	4	1	1	--	4
Wetland	06	USEPA GLNPO	12/2/09	12/2/09	1	--	1	1	--	--	--	1
Wetland	07	USEPA GLNPO	11/30/09	11/30/09	1	--	1	1	1	1	--	1

Table 2 (a)

Summary of Sediment Chemistry Samples for Remedial Investigation Totals by Reach

Eighteenmile Creek Area of Concern

Sample Location	Reach	Number of Studies	Sample Date Range		Number of Samples							
					PCB Aroclors	PCB Congeners	Metals	Mercury	PAH	Pesticides	Dioxins/Furans	Total Organic Carbon
Creek	01	4	5/25/94	10/26/10	32	36	47	47	--	50	42	59
Creek	02	3	10/11/94	5/25/10	127	34	127	127	124	14	13	105
Creek	03	2	8/18/98	5/27/10	80	28	80	80	80	7	9	59
Creek	04	1	11/16/09	6/23/10	25	3	22	22	15	4	--	22
Creek	05	3	10/12/94	7/2/10	82	15	83	82	81	13	13	59
Creek	06	1	11/17/09	7/2/10	62	6	62	62	51	6	--	62
Creek	07	2	8/23/06	7/1/10	121	19	101	101	67	15	--	101
Creek	09	4	8/7/96	4/25/07	25	--	20	3	5	4	--	6
Creek	10	5	1/1/94	4/24/07	125	4	125	8	29	25	3	22
Creek_E	10	2	9/1/05	4/25/07	13	--	13	2	6	6	--	4
Creek	**Subtotals**				**692**	**145**	**680**	**534**	**458**	**144**	**80**	**499**
Canal	Erie Canal	4	8/20/98	12/6/08	36	10	45	10	12	4	10	20
Upstream	Upstream	1	8/17/98	4/25/07	2	1	3	--	3	3	1	2
Tributary	04, 07	2	8/17/98	6/29/10	20	2	22	22	22	11	2	20
Historic Creek	04 - 07	1	11/16/09	12/2/09	9	1	9	9	3	3	--	9
Wetland	03 - 07	1	11/16/09	12/2/09	12	2	12	12	4	4	--	12
Totals					**771**	**161**	**771**	**587**	**502**	**169**	**93**	**562**

Table 3

Sediment Screening Criteria for Non-polar Organic COPCs

Eighteenmile Creek Area of Concern

			Human Bioaccumulation			Benthic Aquatic Life Acute Toxicity			Benthic Aquatic Life Chronic Toxicity			Wildlife Bioaccumulation		
Compound	**Logk_{ow}**	**TOC gOC/kg**	**Water Criteria (µg/l)**	**Sediment Criteria (µg/gOC)**	**Site-specific Sediment Criteria (mg /kg)**	**Water Criteria (µg/l)**	**Sediment Criteria (µg/gOC)**	**Site-specific Sediment Criteria (mg /kg)**	**Water Criteria (µg/l)**	**Sediment Criteria (µg/gOC)**	**Site-specific Sediment Criteria (mg /kg)**	**Water Criteria (µg/l)**	**Sediment Criteria (µg/gOC)**	**Site-specific Sediment Criteria (mg /kg)**
PCBs (total)	6.14	54.86	0.0000006	0.0008	0.00005	2	2761	151	0.014	19.3	1.1	0.001	1.4	0.077
2-Methylnaphthalene	3.86	54.86				42	304	17	4.7	34	1.9			
Acenapthene		54.86								140	7.7		140	7.681
Anthracene	4.45	54.86				35	986	54	3.8	107	5.9			
Benzo(a)Anthracene	5.61	54.86	0.0012	1.3	0.072	0.23	94	5.2	0.3	12	0.66			
Benzo(a)Pyrene	6.04	54.86	0.0012	1.3	0.072									
Benzo(b)Fluoranthene	6.04	54.86	0.0012	1.3	0.072									
Benzo(k)Fluoranthene	6.04	54.86	0.0012	1.3	0.072									
Chrysene	6.04	54.86	0.0012	1.3	0.072									
Dibenz(a,h)Anthracene		54.86												
Fluoranthene	5.19	54.86								1020	56.0			
Fluorene	4.18	54.86				4.8	73	4	0.54	8	0.44			
Ideno(1,2,3-cd)pyrene	6.04	54.86	0.0012	1.3	0.072									
Naphthalene	3.37	54.86				110	258	14	13	30	1.65			
Phenanthrene	4.45	54.86								120	6.58			
Pyrene	5.32	54.86				42	8775	481	4.6	961	52.7			
PAHs (total)								47			11.0			
DDT and metabolites	6.00	54.86	0.00001	0.01	0.001	1.1	1100	60	0.001	1	0.055	0.001	1	0.055
Dieldrin	5.00	54.86	0.001	0.1	0.01				9	17	0.933	0.0077	0.77	0.043
2,3,7,8-TCDD	7.00	54.859	0.000001	0.01	0.01							2E-08	0.0002	0.001

Table 4
Sediment Criteria for Metals
Eighteenmile Creek Area of Concern

Metal	Lowest Effect Level mg/kg	Severe Effect Level mg/kg	Concensus Standards mg/kg
Antimony	2 (L)	25 (L)	
Arsenic	6 (P)	33 (P)	9.79
Cadmium	0.6 (P)	9 (L)	0.99
Chromium	26 (P)	110 (P)	43.4
Copper	16 (P)	110 (P)	31.6
Iron (%)	0.02 (P)	0.04 (P)	
Lead	31 (P)	110 (L)	35.8
Manganese	460 (P)	1100 (L)	
Mercury	0.15 (L)	1.3 (L)	0.18
Nickel	16 (P)	50 (L)	22.7
Silver	1 (L)	2.2 (L)	
Zinc	120 (P/L)	270 (L)	121

"L" criterion taken from Long and Morgan (1990)

"P" criterion taken from Persaud et al. (1992)

Consensus standards taken from MacDonald et al. (2000)

Table 5

Site-specific Sediment Screening Criteria Primary COPCs

Eighteenmile Creek Area of Concern

COPC	Site-specific Criteria Low Value (mg/kg)	Site-specific Criteria High Value (mg/kg)
PCBs (total)	1	50
PAHs (total)	15	100
ARSENIC	6	33
CHROMIUM, TOTAL	26	110
COPPER	16	110
LEAD	31	110
ZINC	120	270
MERCURY	0.15	1.3

Table 6a

Statistical Summary of PCBs in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		PCB (Total Aroclors in mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	19	32	0.41	0.001	0.9	--	--
Creek	02	114	127	1.7	0.009	23.0	33	--
Creek	03	63	80	2.3	0.0	25.9	27	--
Creek	04	19	22	2.2	0.067	27.0	5	--
Creek	05	39	82	1.1	0.001	18.4	6	--
Creek	06	48	62	1.1	0.018	25.0	9	--
Creek	07	105	121	8.7	0.016	97.0	74	6
Creek	09	22	25	9.4	0.012	50.0	14	1
Creek	10	104	125	32.4	0.006	1400	51	10
Creek_E	10	13	13	0.4	0.012	3.8	1	--
Creek	**Totals**	**546**	**689**				**220**	**17**
Canal	Erie Canal	34	36	20.1	0.007	310	18	3
Upstream	Upstream	--	2	--	--	--	--	--
Tributary	04	--	1	--	--	--	--	--
Tributary	07	2	19	0.3	0.110	0.4	--	--
Historic Creek	04	1	1	0.2	0.150	0.2	--	--
Historic Creek	05	--	1	--	--	--	--	--
Historic Creek	06	1	2	0.5	0.480	0.5	--	--
Historic Creek	07	4	5	1.2	0.035	3.3	2	--
Wetland	03	4	4	0.3	0.200	0.5	--	--
Wetland	04	1	2	0.2	0.150	0.2	--	--
Wetland	05	4	4	0.5	0.130	1.2	1	--
Wetland	06	1	1	0.1	0.072	0.1	--	--
Wetland	07	1	1	0.2	0.190	0.2	--	--
Other	**Totals**	**19**	**41**				**3**	**0**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 6b

Statistical Summary of PCBs in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		PCB (Total Congeners in mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	36	36	0.37	0.021	2.0	2	--
Creek	02	34	34	3.7	0.116	24.1	29	--
Creek	03	28	28	6.4	0.0	35.9	20	--
Creek	04	3	3	1.4	0.290	2.8	1	--
Creek	05	13	15	3.3	0.001	29.1	3	--
Creek	06	6	6	4.6	1.000	12.0	6	--
Creek	07	19	19	23.7	4.900	86.0	19	2
Creek	09	--	--	--	--	--	--	--
Creek	10	4	4	9.9	1.672	25	4	--
Creek_E	10	--	--	--	--	--	--	--
Creek	**Totals**	**143**	**145**				**84**	**2**
Canal	Erie Canal	10	10	1.5	0.120	5	4	--
Upstream	Upstream	1	1	0.02	0.020	0.02	--	--
Tributary	04	--	--	--	--	--	--	--
Tributary	07	2	2	0.1	0.000	0.2	--	--
Historic Creek	04	--	--	--	--	--	--	--
Historic Creek	05	--	--	--	--	--	--	--
Historic Creek	06	--	--	--	--	--	--	--
Historic Creek	07	1	1	15.0	15	15	1	--
Wetland	03	1	1	0.7	0.720	0.7	--	--
Wetland	04	--	--	--	--	--	--	--
Wetland	05	1	1	0.2	0.180	0.2	--	--
Wetland	06	--	--	--	--	--	--	--
Wetland	07	--	--	--	--	--	--	--
Other	**Totals**	**5**	**5**				**1**	**0**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 7a

Statistical Summary of Metals in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Lead (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	47	47	118	4	419	32	22
Creek	02	127	127	1525	6	6760	121	120
Creek	03	80	80	1574	4.5	5790	71	70
Creek	04	22	22	449	47	2320	22	17
Creek	05	83	83	784	6	7850	74	68
Creek	06	62	62	593	76	4380	62	60
Creek	07	101	101	635	11	2940	100	99
Creek	09	20	20	425	33	2040	20	17
Creek	10	125	125	969	11	25000	121	103
Creek_E	10	13	13	235	63	807	13	12
Creek	**Totals**	**680**	**680**				**636**	**588**
Canal	Erie Canal	45	45	135	33	483	45	21
Upstream	Upstream	3	3	49	9	103	2	--
Tributary	04	1	1	20	20	20	--	--
Tributary	07	21	21	251	5	823	12	8
Historic Creek	04	1	1	193	193	193	1	1
Historic Creek	05	1	1	31	31	31	1	--
Historic Creek	06	2	2	396	359	433	2	2
Historic Creek	07	5	5	236	57	400	5	4
Wetland	03	4	4	380	310	533	4	4
Wetland	04	2	2	148	125	170	2	2
Wetland	05	4	4	357	265	473	4	4
Wetland	06	1	1	299	299	299	1	1
Wetland	07	1	1	339	339	339	1	1
Other	**Totals**	**43**	**43**				**21**	**19**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 7b

Statistical Summary of Metals in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Arsenic (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	47	47	4.3	1.0	13	8	--
Creek	02	127	127	10.6	1.6	32	95	--
Creek	03	80	80	8.4	2.0	17	50	--
Creek	04	22	22	4.9	2.6	14	4	--
Creek	05	83	83	9.3	1.2	33	59	1
Creek	06	62	62	5.4	2.9	13	14	--
Creek	07	100	101	6.9	2.2	31	54	--
Creek	09	14	14	10.2	2.8	25	10	--
Creek	10	73	73	9.4	2.1	37	43	1
Creek_E	10	11	11	5.5	1.2	11	5	--
Creek	**Totals**	**619**	**620**				**342**	**2**
Canal	Erie Canal	34	34	5.7	1.8	20.0	6	--
Upstream	Upstream	3	3	4.9	3.3	7.7	1	--
Tributary	04	1	1	2.6	2.6	2.6	--	--
Tributary	07	21	21	4.8	1.0	8.0	6	--
Historic Creek	04	1	1	4.1	4.1	4.1	--	--
Historic Creek	05	1	1	3.2	3.2	3.2	--	--
Historic Creek	06	2	2	8.7	5.3	12.0	1	--
Historic Creek	07	5	5	6.3	3.6	11.0	3	--
Wetland	03	4	4	5.1	4.5	5.4	--	--
Wetland	04	2	2	4.0	3.8	4.2	--	--
Wetland	05	4	4	6.2	4.9	8.6	2	--
Wetland	06	1	1	6.8	6.8	6.8	1	--
Wetland	07	1	1	4.3	4.3	4.3	--	--
Other	**Totals**	**43**	**43**				**7**	**0**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 7c

Statistical Summary of Metals in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Chromium (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	47	47	70	8	867	29	4
Creek	02	127	127	472	14	1950	121	93
Creek	03	80	80	470	12.0	2090	71	57
Creek	04	22	22	153	19	1090	20	6
Creek	05	83	83	237	14	1470	70	39
Creek	06	62	62	159	13	1380	61	18
Creek	07	101	101	156	13	703	100	60
Creek	09	14	14	48	9	196	8	1
Creek	10	73	73	62	5	1200	39	7
Creek_E	10	11	11	16	8	41	1	--
Creek	**Totals**	**620**	**620**				**520**	**285**
Canal	Erie Canal	34	34	32	6	91	21	--
Upstream	Upstream	3	3	13	9	18	--	--
Tributary	04	1	1	13	13	13	--	--
Tributary	07	21	21	61	8	201	10	4
Historic Creek	04	1	1	65	65	65	1	--
Historic Creek	05	1	1	14	14	14	--	--
Historic Creek	06	2	2	147	95	199	2	1
Historic Creek	07	5	5	63	26	109	5	--
Wetland	03	4	4	140	108	216	4	3
Wetland	04	2	2	49	36	62	2	--
Wetland	05	4	4	133	94	172	4	3
Wetland	06	1	1	72	72	72	1	--
Wetland	07	1	1	78	78	78	1	--
Other	**Totals**	**43**	**43**				**20**	**7**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 7d

Statistical Summary of Metals in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Copper (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	47	47	74	10	245	34	14
Creek	02	127	127	932	9	3790	122	119
Creek	03	80	80	921	5.9	3170	73	70
Creek	04	22	22	260	26	1230	22	16
Creek	05	83	83	395	5	3000	77	64
Creek	06	62	62	351	28	2710	62	51
Creek	07	101	101	551	18	1620	101	99
Creek	09	14	14	622	27	2640	14	10
Creek	10	73	73	1258	16	54900	73	43
Creek_E	10	11	11	107	32	361	11	3
Creek	**Totals**	**620**	**620**				**589**	**489**
Canal	Erie Canal	34	34	44	5	106	29	--
Upstream	Upstream	3	3	18	12	21	2	--
Tributary	04	1	1	10	10	10	--	--
Tributary	07	21	21	98	9	292	18	7
Historic Creek	04	1	1	153	153	153	1	1
Historic Creek	05	1	1	24	24	24	1	--
Historic Creek	06	2	2	256	210	301	2	2
Historic Creek	07	5	5	158	42	272	5	3
Wetland	03	4	4	251	210	347	4	4
Wetland	04	2	2	91	72	110	2	1
Wetland	05	4	4	237	182	301	4	4
Wetland	06	1	1	186	186	186	1	1
Wetland	07	1	1	275	275	275	1	1
Other	**Totals**	**43**	**43**				**21**	**17**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 7e

Statistical Summary of Metals in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Zinc (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	46	46	347	67	1350	29	24
Creek	02	127	127	3403	57	16500	121	119
Creek	03	80	80	4427	47.0	20000	71	71
Creek	04	22	22	1470	183	8670	22	20
Creek	05	64	83	2068	60	24000	54	51
Creek	06	62	62	1236	82	9760	61	59
Creek	07	101	101	1190	76	5980	100	99
Creek	09	14	14	686	51	2280	11	10
Creek	10	73	73	1314	46	21400	57	43
Creek_E	10	11	11	641	66	5190	7	4
Creek	**Totals**	**600**	**619**				**533**	**500**
Canal	Erie Canal	34	34	243	19	899	26	9
Upstream	Upstream	3	3	107	44	170	1	--
Tributary	04	1	1	63	63	63	--	--
Tributary	07	21	21	536	39	1850	14	9
Historic Creek	04	1	1	892	892	892	1	1
Historic Creek	05	1	1	309	309	309	1	1
Historic Creek	06	2	2	919	557	1280	2	2
Historic Creek	07	5	5	527	159	1030	5	3
Wetland	03	4	4	1146	899	1710	4	4
Wetland	04	2	2	374	304	444	2	2
Wetland	05	4	4	931	709	1310	4	4
Wetland	06	1	1	543	543	543	1	1
Wetland	07	1	1	820	820	820	1	1
Other	**Totals**	**43**	**43**				**21**	**19**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 8

Statistical Summary of PAH in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		PAH (Total in mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	--	--	--	--	--	--	--
Creek	02	120	124	4.1	0.048	65	2	--
Creek	03	77	80	5.7	0.004	24.1	5	--
Creek	04	15	15	30.2	0.860	250	6	1
Creek	05	80	81	3.2	0.004	18.2	3	--
Creek	06	51	51	6.3	0.490	130	2	1
Creek	07	66	66	31.3	0.037	380	39	3
Creek	09	5	5	8.9	1.630	17.3	1	--
Creek	10	29	29	35.5	0.049	593	11	2
Creek_E	10	6	6	9.5	1.857	36.6	1	--
Creek	**Totals**	**449**	**457**				**70**	**7**
Canal	Erie Canal	12	12	11.0	1.870	30	3	--
Upstream	Upstream	3	3	13.5	5.632	25.6	1	--
Tributary	04	1	1	0.4	0.400	0.4	--	--
Tributary	07	20	21	8.4	0.046	97	2	--
Historic Creek	04	--	--	--	--	--	--	--
Historic Creek	05	1	1	49.0	49.0	49	1	--
Historic Creek	06	1	1	4.0	4.0	4.0	--	--
Historic Creek	07	1	1	29	29	29	1	--
Wetland	03	1	1	2.1	2.1	2.1	--	--
Wetland	04	1	1	2.0	2.0	2.0	--	--
Wetland	05	1	1	5.3	5.3	5.3	--	--
Wetland	06	--	--	--	--	--	--	--
Wetland	07	1	1	25	25	25	1	--
Other	**Totals**	**28**	**29**				**3**	**0**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 9

Statistical Summary of PCBs in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Mercury (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	37	46	0.67	0.022	3.8	26	6
Creek	02	126	127	1.6	0.050	8.6	123	59
Creek	03	73	80	1.9	0.1	4.8	71	44
Creek	04	22	22	0.6	0.130	1.2	21	--
Creek	05	81	82	3.1	0.052	11.0	76	49
Creek	06	62	62	0.8	0.150	3.4	62	11
Creek	07	98	101	1.6	0.210	18.0	98	33
Creek	09	3	3	1.3	0.600	2.5	3	1
Creek	10	7	8	1.7	0.260	5	7	3
Creek_E	10	2	2	0.1	0.113	0.2	1	--
Creek	**Totals**	**511**	**533**				**488**	**206**
Canal	Erie Canal	10	10	0.3	0.118	1	8	--
Upstream	Upstream	--	--	--	--	--	--	--
Tributary	04	1	1	0.1	0.053	0.1	--	--
Tributary	07	13	21	0.1	0.058	0.3	6	--
Historic Creek	04	1	1	0.5	0.500	0.5	1	--
Historic Creek	05	--	1	--	--	--	--	--
Historic Creek	06	2	2	1.3	0.640	1.9	2	1
Historic Creek	07	5	5	0.8	0	2	5	1
Wetland	03	4	4	0.8	0.600	1.0	4	--
Wetland	04	2	2	0.7	0.710	0.8	2	--
Wetland	05	4	4	0.7	0.510	0.8	4	--
Wetland	06	1	1	2.5	2.500	2.5	1	1
Wetland	07	1	1	1.0	0.990	1.0	1	--
Other	**Totals**	**34**	**43**				**20**	**3**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 10a

Statistical Summary of Pesticides in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		DDT (Total Metabolites in mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	25	31	0.02	0.003	0.1	--	--
Creek	02	13	14	0.04	0.004	0.3	--	--
Creek	03	6	7	0.03	0.0	0.1	--	--
Creek	04	3	4	0.03	0.013	0.1	--	--
Creek	05	9	13	0.02	0.002	0.1	--	--
Creek	06	5	6	0.05	0.014	0.1	--	--
Creek	07	13	15	0.66	0.018	5.7	--	--
Creek	09	1	4	0.00	0.001	0.0	--	--
Creek	10	22	25	0.11	0.001	1	--	--
Creek_E	10	5	6	0.09	0.005	0.2	--	--
Creek	**Totals**	**102**	**125**				**0**	**0**
Canal	Erie Canal	3	4	0.014	0.012	0.016	--	--
Upstream	Upstream	1	3	0.009	0.009	0.01	--	--
Tributary	04	1	1	0.006	0.006	0.006	--	--
Tributary	07	3	10	0.059	0.015	0.132	--	--
Historic Creek	04	--	--	--	--	--	--	--
Historic Creek	05	1	1	0.016	0.016	0.016	--	--
Historic Creek	06	1	1	0.036	0.036	0.036	--	--
Historic Creek	07	--	1	--	--	--	--	--
Wetland	03	--	1	--	--	--	--	--
Wetland	04	1	1	0.015	0.015	0.015	--	--
Wetland	05	1	1	0.039	0.039	0.039	--	--
Wetland	06	--	--	--	--	--	--	--
Wetland	07	--	1	--	--	--	--	--
Other	**Totals**	**8**	**18**				**0**	**0**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 10b

Statistical Summary of Pesticides in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Dieldrin (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	--	20	--	--	--	--	--
Creek	02	--	--	--	--	--	--	--
Creek	03	--	--	--	--	--	--	--
Creek	04	3	4	0.012	0.004	0.02	--	--
Creek	05	--	--	--	--	--	--	--
Creek	06	3	6	0.016	0.011	0.02	--	--
Creek	07	13	15	0.099	0.011	0.44	--	--
Creek	09	2	4	0.010	0.004	0.02	--	--
Creek	10	7	21	0.272	0.003	1.80	--	1
Creek_E	10	2	6	0.189	0.008	0.37	--	--
Creek	**Totals**	**30**	**76**				**0**	**1**
Canal	Erie Canal	1	1	0.0	0.006	0	--	--
Upstream	Upstream	1	2	0.02	0.023	0.02	--	--
Tributary	04	--	1	--	--	--	--	--
Tributary	07	2	10	0.026	0.023	0.028	--	--
Historic Creek	04	--	--	--	--	--	--	--
Historic Creek	05	--	1	--	--	--	--	--
Historic Creek	06	1	1	0.015	0.015	0.015	--	--
Historic Creek	07	--	1	--	--	--	--	--
Wetland	03	1	1	0.007	0.007	0.007	--	--
Wetland	04	--	1	--	--	--	--	--
Wetland	05	1	1	0.011	0.011	0.011	--	--
Wetland	06	--	--	--	--	--	--	--
Wetland	07	1	1	0.007	0.007	0.007	--	--
Other	**Totals**	**6**	**18**				**0**	**0**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 11

Statistical Summary of TOC in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		Total Organic Carbon (mg/kg)						
Sample Location	**Reach**	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
Creek	01	59	59	28668	6900	48000	--	--
Creek	02	105	105	66616	2470	150000	--	--
Creek	03	59	59	70992	1240.0	141000	--	--
Creek	04	22	22	59918	16000	147000	--	--
Creek	05	58	59	57605	3990	130000	--	--
Creek	06	62	62	53555	12000	116000	--	--
Creek	07	101	101	68669	8630	159000	--	--
Creek	09	6	6	56450	36300	79800	--	--
Creek	10	22	22	40645	5390	100000	--	--
Creek_E	10	4	4	74225	14000	193000	--	--
Creek	**Totals**	**498**	**499**				**0**	**0**
Canal	Erie Canal	20	20	33097	4440	67500	--	--
Upstream	Upstream	2	2	8575	1650	15500	--	--
Tributary	04	1	1	22000	22000	22000	--	--
Tributary	07	19	19	41668	11000	112000	--	--
Historic Creek	04	1	1	103000	103000	103000	--	--
Historic Creek	05	1	1	54000	54000	54000	--	--
Historic Creek	06	2	2	28000	23000	33000	--	--
Historic Creek	07	5	5	61800	35000	97000	--	--
Wetland	03	4	4	66250	44000	80000	--	--
Wetland	04	2	2	33000	20000	46000	--	--
Wetland	05	4	4	94250	48000	175000	--	--
Wetland	06	1	1	26000	26000	26000	--	--
Wetland	07	1	1	61000	61000	61000	--	--
Other	**Totals**	**41**	**41**				**0**	**0**

Notes:

-- = No detections/samples in Reach

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 12

Summary of Percent Detected and Exceeded Criteria in Sediment Samples for Remedial Investigation

Eighteenmile Creek Area of Concern

		PCBs (Total Aroclors)			PAH			Lead		
Sample Location	**Reach**	**% Detect**	**% Exceeds Low[(b)]**	**% Exceeds High[(b)]**	**% Detect**	**% Exceeds Low[(b)]**	**% Exceeds High[(b)]**	**% Detect**	**% Exceeds Low[(b)]**	**% Exceeds High[(b)]**
Creek	01	59%	--	--	--	--	--	100%	68%	47%
Creek	02	90%	29%	--	97%	2%	--	100%	95%	94%
Creek	03	79%	43%	--	96%	6%	--	100%	89%	88%
Creek	04	86%	26%	--	100%	40%	7%	100%	100%	77%
Creek	05	48%	15%	--	99%	4%	--	100%	89%	82%
Creek	06	77%	19%	--	100%	4%	2%	100%	100%	97%
Creek	07	87%	70%	5%	100%	59%	5%	100%	99%	98%
Creek	09	88%	64%	4%	100%	20%	--	100%	100%	85%
Creek	10	83%	49%	8%	100%	38%	7%	100%	97%	82%
Creek_E	10	100%	8%	--	100%	17%	--	100%	100%	92%
Creek	**Totals**	79%	40%	2%	98%	16%	2%	100%	94%	86%
Canal	Erie Canal	94%	53%	8%	100%	25%	--	100%	100%	47%
Upstream	Upstream	--	--	--	100%	33%	--	100%	67%	--
Tributary	04	--	--	--	100%	--	--	100%	--	--
Tributary	07	11%	--	--	95%	10%	--	100%	57%	38%
Historic Creek	04	100%	--	--	--	--	--	100%	100%	100%
Historic Creek	05	--	--	--	100%	100%	--	100%	100%	--
Historic Creek	06	50%	--	--	100%	--	--	100%	100%	100%
Historic Creek	07	80%	50%	--	100%	100%	--	100%	100%	80%
Wetland	03	100%	--	--	100%	--	--	100%	100%	100%
Wetland	04	50%	--	--	100%	--	--	100%	100%	100%
Wetland	05	100%	25%	--	100%	--	--	100%	100%	100%
Wetland	06	100%	--	--	--	--	--	100%	100%	100%
Wetland	07	100%	--	--	100%	100%	--	100%	100%	100%
Other	**Totals**	46%	16%	--	97%	11%	--	100%	49%	44%

Notes:

-- = No detections or exceedances for the samples in Reach

[(a)] Average is for samples with positive results only

[(b)] Shows the number of detected results that exceed screening criteria are listed on Table 5

Table 13

Statistical Summary of COPCs for Water Street Residental Soil Samples

Eighteenmile Creek Area of Concern

	COPCs (mg/kg)						
Contaminant	**Number Detected**	**Number of Samples**	**Average[a]**	**Minimum Detected**	**Maximum Detected**	**Exceeds Low Criteria[b]**	**Exceeds High Criteria[b]**
PCBs (total)	22	30	2.90	0.024	27.0	6	0
ARSENIC	20	20	16.5	5.30	66.5	18	0
CHROMIUM, TOTAL	20	20	26.5	10.7	164	5	1
COPPER	20	20	155.8	32.2	1010	20	9
LEAD	42	42	760.3	4.500	4630	40	38
ZINC	20	20	571.5	146	1660	20	12

Notes:

-- = No detections in samples

[a] Average is for samples with positive results only

[b] Shows the number of detected results that exceed screening criteria are listed on Table 5

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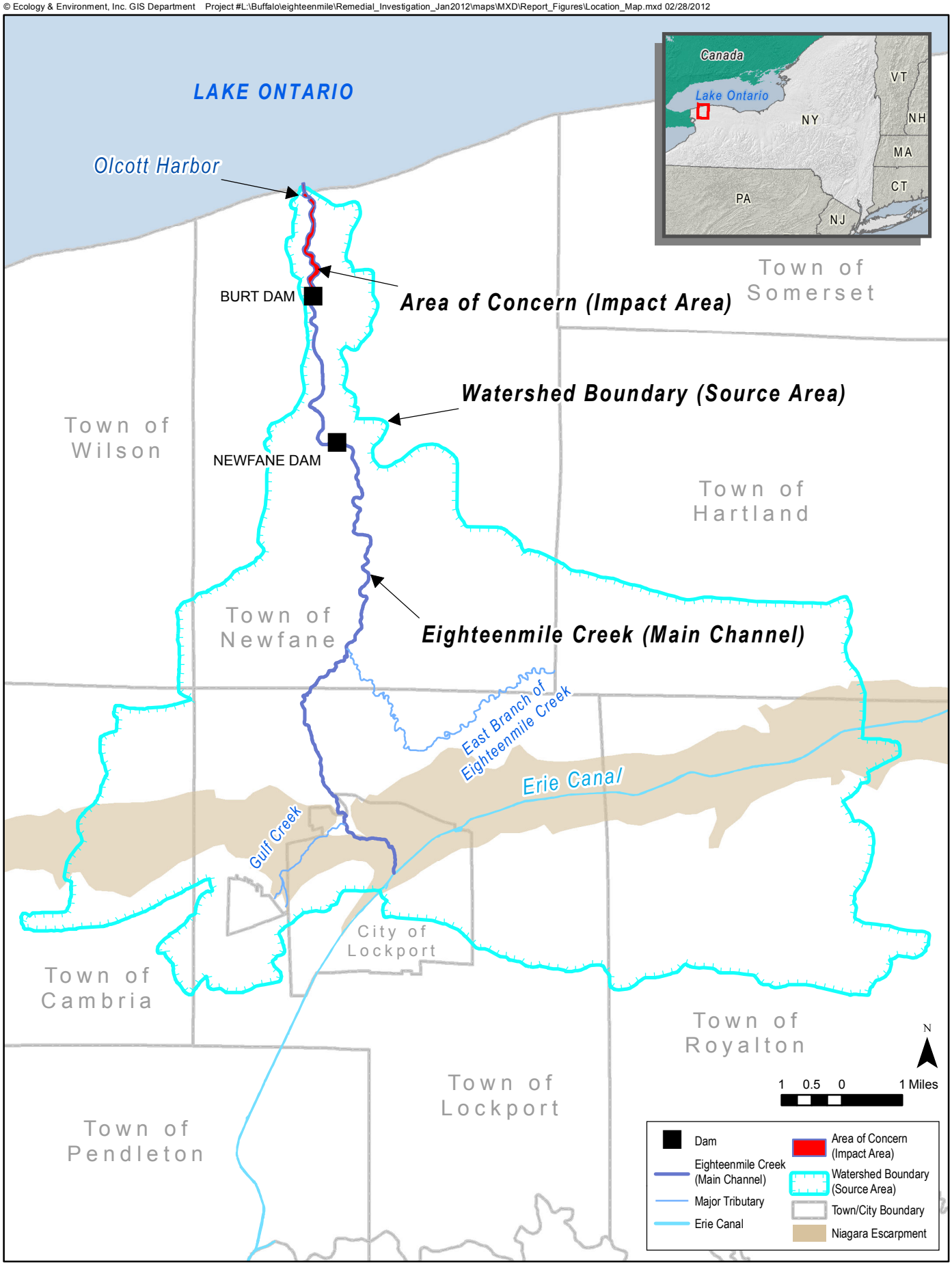

Figure 1 Eighteenmile Creek AOC Project Area and Watershed Boundaries

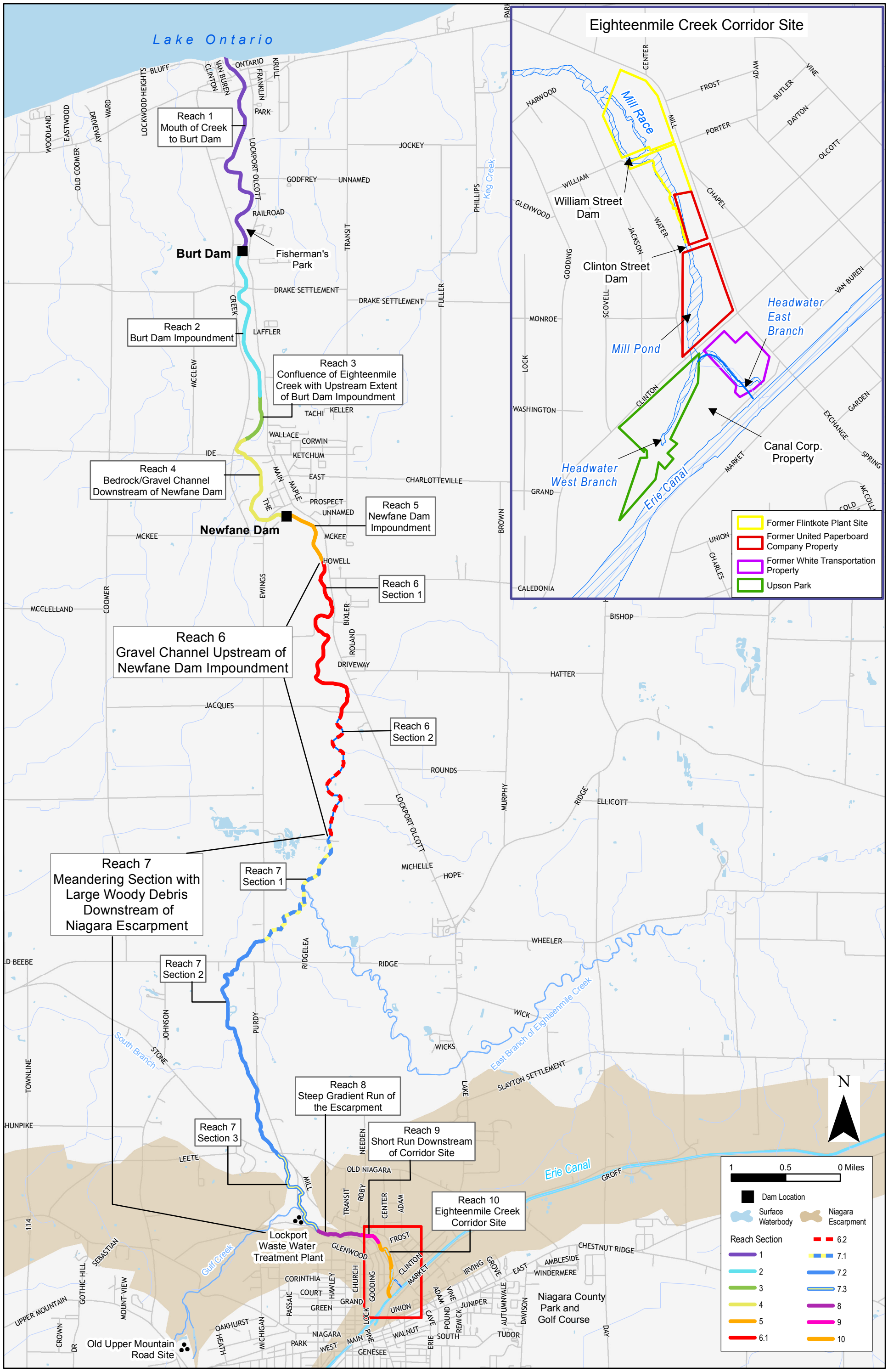

Figure 2 Eighteenmile Creek AOC Project Investigation Areas

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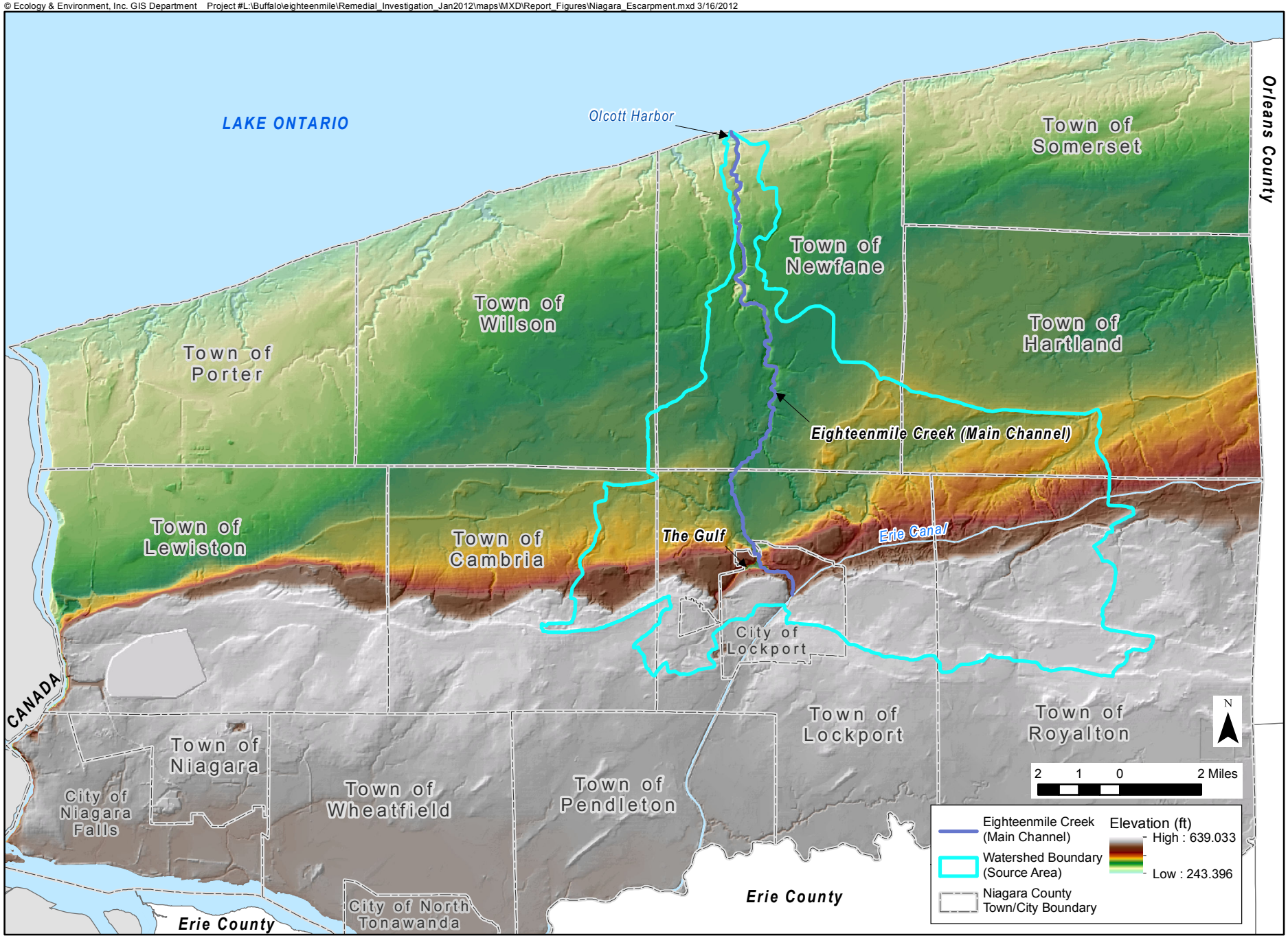


Figure 3 The Niagara Escarpment within Niagara County

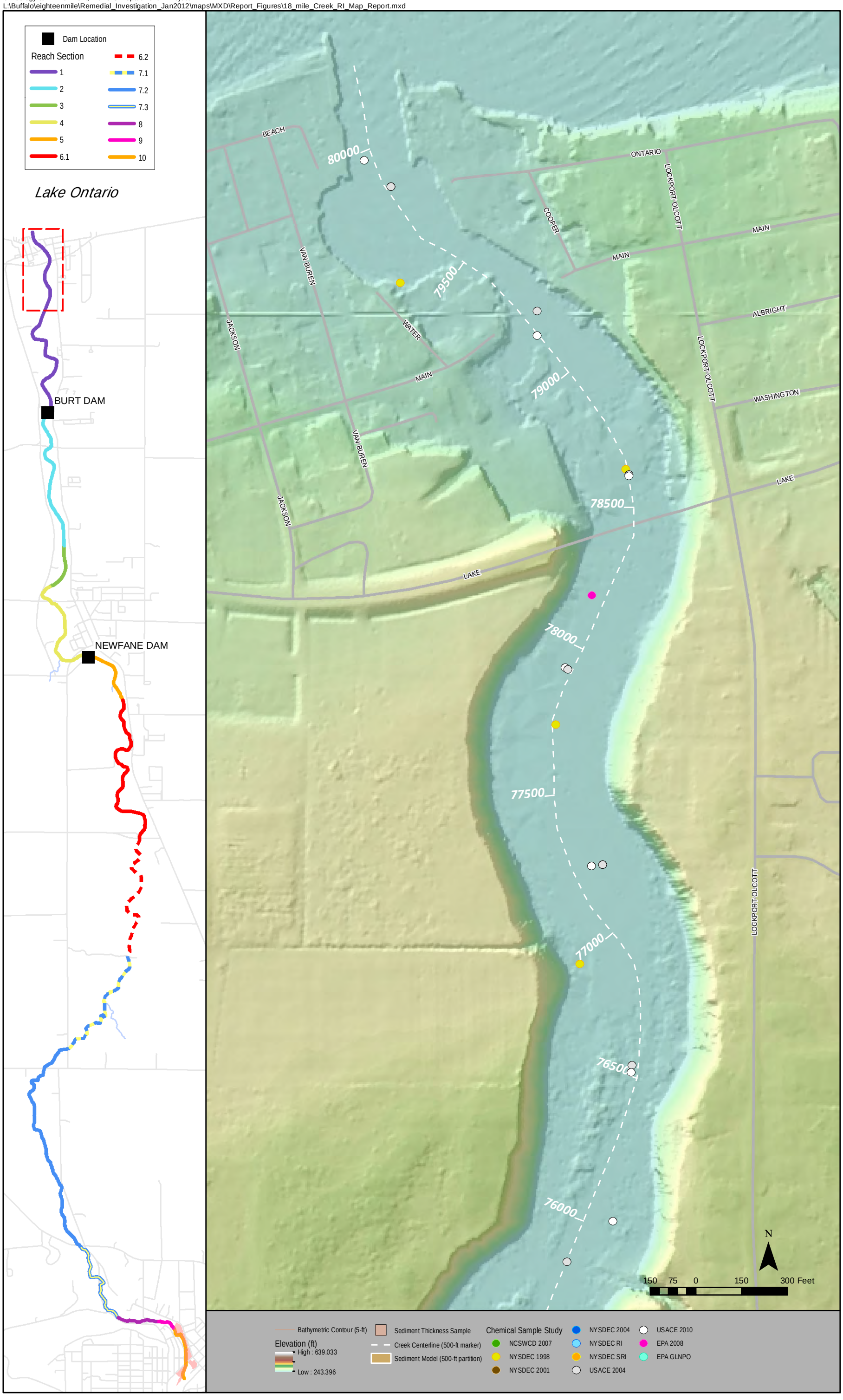
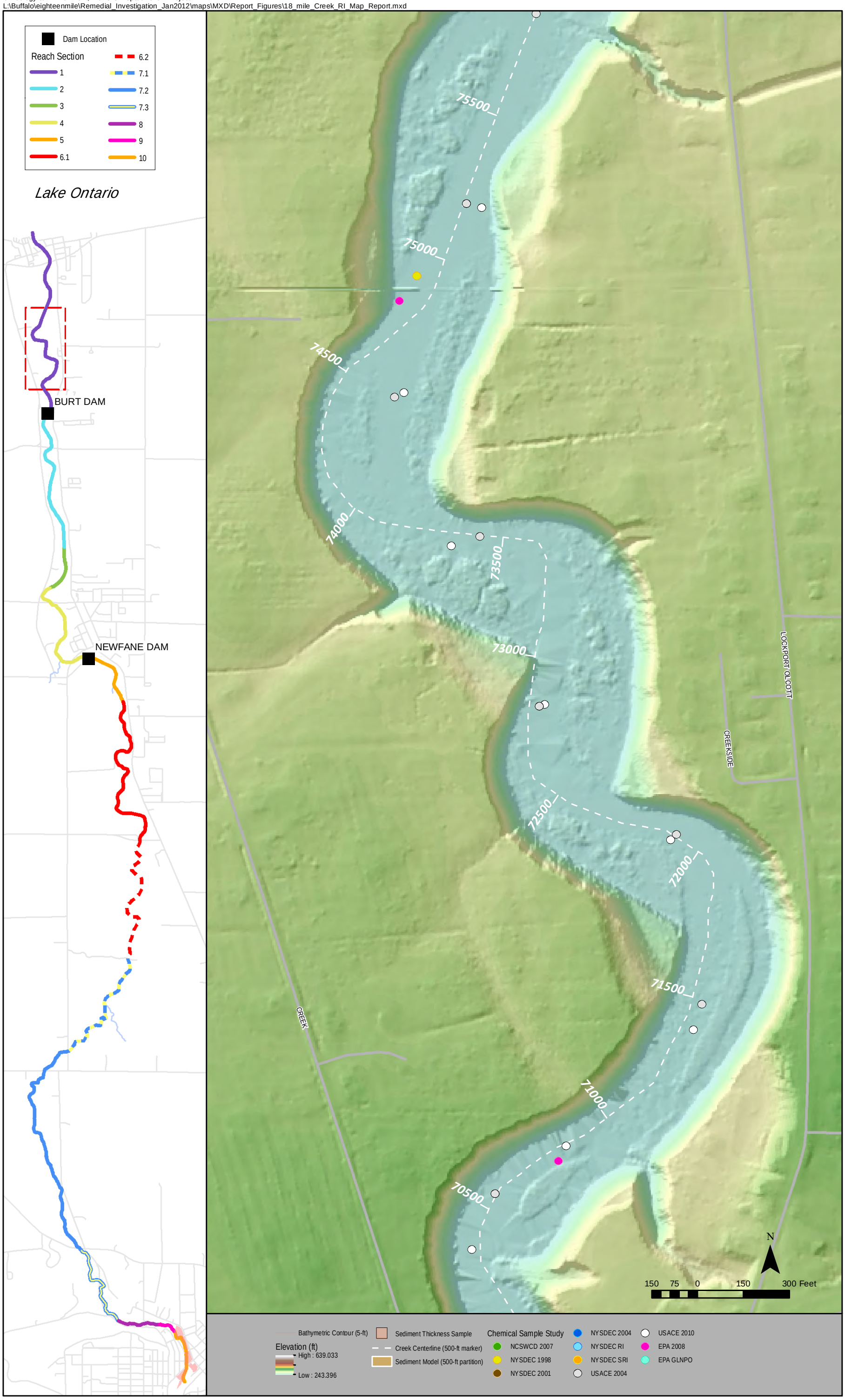


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations



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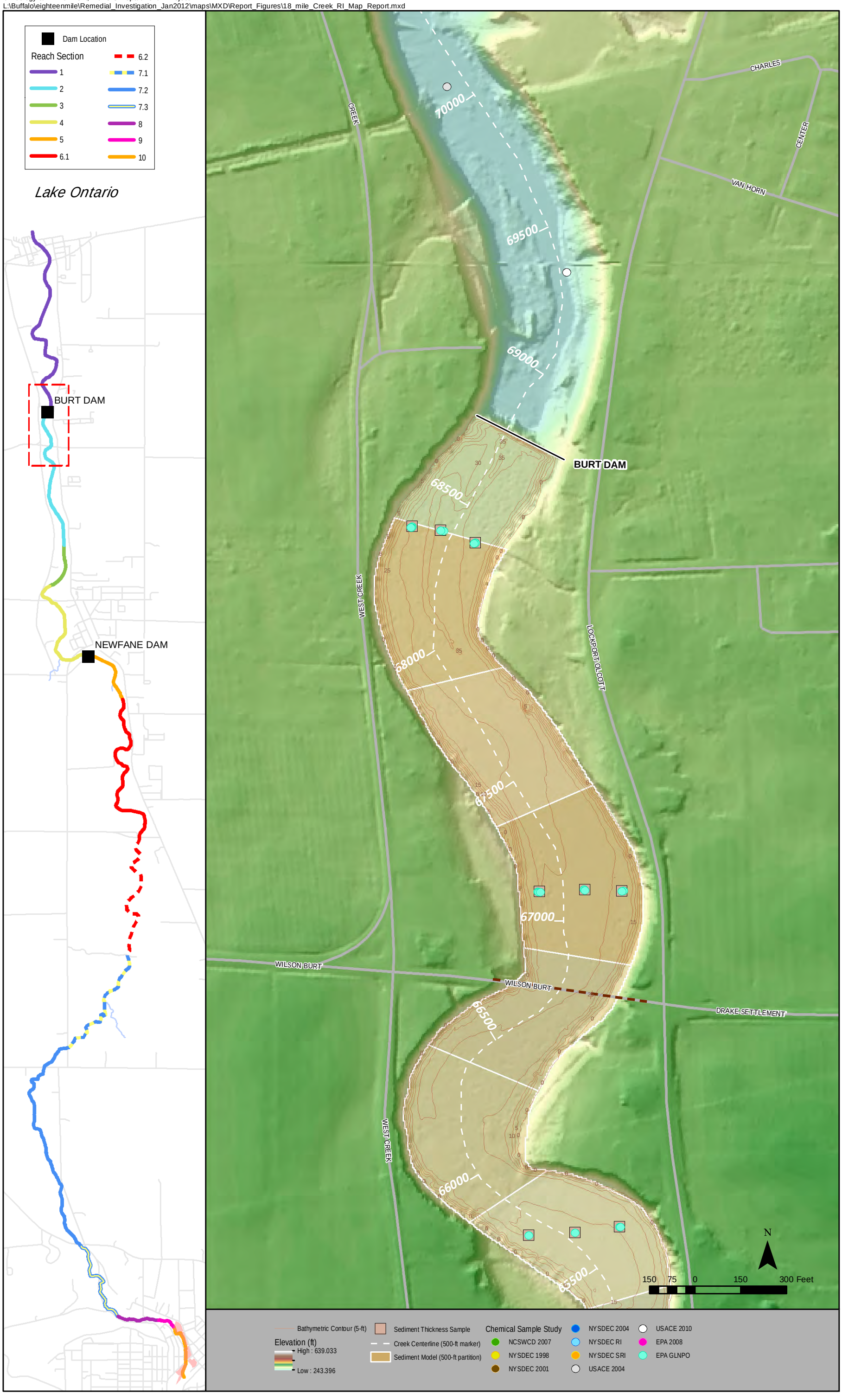

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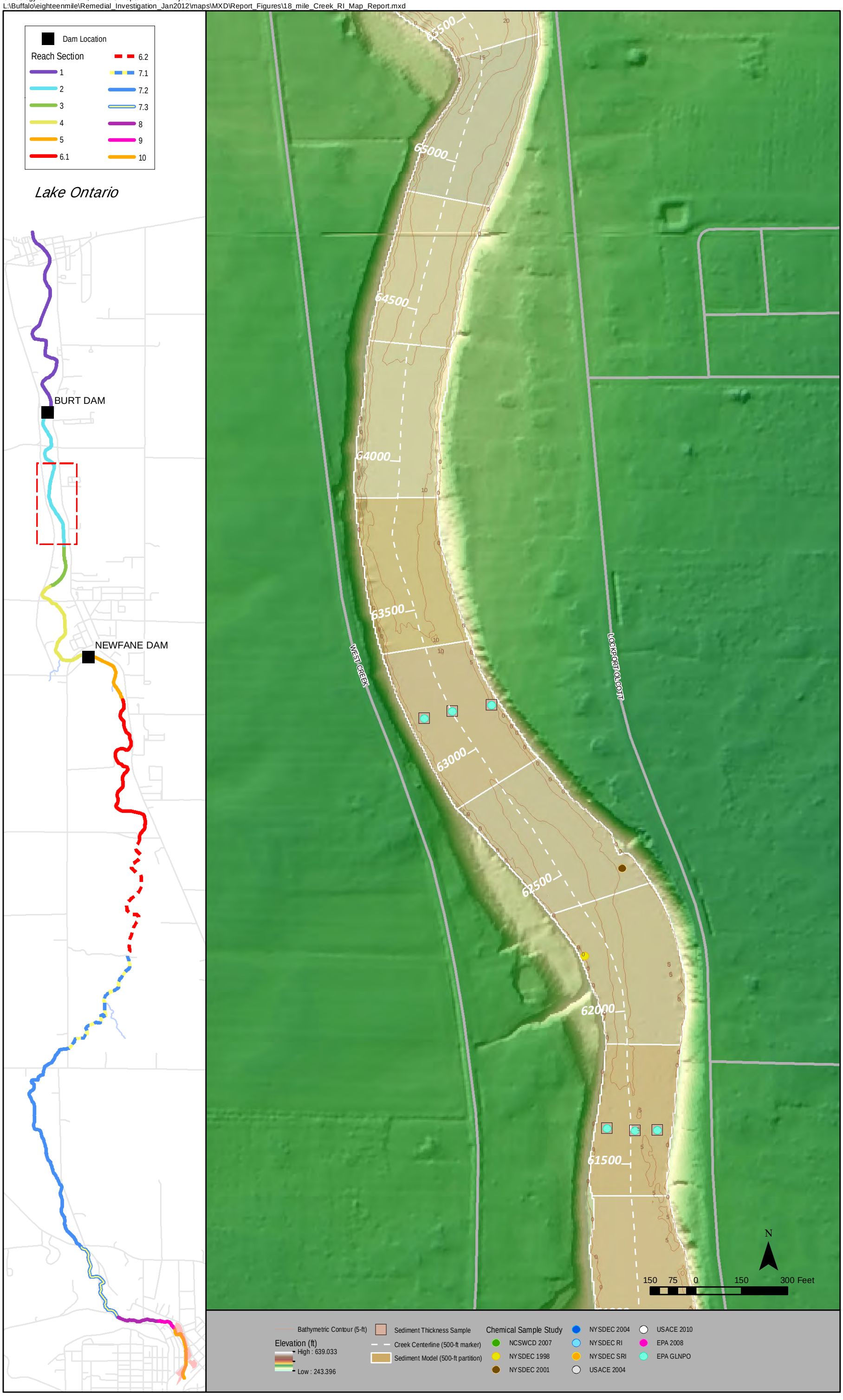

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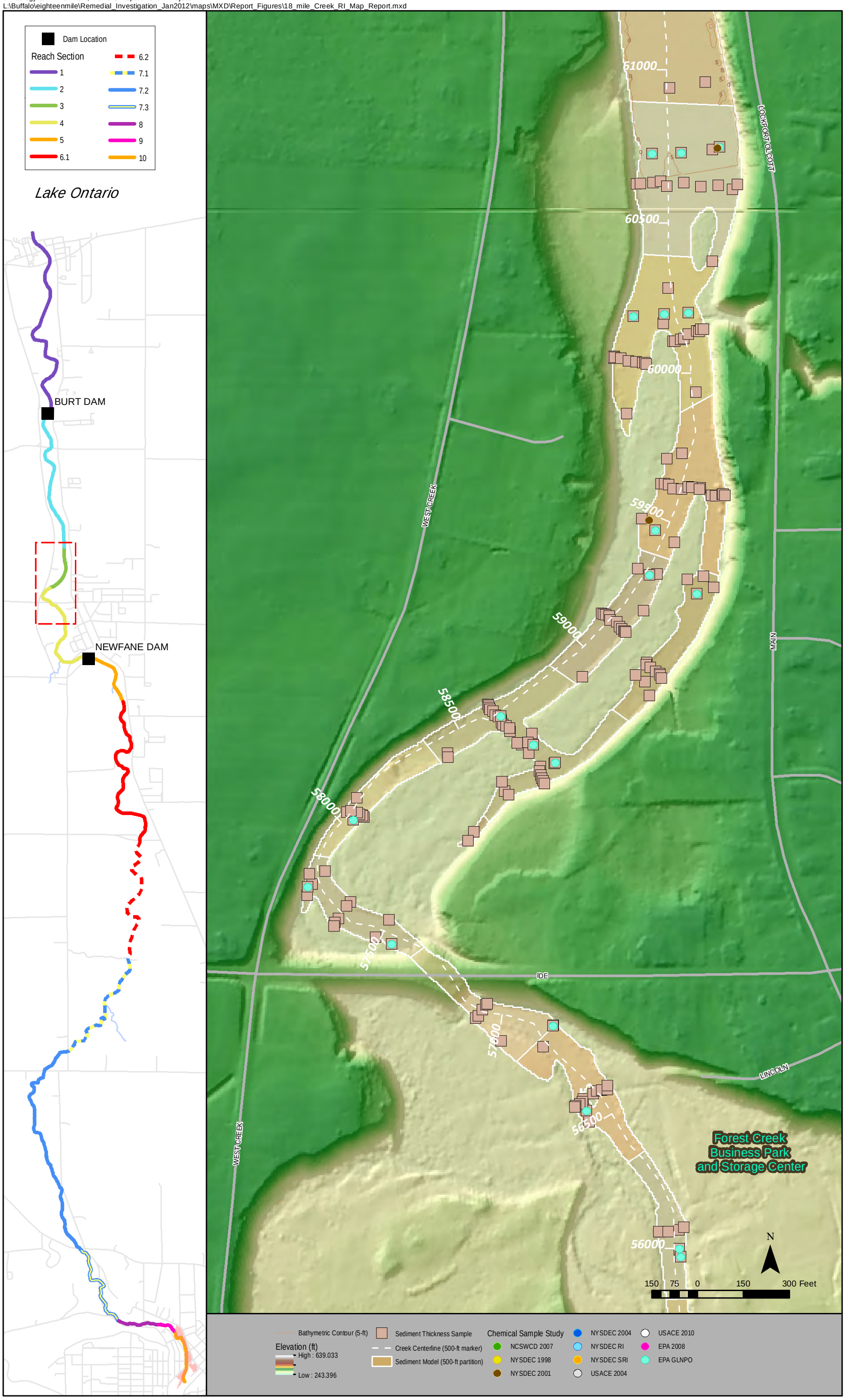

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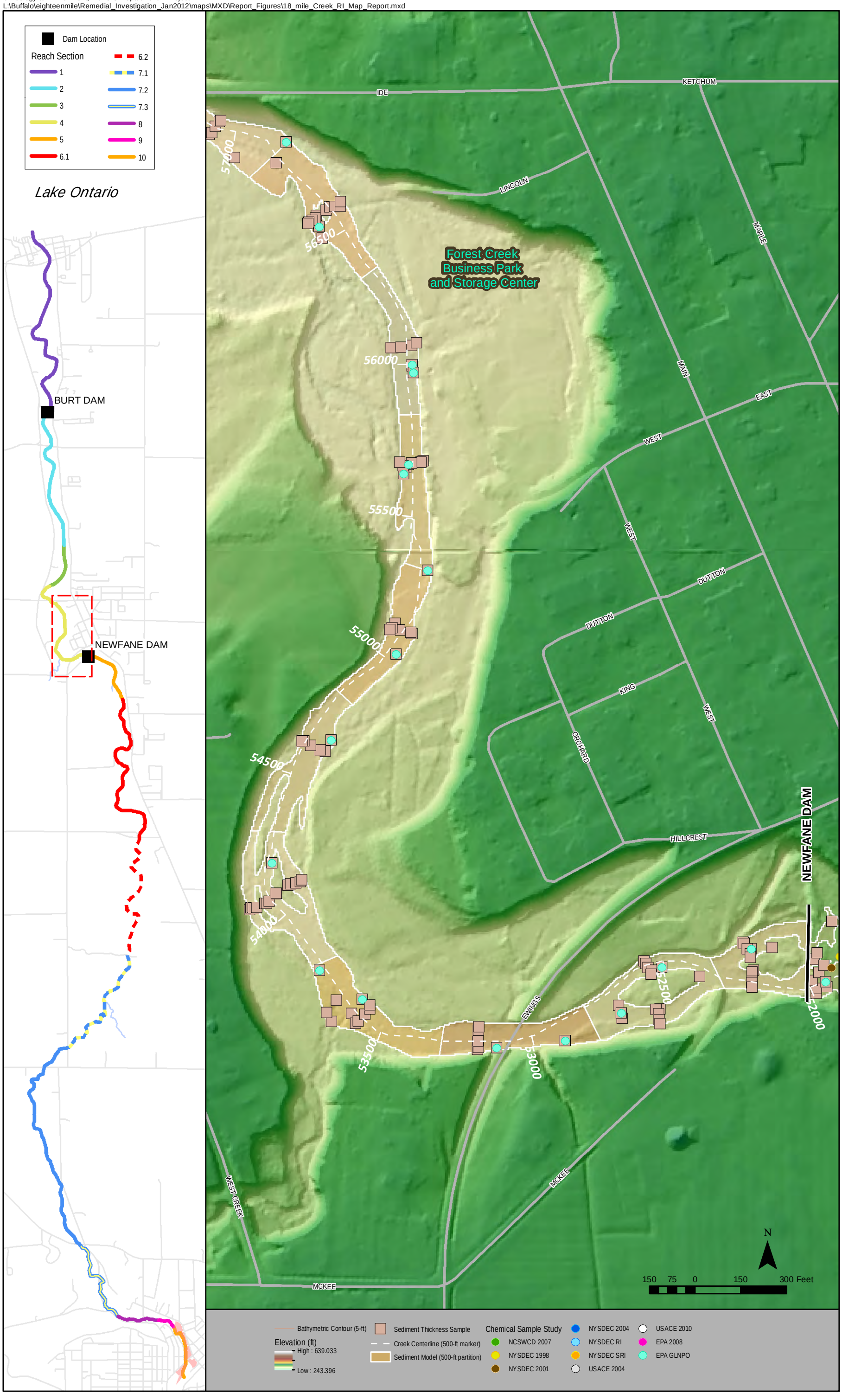


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

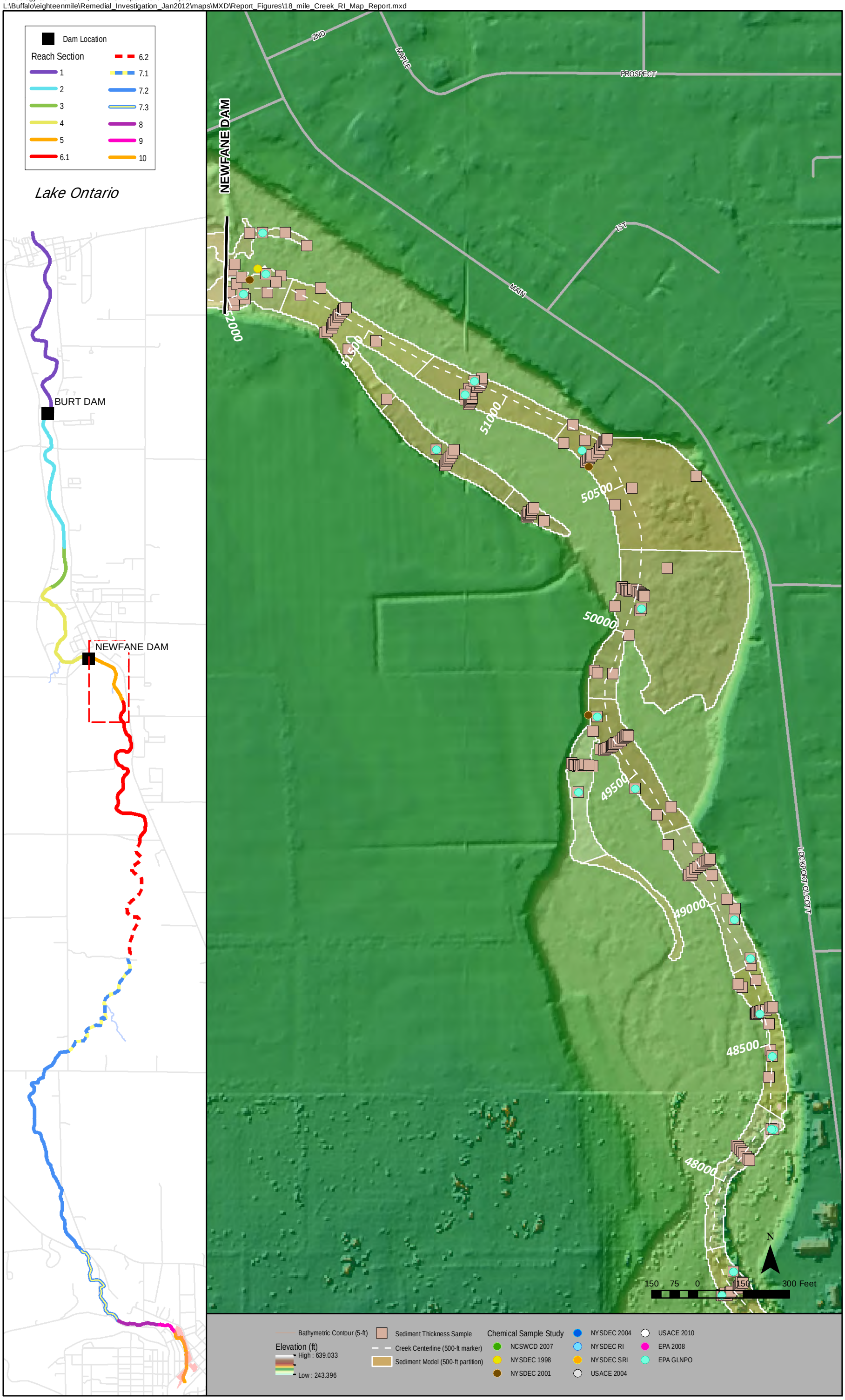


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

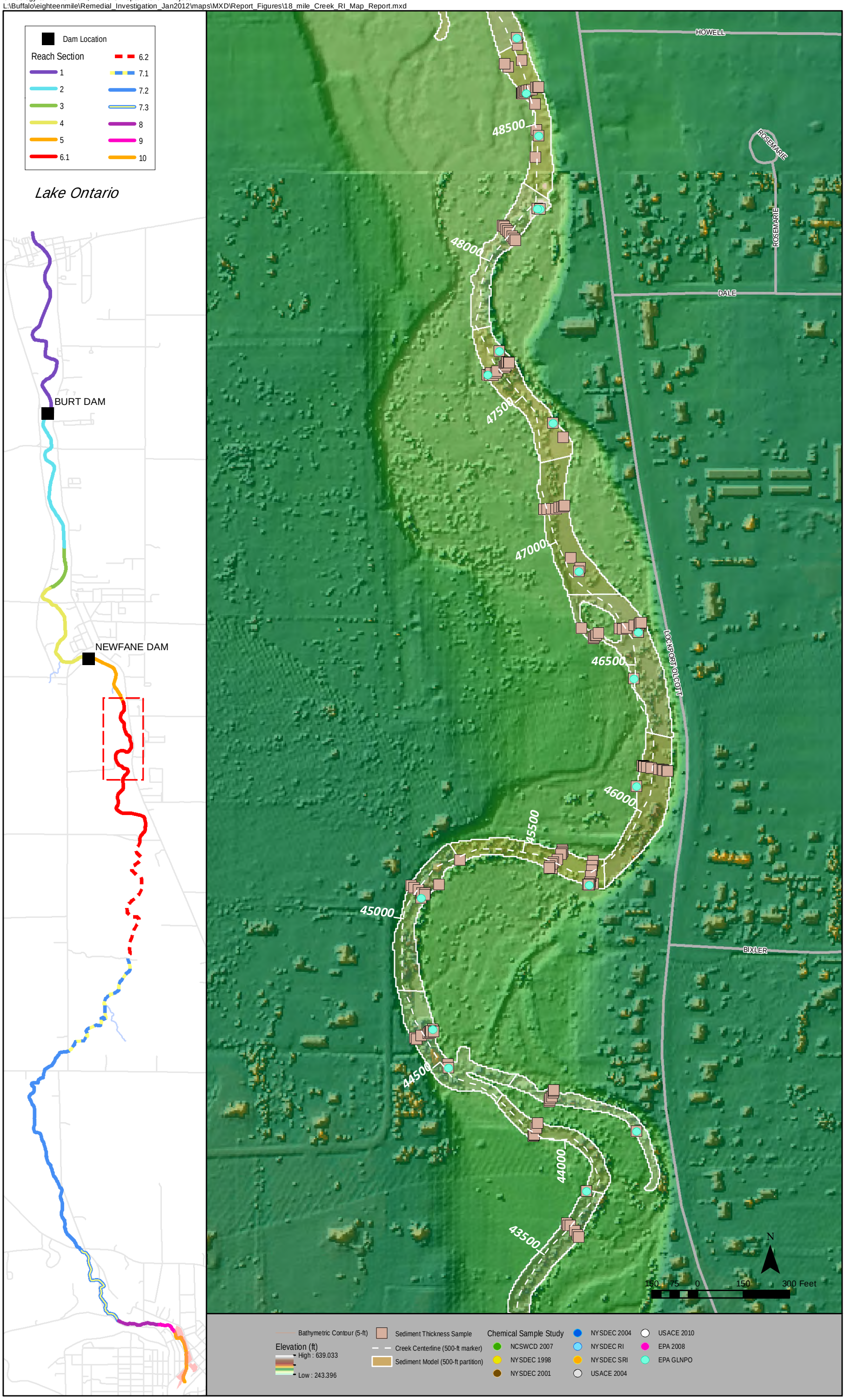


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

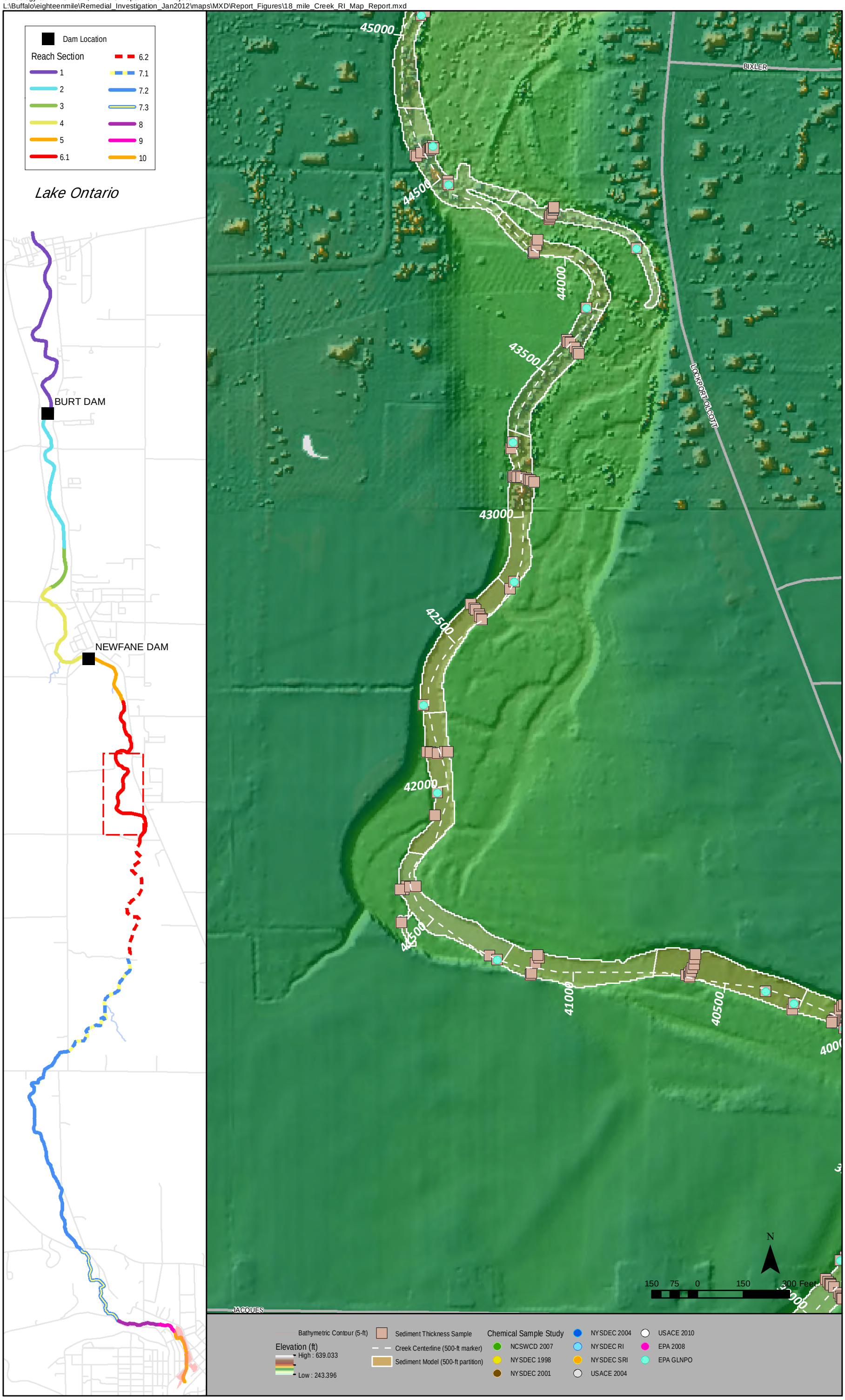


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

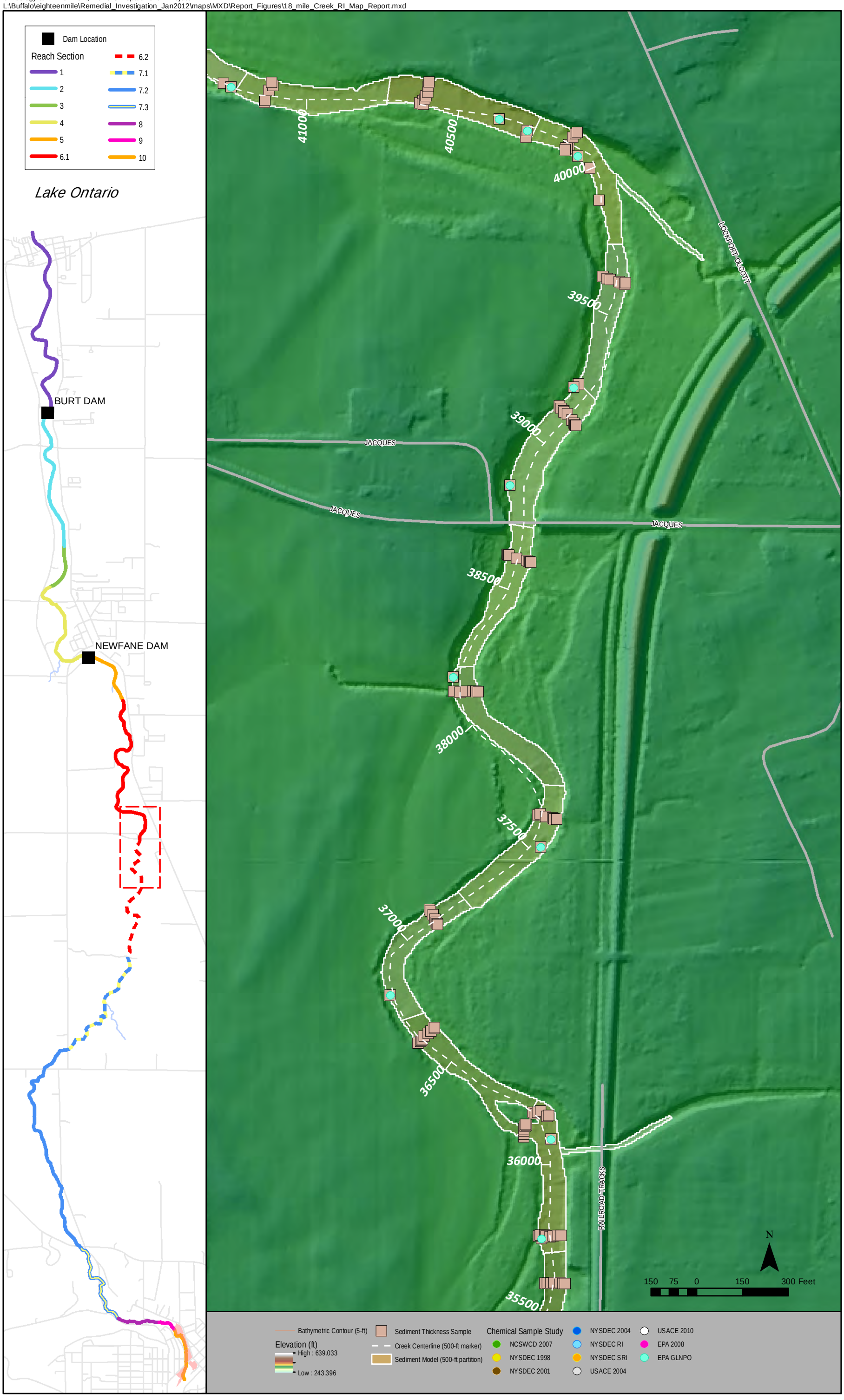


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

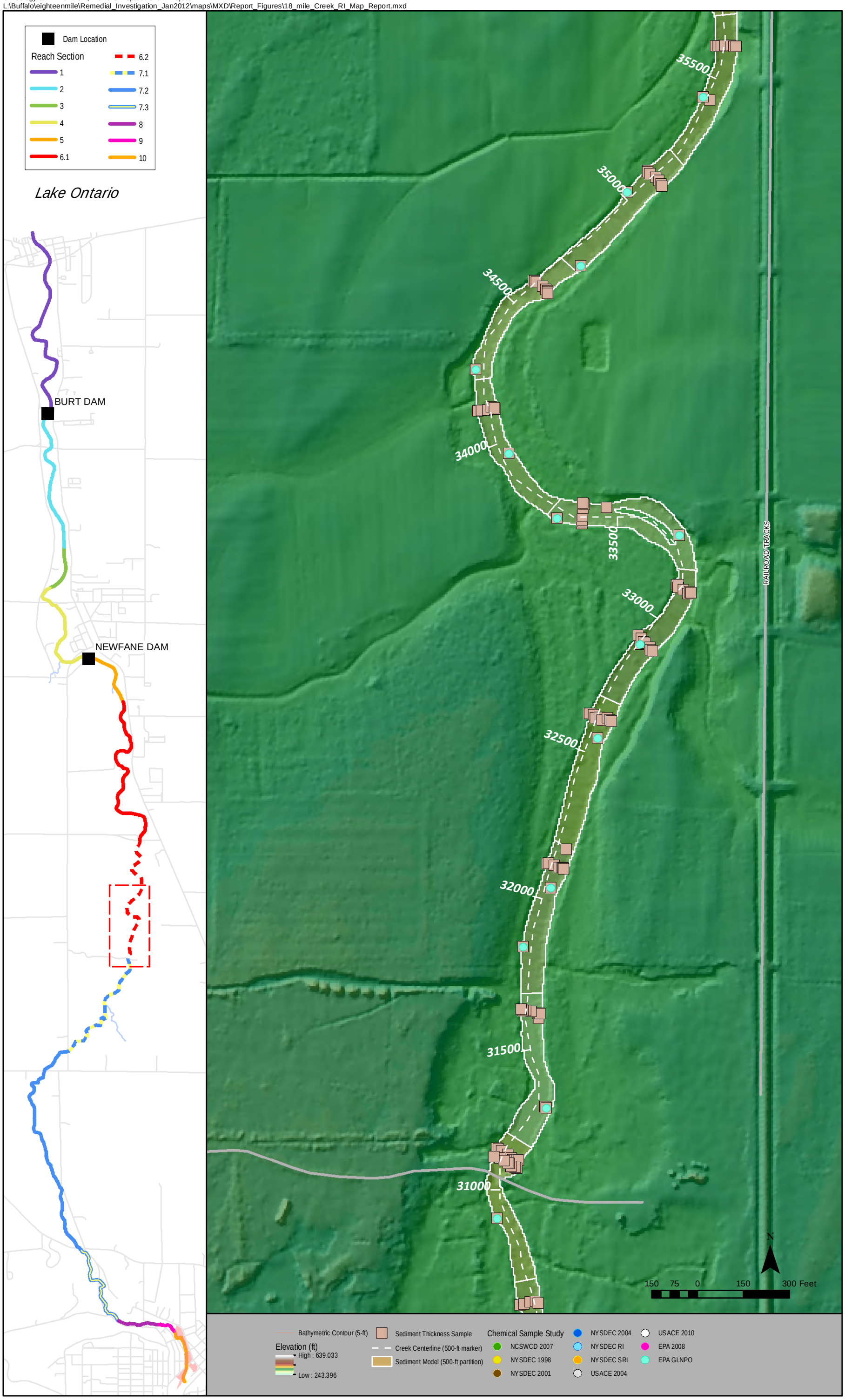


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

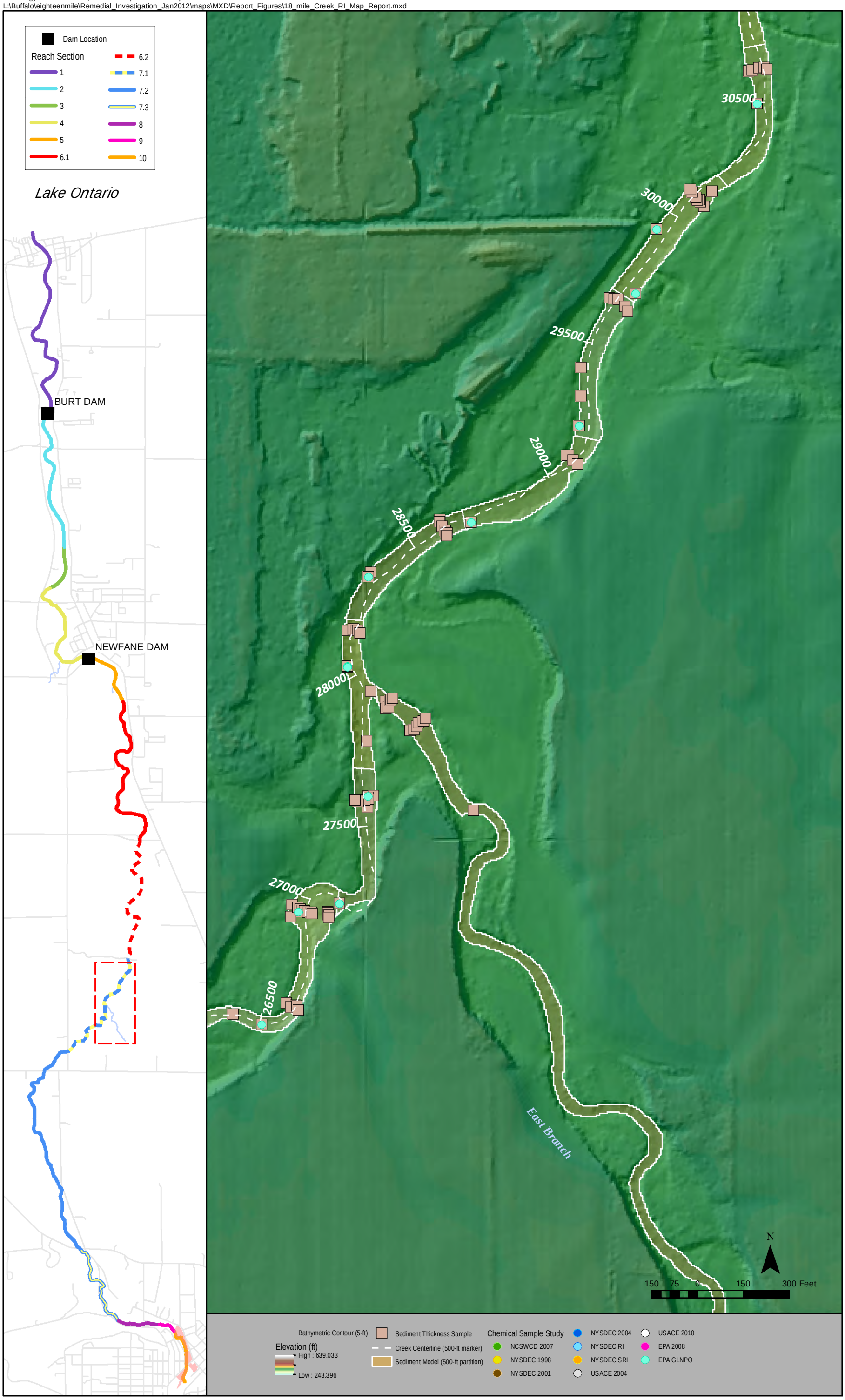


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

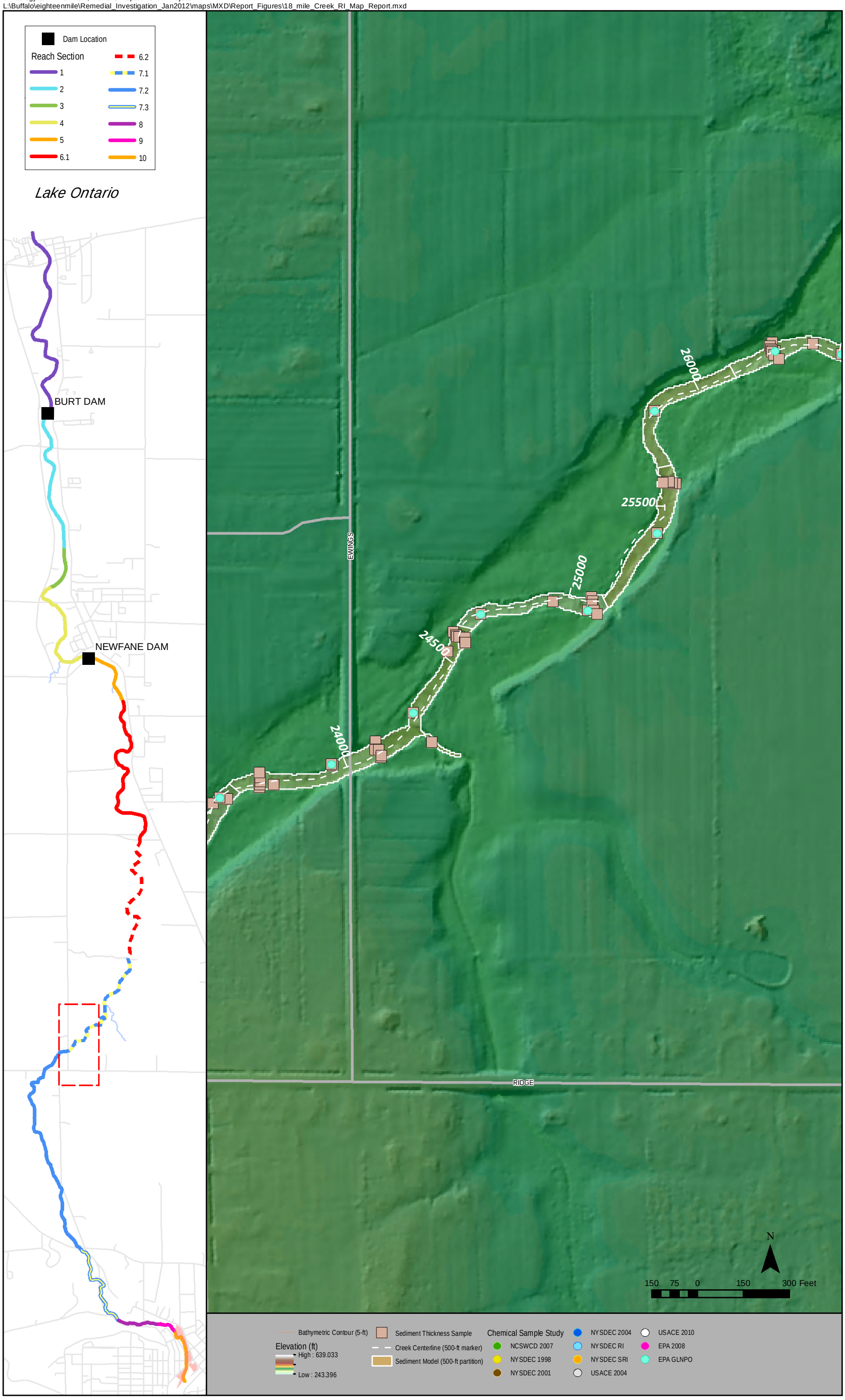


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

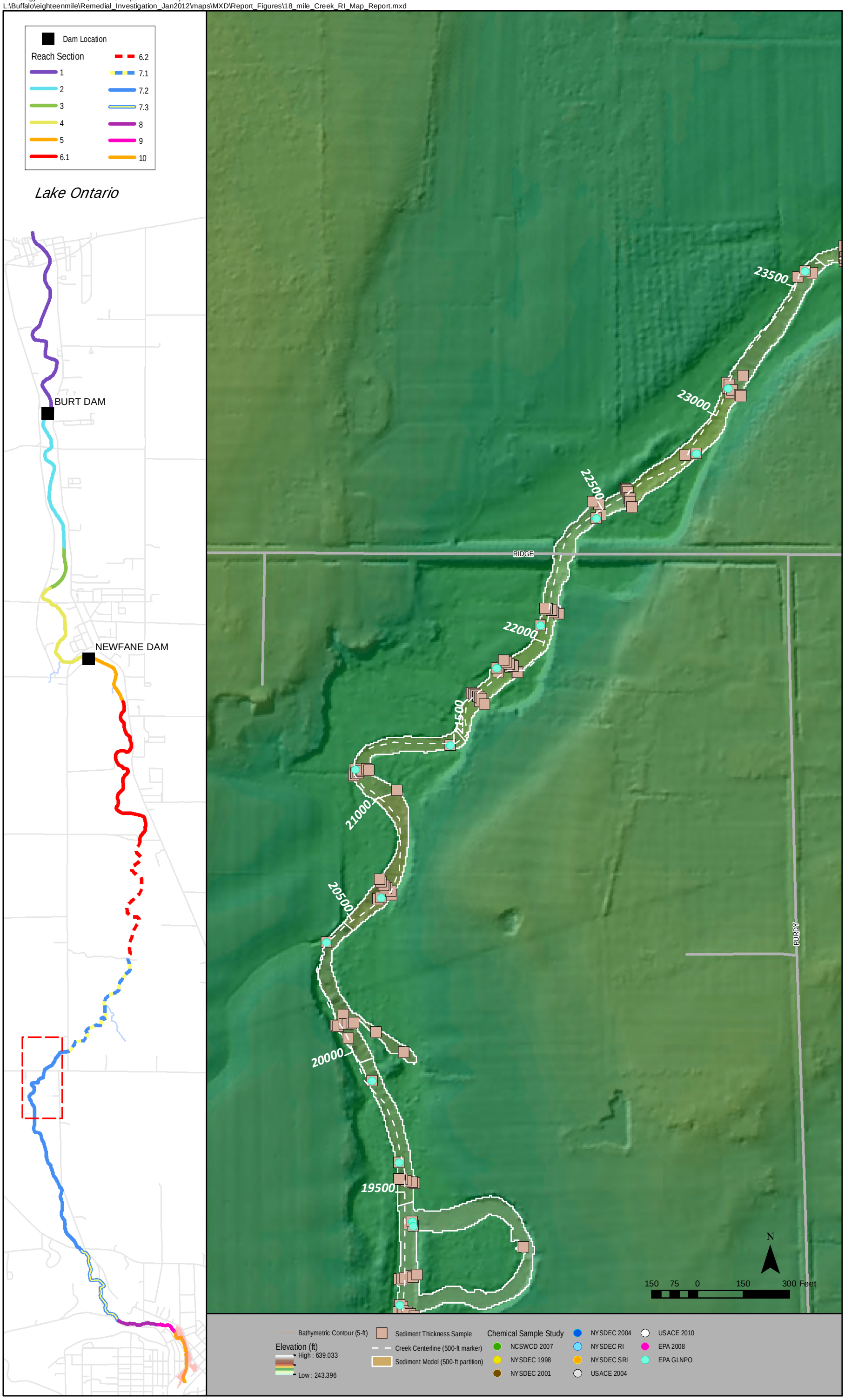


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

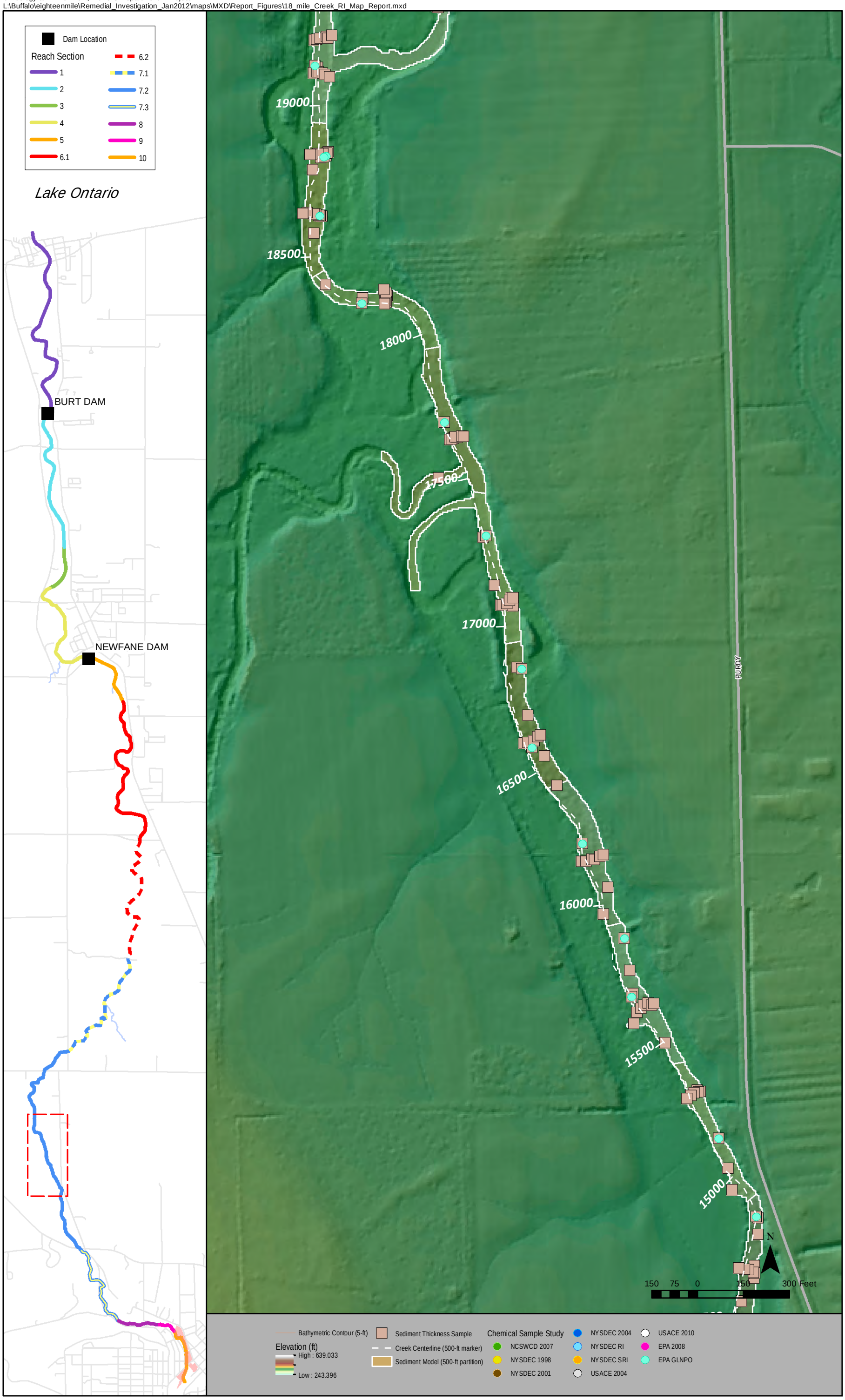


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

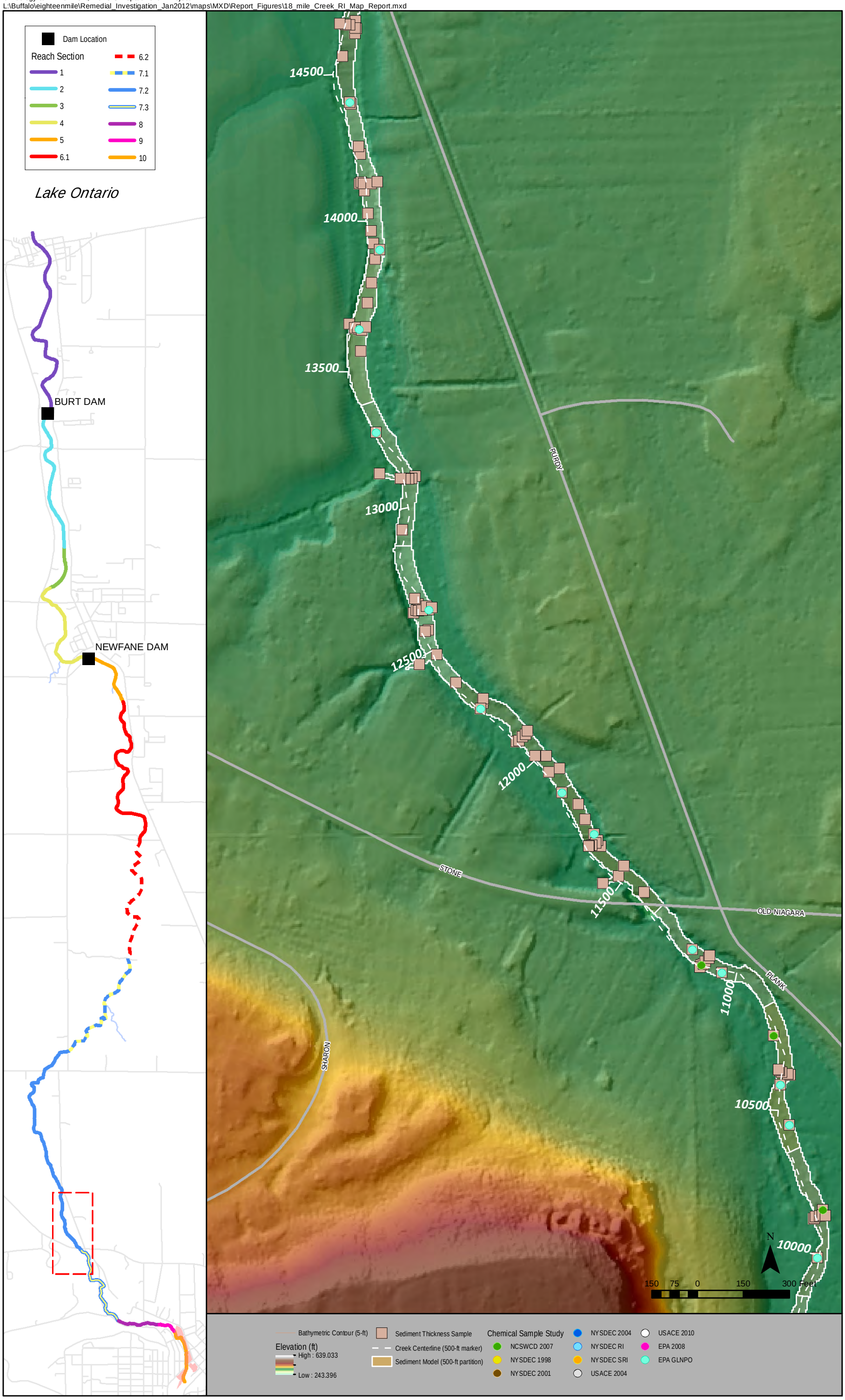


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

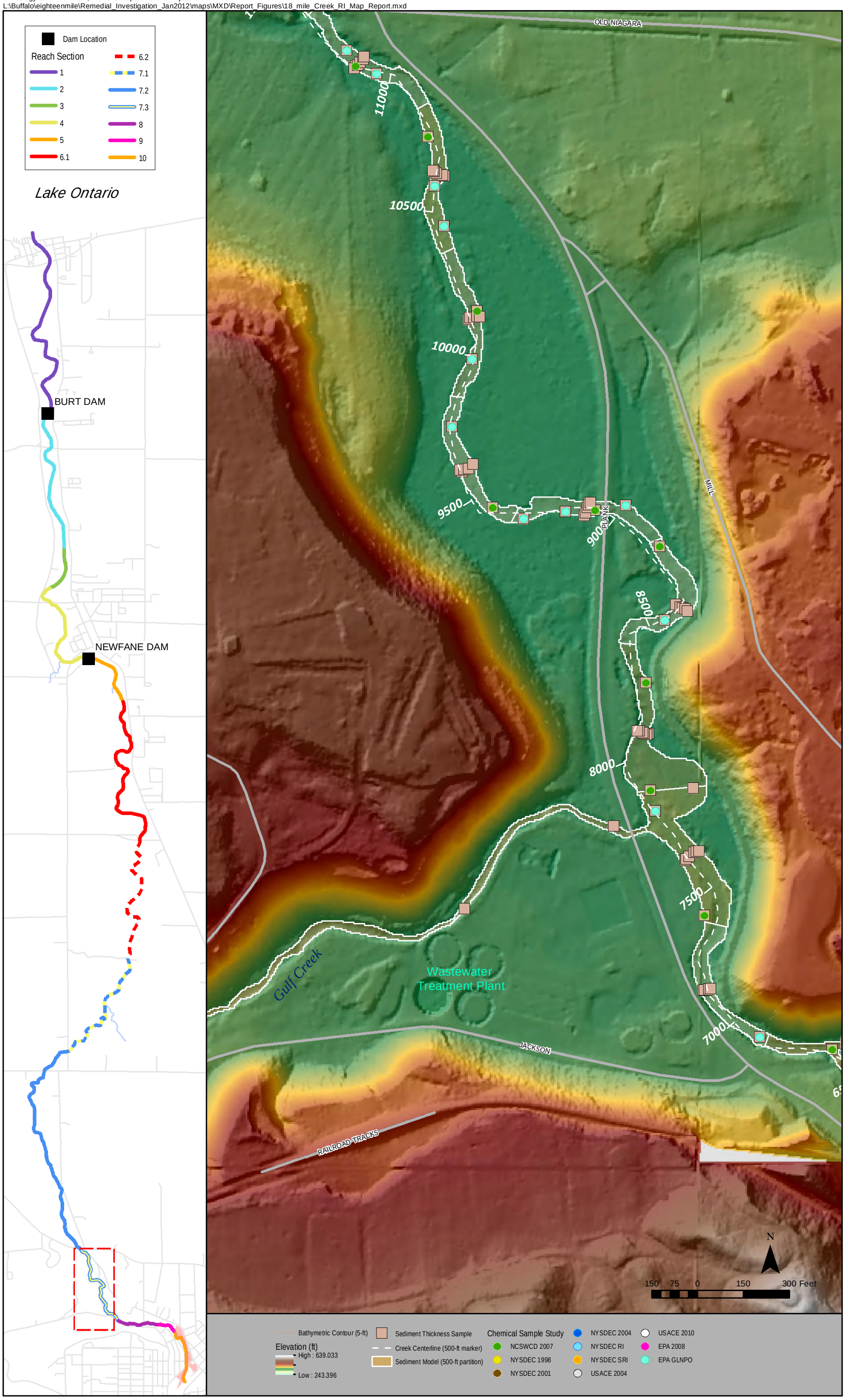


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

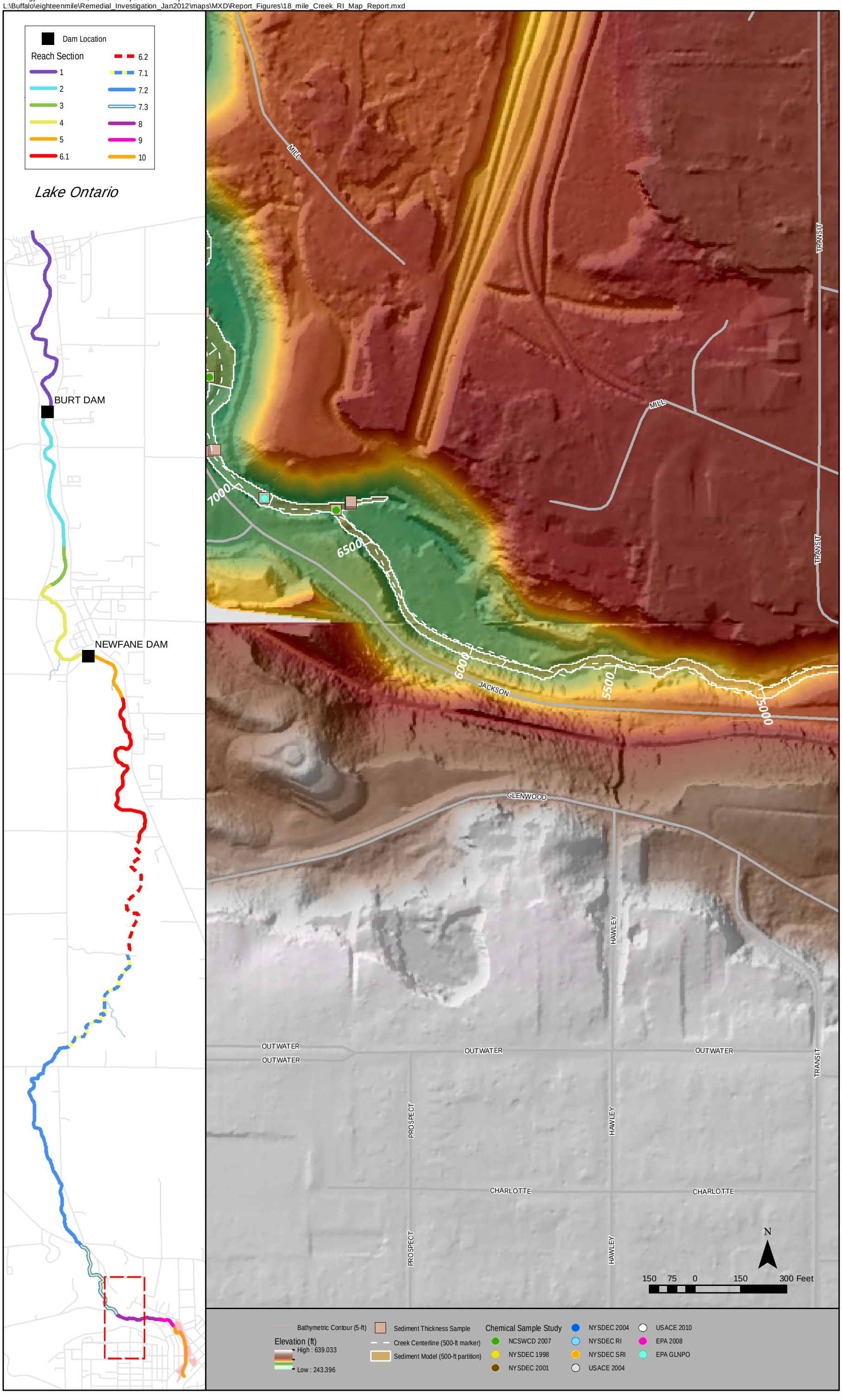


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

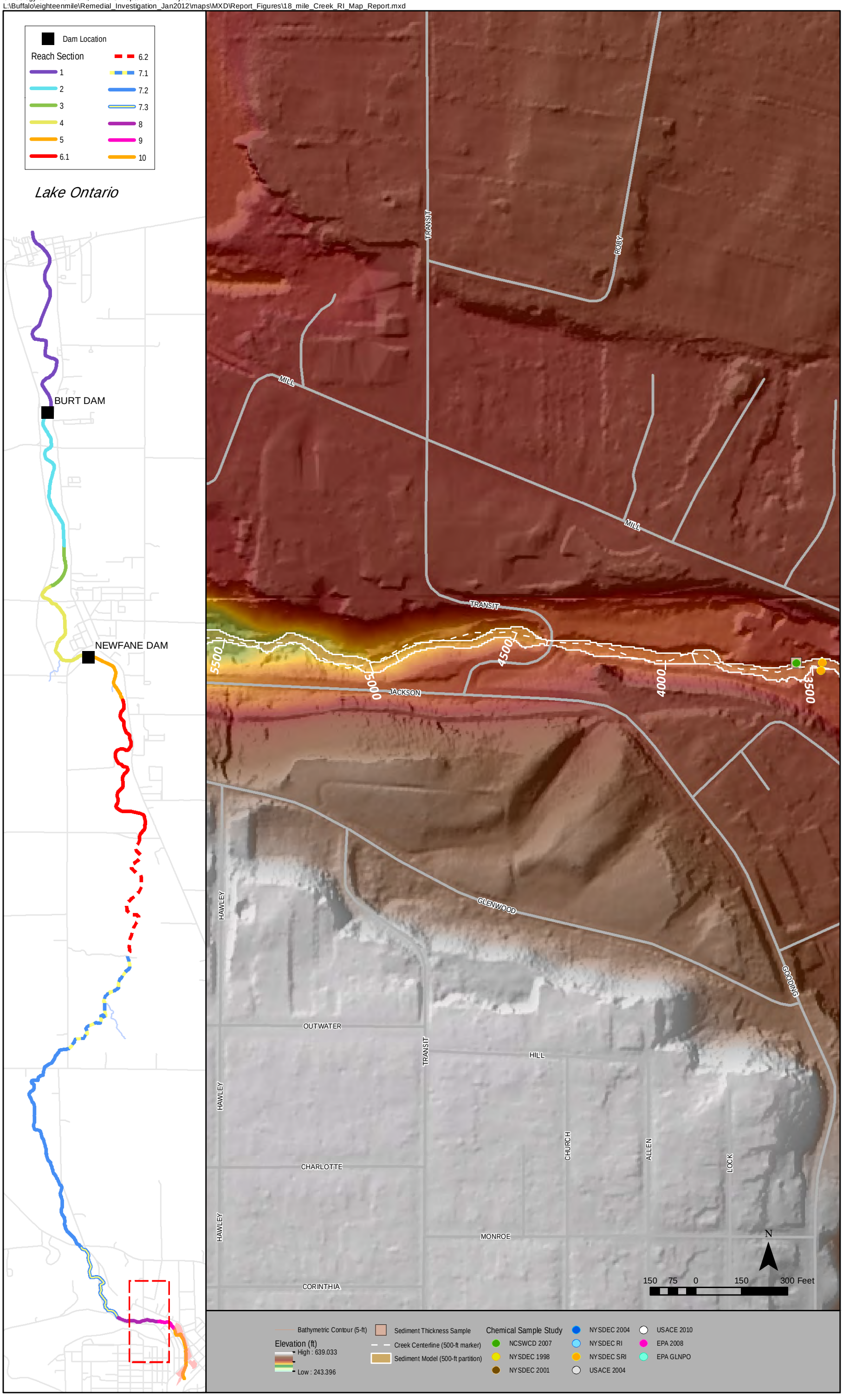


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

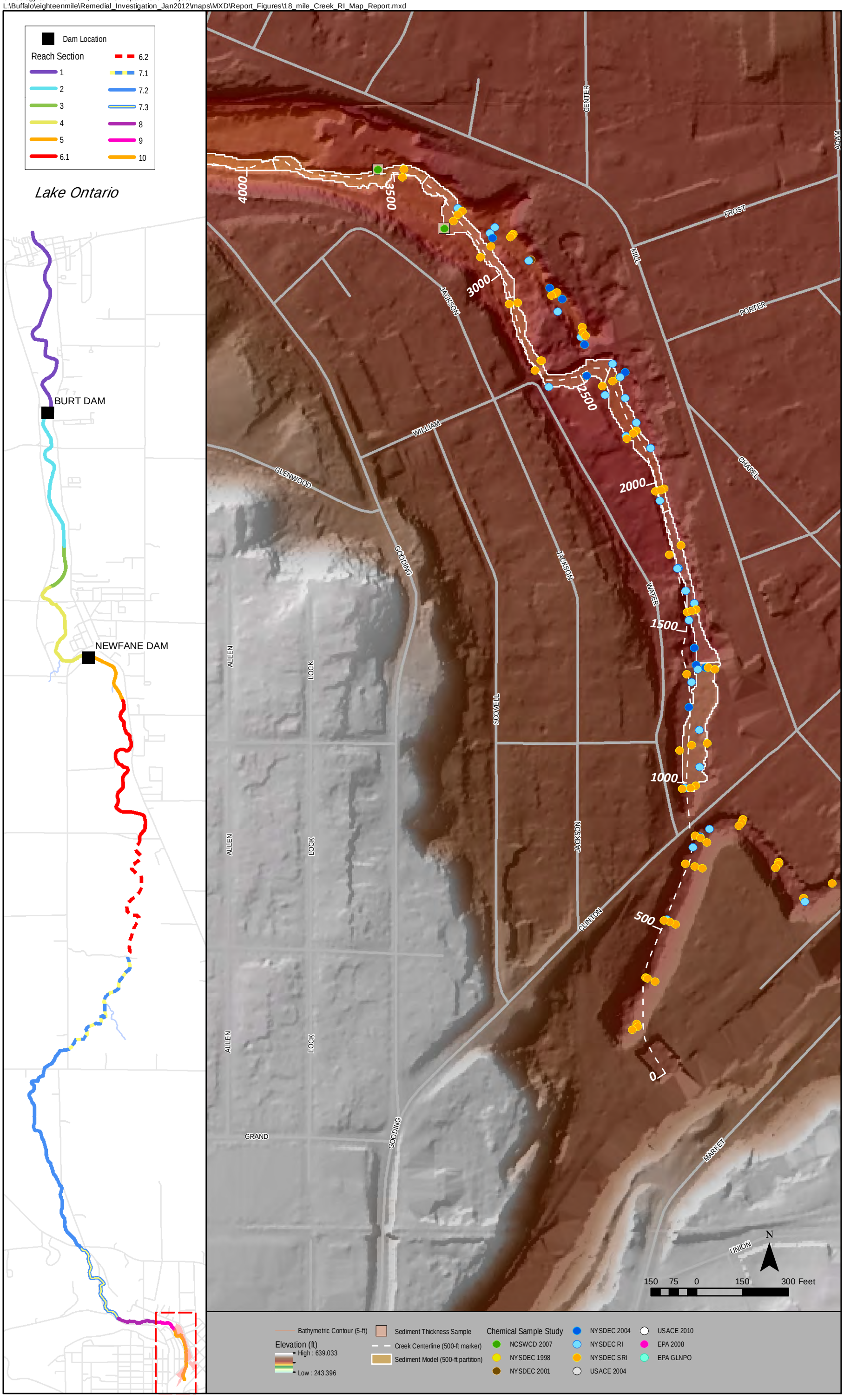


Figure 4 Eighteenmile Creek AOC Project Sediment Characterization and Sampling Locations

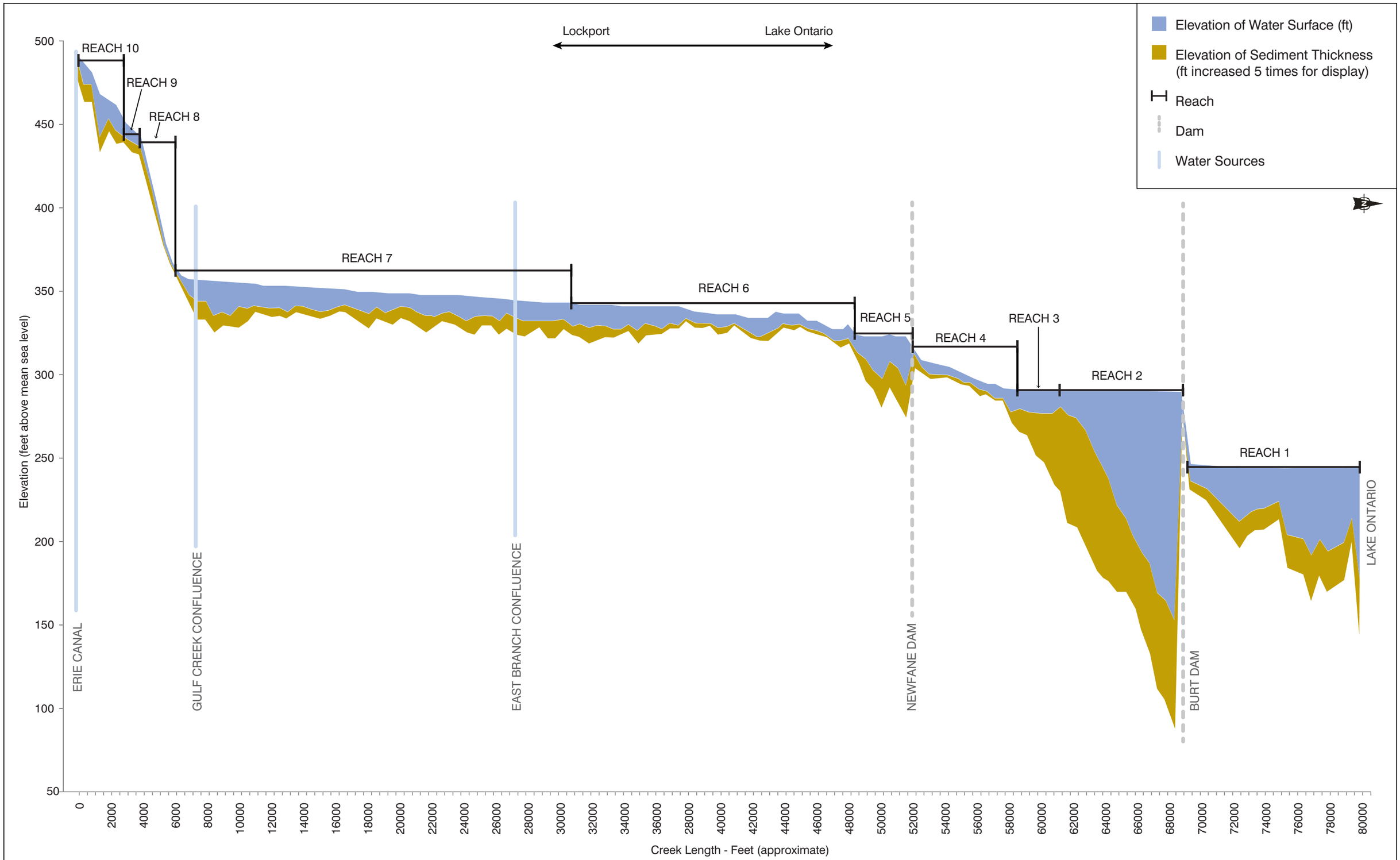
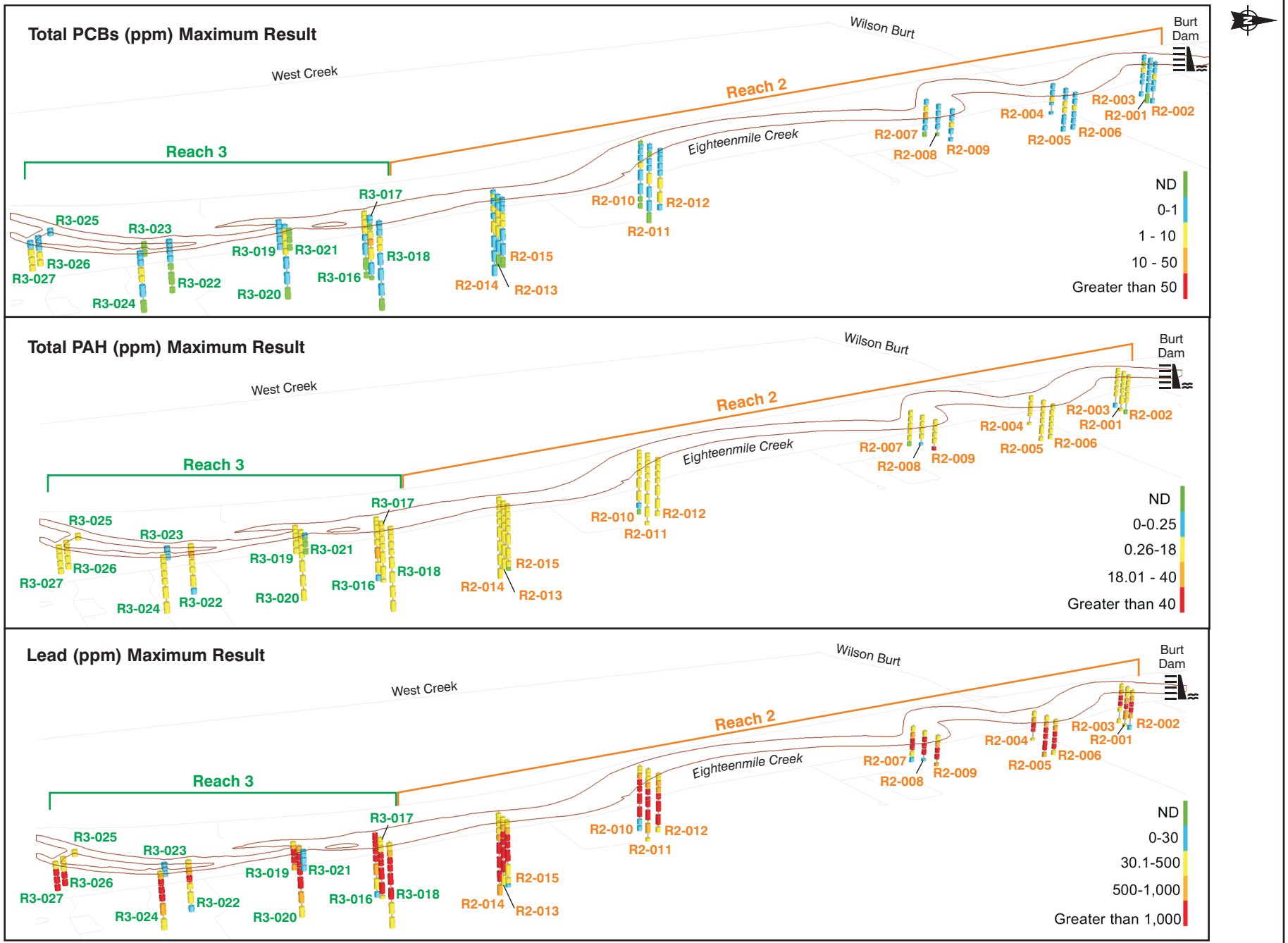


Figure 5 Eighteenmile Creek AOC Sediment Thickness Cross Section



Note: Only cores from the EPA 2011 Data Summary Report are shown.
Core sample segments are not to scale. Each segment represents approximately one foot.

SOURCE: Ecology and Environment, Inc., 2011

Figure 6 Eighteenmile Creek AOC Distribution of PCB, PAH and Lead in Sediment Cores for Reaches 2 and 3

Lockport ← Lake Ontario

PCBs

SAMPLE DEPTH (FEET)

Total PCBs (ppm)
Maximum Result
- ND
- 0-1
- 1 - 10
- 10 - 50
- 50 - 100
- Greater than 100

PAH

SAMPLE DEPTH (FEET)

Total PAH (ppm)
Maximum Result
- ND
- 0-0.25
- 0.26-18
- 18.01 - 40
- Greater than 40

Lead

SAMPLE DEPTH (FEET)

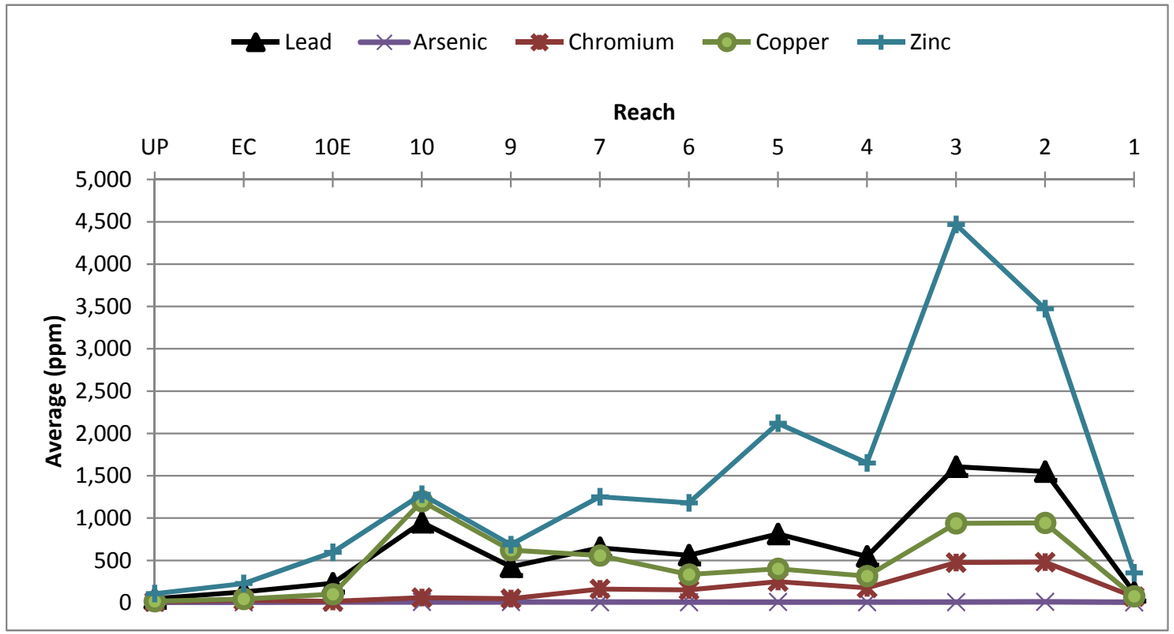
Lead (ppm)
Maximum Result
- ND
- 0-30
- 30.1-500
- 500-1,000
- Greater than 1,000

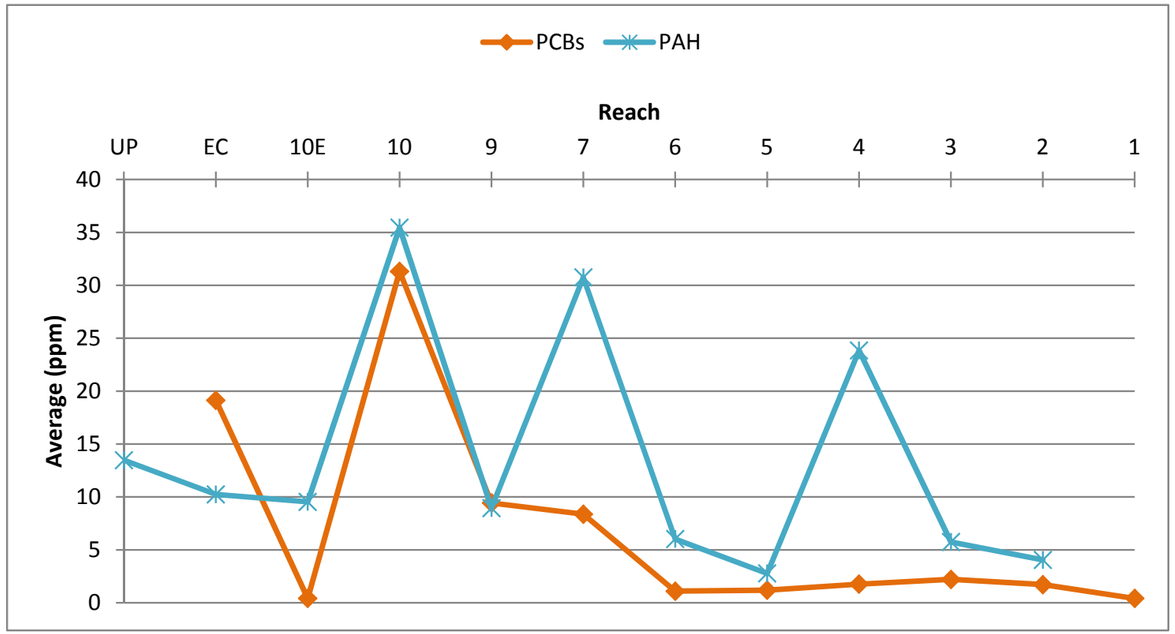
Erie Canal | CLINTON | Reach 10 | Reach 9 | TRANSIT | Reach 8 | Gulf Creek Confluence | Reach 7 Section 3 | PLANK | STONE | Reach 7 Section 2 | RIDGE | EWINGS | East Branch Confluence | Reach 7 Section 1 | Reach 6 Section 2 | JACQUES | Reach 6 Section 1 | Sample continues to 7-ft depth | Reach 5 | Sample continues to 7.5-ft depth | NEWFANE DAM | EWINGS | IDE | Reach 4

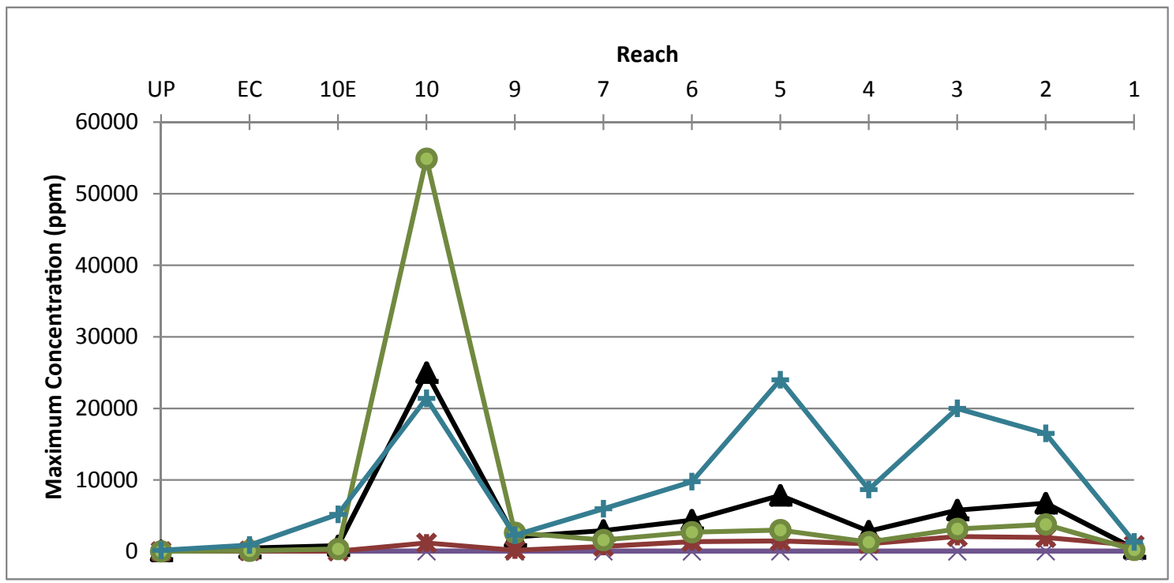
0 1 2 Miles

CREEK LENGTH - FEET

Figure 7 Eighteenmile Creek AOC Distribution of PCBs, PAH and Lead in Sediment Cores for Reaches 4 to 10







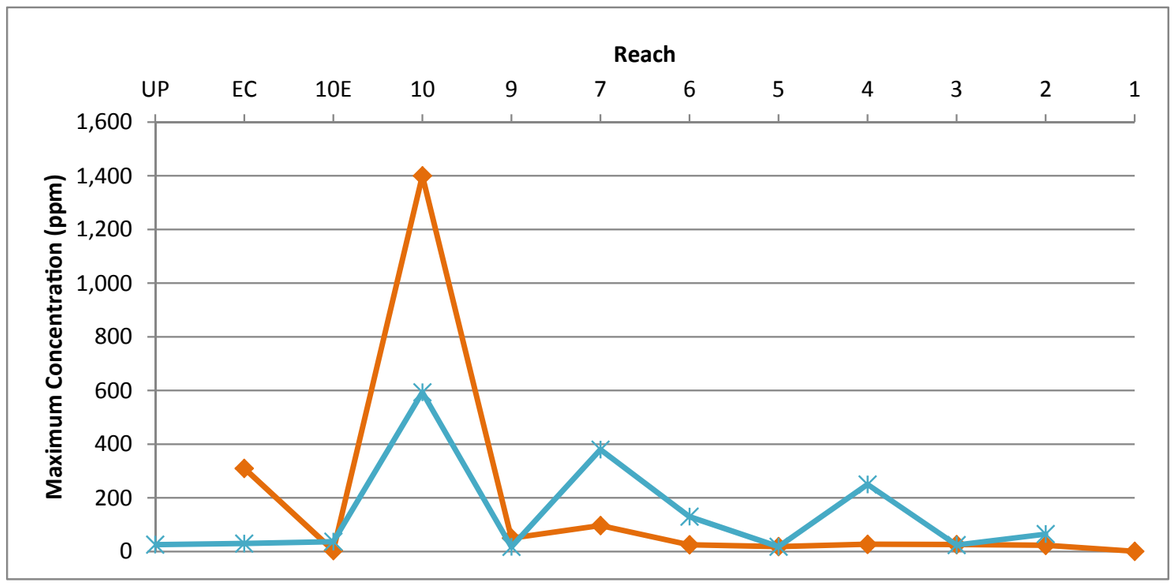


Figure 8 Eighteenmile Creek AOC Concentration Trends of PCBs, PAH and Metals in Sediment by Reach

Appendix A

Phase I Reconnaissance Survey

(Provided separately.)

Appendix B

Data Summary Report Site Characterization

(Provided separately.)

Appendix C

Supporting Reports

(Provided separately.)

Appendix D
Electronic Data

Table D-1 Detailed List of Sediment Chemistry Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Table D-2 List of Sediment Chemistry Locations for Remedial Investigation
Eighteenmile Creek Area of Concern

Table D-3 AVS/SEM Sediment Chemistry Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Table D-4 Dioxin TEQ Sediment Chemistry Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Table D-5 Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Table D-6 Detailed Final Sediment Model Output
Eighteenmile Creek Area of Concern

Table D-7 Detailed List of Sediment Chemistry TCLP Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	01	79984	USACE 2010	EMC-1	Surface	10/26/10	0	0.5	N	0.31	0.77										19000	EMC-1
Creek	01	79868	USACE 2004	EM1-EBU1	Surface	08/27/03	0	0.5	N												33000	EM1-EBU1-8/27/2003
Creek	01	79868	USACE 2004	EM1-EBU1	Surface	08/27/03	0	0.5	N			102	3.4	41	65	328		0.17			33000	EM1-EBU1-EMC-1
Creek	01	79868	USACE 2004	EM1-EBU1	Surface	08/27/03	0	0.5	N		0.20								0.016			EM1-EBU1-SURFACE-8/27/2003
Creek	01	79868	USACE 2004	EM1-EMC1	Surface	08/27/03	0	0.5	N			82	1.24	8.34	14	72		0.09	0.00322		11000	EM1-EMC1
Creek	01	79868	USACE 2004	EM1-EMC1	Surface	08/27/03	0	0.5	N												11000	EM1-EMC1-8/27/2003
Creek	01	79868	USACE 2004	EM1-EMC1	Surface	08/27/03	0	0.5	N		0.03								0.003			EM1-EMC1-SURFACE-8/27/2003
Creek	01	79667	NYSDEC 1998	DEC-2	Surface	09/12/94	0	2	N			231	11.3	61.2	106	299		2.8				DEC-2-0-61 CM CORE-9/12/1994
Creek	01	79667	NYSDEC 1998	DEC-2	Surface	10/11/94	0	0.5	N			66.5	2.5	21.7	35.9	128		0.53	0.004			DEC-2-SURFACE-10/11/1994
Creek	01	79667	NYSDEC 1998	DEC-2	Subsurface	09/12/94	2	3.84	N			419	11.6	101	155	401		3.3				DEC-2-61-117 CM CORE-9/12/1994
Creek	01	79231	USACE 2004	EM1-EMC2	Surface	08/26/03	0	0.5	N												32000	EM1-EMC2-8/26/2003
Creek	01	79231	USACE 2004	EM1-EMC2	Surface	08/26/03	0	0.5	N		0.04								0.017			EM1-EMC2-SURFACE-8/26/2003
Creek	01	79231	USACE 2004	EM1-EMC2	Surface	08/27/03	0	0.5	N			92	3.39	46	66	302		0.15			32000	EM1-EMC2
Creek	01	79170	USACE 2010	EMC-2	Surface	10/26/10	0	0.5	N	0.45	0.83										15000	EMC-2
Creek	01	78639	NYSDEC 1998	DEC-3	Surface	09/12/94	0	2	N			6.7	1.8	17.7	10.9	67.3						DEC-3-0-61 CM CORE-9/12/1994
Creek	01	78639	NYSDEC 1998	DEC-3	Surface	10/11/94	0	0.5	N	0.0006		226	4	94.7	131	0.48		0.48	0.011			DEC-3-SURFACE-10/11/1994
Creek	01	78639	NYSDEC 1998	DEC-3	Subsurface	09/12/94	2	5.84	N			7.2	1.6	17.2	11.2	66						DEC-3-61-178 CM CORE-9/12/1994
Creek	01	78639	NYSDEC 1998	DEC-3	Subsurface	09/12/94	5.84	6.66	N			7.5	1.9	17.9	13.1	68.2						DEC-3-178-203 CM CORE-9/12/1994
Creek	01	78639	NYSDEC 1998	DEC-3	Subsurface	09/12/94	6.66	9.15	N			7.6	1.5	16.3	11	67.4						DEC-3-203-279 CM CORE-9/12/1994
Creek	01	78619	USACE 2004	EM1-EMC3	Surface	08/26/03	0	0.5	N												47000	EM1-EMC3-8/26/2003
Creek	01	78619	USACE 2004	EM1-EMC3	Surface	08/26/03	0	0.5	N		0.32								0.033			EM1-EMC3-SURFACE-8/26/2003
Creek	01	78619	USACE 2004	EM1-EMC3	Surface	08/27/03	0	0.5	N			162	4.02	70	130	485		0.35			47000	EM1-EMC3
Creek	01	78615	USACE 2010	EMC-3	Surface	10/26/10	0	0.5	N	0.59	0.79										15000	EMC-3
Creek	01	78383	NYSDEC 1998	DEC-Q2	Surface	08/10/94	0	0.5	FD		0.06	291	5.7	45.1	78.6	252		1.9	0.0087			DEC-Q2-SURFACE-8/10/1994
Creek	01	78185	USEPA 2008	EM3-DOWNSTREAM	Surface	08/01/08	0	0.5	N			64	3.8	32	58	260		0.11			42000	EM3-DOWNSTREAM
Creek	01	77931	USACE 2004	EMC-4	Surface	08/27/03	0	0.5	FD		0.34											EMC-4 QA-SURFACE-8/27/2003
Creek	01	77931	USACE 2010	EMC-4	Surface	10/26/10	0	0.5	N	0.23	0.30										16000	EMC-4
Creek	01	77930	USACE 2004	EM1-EMC4	Surface	08/27/03	0	0.5	N			189	4.91	101	150	674		0.47			45000	EM1-EMC4
Creek	01	77930	USACE 2004	EM1-EMC4	Surface	08/27/03	0	0.5	N												45000	EM1-EMC4-8/27/2003
Creek	01	77930	USACE 2004	EM1-EMC4	Surface	08/27/03	0	0.5	FD			202	4.65	105	156	718						EM1-EMC4MD
Creek	01	77930	USACE 2004	EM1-EMC4	Surface	08/27/03	0	0.5	N		0.26								0.028			EM1-EMC4-SURFACE-8/27/2003
Creek	01	77743	NYSDEC 1998	DEC-4	Surface	09/12/94	0	2	N			8.6	1.1	18	11.1	86.4						DEC-4-0-24 IN CORE-9/12/1994
Creek	01	77743	NYSDEC 1998	DEC-4	Surface	10/12/94	0	0.5	N	0.86		196	4.5	112	142	918		0.55	0.016			DEC-4-SURFACE-10/12/1994
Creek	01	77743	NYSDEC 1998	DEC-4	Subsurface	09/12/94	2	6.67	N			7.6	1	17.7	10.2	74						DEC-4-24-80 IN CORE-9/12/1994
Creek	01	77743	NYSDEC 1998	DEC-4	Subsurface	09/12/94	2.62	3.71	N			6.4	1.4	18.7	10.2	68.6						DEC-4-80-113 IN CORE-9/12/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Surface	05/25/94	1	1.67	N			296	7	128	228	1080		2.251				DEC-4a-0-4 CM CORE-5/25/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Subsurface	05/25/94	1	1.67	N			222	10	75	92	289		3.609				DEC-4a-13-23 CM CORE-5/25/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Subsurface	05/25/94	1	1.67	N			19	5	21	22	91		0.102				DEC-4a-23-33 CM CORE-5/25/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Subsurface	05/25/94	1	1.67	N			14	5	21	19	81		0.0422				DEC-4a-33-43 CM CORE-5/25/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Subsurface	05/25/94	1	1.67	N			4	6	19	20	79		0.038				DEC-4a-43-53 CM CORE-5/25/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Subsurface	05/25/94	1	1.67	N			249	13	102	177	957		1.892				DEC-4a-4-8 CM CORE-5/25/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Subsurface	05/25/94	1	1.67	N			4	6	19	16	71		0.033				DEC-4a-53-64 CM CORE-5/25/1994
Creek	01	77584	NYSDEC 1998	DEC-4a	Subsurface	05/25/94	1	1.67	N			277	13	88	131	483		3.759				DEC-4a-8-13 CM CORE-5/25/1994
Creek	01	77242	USACE 2010	EMC-5	Surface	10/26/10	0	0.5	N	0.46	0.54										14000	EMC-5
Creek	01	77230	USACE 2004	EM1-EMC5	Surface	08/27/03	0	0.5	N			138	4.09	75	115	486		0.36			44000	EM1-EMC5
Creek	01	77230	USACE 2004	EM1-EMC5	Surface	08/27/03	0	0.5	N												44000	EM1-EMC5-8/27/2003
Creek	01	77230	USACE 2004	EM1-EMC5	Surface	08/27/03	0	0.5	N		0.23								0.026			EM1-EMC5-SURFACE-8/27/2003
Creek	01	77230	USACE 2004	EM1-EBU2	Surface	08/27/03	0	0.5	N												39000	EM1-EBU2-8/27/2003
Creek	01	77230	USACE 2004	EM1-EBU2	Surface	08/27/03	0	0.5	N			146	4.13	74	123	536		0.33			39000	EM1-EBU2-EMC-4
Creek	01	77230	USACE 2004	EM1-EBU2	Surface	08/27/03	0	0.5	N		0.19								0.022			EM1-EBU2-SURFACE-8/27/2003
Creek	01	76553	USACE 2004	EM1-EMC6	Surface	08/27/03	0	0.5	N			118	5.42	55	87	429		0.23			30000	EM1-EMC6
Creek	01	76553	USACE 2004	EM1-EMC6	Surface	08/27/03	0	0.5	N												30000	EM1-EMC6-8/27/2003
Creek	01	76553	USACE 2004	EM1-EMC6	Surface	08/27/03	0	0.5	N		0.16								0.016			EM1-EMC6-SURFACE-8/27/2003
Creek	01	76529	USACE 2010	EMC-6	Surface	10/26/10	0	0.5	N	0.31	0.36										13000	EMC-6
Creek	01	76048	USACE 2010	EMC-7	Surface	10/26/10	0	0.5	N	0.25	0.30										14000	EMC-7
Creek	01	75868	USACE 2004	EM1-EMC7	Surface	08/27/03	0	0.5	N			37	2.34	28	30	140		0.25			35000	EM1-EMC7
Creek	01	75868	USACE 2004	EM1-EMC7	Surface	08/27/03	0	0.5	N												35000	EM1-EMC7-8/27/2003
Creek	01	75868	USACE 2004	EM1-EMC7	Surface	08/27/03	0	0.5	N		0.06								0.007			EM1-EMC7-SURFACE-8/27/2003
Creek	01	75211	USACE 2010	EMC-8	Surface	10/26/10	0	0.5	N	0.48	0.63										14000	EMC-8
Creek	01	75208	USACE 2004	EM1-EBU3	Surface	08/27/03	0	0.5	N												36000	EM1-EBU3-8/27/2003
Creek	01	75208	USACE 2004	EM1-EBU3	Surface	08/27/03	0	0.5	N			203	3.75	109	157	800		0.37			36000	EM1-EBU3-EMC-7
Creek	01	75208	USACE 2004	EM1-EBU3	Surface	08/27/03	0	0.5	N		0.25								0.014			EM1-EBU3-SURFACE-8/27/2003
Creek	01	75208	USACE 2004	EM1-EMC8	Surface	08/27/03	0	0.5	N			321	5.05	187	245	1350		0.56			36000	EM1-EMC8
Creek	01	75208	USACE 2004	EM1-EMC8	Surface	08/27/03	0	0.5	N												36000	EM1-EMC8-8/27/2003
Creek	01	75208	USACE 2004	EM1-EMC8	Surface	08/27/03	0	0.5	N		0.42								0.029			EM1-EMC8-SURFACE-8/27/2003
Creek	01	74932	NYSDEC 1998	DEC-5	Surface	09/12/94	0	2	N			7.1	1.4	18.5	10.3	63						DEC-5-0-24 IN CORE-9/12/1994
Creek	01	74932	NYSDEC 1998	DEC-5	Surface	10/12/94	0	0.5	N	0.63		178	4.3	80	127	470		0.72	0.0079			DEC-5-SURFACE-10/12/1994

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	01	74932	NYSDEC 1998	DEC-5	Subsurface	09/12/94	2	8	N			7.6	1.6	17.7	11.2	61.7						DEC-5-24-96 IN CORE-9/12/1994
Creek	01	74932	NYSDEC 1998	DEC-5	Subsurface	09/12/94	8	10	N			6.7	1.4	19	10.8	63.6						DEC-5-96-120 IN CORE-9/12/1994
Creek	01	74793	USEPA 2008	EM3-MIDSTREAM	Surface	08/01/08	0	0.5	N			210	4.3	60	80	470		0.16			33000	EM3-MIDSTREAM
Creek	01	74620	USACE 2010	EMC-9	Surface	10/26/10	0	0.5	N	0.66	0.75										15000	EMC-9
Creek	01	74596	USACE 2004	EM1-EMC9	Surface	08/27/03	0	0.5	N			133	3.31	49	75	497		0.16			30000	EM1-EMC9
Creek	01	74596	USACE 2004	EM1-EMC9	Surface	08/27/03	0	0.5	N												30000	EM1-EMC9-8/27/2003
Creek	01	74596	USACE 2004	EM1-EMC9	Surface	08/27/03	0	0.5	N		0.17								0.02			EM1-EMC9-SURFACE-8/27/2003
Creek	01	73677	USACE 2010	EMC-10	Surface	10/26/10	0	0.5	N	0.87	1.96										38000	EMC-10
Creek	01	73587	USACE 2004	EM1-EMC10	Surface	08/27/03	0	0.5	N			157	3.39	54	92	525		0.22			24000	EM1-EMC10
Creek	01	73587	USACE 2004	EM1-EMC10	Surface	08/27/03	0	0.5	N												24000	EM1-EMC10-8/27/2003
Creek	01	73587	USACE 2004	EM1-EMC10	Surface	08/27/03	0	0.5	N		0.19								0.011			EM1-EMC10-SURFACE-8/27/2003
Creek	01	72858	USACE 2010	EMC-11	Surface	10/26/10	0	0.5	N	0.55	1.03										23000	EMC-11
Creek	01	72851	USACE 2004	EM1-EBU4	Surface	08/27/03	0	0.5	N												31000	EM1-EBU4-8/27/2003
Creek	01	72851	USACE 2004	EM1-EBU4	Surface	08/27/03	0	0.5	N			153	3.38	53	73	444		0.17			31000	EM1-EBU4-EMC-10
Creek	01	72851	USACE 2004	EM1-EBU4	Surface	08/27/03	0	0.5	N		0.25								0.034			EM1-EBU4-SURFACE-8/27/2003
Creek	01	72851	USACE 2004	EM1-EMC11	Surface	08/27/03	0	0.5	N			85	2.99	39	47	388		0.12			32000	EM1-EMC11
Creek	01	72851	USACE 2004	EM1-EMC11	Surface	08/27/03	0	0.5	N												32000	EM1-EMC11-8/27/2003
Creek	01	72851	USACE 2004	EM1-EMC11	Surface	08/27/03	0	0.5	N		0.12								0.01			EM1-EMC11-SURFACE-8/27/2003
Creek	01	72106	USACE 2010	EMC-12	Surface	10/26/10	0	0.5	N	0.66	0.95										18000	EMC-12
Creek	01	72101	USACE 2004	EM1-EMC12	Surface	08/27/03	0	0.5	N			157	4.29	62	86	411		0.18			48000	EM1-EMC12
Creek	01	72101	USACE 2004	EM1-EMC12	Surface	08/27/03	0	0.5	N												48000	EM1-EMC12-8/27/2003
Creek	01	72101	USACE 2004	EM1-EMC12	Surface	08/27/03	0	0.5	N		0.45								0.051			EM1-EMC12-SURFACE-8/27/2003
Creek	01	71495	USACE 2004	EM1-EMC13	Surface	08/27/03	0	0.5	N			27	2.02	19	15	88		0.022			32000	EM1-EMC13
Creek	01	71495	USACE 2004	EM1-EMC13	Surface	08/27/03	0	0.5	N												32000	EM1-EMC13-8/27/2003
Creek	01	71495	USACE 2004	EM1-EMC13	Surface	08/27/03	0	0.5	N		0.04								0.003			EM1-EMC13-SURFACE-8/27/2003
Creek	01	71416	USACE 2010	EMC-13	Surface	10/26/10	0	0.5	N	0.15	0.18										14000	EMC-13
Creek	01	70848	USACE 2010	EMC-14	Surface	10/26/10	0	0.5	N	0.02	0.02										13000	EMC-14
Creek	01	70798	USEPA 2008	EM3-UPSTREAM	Surface	08/01/08	0	0.5	N			32	4	13	12	63		0.09			7100	EM3-UPSTREAM
Creek	01	70564	USACE 2004	EM1-EBU5	Surface	08/27/03	0	0.5	N												29000	EM1-EBU5-8/27/2003
Creek	01	70564	USACE 2004	EM1-EBU5	Surface	08/27/03	0	0.5	N			70	2.78	102	32	238		0.044			29000	EM1-EBU5-EMC-13
Creek	01	70564	USACE 2004	EM1-EBU5	Surface	08/27/03	0	0.5	N		0.05								0.004			EM1-EBU5-SURFACE-8/27/2003
Creek	01	70564	USACE 2004	EM1-EMC14	Surface	08/27/03	0	0.5	N			89	3.03	30	32	236		0.027			18000	EM1-EMC14
Creek	01	70564	USACE 2004	EM1-EMC14	Surface	08/27/03	0	0.5	N		0.07								0.007			EM1-EMC14-SURFACE-8/27/2003
Creek	01	70374	USACE 2010	EMC-15	Surface	10/26/10	0	0.5	N	0.19	0.11										6900	EMC-15
Creek	01	70081	USACE 2004	EM1-EMC15	Surface	08/27/03	0	0.5	N			322	5.6	867	179	776		0.23			45000	EM1-EMC15
Creek	01	70081	USACE 2004	EM1-EMC15	Surface	08/27/03	0	0.5	N												45000	EM1-EMC15-8/27/2003
Creek	01	70081	USACE 2004	EM1-EMC15	Surface	08/27/03	0	0.5	N		0.16								0.026			EM1-EMC15-SURFACE-8/27/2003
Creek	01	69355	USACE 2010	EMC-16	Surface	10/26/10	0	0.5	N	0.18	0.11										7400	EMC-16
Creek	02	68416	USEPA GLNPO	R2-003-V-P	Surface	05/18/10	0	1	N	0.10		210	7.1	71	154	642	1.6	0.36			43800	R2-003-V-Z1P
Creek	02	68415	USEPA GLNPO	R2-003-V	Surface	05/18/10	0	1	N	0.13		270	7	94	188	792	0.9	0.56			39400	R2-003-V-Z1
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	1	2	N	0.51		715	11	228	452	2060	2.1	0.68			42800	R2-003-V-Z2
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	2	3	N	4.30		5370	28	1480	2330	8900	4.9	1.8			92400	R2-003-V-Z3
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	3	4	N	0.85		3240	25	684	1950	2390	9.5	4.2			81000	R2-003-V-Z4
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	4	5	N	0.19		552	19	261	467	1690	2.5	2			56300	R2-003-V-Z5
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	6	7	N	0.01		12	3.9	14	17	57					89600	R2-003-V-Z6
Creek	02	68410	USEPA GLNPO	R2-003-V-P2	Surface	05/24/10	0	1	N		1.85											R2-003-V-Z1P2
Creek	02	68399	USEPA GLNPO	R2-002-V-P	Surface	05/18/10	0	1	N	0.28	2.42	213	7.9	74	159	630	1	0.36			46200	R2-002-V-Z1P
Creek	02	68395	USEPA GLNPO	R2-002-V	Surface	05/18/10	0	1	N	0.42		256	8.1	89	185	736	1.7	0.33			43200	R2-002-V-Z1
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	1	2	N	0.38		329	9.2	124	215	926	0.52	0.53			46400	R2-002-V-Z2
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	2	3	N	0.71		878	13	333	541	2650	0.87	0.59			60700	R2-002-V-Z3
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	3	4	N	1.00		6760	29	1200	3030	6830	1.5	2.6			86600	R2-002-V-Z4
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	4	6	FD	0.18		789	15	277	673	1250	4.3	1.5			86700	R2-002-VR
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	4	6	N	0.01		873	15	290	639	1290	8.4	2.1			46800	R2-002-V-Z5
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	6	7.5	N			325	15	82	227	852	1.4	1.9			57700	R2-002-V-Z6
Creek	02	68375	USEPA GLNPO	R2-001-V-P	Surface	05/18/10	0	1	N	0.39		210	8.1	73	157	630	2	0.3			44600	R2-001-V-Z1P
Creek	02	68375	USEPA GLNPO	R2-001-V-P2	Surface	05/24/10	0	1	N		1.95											R2-001-V-Z1P2
Creek	02	68375	USEPA GLNPO	R2-001-V	Surface	05/18/10	0	0.5	N	0.48		256	8	89	184	741	1.8	0.3				R2-001-V-Z1A
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	0.5	1	N	0.41		322	8.1	119	209	915	2.2	0.5				R2-001-V-Z1B
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	1	2	N			615	10	202	370	1830	1.2	0.55			47300	R2-001-V-Z2
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	2	3	N	2.50		5500	27	1680	2230	11000	3.2	1.9			91800	R2-001-V-Z3
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	3	4	N	0.06		3140	21	489	1830	2460	4.4	2.5			97600	R2-001-V-Z4
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	4	5	N	0.01		367	17	97	258	1030	0.38	2.9			41600	R2-001-V-Z5
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	6	7	N	0.01		88	4.5	29	36	127	0.048	1.8			12400	R2-001-V-Z6
Creek	02	67111	USEPA GLNPO	R2-005-V	Surface	05/19/10	0	1	N	0.35		278	6.9	95	208	839	0.94	0.75			43900	R2-005-V-Z1
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	1	2	N	0.47		576	9.3	204	383	1770	2.3	0.64			46900	R2-005-V-Z2
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	2	3	N	7.30		3970	25	1780	1890	9430	8.4	1.7			107000	R2-005-V-Z3
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	3	4	N	3.00	12.80	6760	32	969	3240	6050	7.1	2.8			69800	R2-005-V-Z4
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	4	6	N	0.10		2140	17	505	1600	2660	14	3.3			87400	R2-005-V-Z5

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	6	7	N	0.06		548	23	565	888	2680	8.7	1.6			63100	R2-005-V-Z6
Creek	02	67109	USEPA GLNPO	R2-004-V	Surface	05/18/10	0	1	N	0.67		306	7.3	108	223	904	0.89	0.51			39000	R2-004-V-Z1
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	1	2	FD			519	9.2	178	338	1580	0.8	0.63			42800	R2-004-VR
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	1	2	N	0.47		526	9	173	328	1560	0.82	0.55			47800	R2-004-V-Z2
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	2	3	N	2.90		4810	26	1680	2120	10900	4.6	2			73100	R2-004-V-Z3
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	3	3.5	N	0.80		4250	22	602	2180	3200	1.9	2.2			67300	R2-004-V-Z4
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	4.5	5	N	0.01		192	6.2	50	72	229	0.28	3.1			24400	R2-004-V-Z5
Creek	02	67108	USEPA GLNPO	R2-004-V-P	Surface	05/18/10	0	1	N	0.40		211	7.6	73	158	649	0.78	0.47			42300	R2-004-V-Z1P
Creek	02	67108	USEPA GLNPO	R2-005-V-P	Surface	05/19/10	0	1	N	0.26	1.67	234	7.3	81	183	710	1.7	0.53			93100	R2-005-V-Z1P
Creek	02	67107	USEPA GLNPO	R2-004-V-P2	Surface	05/24/10	0	1	N		1.76											R2-004-V-Z1P2
Creek	02	67102	USEPA GLNPO	R2-006-V-P	Surface	05/19/10	0	1	N	0.13		188	6.6	70	151	579	2.4	0.43			46500	R2-006-V-Z1P
Creek	02	67102	USEPA GLNPO	R2-006-V-P	Surface	05/24/10	0	1	N		1.42											R2-006-V-Z1P2
Creek	02	67100	USEPA GLNPO	R2-006-V	Surface	05/19/10	0	1	N	0.15		203	5.3	70	145	599	1.3	0.32			29600	R2-006-V-Z1
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	1	2	N	0.23		603	9.1	200	379	1820	0.7	0.62			44800	R2-006-V-Z2
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	2	3	FD	3.10		3790	21	1320	1720	8650	7.5	1.9			105000	R2-006-VR
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	2	3	N	6.30		3750	23	1570	1770	9070	2.3	1.6			78500	R2-006-V-Z3
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	3	4	N	0.53		2110	16	532	1740	2690	2	3.1			92700	R2-006-V-Z4
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	4	5	N	0.32		1820	23	602	1480	2460	3.6	2.7			75200	R2-006-V-Z5A
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	5	6	N	0.06		272	8.7	56	173	755	0.55	1.7			40400	R2-006-V-Z5B
Creek	02	65759	USEPA GLNPO	R2-007-V	Surface	05/19/10	0	1	N	0.64		347	6.7	131	261	1050	0.77	0.6			40600	R2-007-V-Z1
Creek	02	65759	USEPA GLNPO	R2-007-V	Surface	05/19/10	0	1	N	0.38		244	6.5	84	189	727	1.1	0.59			51100	R2-007-V-Z1P
Creek	02	65759	USEPA GLNPO	R2-007-V	Surface	05/25/10	0	1	N		2.40											R2-007-V-Z1P2
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	1	2	N	2.30		958	11	381	687	3230	1.4	0.72			58300	R2-007-V-Z2
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	2	3	N	23.00		5240	26	1600	2430	10500	5.5	2.1			136000	R2-007-V-Z3
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	3	4	N	0.69		2370	19	622	1820	2620	2.8	2.6			78800	R2-007-V-Z4
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	4	5	N	0.02		173	7.8	99	192	633	0.54	0.58			29800	R2-007-V-Z5A
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	5	6	N			8.2	1.9	15	9.7	60		0.05			3980	R2-007-V-Z5B
Creek	02	65640	USEPA GLNPO	R2-008-V	Surface	05/19/10	0	1	N	0.35		475	7.4	162	325	1480	1.8	0.81			56300	R2-008-V-Z1
Creek	02	65640	USEPA GLNPO	R2-008-V	Surface	05/19/10	0	1	N	0.13	2.06	258	6.6	89	204	769	2.4	0.58			45500	R2-008-V-Z1P
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	1	2	N	0.87		1220	12	605	833	4040	0.89	0.97			57400	R2-008-V-Z2
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	2	3	N	1.00		5060	23	1100	2620	7850	2.4	2.4			106000	R2-008-V-Z3
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	3	4	N	0.19		2430	18	520	1730	2810	4.2	2.8			70000	R2-008-V-Z4
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	4.5	5	N			13	2.8	15	13	63	0.062	0.26			12700	R2-008-V-Z5
Creek	02	65564	USEPA GLNPO	R2-009-V-P	Surface	05/25/10	0	1	N		2.59											R2-009-V-Z1P2
Creek	02	65562	USEPA GLNPO	R2-009-V	Surface	05/19/10	0	1	N	0.44		355	6.8	128	274	1090	0.93	0.73			45700	R2-009-V-Z1
Creek	02	65562	USEPA GLNPO	R2-009-V	Surface	05/19/10	0	1	N	0.34		270	6.9	92	218	848	1.7	0.61			37200	R2-009-V-Z1P
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	1	2	N	0.59		712	9.1	244	507	2440	7.1	0.86			54300	R2-009-V-Z2
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	2	3	N	4.60		3670	24	1530	1850	9600	2.4	1.7			99700	R2-009-V-Z3
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	3	4	FD	0.50		705	8.8	245	493	2360	0.93	0.84			51500	R2-009-VR
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	3	4	N	0.25		2650	17	554	1740	3950	5.5	2.4			85400	R2-009-V-Z4
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	4	5.5	N	0.02		698	13	301	799	2060	65	2.2			61700	R2-009-V-Z5
Creek	02	63171	USEPA GLNPO	R2-010-V	Surface	05/25/10	0	1	N		2.98										55200	R2-010-V-Z1
Creek	02	63171	USEPA GLNPO	R2-010-V	Surface	05/25/10	0	0.5	N			329	4.3	113	267	1030	3.4	0.7				R2-010-V-Z1A
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	0.5	1	N	0.16		395	4.6	135	302	1220	3	0.83				R2-010-V-Z1B
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	1	2	N	0.17		764	5.3	250	513	2780	4.3	0.78			60400	R2-010-V-Z2
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	2	3	N	0.43		1190	7.2	634	930	4970	4	1.1			72100	R2-010-V-Z3
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	3	4	N	1.20		3530	11	1950	2030	11500	12	1.8			138000	R2-010-V-Z4
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	4	6	N	0.49		4580	12	911	2650	8160	11	3			95200	R2-010-V-Z5
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	6	8	FD			844	9.2	318	831	1940	12	1.9			66500	R2-010-VR
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	6	8	N	0.05		1190	11	449	1210	2420	17	2.3			64500	R2-010-V-Z6
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	8	9	N			12	1.7	17	9.1	66	0.054	0.09			8750	R2-010-V-Z7A
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	9	10	N			6.8	2.2	17	8.7	61		0.32			20100	R2-010-V-Z7B
Creek	02	63153	USEPA GLNPO	R2-011-V	Surface	05/25/10	0	1	N		2.80										32000	R2-011-V-Z1
Creek	02	63153	USEPA GLNPO	R2-011-V	Surface	05/25/10	0	0.5	N	0.38		291	4.2	103	231	906	1.2	0.67				R2-011-V-Z1A
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	0.5	1	N	0.14		313	3.5	112	255	1020	1.5	0.77				R2-011-V-Z1B
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	1	2	N		2.82	416	5.1	155	312	1340	1.5	1.1			55600	R2-011-V-Z2
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	2	3	N	0.53	7.20	802	5.3	306	606	3060	1.9	1.3			73200	R2-011-V-Z3
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	3	4	N	0.46	5.98	1230	7	709	926	4890	2.3	1.4			62200	R2-011-V-Z4
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	4	6	N	4.90	24.10	2750	10	1590	1740	9170	3	2.1			124000	R2-011-V-Z5
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	6	8	N	0.98	5.46	3620	13	737	2120	6780	5.2	5			106000	R2-011-V-Z6
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	8	10	N	0.05	1.27	589	13	501	1110	3630	3.2	3			79500	R2-011-V-Z7
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	10	11.5	N		0.12	280	9.7	65	224	864	3.3	3			43200	R2-011-V-Z8
Creek	02	63096	USEPA GLNPO	R2-012-V	Surface	05/25/10	0	1	N		2.36										48900	R2-012-V-Z1
Creek	02	63096	USEPA GLNPO	R2-012-V	Surface	05/25/10	0	0.5	N	0.22		271	5.5	95	215	873	0.94	1.5				R2-012-V-Z1A
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	0.5	1	N	0.60		325	5.1	110	256	1020	1.2	1.1				R2-012-V-Z1B
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	1	2	N	0.37		540	5.6	183	381	1810	0.92	1.1			52300	R2-012-V-Z2
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	2	3	N	0.62		957	6.3	351	737	3960	1.5	1.2			47600	R2-012-V-Z3
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	3	4	FD			1520	8.5	948	1110	5360	1.4	1.4			84600	R2-012-VR
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	3	4	N	0.48		1540	9	961	1110	5420	1.5	1.4			87700	R2-012-V-Z4
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	4	6	N	7.10		2520	11	1470	1410	8590	8.4	0.25			139000	R2-012-V-Z5

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	6	8	N	1.20		2110	12	459	1600	3570	3	2.5			59800	R2-012-V-Z6
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	8	9	N	0.03		124	6.1	153	246	849	0.62	0.64			25900	R2-012-V-Z7
Creek	02	62416	NYSDEC 2001	DEC-6BCEF	Surface	08/18/98	0	0.5	N	0.68	0.63	278	6.5	103	197	813	2.75	0.64	0.009			DEC-6BCEF-SURFACE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Surface	08/18/98	0	0.33	N	0.42	0.39	357	5.9	121	258	1010	1.405	0.757	0.007			DEC-6C-0-10 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Surface	08/18/98	0.34	0.66	N	0.32	0.29	413	6.2	152	298	1260	1.019	0.717	0.004			DEC-6C-10-20 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	0.66	0.98	N	0.92	0.85	488	7.8	175	352	1550	3.27	0.596	0.004			DEC-6C-20-30 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	0.98	1.31	N	1.32	1.20	870	6.9	251	532	2880	4.166	0.914	0.01			DEC-6C-30-40 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	1.31	1.64	N	2.01	1.90	909	6.9	344	653	3520	4.297	0.988	0.007			DEC-6C-40-50 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	1.64	1.97	N	1.96	1.80	872	7	365	563	3340	4.331	0.87	0.009			DEC-6C-50-60 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	1.97	2.3	N	10.61	9.80	1990	10.8	1240	1260	6560	8.251	1.27	0.028			DEC-6C-60-70 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	2.3	2.62	N	12.56	12.00	4490	12.3	848	2450	10800	13.268	2.38	0.06			DEC-6C-70-80 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	2.62	2.95	N	1.67	1.40	3120	12.1	424	2200	2540	13.19	3.31	0.051			DEC-6C-80-90 CM CORE-8/18/1998
Creek	02	62416	NYSDEC 2001	DEC-6C	Subsurface	08/18/98	2.95	3.25	N	1.25	1.00	2190	10.6	450	1880	2850	14.54	3.13	0.026			DEC-6C-90-99 CM CORE-8/18/1998
Creek	02	62234	NYSDEC 1998	DEC-6	Surface	10/11/94	0	1.7	N	2.42		644	5.1	250	462	2360		0.79				DEC-6-0-20 IN CORE-10/11/1994
Creek	02	62234	NYSDEC 1998	DEC-6	Surface	10/11/94	0	0.5	N	2.49		486	5.6	189	353	1540		0.69	0.03			DEC-6-SURFACE-10/11/1994
Creek	02	62234	NYSDEC 1998	DEC-6	Subsurface	10/11/94	1.67	2	N	21.00		4500	14.5	1910	2340	16500		1.1	0.301			DEC-6-20-24 IN CORE-10/11/1994
Creek	02	61625	USEPA GLNPO	R2-013-V	Surface	05/25/10	0	1	N		2.77										53000	R2-013-V-Z1
Creek	02	61625	USEPA GLNPO	R2-013-V	Surface	05/25/10	0	0.5	N	0.59		388	5.4	135	285	1240	1.8	0.79				R2-013-V-Z1A
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	0.5	1	N	2.20		338	4.5	120	254	1090	4.6	0.95				R2-013-V-Z1B
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	1	2	N	0.61		394	4.8	140	299	1300	1.4	0.97			50700	R2-013-V-Z2
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	2	3	N	2.50		441	4.8	167	331	1490	3.3	0.97			49400	R2-013-V-Z3
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	3	4	N	0.79		930	6.3	394	693	3930	0.88	1			67500	R2-013-V-Z4
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	4	6	N	3.10		4350	13	1580	2100	11900	2.1	2.1			133000	R2-013-V-Z5
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	6	8	N	0.50		5980	14	909	3610	9630	3.9	3.2			128000	R2-013-V-Z6
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	8	10	N	0.12		2140	15	875	1350	3210	5.7	4.2			109000	R2-013-V-Z7
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	10	12	N	0.08		723	14	557	1400	3790	6.1	3			89600	R2-013-V-Z8
Creek	02	61620	USEPA GLNPO	R2-015-V	Surface	05/25/10	0	1	N		2.10										31700	R2-015-V-Z1
Creek	02	61620	USEPA GLNPO	R2-015-V	Surface	05/25/10	0	0.5	N	0.29		306	3.8	104	229	1000	1.8	1.2				R2-015-V-Z1A
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	0.5	1	N	0.24		375	4.8	125	275	1190	2.7	1.3				R2-015-V-Z1B
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	1	2	N	0.36		590	4.9	224	393	2270	3.1	1.2			64500	R2-015-V-Z2
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	2	3	N	6.80		4190	11	1830	2240	14400	7.2	2.7			131000	R2-015-V-Z3
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	3	4	N	3.70		5420	13	1170	2640	15100	4.5	3.4			116000	R2-015-V-Z4
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	4	6	N	0.46		2520	12	469	2010	3140	7.4	4			92100	R2-015-V-Z5
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	6	8	N	0.03		469	10	270	676	2230	4.6	2.8			66100	R2-015-V-Z6
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	8	10	N			135	5.7	38	157	515	2	2			33500	R2-015-V-Z7A
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	9	9.5	N			5.5	1.6	17	11	62		0.13			2470	R2-015-V-Z7B
Creek	02	61618	USEPA GLNPO	R2-014-V	Surface	05/25/10	0	1	N		2.95										60000	R2-014-V-Z1
Creek	02	61618	USEPA GLNPO	R2-014-V	Surface	05/25/10	0	0.5	N	0.53		440	4.7	149	320	1400	3	1.2				R2-014-V-Z1A
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	0.5	1	N			457	4.6	161	308	1560	2.6	1.3				R2-014-V-Z1B
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	1	2	N	0.62		680	4.4	240	470	2900	2.1	0.87			45900	R2-014-V-Z2
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	2	3	N	6.10		3310	11	1620	1920	11400	2.9	1.9			124000	R2-014-V-Z3
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	3	4	N	7.40		5490	13	1670	2550	11400	6	2.8			150000	R2-014-V-Z4
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	4	6	FD	2.70		5760	15	1040	2880	12100	0.92	2.5			128000	R2-014-VR
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	4	6	N	4.50		5100	13	982	2740	10400	6.2	8.6			130000	R2-014-V-Z5
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	6	8	N	0.62		4500	10	547	3790	2630	3.9	3.7			97600	R2-014-V-Z6
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	8	10	N			340	11	78	273	943	6.3	3.1			107000	R2-014-V-Z7
Creek	03	60757	USEPA GLNPO	R3-018-V	Surface	05/25/10	0	1	N		3.35										57400	R3-018-V-Z1
Creek	03	60757	USEPA GLNPO	R3-018-V	Surface	05/25/10	0	0.5	N	0.07		301	4	105	224	999	1.5	0.87				R3-018-V-Z1A
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	0.5	1	N	0.56		386	4.6	141	273	1380	3.3	1				R3-018-V-Z1B
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	1	2	N	0.77		742	4.9	324	532	2830	2.9	1.3			68800	R3-018-V-Z2
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	2	3	N	3.30		2540	10	1630	1610	9390	5.1	2.5			126000	R3-018-V-Z3
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	3	4	N	3.20		5790	11	1750	2560	17300	8.9	3.8			141000	R3-018-V-Z4
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	4	6	N	0.76		5080	11	703	3170	5470	7.4	4.6			118000	R3-018-V-Z5
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	6	8	N	0.12		1400	11	554	1540	2850	5.3	4			95000	R3-018-V-Z6
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	8	10	N	0.02		443	11	193	458	1670	1.4	3.2			88400	R3-018-V-Z7
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	10	12	N			288	9.2	60	255	1000	1.8	2.7			56800	R3-018-V-Z8
Creek	03	60754	NYSDEC 2001	DEC-6E	Surface	08/18/98	0	0.85	N	1.06	0.98	454	4.4	158	328	1400	4.283	1.03	0.007			DEC-6E-0-26 CM CORE-8/18/1998
Creek	03	60754	NYSDEC 2001	DEC-6E	Subsurface	08/18/98	0.85	1.31	N	1.88	1.70	787	4.3	284	562	3290	5.517	0.949	0.009			DEC-6E-26-40 CM CORE-8/18/1998
Creek	03	60754	NYSDEC 2001	DEC-6E	Subsurface	08/18/98	1.31	1.84	N	10.28	9.50	1190	4.8	753	851	3070	6.696	1.42	0.019			DEC-6E-40-56 CM CORE-8/18/1998
Creek	03	60754	NYSDEC 2001	DEC-6E	Subsurface	08/18/98	1.84	2.43	N	6.74	6.30	4150	12.5	1490	2310	11600	14.39	2.62	0.095			DEC-6E-56-74 CM CORE-8/18/1998
Creek	03	60738	USEPA GLNPO	R3-017-V	Surface	05/26/10	0	1	N		2.44										34000	R3-017-V-Z1
Creek	03	60738	USEPA GLNPO	R3-017-V	Surface	05/26/10	0	0.5	N	0.11		260	4.3	86	172	821	1.6	1.2				R3-017-V-Z1A
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	0.5	1	N	0.33		299	5.2	92	212	984	0.76	1.5				R3-017-V-Z1B
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	1	2	N			340	4.4	110	214	1130	4.5	0.87			44900	R3-017-V-Z2
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	2	3	N	5.00		1390	7.8	693	777	6170	8.5	1.1			71000	R3-017-V-Z3
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	3	4	N	11.00		5500	15	2090	2470	15900	10	2.4			125000	R3-017-V-Z4
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	4	6	FD	1.50		5280	16	1100	2540	11500	3.6	2.7			121000	R3-017-VR
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	4	6	N	1.80		5230	15	1000	2480	9330	5.6	2.5			130000	R3-017-V-Z5
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	6	8	N	0.09		1820	11	224	1540	1620	4.3	2.7			77900	R3-017-V-Z6
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	8	8.5	N			290	10	64	354	1160	5	3.4			62800	R3-017-V-Z7

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	03	60734	USEPA GLNPO	R3-016-V	Surface	05/26/10	0	1	N		8.30										70900	R3-016-V-Z1
Creek	03	60734	USEPA GLNPO	R3-016-V	Surface	05/26/10	0	0.5	N	6.70		2270	15	1290	1290	9350	7.1	1.5				R3-016-V-Z1A
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	0.5	1	N	10.00		4650	17	1940	2320	16700	12	2				R3-016-V-Z1B
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	1	2	N	5.80		4430	15	1040	2160	12500	6.1	2.1			109000	R3-016-V-Z2
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	2	3	N	2.50		3880	11	441	2470	3000	10	3.1			97900	R3-016-V-Z3
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	3	4	FD	0.35		1600	11	549	1330	2960	11	3.3			76000	R3-016-VR
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	3	4	N	0.36		1600	14	512	1310	3050	13	3.4			86800	R3-016-V-Z4
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	4	6	N	0.07		619	14	379	1020	3240	20				82300	R3-016-V-Z5
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	6	8	N			304	9.6	66	288	976	12				67500	R3-016-V-Z6
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	8	9	N			7.1	2.1	16	10	69	0.01				3380	R3-016-V-Z7
Creek	03	60224	USEPA GLNPO	R3-019-V	Surface	05/26/10	0	1	N		2.50										61400	R3-019-V-Z1
Creek	03	60224	USEPA GLNPO	R3-019-V	Surface	05/26/10	0	0.5	N	0.76		447	4.5	184	332	1650	0.82	0.34				R3-019-V-Z1A
Creek	03	60224	USEPA GLNPO	R3-019-V	Subsurface	05/26/10	0.5	1	N	0.44		613	4.8	266	453	2410	0.59	0.53				R3-019-V-Z1B
Creek	03	60224	USEPA GLNPO	R3-019-V	Subsurface	05/26/10	1	2	N	0.62		2470	8.5	923	1320	9750	4.2	4.8			73200	R3-019-V-Z2
Creek	03	60224	USEPA GLNPO	R3-019-V	Subsurface	05/26/10	2	3	N	0.72		3480	10	741	2110	6860	6.9	2.8			99200	R3-019-V-Z3
Creek	03	60224	USEPA GLNPO	R3-019-V	Subsurface	05/26/10	3	4	N	0.04		942	12	554	1240	3350	6.4	2.3			85900	R3-019-V-Z4
Creek	03	60215	USEPA GLNPO	R3-020-V	Surface	05/26/10	0	1	N		3.84										47300	R3-020-V-Z1
Creek	03	60215	USEPA GLNPO	R3-020-V	Surface	05/26/10	0	0.5	N	0.48		571	5.1	232	355	2040	2.2	0.35				R3-020-V-Z1A
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	0.5	1	N	2.80		753	5.6	360	486	2670	0.95	0.78				R3-020-V-Z1B
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	1	2	N	3.90	35.90	4390	13	1770	2210	13000	1.8	2.5			139000	R3-020-V-Z2
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	2	3	N	4.60	35.20	4850	12	1100	2430	20000	2	2.4			122000	R3-020-V-Z3
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	3	4	N	1.90	11.80	5490	15	973	2830	8750	7.7	3.5			106000	R3-020-V-Z4
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	4	6	N	0.21	3.50	2350	12	514	1710	3050	6.5	2.9			102000	R3-020-V-Z5
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	6	8	N	0.04	0.46	508	12	172	537	1910	4.9	3.2			81800	R3-020-V-Z6
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	8	10	N		0.00	325	9.5	60	322	1100	3.9	3.6			68100	R3-020-V-Z7
Creek	03	60207	USEPA GLNPO	R3-021-V	Surface	05/26/10	0	1	N		0.03										9710	R3-021-V-Z1
Creek	03	60207	USEPA GLNPO	R3-021-V	Surface	05/26/10	0	0.5	N			5.4	2.4	12	10	47	0.0041					R3-021-V-Z1A
Creek	03	60207	USEPA GLNPO	R3-021-V	Subsurface	05/26/10	0.5	1	N			5.3	2	16	8	86						R3-021-V-Z1B
Creek	03	60207	USEPA GLNPO	R3-021-V	Subsurface	05/26/10	1	2	N			5.7	3.4	19	8.6	114		0.13			2250	R3-021-V-Z2
Creek	03	60207	USEPA GLNPO	R3-021-V	Subsurface	05/26/10	2	3	N			4.5	2	15	5.9	84		0.14			1240	R3-021-V-Z3
Creek	03	59488	NYSDEC 2001	DEC-6F	Surface	08/18/98	0	0.33	N	1.12	1.00	318	6.5	107	351	950	2.475	0.59	0.013			DEC-6F-0-10 CM CORE-8/18/1998
Creek	03	59488	NYSDEC 2001	DEC-6F	Surface	08/18/98	0.33	0.92	N	3.03	2.80	320	4.9	124	191	1210	17.921	0.536				DEC-6F-10-28 CM CORE-8/18/1998
Creek	03	59488	NYSDEC 2001	DEC-6F	Subsurface	08/18/98	0.92	1.71	N	25.85	24.00	2740	11.7	616	1270	15100	12.844	2.06	0.062			DEC-6F-28-52 CM CORE-8/18/1998
Creek	03	59488	NYSDEC 2001	DEC-6F	Subsurface	08/18/98	1.71	2.3	N	0.03	0.02	673	9.6	113	449	1160	24.11	2.37				DEC-6F-52-70 CM CORE-8/18/1998
Creek	03	59488	NYSDEC 2001	DEC-6F	Subsurface	08/18/98	2.3	3.61	N	0.00	0.00	315	10.5	75	299	1140	21.73	2.97				DEC-6F-70-110 CM CORE-8/18/1998
Creek	03	59465	USEPA GLNPO	R3-022-V	Surface	05/26/10	0	1	N		4.44										21600	R3-022-V-Z1
Creek	03	59465	USEPA GLNPO	R3-022-V	Surface	05/26/10	0	0.5	N	0.25		343	4.9	131	237	1120	2.6	0.73				R3-022-V-Z1A
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	0.5	1	N	0.33		402	4.6	145	264	1390	6	0.8				R3-022-V-Z1B
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	1	2	FD	0.79		509	3.9	167	287	2280	3.7	0.56			37100	R3-022-VR
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	1	2	N	0.18		591	4	186	375	2380	19	0.67			43100	R3-022-V-Z2
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	2	3	N	0.90		1180	6.6	442	635	5500	2.7	0.88			53500	R3-022-V-Z3
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	3	4	N			417	9	66	265	931	5.6	2.6			48200	R3-022-V-Z4
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	4	6	N			235	8.4	52	196	669	2.1	2.4			45900	R3-022-V-Z5
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	6	6.8	N			25	2.7	19	16	74	0.062	0.24			2980	R3-022-V-Z6
Creek	03	59359	USEPA GLNPO	R3-024-V	Surface	05/26/10	0	1	N		5.45										62500	R3-024-V-Z1
Creek	03	59359	USEPA GLNPO	R3-024-V	Surface	05/26/10	0	0.5	N	0.65		431	6.1	166	300	1540	2.4	0.6				R3-024-V-Z1A
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	0.5	1	N	0.75		708	6.1	241	442	2470	2.3	0.64				R3-024-V-Z1B
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	1	2	N	0.44		3220	11	1510	1750	11600	7.6	1.7			125000	R3-024-V-Z2
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	2	3	N	4.80		4810	14	1170	2370	12700	4	2.6			114000	R3-024-V-Z3
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	3	4	N	1.40		5260	14	732	2970	5760	6.7	2.7			116000	R3-024-V-Z4
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	4	6	N	0.06		563	11	110	478	1320	3.1	3.1			55700	R3-024-V-Z5
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	6	8	N			240	8.2	57	252	741	2.9	2.1			29300	R3-024-V-Z6
Creek	03	59325	USEPA GLNPO	R3-023-V	Surface	05/26/10	0	1	N		0.00										24600	R3-023-V-Z1
Creek	03	59325	USEPA GLNPO	R3-023-V	Surface	05/26/10	0	0.5	N			27	2.9	18	17	82	0.011					R3-023-V-Z1A
Creek	03	59325	USEPA GLNPO	R3-023-V	Subsurface	05/26/10	0.5	0.9	N			17	2.7	17	14	75	0.009	1.4				R3-023-V-Z1B
Creek	03	59325	USEPA GLNPO	R3-023-V	Subsurface	05/26/10	1	2	N			6.7	2	15	8.7	60	0.015	1.7			6390	R3-023-V-Z2
Creek	03	58706	USEPA GLNPO	R3-027-V	Surface	05/27/10	0	1	N		2.35										47100	R3-027-V-Z1
Creek	03	58706	USEPA GLNPO	R3-027-V	Surface	05/27/10	0	0.5	N	0.32		273	6	103	196	953	3.4	0.53				R3-027-V-Z1A
Creek	03	58706	USEPA GLNPO	R3-027-V	Subsurface	05/27/10	0.5	1	N	0.38		417	6.2	189	266	1670	4.6	0.7				R3-027-V-Z1B
Creek	03	58706	USEPA GLNPO	R3-027-V	Subsurface	05/27/10	1	2	N	2.10		1610	9.2	701	877	7510	8.4	1.2			82200	R3-027-V-Z2
Creek	03	58706	USEPA GLNPO	R3-027-V	Subsurface	05/27/10	2	3	N	2.80		4880	17	1500	2440	17900	7.3	2.8			114000	R3-027-V-Z3
Creek	03	58706	USEPA GLNPO	R3-027-V	Subsurface	05/27/10	3	4	N	1.80		3200	13	674	1640	6320	6.7	2.5			102000	R3-027-V-Z4
Creek	03	58684	USEPA GLNPO	R3-026-V	Surface	05/27/10	0	1	N		4.45										47400	R3-026-V-Z1
Creek	03	58684	USEPA GLNPO	R3-026-V	Surface	05/27/10	0	0.5	N	0.38		284	5.5	124	233	859	5.5	0.6				R3-026-V-Z1A
Creek	03	58684	USEPA GLNPO	R3-026-V	Subsurface	05/27/10	0.5	1	N	0.80		337	3.8	132	215	1240	7.6	0.44				R3-026-V-Z1B
Creek	03	58684	USEPA GLNPO	R3-026-V	Subsurface	05/27/10	1	2	N	0.54		493	6.2	172	298	2030	4.4	0.69			46000	R3-026-V-Z2
Creek	03	58684	USEPA GLNPO	R3-026-V	Subsurface	05/27/10	2	3	N	1.30		3980	15	926	2020	14300	5.1	2			103000	R3-026-V-Z3
Creek	03	58684	USEPA GLNPO	R3-026-V	Subsurface	05/27/10	3	4	N	3.60	8.53	3480	15	692	2040	6480	3.5	2.2			80800	R3-026-V-Z4
Creek	03	58656	USEPA GLNPO	R3-025-V	Surface	05/26/10	0	1	N		0.05										3400	R3-025-V-Z1
Creek	03	58656	USEPA GLNPO	R3-025-V	Surface	05/26/10	0	0.5	N	0.12		92	2.7	38	40	538	0.31					R3-025-V-Z1A

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	03	58656	USEPA GLNPO	R3-025-V	Subsurface	05/26/10	0.5	1	N	0.07		381	3.7	117	113	1230	0.48	0.16				R3-025-V-Z1B
Creek	04	58038	USEPA GLNPO	R4-135-C	Surface	06/21/10	0	0.8	N	27.00		200	4.7	73	109	624	44	0.13			46100	R4-135-C-COMP
Creek	04	58038	USEPA GLNPO	R4-135-C	Surface	06/21/10	0	0.5	N	5.30		385	5.7	109	232	909	29	0.71			115000	R4-135-C-Z1A
Creek	04	57787	USEPA GLNPO	R4-028-C	Surface	11/17/09	0	1.55	N	0.37		450	5.5	211	304	1750	2.9	0.42	0.0125	0.013	56000	R4-028-C
Creek	04	57468	USEPA GLNPO	R4-136-C	Surface	06/21/10	0	0.4	N	1.10		2320	14	1090	1230	8670	5.5	1.2			80900	R4-136-C-Z1A
Creek	04	56862	USEPA GLNPO	R4-029-C	Surface	11/16/09	0	1.2	N	0.07		264	4.2	90	191	829		0.72			47000	R4-029-C
Creek	04	56559	USEPA GLNPO	R4-137-C	Surface	06/21/10	0	0.7	N	0.32		256	4.6	76	99	536	26	0.39			61900	R4-137-C-Comp
Creek	04	56006	USEPA GLNPO	R4-030-C	Surface	11/16/09	0	1.1	N	0.70	0.29	103	2.9	36	50	345	40	0.19	0.0599	0.019	147000	R4-030-C
Creek	04	55979	USEPA GLNPO	R4-138-C	Surface	06/21/10	0	0.4	N	0.33		107	3.5	39	70	411	250	0.38			60700	R4-138-C-Comp
Creek	04	55678	USEPA GLNPO	R4-031-C	Surface	11/16/09	0	0.8	N	0.17		1460	6.4	451	725	6510	11	1	0.0137		52000	R4-031-C
Creek	04	55647	USEPA GLNPO	R4-139-C	Surface	06/22/10	0	0.3	N	1.50		810	6.4	261	427	3510	20	0.8			59200	R4-139-C-Z1A
Creek	04	55325	USEPA GLNPO	R4-140-C	Surface	06/23/10	0	0.3	N			103	5.9	35	244	611	1.1	0.17			26900	R4-140-C-Z1A
Creek	04	55037	USEPA GLNPO	R4-032-C	Surface	11/16/09	0	0.7	N	0.30		392	5.2	133	238	1200		0.63			39000	R4-032-C
Creek	04	54677	USEPA GLNPO	R4-141-C	Surface	06/23/10	0	0.8	N			888	6.9	139	537	1150	11	1.1			46200	R4-141-C-COMP
Creek	04	54677	USEPA GLNPO	R4-141-C	Surface	06/23/10	0	0.5	FD	0.37		491	4.9	121	332	1500	3.7	0.64			30700	R4-141-CR
Creek	04	54677	USEPA GLNPO	R4-141-C	Surface	06/23/10	0	0.5	N	0.71		408	4.5	101	251	1230	1.5	0.6			41300	R4-141-C-Z1A
Creek	04	54208	USEPA GLNPO	R4-033-C	Surface	11/17/09	0	0.4	N	0.07		47	3	19	26	183		0.16			16000	R4-033-C
Creek	04	53793	USEPA GLNPO	R4-142-C	Surface	06/23/10	0	0.2	N			456	4.1	67	128	623	0.86	0.24			29000	R4-142-C-Z1A
Creek	04	53633	USEPA GLNPO	R4-034-C	Surface	11/17/09	0	0.4	N	0.10		62	3.3	20	27	224	5.4	0.31		0.0037	63000	R4-034-C
Creek	04	53123	USEPA GLNPO	R4-143-C	Surface	06/23/10	0	0.3	N	1.10		244	5.3	82	153	672	4.2	0.79			102000	R4-143-C-Z1A
Creek	04	52919	USEPA GLNPO	R4-035-C	Surface	11/17/09	0	0.8	N	0.81	0.97	307	2.6	98	160	688		1.2			63000	R4-035-C
Creek	04	52719	USEPA GLNPO	R4-036-C	Surface	11/17/09	0	0.9	N	0.57		200	3.4	60	128	507		0.56			104000	R4-036-C
Creek	04	52514	USEPA GLNPO	R4-037-C	Surface	11/17/09	0	0.6	N	0.56	2.80	176	3.1	69	249	575		0.47			30000	R4-037-C
Creek	04	52226	USEPA GLNPO	R4-038-C	Surface	11/18/09	0	0.4	N	0.29		238	2.9	101	136	574		0.28			32000	R4-038-C
Creek	04	52061	NYSDEC 2001	DEC-7A	Surface	08/19/98	0	0.66	N	0.25	0.23	2840	10.6	798	1330	8640	5.038	1.33	0.02			DEC-7A-0-20 CM CORE-8/19/1998
Creek	04	52061	NYSDEC 2001	DEC-7A	Surface	08/19/98	0	0.5	N	0.12	0.11	329	7.5	105	241	816	3.25	1.1	0.008			DEC-7ABC-SURFACE-8/19/1998
Creek	05	52061	NYSDEC 2001	DEC-7A	Subsurface	08/19/98	0.66	1.64	N	0.24	0.21	900	12.1	251	795	2040	15.543	4.73	0.009			DEC-7A-20-50 CM CORE-8/19/1998
Creek	05	52061	NYSDEC 2001	DEC-7A	Subsurface	08/19/98	1.64	2.95	N		0.00	346	12.5	89.9	193	485	14.54	4.36				DEC-7A-50-90 CM CORE-8/19/1998
Creek	05	52061	NYSDEC 2001	DEC-7A	Subsurface	08/19/98	2.95	3.41	N	0.00		545	11.2	176	215	424	6.268	10.1				DEC-7A-90-104 CM CORE-8/19/1998
Creek	05	51954	USEPA GLNPO	R5-039-V	Surface	05/21/10	0	1	N			188	1.8	34	56	319	17	0.24			41600	R5-039-V-Z1
Creek	05	51954	USEPA GLNPO	R5-039-V	Subsurface	05/21/10	1	1.9	N	0.48		167	2	57	86	412	0.65	0.8				R5-039-V-Z2
Creek	05	51903	NYSDEC 1998	DEC-7	Surface	10/12/94	0	1	N	18.36		7850	11.3	1470	2130	24000		2.2	0.031			DEC-7-0-12 IN CORE-10/12/1994
Creek	05	51903	NYSDEC 1998	DEC-7	Subsurface	10/12/94	1	1.67	N	13.00		3670	12.7	927	1620	10500		1.7	0.052			DEC-7-12-20 IN CORE-10/12/1994
Creek	05	51887	USEPA GLNPO	R5-041-V	Surface	05/24/10	0	1	N												65100	R5-041-V-Z1
Creek	05	51887	USEPA GLNPO	R5-041-V	Surface	05/24/10	0	0.5	N	0.01		389	9.8	80	305	1220	11	3				R5-041-V-Z1A
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	0.5	1	N			346	11	77	306	1090	12	3				R5-041-V-Z1B
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	1	2	N			302	12	78	224	913	12	2.9			61400	R5-041-V-Z2
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	2	3	N			473	16	117	211	586	3.7	5.3			63600	R5-041-V-Z3
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	3	4	N			648	14	165	247	593	2	8.3			81600	R5-041-V-Z4
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	4	5	N			456	8.7	182	197	394	1.9	11			68300	R5-041-V-Z5A
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	5	6	N			136	8	42	57	180	1	2			44200	R5-041-V-Z5B
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	6	7	N			40	4	20	23	111	0.44	0.28			24600	R5-041-V-Z6A
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	7	7.5	N			6.1	2.2	20	4.8	68	0.0039					R5-041-V-Z6B
Creek	05	51876	USEPA GLNPO	R5-040-V	Surface	05/20/10	0	1	N												64900	R5-040-V-Z1
Creek	05	51876	USEPA GLNPO	R5-040-V	Surface	05/20/10	0	0.5	N			430	20	89	206	606	1.4	4.2				R5-040-V-Z1A
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	0.5	1	N			543	18	143	248	594	0.61	7.8				R5-040-V-Z1B
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	1	2	N			545	11	161	208	445	0.49	11			58500	R5-040-V-Z2
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	2	3	N			566	11	191	238	467	0.37	11			61900	R5-040-V-Z3
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	3	4	N			419	11	128	161	355	0.66	9.2			55900	R5-040-V-Z4
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	4.5	5	N			8.1	2.5	18	8.7	72	0.019	0.062			3990	R5-040-V-Z5A
Creek	05	51152	USEPA GLNPO	R5-042-V	Surface	05/20/10	0	1	N												63200	R5-042-V-Z1
Creek	05	51152	USEPA GLNPO	R5-042-V	Surface	05/20/10	0	0.5	N			353	13	85	165	462	1.3	4				R5-042-V-Z1A
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	0.5	1	N			532	14	122	217	509	1.1	6.1				R5-042-V-Z1B
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	1	2	N			335	8.3	98	131	287	0.49	8.1			39400	R5-042-V-Z2
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	2	3	N			178	7.2	32	56	172	0.73	4.4			68000	R5-042-V-Z3
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	3	4	N			54	9.3	18	29	126	0.097	0.4			48400	R5-042-V-Z4
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	4.5	5	N	0.00		34	3.7	18	24	103	0.15	0.27			22500	R5-042-V-Z5A
Creek	05	51134	USEPA GLNPO	R5-043-V	Surface	05/20/10	0	1	N	0.11		362	13	107	237	881	4.3	2.3			51300	R5-043-V-Z1
Creek	05	51134	USEPA GLNPO	R5-043-V	Surface	05/20/10	0	1	N	0.19		384	6.3	116	274	892	1.4	0.69			61600	R5-043-V-Z1P
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	1	2	N			419	11	102	226	695	3	6.9			61800	R5-043-V-Z2
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	2	3	N			526	11	123	219	471	0.88	7.7			80800	R5-043-V-Z3
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	3	4	N	0.14		485	14	167	211	420	0.44	8			51500	R5-043-V-Z4
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	4	4.5	N			429	11	182	191	426	0.37	8.3			52400	R5-043-V-Z5A
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	4.5	5	N			27	4.3	18	19	75	0.031	0.33			4380	R5-043-V-Z5B
Creek	05	51122	USEPA GLNPO	R5-044-V	Surface	05/20/10	0	1	N												88300	R5-044-V-Z1
Creek	05	51122	USEPA GLNPO	R5-044-V	Surface	05/20/10	0	0.5	N	0.03		500	8.7	211	339	1610	1.7	0.39				R5-044-V-Z1A
Creek	05	51122	USEPA GLNPO	R5-044-V	Subsurface	05/20/10	0.5	1	N	1.20		2720	18	1280	1350	8890	4.6	1.3				R5-044-V-Z1B
Creek	05	51122	USEPA GLNPO	R5-044-V	Subsurface	05/20/10	1	2	FD			3730	15	1130	1500	9290	2.1	2.6			79700	R5-044-VR
Creek	05	51122	USEPA GLNPO	R5-044-V	Subsurface	05/20/10	1	2	N	0.57		3500	14	1070	1410	8720	2.5	2.9			76700	R5-044-V-Z2
Creek	05	51122	USEPA GLNPO	R5-044-V	Subsurface	05/20/10	2	3	N			15	2.5	19	14	90	0.0095	0.052			8210	R5-044-V-Z3

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	05	50710	USEPA GLNPO	R5-045-V	Surface	05/20/10	0	1	N	1.00		284	6.6	95	203	767	3.6	0.62				R5-045-V-Z1
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	1	2	N	0.55		293	6.2	88	223	791	2.1	0.63			64400	R5-045-V-Z2
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	2	3	N	0.28		188	4.6	60	140	609	1.7	1.4			54800	R5-045-V-Z3
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	3	4	FD	0.01		32	4	15	22	88	0.49	0.24			32900	R5-045-VR
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	3	4	N	0.01		31	4.1	16	22	89	0.39	0.21			52900	R5-045-V-Z4
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	4.5	5	N	0.01		24	4.3	16	22	85	0.4	0.18			27600	R5-045-V-Z5A
Creek	05	50627	NYSDEC 2001	DEC-7B	Surface	08/19/98	0	0.66	N	0.14	0.13	321	6.2	112	246	829	3.718	0.757	0.012			DEC-7B-0-20 CM CORE-8/19/1998
Creek	05	50627	NYSDEC 2001	DEC-7B	Subsurface	08/19/98	0.66	1.9	N	0.27	0.26	21.3	4.3	15.7	19.9	71.8	7.84	0.101	0.014			DEC-7B-20-58 CM CORE-8/19/1998
Creek	05	50627	NYSDEC 2001	DEC-7B	Subsurface	08/19/98	1.9	2.17	N			15.9	4.3	14.4	15.9	60.4						DEC-7B-58-66 CM CORE-8/19/1998
Creek	05	50099	USEPA GLNPO	R5-046-V	Surface	05/20/10	0	1	N												106000	R5-046-V-Z1
Creek	05	50099	USEPA GLNPO	R5-046-V	Surface	05/20/10	0	0.5	N			559	15	547	1020	3190	1.4	1.7				R5-046-V-Z1A
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	0.5	1	N	0.02		763	18	769	1110	4370	1.5	2.9				R5-046-V-Z1B
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	1	2	N			369	11	66	313	1100	2.5	2.6			67100	R5-046-V-Z2
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	2	3	N			401	16	83	259	1210	5.4	3.3			64400	R5-046-V-Z3
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	3	4	N			439	33	104	245	637	3.7	4.8			56900	R5-046-V-Z4
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	4	5	N			413	11	93	180		0.38	3.8			65800	R5-046-V-Z5A
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	5	6	N			487	11	146	194		1.2	6.3			52000	R5-046-V-Z5B
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	6	7	N			60	3.9	39	32		0.024	1.3			29800	R5-046-V-Z6A
Creek	05	49732	NYSDEC 2001	DEC-7C	Surface	08/19/98	0	0.66	N	0.42	0.39	1240	7.5	380	639	3620	7.606	0.966	0.009			DEC-7C-0-20 CM CORE-8/19/1998
Creek	05	49732	NYSDEC 2001	DEC-7C	Subsurface	08/19/98	0.66	2.3	N	0.00	0.00	825	11	195	468	1820	18.18	3.34	0.002			DEC-7C-20-70 CM CORE-8/19/1998
Creek	05	49732	NYSDEC 2001	DEC-7C	Subsurface	08/19/98	2.3	2.72	N	0.00	0.00	353	12.3	89.2	172	443	4.171	4.34				DEC-7C-70-83 CM CORE-8/19/1998
Creek	05	49723	USEPA GLNPO	R5-047-V	Surface	05/20/10	0	1	N												58300	R5-047-V-Z1
Creek	05	49723	USEPA GLNPO	R5-047-V	Surface	05/20/10	0	0.5	N	0.39		317	6.4	96	222		3.7	0.51				R5-047-V-Z1A
Creek	05	49723	USEPA GLNPO	R5-047-V	Subsurface	05/20/10	0.5	1	N	0.21		316	6	93	226		3.6	0.61				R5-047-V-Z1B
Creek	05	49723	USEPA GLNPO	R5-047-V	Subsurface	05/20/10	1	2	N			400	5.7	117	275		4.3	0.74			57300	R5-047-V-Z2
Creek	05	49723	USEPA GLNPO	R5-047-V	Subsurface	05/20/10	2	3	N			395	11	106	208		1.9	3.3			56100	R5-047-V-Z3
Creek	05	49723	USEPA GLNPO	R5-047-V	Subsurface	05/20/10	3	4	N			406	10	93	185		1.5	3.2			62700	R5-047-V-Z4
Creek	05	49556	USEPA GLNPO	R5-048-V	Surface	05/21/10	0	1	N												51500	R5-048-V-Z1
Creek	05	49556	USEPA GLNPO	R5-048-V	Surface	05/21/10	0	0.5	N			666	13	163	240		1.2	7				R5-048-V-Z1A
Creek	05	49556	USEPA GLNPO	R5-048-V	Subsurface	05/21/10	0.5	1	N			42	4.1	26	28		0.21	0.47				R5-048-V-Z1B
Creek	05	49556	USEPA GLNPO	R5-048-V	Subsurface	05/21/10	1	2	N			11	1.5	18	14		0.0082	0.095			22100	R5-048-V-Z2
Creek	05	49556	USEPA GLNPO	R5-048-V	Subsurface	05/21/10	2	3	N	0.01		6.2	1.2	17	8.5		0.0076	0.076			4890	R5-048-V-Z3
Creek	05	49472	USEPA GLNPO	R5-049-V	Surface	05/21/10	0	1	N		4.94										42600	R5-049-V-Z1
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	0.5	1	N	0.48		619	5.8	227	373		1.6	0.95				R5-049-V-Z1B
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	1	2	N	0.29	7.65	1150	7	434	854		1.2	1			67000	R5-049-V-Z2
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	2	3	N	1.10	29.10	2180	11	1240	1150		1.4	1.4			119000	R5-049-V-Z3
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	3	4	N		0.21	480	10	120	178		0.47	5.2			53100	R5-049-V-Z4
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	4	4.5	N			431	11	174	177		1.2	8.6			57900	R5-049-V-Z5A
Creek	05	48925	USEPA GLNPO	R5-050-V	Surface	05/21/10	0	1	N												62900	R5-050-V-Z1
Creek	05	48925	USEPA GLNPO	R5-050-V	Surface	05/21/10	0	0.5	N	0.25		245	5.1	80	181		2.2	0.55				R5-050-V-Z1A
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	0.5	1	N	0.16		239	3.2	79	159	665	2	0.48				R5-050-V-Z1B
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	1	2	FD			1930	8.7	875	1010		2.3	1.7			83200	R5-050-VR
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	1	2	N	1.10		1830	7.9	826	1010	5980	4	1			87200	R5-050-V-Z2
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	2	3	N	0.20		6190	12	1410	2500	10900	8.8	2.6			130000	R5-050-V-Z3
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	3	4	N	0.91		6130	13	1070	3000	8800	9.5	2.5			122000	R5-050-V-Z4
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	4	4.5	N	0.76		708	5.3	130	594	914	3.4	1.3			57100	R5-050-V-Z5A
Creek	05	48794	USEPA GLNPO	R6-144-C	Surface	07/02/10	0	1.3	N	0.08		1620	8.2	796	827	4570	2.7	0.95			72400	R6-144-C-COMP
Creek	05	48794	USEPA GLNPO	R6-144-C	Surface	07/02/10	0	0.5	N			246	5.6	81	170	642	1.5	0.67			41200	R6-144-C-Z1A
Creek	06	48613	USEPA GLNPO	R6-051-C	Surface	11/19/09	0	1.2	N	0.47		207	4	79	156	543	6.2	0.51	0.028	0.014	62000	R6-051-C
Creek	06	48613	USEPA GLNPO	R6-051-C	Surface	11/19/09	0	1.2	FD	0.47		193	3.9	65	153	603	6.6	0.61	0.045	0.015	81000	R6-051-CR
Creek	06	48468	USEPA GLNPO	R6-145-C	Surface	07/02/10	0	0.7	N			153	4.1	49	98	387	1	0.5			30400	R6-145-C-COMP
Creek	06	48468	USEPA GLNPO	R6-145-C	Surface	07/02/10	0	0.5	N	0.05		164	5	50	103	434	1.2	0.62			36900	R6-145-C-Z1A
Creek	06	48245	USEPA GLNPO	R6-146-C	Surface	07/02/10	0	1.1	N			2780	9.3	450	1530	4100	2.5	2.3			64800	R6-146-C-COMP
Creek	06	48245	USEPA GLNPO	R6-146-C	Surface	07/02/10	0	0.5	N	0.65		3310	9.8	679	1530	6800	5.5	1.6			75100	R6-146-C-Z1A
Creek	06	48241	USEPA GLNPO	R6-052-C	Surface	11/19/09	0	1.3	N	1.30		3790	11	539	2710	3640	27	3.4	0.118		84000	R6-052-C
Creek	06	47676	USEPA GLNPO	R6-147-C	Surface	07/01/10	0	0.8	N	0.64		371	5	128	313	1180	3.3	0.52			54900	R6-147-C-COMP
Creek	06	47676	USEPA GLNPO	R6-147-C	Surface	07/01/10	0	0.5	N	0.29		208	4.7	71	147	546	3.1	0.52			51800	R6-147-C-Z1A
Creek	06	47630	USEPA GLNPO	R6-053-C	Surface	11/19/09	0	1.2	N	0.72	1.00	277	4	97	217	715	5.2	0.5	0.022		59000	R6-053-C
Creek	06	47394	USEPA GLNPO	R6-148-C	Surface	07/01/10	0	0.9	N			199	4.3	61	134	580	1.5	0.67			21500	R6-148-C-COMP
Creek	06	47394	USEPA GLNPO	R6-148-C	Surface	07/01/10	0	0.9	FD	0.14		187	3.6	57	125	539	1.4	0.24			26700	R6-148-CR
Creek	06	46875	USEPA GLNPO	R6-149-C	Surface	07/01/10	0	0.9	N	0.15		141	2.9	48	98	425	1.9	0.29			48600	R6-149-C-COMP
Creek	06	46600	USEPA GLNPO	R6-054-C	Surface	12/02/09	0	0.5	N	0.47		196	3.6	81	158	642		0.25			38000	R6-054-C
Creek	06	46461	USEPA GLNPO	R6-150-C	Surface	07/01/10	0	0.9	N	0.06		211	4.5	69	126	525	2.4	0.39			46100	R6-150-C-COMP
Creek	06	46094	USEPA GLNPO	R6-151-C	Surface	07/02/10	0	0.7	N			189	4.2	61	147	469	2	0.5			39600	R6-151-C-COMP
Creek	06	45738	USEPA GLNPO	R6-152-C	Surface	07/02/10	0	0.7	N	0.02		188	3.9	65	135	519	1.6	0.54			50000	R6-152-C-COMP
Creek	06	45738	USEPA GLNPO	R6-152-C	Surface	07/02/10	0	0.7	FD	0.09		189	3.6	65	142	495	1.8	0.49			34400	R6-152-CR
Creek	06	45097	USEPA GLNPO	R6-153-C	Surface	07/02/10	0	0.5	N	0.49		162	3.8	54	111	388	3.5	0.43			31200	R6-153-C-COMP
Creek	06	44611	USEPA GLNPO	R6-055-C	Surface	11/17/09	0	1.1	N	0.32		359	3.1	109	208	882	130	0.89	0.014	0.011	51000	R6-055-C
Creek	06	44475	USEPA GLNPO	R6-154-C	Surface	07/01/10	0	1.1	N	0.02		179	4.2	58	117	439	1.8	0.43			45400	R6-154-C-COMP

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	06	44475	USEPA GLNPO	R6-154-C	Surface	07/01/10	0	0.5	N	0.07		233	4.5	72	146	650	1.9	0.7			44500	R6-154-C-Z1A
Creek	06	43904	USEPA GLNPO	R6-056-C	Surface	11/17/09	0	1.2	N	1.00	1.80	160	3.2	58	104	772		0.97			39000	R6-056-C
Creek	06	43904	USEPA GLNPO	R6-056-C	Surface	11/17/09	0	1.2	FD	3.30	2.70	149	1.9	51	82	627		0.57			26000	R6-056-CR
Creek	06	43766	USEPA GLNPO	R6-155-C	Surface	07/01/10	0	0.7	N	0.77		212	5.2	65	142	483	3.5	0.64			49900	R6-155-C-COMP
Creek	06	43252	USEPA GLNPO	R6-057-C	Surface	11/17/09	0	1.4	N			250	4.4	69	184	546		0.49			41000	R6-057-C
Creek	06	42790	USEPA GLNPO	R6-156-C	Surface	07/01/10	0	0.7	N	0.07		152	3.8	46	84	383	3.2	0.41			33200	R6-156-C-COMP
Creek	06	42279	USEPA GLNPO	R6-157-C	Surface	07/01/10	0	1.2	N	1.20		464	5.5	125	253	825	1.7	0.68			64600	R6-157-C-COMP
Creek	06	42279	USEPA GLNPO	R6-157-C	Surface	07/01/10	0	0.5	N	0.48		137	3.6	48	89	315	1.7	0.41			23300	R6-157-C-Z1A
Creek	06	41988	USEPA GLNPO	R6-158-C	Surface	07/01/10	0	1.4	N	0.39		181	4.2	54	127	430	2.2	0.6			41400	R6-158-C-COMP
Creek	06	41988	USEPA GLNPO	R6-158-C	Surface	07/01/10	0	0.5	FD			94	3.2	26	52	191	0.9	0.27			17900	R6-158-CR
Creek	06	41988	USEPA GLNPO	R6-158-C	Surface	07/01/10	0	0.5	N			116	3.3	27	50	202	2	0.46			21900	R6-158-C-Z1A
Creek	06	41258	USEPA GLNPO	R6-159-C	Surface	07/01/10	0	1.3	N	0.41		212	5.8	59	131	462	2.9	0.47			37900	R6-159-C-COMP
Creek	06	41258	USEPA GLNPO	R6-159-C	Surface	07/01/10	0	0.5	N	0.02		152	6.6	44	96	335	2.4	0.34			28100	R6-159-C-Z1A
Creek	06	40369	USEPA GLNPO	R6-160-C	Surface	07/01/10	0	1.7	N	1.40		4380	13	1220	1950	9760	7.2	2.1			94100	R6-160-C-COMP
Creek	06	40369	USEPA GLNPO	R6-160-C	Surface	07/01/10	0	0.5	N			3240	11	1380	1530	8800	5.6	1.4			116000	R6-160-C-Z1A
Creek	06	40268	USEPA GLNPO	R6-058-C	Surface	11/18/09	0	2.2	N	0.73	2.80	452	5	164	309	929	5.1	2.8	0.09	0.022	67000	R6-058-C
Creek	06	40082	USEPA GLNPO	R6-161-C	Surface	07/01/10	0	0.5	N	0.03		166	5.7	60	115	391	4.8	0.33			37000	R6-161-C-Z1A
Creek	06	40082	USEPA GLNPO	R6-161-C	Surface	07/01/10	0.5	1.5	N	25.00		1550	6.4	325	593	3880	3.1	1.1			51500	R6-161-C-Z1
Creek	06	39209	USEPA GLNPO	R6-162-C	Surface	06/30/10	0	0.8	N			169	4.7	53	134	408	1.7	0.46			42800	R6-162-C-COMP
Creek	06	38848	USEPA GLNPO	R6-059-C	Surface	11/18/09	0	1.3	N	0.49		261	5.3	83	186	554		0.43			38000	R6-059-C
Creek	06	38173	USEPA GLNPO	R6-163-C	Surface	06/30/10	0	0.5	N			76	13	13	28	82	0.62	0.15			12000	R6-163-C-Z1A
Creek	06	38173	USEPA GLNPO	R6-163-C	Surface	06/30/10	0.5	1.4	N			201	6.5	60	149	516	1.2	0.44			32100	R6-163-C-Z1
Creek	06	37526	USEPA GLNPO	R6-060-C	Surface	11/18/09	0	0.8	N	0.40		250	4.7	79	247	599		0.52			50000	R6-060-C
Creek	06	36804	USEPA GLNPO	R6-164-C	Surface	06/30/10	0	1.4	N			326	7.8	121	288	1050	4.8	1.3			34700	R6-164-C-COMP
Creek	06	36804	USEPA GLNPO	R6-164-C	Surface	06/30/10	0	0.5	N			84	3.1	29	62	199	0.49	0.25			27800	R6-164-C-Z1A
Creek	06	36085	USEPA GLNPO	R6-165-C	Surface	06/30/10	0	1.6	N	0.24		350	4.8	95	238	888	4	0.68			72400	R6-165-C-COMP
Creek	06	36085	USEPA GLNPO	R6-165-C	Surface	06/30/10	0	0.5	N	0.33		218	4.5	61	152	507	2.3	0.46			81400	R6-165-C-Z1A
Creek	06	35766	USEPA GLNPO	R6-061-C	Surface	11/18/09	0	4	N	0.53		337	5.2	107	281	834	8.2	0.88			86000	R6-061-C
Creek	06	35433	USEPA GLNPO	R6-166-C	Surface	06/30/10	0	2.1	N	0.02		422	5.4	127	295	929	3.6	0.88			66100	R6-166-C-COMP
Creek	06	35433	USEPA GLNPO	R6-166-C	Surface	06/30/10	0	0.5	N	0.05		252	4.5	78	195	575	4.1	1.5			73600	R6-166-C-Z1A
Creek	06	35023	USEPA GLNPO	R6-167-C	Surface	06/30/10	0	1.3	N			203	3.6	65	146	498	1.9	0.36			72500	R6-167-C-COMP
Creek	06	35023	USEPA GLNPO	R6-167-C	Surface	06/30/10	0	0.5	N	0.03		273	5.3	78	210	624	3.9	0.72			64600	R6-167-C-Z1A
Creek	06	34754	USEPA GLNPO	R6-062-C	Surface	11/19/09	0	3.7	N	0.66	1.80	720	6.1	176	550	1310		1.4			62000	R6-062-C
Creek	06	34255	USEPA GLNPO	R6-168-C	Surface	06/30/10	0	1.3	N			297	3.7	132	185	735	1.6	0.37			35800	R6-168-C-COMP
Creek	06	34255	USEPA GLNPO	R6-168-C	Surface	06/30/10	0	0.5	N	0.42		251	4.7	66	207	572	2.6	0.44			51100	R6-168-C-Z1A
Creek	06	33962	USEPA GLNPO	R6-063-C	Surface	11/19/09	0	1.1	N	2.00		393	4.4	137	293	1040		0.65			88000	R6-063-C
Creek	06	33691	USEPA GLNPO	R6-169-C	Surface	06/28/10	0	1.4	N	0.25		2360	8	391	1360	2590	5.3	2.1			84800	R6-169-C-COMP
Creek	06	33691	USEPA GLNPO	R6-169-C	Surface	06/28/10	0	0.5	N	0.34		280	4.6	86	206	685	5.3	0.67			77200	R6-169-C-Z1A
Creek	06	33292	USEPA GLNPO	R6-064-C	Surface	11/19/09	0	1.4	N	0.39		129	4	45	101	290		0.23			89000	R6-064-C
Creek	06	32904	USEPA GLNPO	R6-065-C	Surface	11/19/09	0	2.4	N	1.00		170	3.3	62	126	431		0.4			39000	R6-065-C
Creek	06	32562	USEPA GLNPO	R6-066-C	Surface	11/25/09	0	1.9	N	4.50	7.90	299	4.9	99	238	703		0.53			47000	R6-066-C
Creek	06	32046	USEPA GLNPO	R6-067-C	Surface	11/25/09	0	2.1	N	0.87	12.00	235	4.8	87	216	643		1.6			47000	R6-067-C
Creek	06	31840	USEPA GLNPO	R6-170-C	Surface	06/25/10	0	1.5	N	0.24		1240	6.5	286	662	1680	5.5	1.2			74300	R6-170-C-COMP
Creek	06	31840	USEPA GLNPO	R6-170-C	Surface	06/25/10	0	0.5	N	0.59		407	5.7	151	260	1080	4.5	0.64			56900	R6-170-C-Z1A
Creek	06	31325	USEPA GLNPO	R6-171-C	Surface	06/25/10	0	1.2	N	0.73		1260	7.7	444	661	3760	5.7	1.1			80100	R6-171-C-COMP
Creek	06	31325	USEPA GLNPO	R6-171-C	Surface	06/25/10	0	0.5	N	1.50		178	3.9	60	160	446	6.5	0.63			53500	R6-171-C-Z1A
Creek	07	30918	USEPA GLNPO	R7-068-C	Surface	11/25/09	0	2.1	N	3.60	86.00	1770	12	703	1000	5980	20	1.1			79000	R7-068-C
Creek	07	30918	USEPA GLNPO	R7-068-C	Surface	11/25/09	0	2.1	FD	11.00	58.00	1650	11	638	985	5280	10	1.6	0.006		109000	R7-068-CR
Creek	07	30500	USEPA GLNPO	R7-172-C	Surface	06/25/10	0	0.9	N	26.00		1060	6.7	179	862	1670	46	1.4			42900	R7-172-C-COMP
Creek	07	30500	USEPA GLNPO	R7-172-C	Surface	06/25/10	0	0.5	N	15.00		1930	6.2	193	850	1350	42	1.5			58600	R7-172-C-Z1A
Creek	07	29933	USEPA GLNPO	R7-069-C	Surface	11/25/09	0	2.4	N	1.90		1250	7	349	652	2820		1.2			63000	R7-069-C
Creek	07	29724	USEPA GLNPO	R7-070-C	Surface	11/25/09	0	2.4	N	0.46		358	4.3	109	257	960		0.45			54000	R7-070-C
Creek	07	29233	USEPA GLNPO	R7-071-C	Surface	11/25/09	0	1.5	N	4.20	44.00	399	4.5	147	338	977		0.68			72000	R7-071-C
Creek	07	28712	USEPA GLNPO	R7-072-C	Surface	11/24/09	0	0.8	N	3.90		790	5.7	191	599	1220		1.7			93000	R7-072-C
Creek	07	28328	USEPA GLNPO	R7-173-C	Surface	06/25/10	0	1.1	N	1.40		377	6.1	102	287	823	7.3	0.67			60500	R7-173-C-COMP
Creek	07	28328	USEPA GLNPO	R7-173-C	Surface	06/25/10	0	0.5	N	1.30		331	6.1	99	282	699	9.2	0.69			51200	R7-173-C-Z1A
Creek	07	28037	USEPA GLNPO	R7-174-C	Surface	06/25/10	0	1.2	N	4.80		780	7.4	272	608	2070	13	0.94			68700	R7-174-C-COMP
Creek	07	28037	USEPA GLNPO	R7-174-C	Surface	06/25/10	0	0.5	N	2.70		318	5.1	96	270	681	5	0.54			82200	R7-174-C-Z1A
Creek	07	28034	USEPA GLNPO	R7-073-C	Surface	11/24/09	0	2.4	N	4.40		528	5.3	186	471	1370	380	2.3	0.2	0.078	103000	R7-073-C
Creek	07	27600	USEPA GLNPO	R7-175-C	Surface	06/24/10	0	0.5	N	1.00		367	5.7	112	325	826	9.2	0.65			73200	R7-175-C-Z1A
Creek	07	27600	USEPA GLNPO	R7-175-C	Surface	06/24/10	0.5	1.4	N	0.52		428	7.2	131	361	955	5.5	1.1			45600	R7-175-C-Z1
Creek	07	27127	USEPA GLNPO	R7-074-C	Surface	11/24/09	0	2.3	N	4.30	6.20	382	6.4	100	301	769		0.88			45000	R7-074-C
Creek	07	26960	USEPA GLNPO	R7-075-C	Surface	11/24/09	0	2.1	N	1.30	8.10	851	6.4	270	623	2710	18		0.0177		129000	R7-075-C
Creek	07	26511	USEPA GLNPO	R7-076-C	Surface	11/24/09	0	2	N	6.80		351	6	130	332	897		0.67			102000	R7-076-C
Creek	07	26286	USEPA GLNPO	R7-176-C	Surface	06/24/10	0	0.9	N	8.10		369	5.2	138	462	865	12	1			108000	R7-176-C-COMP
Creek	07	26286	USEPA GLNPO	R7-176-C	Surface	06/24/10	0	0.5	N	11.00		447	6	140	389	938	21	1.5			106000	R7-176-C-Z1A
Creek	07	25843	USEPA GLNPO	R7-077-C	Surface	11/24/09	0	1.2	N	1.40		288		89	280	741					73000	R7-077-C
Creek	07	25419	USEPA GLNPO	R7-177-C	Surface	06/24/10	0	0.5	FD	0.42		1170	9.2	349	762	3190	10	1.3			62100	R7-177-CR
Creek	07	25419	USEPA GLNPO	R7-177-C	Surface	06/24/10	0	0.5	N	1.10		476	6.4	159	391	1080	10	0.93			65500	R7-177-C-Z1A
Creek	07	25419	USEPA GLNPO	R7-177-C	Surface	06/24/10	0.5	1.1	N	0.74		1190	9.2	340	751	3150		3.7			67000	R7-177-C-Z1

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	07	25068	USEPA GLNPO	R7-078-C	Surface	12/02/09	0	4	N	0.45		629	6.8	284	516	1370		1.1			75000	R7-078-C
Creek	07	24710	USEPA GLNPO	R7-079-C	Surface	12/02/09	0	2.4	N	7.70		481	4.5	192	392	1220		0.4			77000	R7-079-C
Creek	07	24295	USEPA GLNPO	R7-178-C	Surface	06/24/10	0	0.5	N	5.80		358	6.4	101	330	983	17	4.5			76300	R7-178-C-Z1A
Creek	07	24295	USEPA GLNPO	R7-178-C	Surface	06/24/10	0.5	1.2	N	84.00		711	13	230	972	3440	34	0.57			130000	R7-178-C-Z1
Creek	07	23960	USEPA GLNPO	R7-080-C	Surface	12/02/09	0	1.7	N	0.76	4.90	624	6.1	106	349	1730		1.5			41000	R7-080-C
Creek	07	23569	USEPA GLNPO	R7-179-C	Surface	06/23/10	0	0.7	N	5.70		424	7.9	117	378	934	15	0.96			41400	R7-179-C-COMP
Creek	07	23569	USEPA GLNPO	R7-179-C	Surface	06/23/10	0	0.5	N	5.40		363	6.4	120	347	900	25	0.86			68900	R7-179-C-Z1A
Creek	07	23100	USEPA GLNPO	R7-081-C	Surface	12/02/09	0	1.7	N	0.63	49.00	308	4.9	119	540	1090		0.52			107000	R7-081-C
Creek	07	22856	USEPA GLNPO	R7-082-C	Surface	11/30/09	0	1.6	N	0.32		481	6	98	347	858		1.8			44000	R7-082-C
Creek	07	22856	USEPA GLNPO	R7-082-C	Surface	11/30/09	0	1.6	FD	1.40	5.80	416	6.2	92	408	839		1.3			39000	R7-082-CR
Creek	07	22470	USEPA GLNPO	R7-180-C	Surface	06/23/10	0	1.1	N	44.00		475	5.7	138	397	1070	33	0.59			64500	R7-180-C-COMP
Creek	07	22470	USEPA GLNPO	R7-180-C	Surface	06/23/10	0	0.5	N	4.00		354	5.7	99.7372	338	741	36	0.98			65300	R7-180-C-Z1A
Creek	07	22057	USEPA GLNPO	R7-083-C	Surface	11/30/09	0	3.3	N	1.50		345	5	99	321	917	0.065	0.59	0.091	0.039	70000	R7-083-C
Creek	07	21809	USEPA GLNPO	R7-084-C	Surface	11/30/09	0	3.3	N	0.96	17.00	279	6.2	86	278	644		0.39			26000	R7-084-C
Creek	07	21492	USEPA GLNPO	R7-085-C	Surface	11/30/09	0	1.6	N	7.80		534	5.4	195	477	1610	0.037	0.42	0.75	0.22	62000	R7-085-C
Creek	07	21130	USEPA GLNPO	R7-181-C	Surface	07/01/10	0	1.3	N	0.11		165	4.2	39	128	311	2.8	0.46			16000	R7-181-C-COMP
Creek	07	21130	USEPA GLNPO	R7-181-C	Surface	07/01/10	0	0.5	N			108	3.2	33	93	246	2.6	0.21			48800	R7-181-C-Z1A
Creek	07	20624	USEPA GLNPO	R7-086-C	Surface	11/30/09	0	3.2	N	4.10	22.00	351	4.1	115	420	858		0.48			80000	R7-086-C
Creek	07	20394	USEPA GLNPO	R7-182-C	Surface	07/01/10	0	0.8	N			209	13	45	123	320	1.5	0.69			19200	R7-182-C-COMP
Creek	07	19884	USEPA GLNPO	R7-087-C	Surface	11/30/09	0	2.1	N	0.82	14.00	445	5.1	141	419	1020	28	0.68		0.017	64000	R7-087-C
Creek	07	19601	USEPA GLNPO	R7-183-C	Surface	07/01/10	0	1.3	N			682	4.8	116	407	1190	10	2.4			131000	R7-183-C-COMP
Creek	07	19601	USEPA GLNPO	R7-183-C	Surface	07/01/10	0	0.5	N	0.16		364	4.4	91	387	697	5.7	1.1			68100	R7-183-C-Z1A
Creek	07	19406	USEPA GLNPO	R7-184-C	Surface	06/30/10	0	0.75	N	6.90		1300	11	409	1030	2360	18	3.6			101000	R7-184-C-COMP
Creek	07	19391	USEPA GLNPO	R7-088-C	Surface	11/25/09	0	1	N	55.00	19.00	1830	13	335	1400	2130		3.4			91000	R7-088-C
Creek	07	19132	USEPA GLNPO	R7-185-C	Surface	06/30/10	0	0.7	N	1.10		294	4.5	91	257	628	8	0.55			77100	R7-185-C-COMP
Creek	07	19132	USEPA GLNPO	R7-185-C	Surface	06/30/10	0	0.5	N			324	4.2	95	293	721	9.6	1.1			76100	R7-185-C-Z1A
Creek	07	18838	USEPA GLNPO	R7-089-C	Surface	11/25/09	0	2.9	N	97.00	50.00	1500	8.2	264	1100	1680	45	0.42	5.68	0.44	68000	R7-089-C
Creek	07	18836	USEPA GLNPO	R7-186-C	Surface	06/30/10	0	0.7	N	0.85		585	3.2	91	434	535	17	0.68			50800	R7-186-C-COMP
Creek	07	18836	USEPA GLNPO	R7-186-C	Surface	06/30/10	0	0.5	N			275	3.9	83	324	469	18	0.78			46600	R7-186-C-Z1A
Creek	07	18638	USEPA GLNPO	R7-187-C	Surface	06/30/10	0	0.95	N	64.00		338	4.5	96	288	902	7.9	0.84			53700	R7-187-C-COMP
Creek	07	18638	USEPA GLNPO	R7-187-C	Surface	06/30/10	0	0.5	N	0.67		275	4.6	67	243	598	4.1	0.81			49100	R7-187-C-Z1A
Creek	07	18255	USEPA GLNPO	R7-090-C	Surface	11/25/09	0	3.5	N	3.40		809	8.6	237	995	2910		0.92			159000	R7-090-C
Creek	07	17701	USEPA GLNPO	R7-188-C	Surface	06/30/10	0	0.5	N			179	3.8	44	150	377	2.2	1.3			47600	R7-188-C-Z1A
Creek	07	17701	USEPA GLNPO	R7-188-C	Surface	06/30/10	0.4	1.1	N			11	2.2	13	18	76	0.22				48500	R7-188-C-Z1
Creek	07	17307	USEPA GLNPO	R7-189-C	Surface	06/30/10	0	1.2	N	0.24		810	9.1	214	656	2090	17	1.3			76200	R7-189-C-COMP
Creek	07	17307	USEPA GLNPO	R7-189-C	Surface	06/30/10	0	1.2	FD	0.18		714	6.2	198	682	1850	15	1.1			64600	R7-189-CR
Creek	07	17307	USEPA GLNPO	R7-189-C	Surface	06/30/10	0	0.5	N			382	4.4	89	323	649	9.8	1.9			97900	R7-189-C-Z1A
Creek	07	16833	USEPA GLNPO	R7-091-C	Surface	11/24/09	0	1.4	N	11.00	17.00	402	3.8	114	696	1680		13			109000	R7-091-C
Creek	07	16587	USEPA GLNPO	R7-092-C	Surface	11/24/09	0	1	N	2.50		880	5.9	142	511	950		0.98			64000	R7-092-C
Creek	07	16217	USEPA GLNPO	R7-190-C	Surface	06/30/10	0	0.7	N	0.85		320	5.7	85	343	664	14	0.64			63400	R7-190-C-COMP
Creek	07	15878	USEPA GLNPO	R7-093-C	Surface	11/24/09	0	0.9	N	3.10		496	6.2	141	512	903	170	0.72	0.164	0.081	60000	R7-093-C
Creek	07	15682	USEPA GLNPO	R7-191-C	Surface	06/29/10	0	0.9	N	0.94		475	5.1	119	414	782	9.4	1.1			80700	R7-191-C-COMP
Creek	07	15682	USEPA GLNPO	R7-191-C	Surface	06/29/10	0	0.5	N	1.00		313	4.1	80	314	625	22	2.1			63400	R7-191-C-Z1A
Creek	07	15136	USEPA GLNPO	R7-094-C	Surface	11/23/09	0	1	N	1.30	5.90	463	6.7	132	400	996	31	0.68	0.147	0.023	64000	R7-094-C
Creek	07	14846	USEPA GLNPO	R7-095-C	Surface	11/23/09	0	1.3	N	1.20		625	7.4	173	631	1090	47	0.86	0.105	0.03	89000	R7-095-C
Creek	07	14846	USEPA GLNPO	R7-095-C	Surface	11/23/09	0	1.3	FD	3.00		608	5	167	592	1050	59	0.52	0.53	0.12	69000	R7-095-CR
Creek	07	14397	USEPA GLNPO	R7-096-C	Surface	11/23/09	0	1.3	N	1.80		548	5.1	162	1220	721		1.6			52000	R7-096-C
Creek	07	13907	USEPA GLNPO	R7-192-C	Surface	06/29/10	0	0.3	N	0.27		436	4.5	110	427	691	14	1.2			54500	R7-192-C-Z1A
Creek	07	13648	USEPA GLNPO	R7-097-C	Surface	11/23/09	0	0.9	N	2.20		590	6	141	567	856		0.56			51000	R7-097-C
Creek	07	13280	USEPA GLNPO	R7-193-C	Surface	06/29/10	0	0.8	N	0.18		652	10	82	524	786	93	2.9			95000	R7-193-C-COMP
Creek	07	13280	USEPA GLNPO	R7-193-C	Surface	06/29/10	0	0.5	N	1.30		519	6.1	95	409	666	32	5.5			79400	R7-193-C-Z1A
Creek	07	12647	USEPA GLNPO	R7-098-C	Surface	11/23/09	0	1.9	N	1.60		488	5.6	130	520	791		0.98			37000	R7-098-C
Creek	07	12247	USEPA GLNPO	R7-099-C	Surface	11/23/09	0	1.3	N	0.65	6.70	628	5.5	161	567	1010	34	0.69	0.092	0.019	72000	R7-099-C
Creek	07	11865	USEPA GLNPO	R7-100-C	Surface	11/23/09	0	1.2	N	0.50	10.00	486	6.4	105	385	763	43	1.8	0.061	0.018	20000	R7-100-C
Creek	07	11695	USEPA GLNPO	R7-194-C	Surface	06/29/10	0	0.6	N	35.00		358	3.6	94	487	498	69	0.77			84700	R7-194-C-COMP
Creek	07	11180	USEPA GLNPO	R7-101-C	Surface	11/30/09	0	0.5	N	1.10	22.00	2070	7.1	265	1620	942		0.96			75000	R7-101-C
Creek	07	11119	NCSWCD 2007	EMC-C-10-SD	Surface	08/24/06	0	0.5	N	7.76		1270	8.8	200	859	1530		18				EMC-C-10-SD-A
Creek	07	11119	NCSWCD 2007	EMC-C-10-SD	Subsurface	08/24/06	0.5	1	N	1.51												EMC-C-10-SD-B
Creek	07	11119	NCSWCD 2007	EMC-C-10-SD	Subsurface	08/24/06	1	1.5	N	1.10											86400	EMC-C-10-SD-C
Creek	07	11048	USEPA GLNPO	R7-195-C	Surface	06/29/10	0	0.5	N	6.30		471	4	142	677	613	200	1.3			66600	R7-195-C-COMP
Creek	07	10757	NCSWCD 2007	EMC-C-12-SD	Surface	09/08/06	0	0.79	N	2.05		892	31	268	1040	4050		1.8			79600	EMC-C-12-SD-A
Creek	07	10757	NCSWCD 2007	EMC-C-12-SD	Subsurface	09/08/06	0.8	1.6	N													EMC-C-12-SD-B
Creek	07	10757	NCSWCD 2007	EMC-C-12-SD	Subsurface	09/08/06	1.58	2.4	N													EMC-C-12-SD-C
Creek	07	10585	USEPA GLNPO	R7-102-C	Surface	11/30/09	0	1.5	N	1.90		813	10	136	608	1390		3			86000	R7-102-C
Creek	07	10442	USEPA GLNPO	R7-196-C	Surface	06/29/10	0	1.3	N	0.59		1330	15	374	839	2340	22	2.1			77800	R7-196-C-COMP
Creek	07	10442	USEPA GLNPO	R7-196-C	Surface	06/29/10	0	0.5	N	0.73		652	5.4	172	506	1200	15	1.7			58000	R7-196-C-Z1A
Creek	07	10143	NCSWCD 2007	EMC-C-11-SD	Surface	09/08/06	0	0.79	N	0.09		1010	11	68	511	1150		6				EMC-C-11-SD-A
Creek	07	10143	NCSWCD 2007	EMC-C-11-SD	Subsurface	09/08/06	0.8	1.6	N	0.04											43400	EMC-C-11-SD-B
Creek	07	10143	NCSWCD 2007	EMC-C-11-SD	Subsurface	09/08/06	1.58	2.4	N	0.06												EMC-C-11-SD-C
Creek	07	9991	USEPA GLNPO	R7-103-C	Surface	11/30/09	0	2.3	N	1.50	33.00	2940	16	414	1560	2220		3.6			118000	R7-103-C

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	07	9757	USEPA GLNPO	R7-197-C	Surface	06/28/10	0	1.2	N	1.80		932	10	190	829	1710	26	1.9			99700	R7-197-C-COMP
Creek	07	9757	USEPA GLNPO	R7-197-C	Surface	06/28/10	0	1.2	FD	0.53		803	8.1	172	626	1540	25	0.91			92100	R7-197-CR
Creek	07	9757	USEPA GLNPO	R7-197-C	Surface	06/28/10	0	0.5	N	1.30		522	6.4	104	468	738	32	4.5			90600	R7-197-C-Z1A
Creek	07	9410	NCSWCD 2007	EMC-C-08-SD	Surface	08/24/06	0	0.5	N	53.00		558	6.2	113	458	927		0.88				EMC-C-08-SD-A
Creek	07	9410	NCSWCD 2007	EMC-C-08-SD	Subsurface	08/24/06	0.5	1	N	37.00											59300	EMC-C-08-SD-B
Creek	07	9410	NCSWCD 2007	EMC-C-08-SD	Subsurface	08/24/06	1	1.5	N	0.53												EMC-C-08-SD-C
Creek	07	9310	USEPA GLNPO	R7-198-C	Surface	06/28/10	0	0.9	N	2.60		534	6.4	117	510	802	18	0.84			57500	R7-198-C-COMP
Creek	07	9310	USEPA GLNPO	R7-198-C	Surface	06/28/10	0	0.5	N			423	4.6	99.6608	466	595	15	0.81			57000	R7-198-C-Z1A
Creek	07	9173	USEPA GLNPO	R7-104-C	Surface	12/02/09	0	1	N	9.80	22.00	849	7.9	136	576	907	79	0.93	1.01	0.19	65000	R7-104-C
Creek	07	9070	NCSWCD 2007	EMC-C-09-SD	Surface	08/24/06	0	0.66	N	37.00		600	7.1	108	771	770		1.1				EMC-C-09-SD-A
Creek	07	9070	NCSWCD 2007	EMC-C-09-SD	Subsurface	08/24/06	0.67	1.3	N	69.00												EMC-C-09-SD-B
Creek	07	9070	NCSWCD 2007	EMC-C-09-SD	Subsurface	08/24/06	1.3	2	N	48.00											58500	EMC-C-09-SD-C
Creek	07	8998	USEPA GLNPO	R7-199-C	Surface	06/28/10	0	1.5	N			666	5.8	111	907	758	22	0.86			102000	R7-199-C-COMP
Creek	07	8998	USEPA GLNPO	R7-199-C	Surface	06/28/10	0	0.5	N			540	6.2	89	634	721	21	0.67			67100	R7-199-C-Z1A
Creek	07	8835	NCSWCD 2007	EMC-C-01-SD	Surface	08/23/06	0	0.875	N	4.30		535	7	118	340	1040		0.65				EMC-C-01-SD-A
Creek	07	8835	NCSWCD 2007	EMC-C-01-SD	Subsurface	08/23/06	0.83	1.75	N	0.02												EMC-C-01-SD-B
Creek	07	8835	NCSWCD 2007	EMC-C-01-SD	Subsurface	08/23/06	1.75	2.7	N												8630	EMC-C-01-SD-C
Creek	07	8556	USEPA GLNPO	R7-105-C	Surface	11/30/09	0	1.4	N	4.80		1630	17	443	966	2460	32	1.2	0.256	0.12	87000	R7-105-C
Creek	07	8267	NCSWCD 2007	EMC-C-02-SD	Surface	08/23/06	0	0.66	N	5.40		1630	9.4	612	1150	4540		1.3				EMC-C-02-SD-A
Creek	07	8267	NCSWCD 2007	EMC-C-02-SD	Subsurface	08/23/06	0.67	1.3	N	4.50											53200	EMC-C-02-SD-B
Creek	07	8267	NCSWCD 2007	EMC-C-02-SD	Subsurface	08/23/06	1.3	2	N	0.10												EMC-C-02-SD-C
Creek	07	7878	NCSWCD 2007	EMC-C-03-SD	Surface	08/23/06	0	0.58	N	7.10		282	15	63	294	426		0.61				EMC-C-03-SD-A
Creek	07	7878	NCSWCD 2007	EMC-C-03-SD	Subsurface	08/23/06	0.58	1.2	N	0.02											14500	EMC-C-03-SD-B
Creek	07	7878	NCSWCD 2007	EMC-C-03-SD	Subsurface	08/23/06	1.2	1.8	N													EMC-C-03-SD-C
Creek	07	7812	USEPA GLNPO	R7-200-C	Surface	06/28/10	0	3	N	13.00		363	6.4	84	785	483	37	4.7			50600	R7-200-C-COMP
Creek	07	7812	USEPA GLNPO	R7-200-C	Surface	06/28/10	0	0.5	N	1.70		256	4.5	49	362	367	1.1	0.7			66900	R7-200-C-Z1A
Creek	07	7404	NCSWCD 2007	EMC-C-04-SD	Surface	08/23/06	0	0.5	N	1.83		300	5.6	135	1320	427		0.35				EMC-C-04-SD-A
Creek	07	7404	NCSWCD 2007	EMC-C-04-SD	Subsurface	08/23/06	0.5	1	N	4.10											35100	EMC-C-04-SD-B
Creek	07	7404	NCSWCD 2007	EMC-C-04-SD	Subsurface	08/23/06	1	1.5	N													EMC-C-04-SD-C
Creek	07	6889	USEPA GLNPO	R7-106-C	Surface	11/30/09	0	0.5	N	0.43	13.00	311	5.3	61	462	402	0.054	0.67	0.0255	0.011	32000	R7-106-C
Creek	07	6654	NCSWCD 2007	EMC-C-05-SD	Surface	08/23/06	0	0.5	N	1.29		426	5.8	77	1030	430		0.29				EMC-C-05-SD-A
Creek	07	6654	NCSWCD 2007	EMC-C-05-SD	Subsurface	08/23/06	0.5	1	N	0.68												EMC-C-05-SD-B
Creek	07	6654	NCSWCD 2007	EMC-C-05-SD	Subsurface	08/23/06	1	1.5	N	3.70											40500	EMC-C-05-SD-C
Creek	09	3551	NCSWCD 2007	EMC-C-07-SD	Surface	08/24/06	0	0.4	N	14.30		531	12	84	1720	1600		0.6				EMC-C-07-SD-A
Creek	09	3551	NCSWCD 2007	EMC-C-07-SD	Surface	08/24/06	0.42	0.83	N	25.90												EMC-C-07-SD-B
Creek	09	3551	NCSWCD 2007	EMC-C-07-SD	Subsurface	08/24/06	0.83	1.25	N	50.00											48400	EMC-C-07-SD-C
Creek	09	3470	NYSDEC SRI	18MC-L18-S01	Surface	04/25/07	0.3	0.9	N	0.11		44	2.8	9	27	72						18MC-L18-S01-Z1
Creek	09	3469	NYSDEC SRI	18MC-L18-S02	Surface	04/25/07	0.2	0.9	N	1.43		576	9.7	22	1370	889	13			0.016	36300	18MC-L18-S02-Z1
Creek	09	3469	NYSDEC SRI	18MC-L18-S02	Subsurface	04/25/07	1.2	1.8	N	0.02		33	4	10	32	90	1.63				48300	18MC-L18-S02-Z2
Creek	09	3259	NYSDEC RI	SED-40	Surface	09/01/05	0	0.17	N	2.20		224										SED-40-Z1
Creek	09	3259	NYSDEC RI	SED-40	Surface	09/01/05	0.17	0.5	N	24.00		951										SED-40-Z2
Creek	09	3243	NYSDEC SRI	18MC-L17-S03	Surface	04/25/07	0.5	1	N	0.41		320	15	22	473	1140						18MC-L17-S03-Z1
Creek	09	3241	NYSDEC SRI	18MC-L17-S02	Surface	04/25/07	0.5	1	N			235	6.9	27	170	273	1.753		0.0013		75700	18MC-L17-S02-Z1
Creek	09	3231	NYSDEC SRI	18MC-L17-S01	Surface	04/25/07	0.4	0.8	N			410	12	46	227	653						18MC-L17-S01-Z1
Creek	09	3226	NCSWCD 2007	EMC-C-06-SD	Surface	08/24/06	0	0.4	N			246	11	21	80	198		2.5			79800	EMC-C-06-SD-A
Creek	09	3226	NCSWCD 2007	EMC-C-06-SD	Surface	08/24/06	0.42	0.83	N	0.37												EMC-C-06-SD-B
Creek	09	3226	NCSWCD 2007	EMC-C-06-SD	Subsurface	08/24/06	0.83	1.25	N	0.01												EMC-C-06-SD-C
Creek	09	3131	NYSDEC RI	SED-38	Surface	09/01/05	0	0.17	N	8.30		164										SED-38-Z1
Creek	09	3131	NYSDEC RI	SED-39	Surface	09/01/05	0	0.17	N	0.06		179										SED-39-Z1
Creek	09	3131	NYSDEC RI	SED-38	Surface	09/01/05	0.25	0.75	N	8.00		291										SED-38-Z2
Creek	09	3131	NYSDEC RI	SED-39	Surface	09/01/05	0.25	0.58	N	0.51		166										SED-39-Z2
Creek	09	3116	NYSDEC 2004	EM4-SED-01	Surface	12/30/99	0	0.5	N	3.27												EM4-SED-01-0-0
Creek	09	3116	NYSDEC 2004	EM4-SED-01	Surface	08/07/96	0	0.17	N			362	3.6	36	352	712		0.73				EM4-SED-01-0-0.1667
Creek	09	3116	NYSDEC 2004	EM4-SED-01	Surface	08/07/96	0	0.16	N	6.10							17.3					EM4-SED-01-0-0.1651
Creek	09	3095	NYSDEC SRI	18MC-L16W-S03	Surface	04/25/07	0.5	1	N	0.04		63	10	11	29	51						18MC-L16W-S03-Z1
Creek	09	3093	NYSDEC SRI	18MC-L16E-S03	Surface	04/24/07	0.5	1	N	8.70		2040	18	196	1170	672						18MC-L16E-S03-Z1
Creek	09	3091	NYSDEC SRI	18MC-L16E-S02	Surface	04/24/07	0	0.16	N	5.80		323	7.7	43	273	696	11.06			0.0035	50200	18MC-L16E-S02-Z1
Creek	09	3090	NYSDEC SRI	18MC-L16E-S01	Surface	04/24/07	0.4	1	N	38.00		1140	25	68	2640	2280						18MC-L16E-S01-Z1
Creek	09	3082	NYSDEC SRI	18MC-L16W-S01	Surface	04/24/07	0.2	0.8	N	10.00		206	5.7	76	138	272						18MC-L16W-S01-Z1
Creek	10	3409	NYSDEC 2001	DEC-12	SURFACE	08/17/98	0	0.59	N		24.93	354	6.2	42.6	252	640	13.272		0.06155			DEC-12-0-18 CM CORE-8/19/1998
Creek	10	3409	NYSDEC 2001	DEC-12	SUBSURFACE	08/17/98	0.59	0.89	N		9.55	493	9.9	64.2	291	774	9.878		0.02514			DEC-12-18-27 CM CORE-8/19/1998
Creek	10	2978	NYSDEC RI	SED-37	Surface	09/01/05	0	0.17	N	9.00		214										SED-37-Z1
Creek	10	2978	NYSDEC RI	SED-37	Surface	09/01/05	0.17	0.58	N	66.00		1190										SED-37-Z2
Creek	10	2978	NYSDEC RI	SED-37	Subsurface	09/01/05	0.8	1	N	234.00		428										SED-37-Z3
Creek	10	2909	NYSDEC 2004	EM4-SED-02	Surface	08/07/96	0	0.17	N			558	4.8	74	415	1020		2.1				EM4-SED-02-0-0.1667
Creek	10	2909	NYSDEC 2004	EM4-SED-02	Surface	08/07/96	0	0.16	N	2.96							19.8					EM4-SED-02-0-0.1651
Creek	10	2898	NYSDEC SRI	18MC-L15W-S01	Surface	04/24/07	0.3	1.2	N	1.40		356	4.1	131	407	582						18MC-L15W-S01-Z1
Creek	10	2894	NYSDEC SRI	18MC-L15W-S03	Surface	04/24/07	0.3	0.8	N	0.12		55	7.1	8.7	152	85						18MC-L15W-S03-Z1
Creek	10	2891	NYSDEC SRI	18MC-L15E-S02	Surface	04/24/07	0	0.16	N	4.80		568	9.9	28	728	1030	593.07			0.0084	100000	18MC-L15E-S02-Z1

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Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	10	2891	NYSDEC SRI	18MC-L15E-S03	Surface	04/24/07	0.5	1	N	17.00		1850	12	63	6830	4610						18MC-L15E-S03-Z1
Creek	10	2890	NYSDEC SRI	18MC-L15E-S01	Surface	04/24/07	0	0.5	FD	13.00		999	9.3	47	1220	1500						18MC-L15E-S01-Z1/D
Creek	10	2890	NYSDEC SRI	18MC-L15E-S01	Surface	04/24/07	0.5	0.9	N	29.00		1370	12	55	1370	1740						18MC-L15E-S01-Z1
Creek	10	2870	NYSDEC 2004	EM4-SED-03	Surface	08/07/96	0	0.17	N			189	2.1	20.7	108	427		0.26				EM4-SED-03-0-0.1667
Creek	10	2870	NYSDEC 2004	EM4-SED-03	Surface	08/07/96	0	0.16	N	0.36							14.3					EM4-SED-03-0-0.1651
Creek	10	2833	NYSDEC RI	SED-35	Surface	09/01/05	0	0.17	N	6.50		94										SED-35-Z1
Creek	10	2833	NYSDEC RI	SED-35	Surface	09/01/05	0.25	0.67	N	12.00		247										SED-35-Z2
Creek	10	2681	NYSDEC SRI	18MC-L14W-S02	Surface	04/24/07	0	0.5	N	0.01		11	5.7	11	89	51	0.095			0.0035	24700	18MC-L14W-S02-Z1
Creek	10	2680	NYSDEC SRI	18MC-L14W-S03	Surface	04/24/07	0.5	1.2	N			1780	22	88	1550	2000						18MC-L14W-S03-Z1
Creek	10	2680	NYSDEC SRI	18MC-L14W-S03	Subsurface	04/24/07	1.8	2.3	N			1690	15	466	1370	3170						18MC-L14W-S03-Z2
Creek	10	2664	NYSDEC SRI	18MC-L14W-S01	Surface	04/24/07	0.5	1.6	N			74	5.7	12	42	105						18MC-L14W-S01-Z1
Creek	10	2605	NYSDEC RI	SED-32	Surface	09/01/05	0	0.17	N	0.42		169										SED-32-Z1
Creek	10	2605	NYSDEC RI	SED-32	Surface	09/01/05	0.25	0.42	N	0.64		171										SED-32-Z2
Creek	10	2482	NYSDEC 2004	EM4-SED-A	Surface	10/27/95	0	0.16	N	4.07		343	4.7	28.2	244	483	19.9	1.025				EM4-SED-A-0-0.1651
Creek	10	2454	NYSDEC 2004	EM4-SED-4A	Surface	12/30/99	0	0.5	N	1.87												EM4-SED-4A-0-0
Creek	10	2454	NYSDEC 2004	EM4-SED-04	Surface	08/07/96	0	0.17	N			398	6.3	43.9	181	723		0.69				EM4-SED-04-0-0.1667
Creek	10	2454	NYSDEC RI	SED-34	Surface	09/01/05	0	0.17	N	49.00		146										SED-34-Z1
Creek	10	2454	NYSDEC SRI	18MC-L14E-S02	Surface	04/24/07	0	0.16	N	237.00		1430	17	41	1150	1060	36.19		0.85		51000	18MC-L14E-S02-Z1
Creek	10	2454	NYSDEC 2004	EM4-SED-04	Surface	08/07/96	0	0.16	N	6.14							33.5					EM4-SED-04-0-0.1651
Creek	10	2454	NYSDEC RI	SED-34	Surface	09/01/05	0.17	0.58	N	390.00		1150										SED-34-Z2
Creek	10	2454	NYSDEC SRI	18MC-L14E-S01	Surface	04/24/07	0.5	0.8	N	0.20		18	3.1	5.9	16	150						18MC-L14E-S01-Z1
Creek	10	2454	NYSDEC SRI	18MC-L14E-S03	Subsurface	04/24/07	0.8	1.2	N	59.00		1000	9.6	43	860	1970						18MC-L14E-S03-Z1
Creek	10	2454	NYSDEC SRI	18MC-L14E-S02	Subsurface	04/24/07	1	1.5	N	142.00		709	12	1200	646	1390	13.01		0.3		79000	18MC-L14E-S02-Z2
Creek	10	2412	NYSDEC RI	SED-FS	Surface	09/01/05	0	0.17	N			119										SED-FS-Z1
Creek	10	2371	NYSDEC 2004	EM4-SED-05	Surface	08/07/96	0	0.17	N			343	36.8	167	7550	13000		4.9				EM4-SED-05-0-0.1667
Creek	10	2371	NYSDEC 2004	EM4-SED-05	Surface	08/07/96	0	0.16	N	8.80							35.6					EM4-SED-05-0-0.1651
Creek	10	2369	NYSDEC SRI	18MC-L13-S03	Surface	04/24/07	0.5	1	N	46.00		3990	25	114	2830	7340						18MC-L13-S03-Z1
Creek	10	2369	NYSDEC RI	SED-29	Surface	09/01/05	0	0.17	N	2.02		581										SED-29-Z1
Creek	10	2369	NYSDEC RI	SED-29	Surface	09/01/05	0.25	0.5	N	1.42		6840										SED-29-Z2
Creek	10	2363	NYSDEC SRI	18MC-L13-S02	Surface	04/24/07	0.5	1	N	0.12		176	4.8	25	103	245	3.072				48300	18MC-L13-S02-Z1
Creek	10	2357	NYSDEC SRI	18MC-L13-S01	Subsurface	04/24/07	0.8	1.5	N			155	4.5	6.6	34	100						18MC-L13-S01-Z1
Creek	10	2328	NYSDEC RI	SED-30	Surface	09/01/05	0	0.17	N	0.17		143										SED-30-Z1
Creek	10	2328	NYSDEC RI	SED-30	Surface	09/01/05	0.17	0.58	N			44										SED-30-Z2
Creek	10	2297	NYSDEC RI	SED-28	Surface	09/01/05	0	0.17	N	10.00		3040										SED-28-Z1
Creek	10	2297	NYSDEC RI	SED-28	Subsurface	09/01/05	0.67	0.92	N	150.00		1240										SED-28-Z2
Creek	10	2205	NYSDEC RI	SED-43	Surface	09/01/05	0	0.17	N	1.67		434										SED-43-Z1
Creek	10	2205	NYSDEC RI	SED-43	Surface	09/01/05	0.25	0.75	N	7.49		582										SED-43-Z2
Creek	10	2185	NYSDEC RI	SED-27	Surface	09/01/05	0	0.17	N	0.67		148										SED-27-Z1
Creek	10	2185	NYSDEC RI	SED-27	Surface	09/01/05	0.25	0.75	N	0.27		229										SED-27-Z2
Creek	10	2182	NYSDEC SRI	18MC-L12-S03	Surface	04/24/07	0.5	1.4	N	0.22		1110	9.5	27	526	668						18MC-L12-S03-Z1
Creek	10	2180	NYSDEC SRI	18MC-L12-S02	Surface	04/24/07	0.5	0.9	N			84	2.6	5.5	17	46	0.313		0.0033	0.0028	59300	18MC-L12-S02-Z1
Creek	10	2177	NYSDEC SRI	18MC-L12-S01	Subsurface	04/24/07	1	1.6	N	0.04		513	9.3	87	725	960						18MC-L12-S01-Z1
Creek	10	2115	NYSDEC RI	SED-42	Surface	09/01/05	0	0.17	N	0.20		291										SED-42-Z1
Creek	10	1974	NYSDEC SRI	18MC-L11-S01	Subsurface	04/24/07	1	1.6	N	1.65		920	7.1	85	477	855						18MC-L11-S01-Z1
Creek	10	1974	NYSDEC SRI	18MC-L11-S03	Surface	04/24/07	0	0.8	N	0.59		98	32	11	66	99						18MC-L11-S03-Z1
Creek	10	1973	NYSDEC SRI	18MC-L11-S02	Surface	04/24/07	0.5	0.9	N	0.38		2530	19	20	394	7660	100.16		0.03		53300	18MC-L11-S02-Z1
Creek	10	1940	NYSDEC RI	SED-25	Surface	09/01/05	0	0.17	N	4.00		251										SED-25-Z1
Creek	10	1940	NYSDEC RI	SED-25	Surface	09/01/05	0.42	0.58	N	0.90		211										SED-25-Z2
Creek	10	1784	NYSDEC SRI	18MC-L10-S03	Surface	04/23/07	0.5	9	N	0.56		737	6.8	62	329	595						18MC-L10-S03-Z1
Creek	10	1760	NYSDEC SRI	18MC-L10-S01	Surface	04/23/07	0	0.5	FD	1.83		792	19	42	241	1830						18MC-L10-S01-Z1/D
Creek	10	1760	NYSDEC SRI	18MC-L10-S01	Surface	04/23/07	0.5	1.5	N	2.75		1070	27	76	397	1900						18MC-L10-S01-Z1
Creek	10	1713	NYSDEC 2004	EM4-SED-06	Surface	08/07/96	0	0.17	N			805	3.5	18.5	388	905						EM4-SED-06-0-0.1667
Creek	10	1713	NYSDEC RI	SED-6	Surface	07/23/02	0	0.17	N	3.50		6000										SED-6-Z1
Creek	10	1713	NYSDEC 2004	EM4-SED-06	Surface	08/07/96	0	0.16	N	5.57							57.5					EM4-SED-06-0-0.1651
Creek	10	1712	NYSDEC RI	SED-23	Surface	09/01/05	0	0.17	N	0.78		136										SED-23-Z1
Creek	10	1712	NYSDEC RI	SED-23	Surface	09/01/05	0.17	0.42	N	17.00		213										SED-23-Z2
Creek	10	1634	NYSDEC RI	SED-22	Surface	09/01/05	0	0.3	N	1400.00		2000										SED-22-Z2
Creek	10	1634	NYSDEC RI	SED-22	Surface	09/01/05	0	0.17	N	201.00		3170										SED-22-Z1
Creek	10	1587	NYSDEC RI	SED-20	Surface	09/01/05	0	0.17	N	1.82		149										SED-20-Z1
Creek	10	1587	NYSDEC RI	SED-20	Surface	09/01/05	0.25	0.5	N	3.74		324										SED-20-Z2
Creek	10	1566	NYSDEC SRI	18MC-L09-S03	Subsurface	04/23/07	1.5	2.5	N	61.00		15000	21	85	54900	21400						18MC-L09-S03-Z1
Creek	10	1565	NYSDEC SRI	18MC-L09-S01	Surface	04/23/07	0.5	1.2	N	33.00		1470	12	115	857	2640						18MC-L09-S01-Z1
Creek	10	1565	NYSDEC SRI	18MC-L09-S02	Surface	04/23/07	0	0.5	N	11.00		526	3.3	26	122	243	16.03		0.81	1.8	50600	18MC-L09-S02-Z1
Creek	10	1565	NYSDEC SRI	18MC-L09-S02	Subsurface	04/23/07	0.8	1.5	N			213	9.4	15	162	131	0.049		0.0014		5390	18MC-L09-S02-Z2
Creek	10	1539	NYSDEC RI	SED-21	Surface	09/01/05	0	0.17	N	12.00		369										SED-21-Z1
Creek	10	1454	NYSDEC 2004	EM4-SED-08	Surface	11/26/02	0	0.17	N			449										EM4-SED-08-0-0.1667
Creek	10	1454	NYSDEC 2004	EM4-SED-08	Surface	11/26/02	0	0.16	N	1.94												EM4-SED-08-0-0.1651
Creek	10	1379	NYSDEC 2004	EM4-SED-07	Surface	11/26/02	0	0.17	N			25000										EM4-SED-07-0-0.1667
Creek	10	1379	NYSDEC 2004	EM4-SED-07	Surface	11/26/02	0	0.16	N	0.84												EM4-SED-07-0-0.1651
Creek	10	1363	NYSDEC RI	SED-18	Surface	09/01/05	0	0.17	N	0.87		275										SED-18-Z1

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek	10	1363	NYSDEC RI	SED-18	Surface	09/01/05	0.25	0.5	N	7.10		484										SED-18-Z2
Creek	10	1363	NYSDEC 2004	EM4-OLC-08	Surface	10/12/94	0	0.33	N	1.72												EM4-OLC-08-0-0.3302
Creek	10	1363	NYSDEC 2004	EM4-OLC-08	Surface	01/01/94	0	0.17	N			475										EM4-OLC-08-0-0.1667
Creek	10	1363	NYSDEC 2004	EM4-OLC-08	Surface	12/30/99	0	0.16	N	3.66												EM4-OLC-08-0-0.1651
Creek	10	1361	NYSDEC SRI	18MC-L08-S02	Surface	04/23/07	0.4	1	N	0.04		46	4.5	7.9	17	52	6.424		0.0086		34500	18MC-L08-S02-Z1
Creek	10	1358	NYSDEC SRI	18MC-L08-S01	Surface	04/23/07	0.5	1.5	N			658	21	75	609	2120						18MC-L08-S01-Z1
Creek	10	1350	NYSDEC SRI	18MC-L08-S03	Surface	04/23/07	0.5	1.5	N	35.00		284	9.9	43	123	654						18MC-L08-S03-Z1
Creek	10	1329	NYSDEC RI	SED-16	Surface	09/01/05	0	0.17	N	0.33		169										SED-16-Z1
Creek	10	1329	NYSDEC RI	SED-16	Surface	09/01/05	0.25	0.5	N	0.51		229										SED-16-Z2
Creek	10	1249	NYSDEC 2004	EM4-SED-09	Surface	11/26/02	0	0.17	N			146										EM4-SED-09-0-0.1667
Creek	10	1249	NYSDEC 2004	EM4-SED-09	Surface	11/26/02	0	0.16	N													EM4-SED-09-0-0.1651
Creek	10	1176	NYSDEC RI	SED-17	Surface	09/01/05	0	0.17	N	1.60		402										SED-17-Z1
Creek	10	1176	NYSDEC RI	SED-17	Surface	09/01/05	0.25	0.75	N	0.73		1020										SED-17-Z2
Creek	10	1134	NYSDEC SRI	18MC-L07-S03	Subsurface	04/23/07	1.5	2.5	N	0.76		628	14	105	458	1170						18MC-L07-S03-Z1
Creek	10	1125	NYSDEC SRI	18MC-L07-S02	Surface	04/23/07	0	0.8	N	23.00		408	5.1	52	134	289	19.29		0.084	0.083	80500	18MC-L07-S02-Z1
Creek	10	1106	NYSDEC SRI	18MC-L07-S01	Surface	04/23/07	0	0.5	FD	0.23		280	7.3	39	188	412						18MC-L07-S01-Z1/D
Creek	10	1106	NYSDEC SRI	18MC-L07-S01	Subsurface	04/23/07	3	3.5	N	0.33		323	8.4	40	206	590						18MC-L07-S01-Z1
Creek	10	1056	NYSDEC RI	SED-15	Surface	09/01/05	0	0.17	N	8.60		997										SED-15-Z1
Creek	10	1056	NYSDEC RI	SED-15	Subsurface	09/01/05	0.5	0.75	N	1.53		2720										SED-15-Z2
Creek	10	993	NYSDEC SRI	18MC-L06-S03	Surface	04/19/07	0	0.5	FD	0.07		170	5	12	69	147						18MC-L06-S03-Z1/D
Creek	10	993	NYSDEC SRI	18MC-L06-S03	Surface	04/19/07	0.5	1.2	N	0.08		88	3.9	10	57	148						18MC-L06-S03-Z1
Creek	10	993	NYSDEC SRI	18MC-L06-S03	Subsurface	04/19/07	1.5	2.5	N	0.09		125	5.9	11	54	130						18MC-L06-S03-Z2
Creek	10	985	NYSDEC RI	SED-14	Surface	09/01/05	0	0.17	N	0.12		72										SED-14-Z1
Creek	10	985	NYSDEC RI	SED-14	Surface	09/01/05	0.25	0.5	N	0.31		231										SED-14-Z2
Creek	10	985	NYSDEC RI	SED-14	Subsurface	09/01/05	0.58	0.75	N	0.01		15										SED-14-Z3
Creek	10	983	NYSDEC SRI	18MC-L06-S01	Subsurface	04/23/07	1	1.5	N			368	8.1	40	265	410						18MC-L06-S01-Z1
Creek	10	983	NYSDEC SRI	18MC-L06-S02	Surface	04/18/07	0	0.16	N	0.05		32	5.2	8.9	19	74	0.795		0.015	0.0067	37400	18MC-L06-S02-Z1
Creek	10	983	NYSDEC SRI	18MC-L06-S02	Subsurface	04/18/07	1	2	N	0.87		61	4	10	54	116	0.428		0.011		27800	18MC-L06-S02-Z2
Creek	10	837	NYSDEC RI	SED-44	Surface	09/01/05	0	0.17	N	0.07		60										SED-44-Z1
Creek	10	825	NYSDEC SRI	18MC-L05W-S01	Subsurface	04/19/07	1	2	N	0.13		198	4.9	22	124	419						18MC-L05W-S01-Z1
Creek	10	819	NYSDEC 1998	DEC-8	Surface	10/12/94	0	1.07	N	8.87	3.38	1260	4.8	66.5	447	874		2.1	0.121			DEC-8-0-33 CM CORE-10/12/1994
Creek	10	819	NYSDEC 1998	DEC-8	Surface	10/12/94	0	0.5	N	1.39	1.67	475	3.6	44.8	238	423		0.66	0.0165			DEC-8-SURFACE-10/12/1994
Creek	10	819	NYSDEC 2004	DEC-8	Surface	12/30/99	0	0.5	N	0.36		1330										EM4-STATION-08-0-0
Creek	10	817	NYSDEC SRI	18MC-L05W-S02	Surface	04/19/07	0	0.2	N	0.07		159	5.8	11	29	209	4.862		0.02		33700	18MC-L05W-S02-Z1
Creek	10	817	NYSDEC SRI	18MC-L05W-S02	Subsurface	04/18/07	1.5	3	N	0.34		183	5.5	20	103	296	15.52		0.036		30900	18MC-L05W-S02-Z2
Creek	10	805	NYSDEC SRI	18MC-L05W-S03	Surface	04/19/07	0	0.5	N	0.33		857	5.2	146	702	1300						18MC-L05W-S03-Z1
Creek	10	805	NYSDEC SRI	18MC-L05W-S03	Subsurface	04/19/07	1	1.5	N	0.14		459	7.1	62	424	1020						18MC-L05W-S03-Z2
Creek	10	805	NYSDEC SRI	18MC-L05W-S03	Subsurface	04/19/07	2	2.5	N	0.03		173	3.8	21	176	591						18MC-L05W-S03-Z3
Creek	10	789	NYSDEC RI	SED-12	Surface	09/01/05	0	0.17	N	0.06		226										SED-12-Z1
Creek	10	789	NYSDEC RI	SED-12	Surface	09/01/05	0.17	0.5	N	0.04		130										SED-12-Z2
Creek	10	737	NYSDEC SRI	18MC-L04W-S03	Subsurface	04/20/07	1	2	N			47	5.1	10	25	80						18MC-L04W-S03-Z1
Creek	10	733	NYSDEC SRI	18MC-L04W-S02	Surface	04/20/07	0	0.16	N	0.15		292	7.7	35	84	215	11.22		0.018		25400	18MC-L04W-S02-Z1
Creek	10	733	NYSDEC SRI	18MC-L04W-S02	Subsurface	04/20/07	1	1.2	N			80	6.9	6.7	22	91	0.512		0.0014		46400	18MC-L04W-S02-Z2
Creek	10	729	NYSDEC SRI	18MC-L04W-S01	Surface	04/19/07	0.5	1.5	N	0.06		220	4.9	32	146	460						18MC-L04W-S01-Z1
Creek	10	538	NYSDEC RI	SED-11	Surface	09/01/05	0	0.17	N	0.19		462										SED-11-Z1
Creek	10	538	NYSDEC RI	SED-11	Surface	09/01/05	0.17	0.58	N	0.34		418										SED-11-Z2
Creek	10	534	NYSDEC SRI	18MC-L03W-S03	Subsurface	04/19/07	2	3	N	0.15		232	4.9	27	120	490						18MC-L03W-S03-Z1
Creek	10	534	NYSDEC SRI	18MC-L03W-S02	Surface	04/19/07	0	0.16	N			75	4.3	5.4	16	60	0.442		0.0021		16400	18MC-L03W-S02-Z1
Creek	10	532	NYSDEC SRI	18MC-L03W-S01	Subsurface	04/19/07	0.8	1.8	N	0.73		552	8.6	35	122	511						18MC-L03W-S01-Z1
Creek	10	335	NYSDEC SRI	18MC-L02W-S01	Subsurface	04/18/07	1	2	N			89	6.6	8.6	22	65						18MC-L02W-S01-Z1
Creek	10	335	NYSDEC SRI	18MC-L02W-S01	Subsurface	04/18/07	2	3.2	N			204	7.9	13	71	149						18MC-L02W-S01-Z2
Creek	10	333	NYSDEC SRI	18MC-L02W-S02	Surface	04/18/07	0	0.16	N	0.01		951	11	25	55	140	0.302		0.0099		22400	18MC-L02W-S02-Z1
Creek	10	333	NYSDEC SRI	18MC-L02W-S02	Subsurface	04/18/07	1	2	N			63	6.3	7.8	16	52					31500	18MC-L02W-S02-Z2
Creek	10	333	NYSDEC SRI	18MC-L02W-S02	Subsurface	04/18/07	1	2	FD			138	11	12	30	124					31000	18MC-L02W-S02-Z2/D
Creek	10	329	NYSDEC SRI	18MC-L02W-S03	Surface	04/18/07	0	0.16	N			87	12	8.2	81	141						18MC-L02W-S03-Z1
Creek	10	329	NYSDEC SRI	18MC-L02W-S03	Subsurface	04/18/07	3.2	4	N			29	5.5	6.3	18	48						18MC-L02W-S03-Z2
Creek	10	181	NYSDEC SRI	18MC-L01W-S03	Surface	04/18/07	0.3	1	N	0.10		227	14	13	42	240						18MC-L01W-S03-Z1
Creek	10	174	NYSDEC SRI	18MC-L01W-S02	Surface	04/18/07	0	0.16	N	0.05		412	14	77	106	213	0.69		0.0016	0.0026		18MC-L01W-S02-Z1
Creek	10	174	NYSDEC SRI	18MC-L01W-S02	Subsurface	04/18/07	0.5	1	N	0.01		1660	18	21	46	176	1.896		0.0035			18MC-L01W-S02-Z2
Creek	10	167	NYSDEC SRI	18MC-L01W-S01	Surface	04/18/07	0	0.16	N			411	11	9.9	35	1030					6490	18MC-L01W-S01-Z1
Creek	10	167	NYSDEC SRI	18MC-L01W-S01	Subsurface	04/18/07	0.5	1.2	N			127	6.2	9.5	21	73					29200	18MC-L01W-S01-Z2
Creek_E	10	847	NYSDEC SRI	18MC-L03E-S03	Surface	04/20/07	0	0.5	FD	0.09		165	5	8.3	32	97						18MC-L03E-S03-Z1/D
Creek_E	10	847	NYSDEC SRI	18MC-L03E-S03	Subsurface	04/20/07	0.7	1.7	N	0.10		202	6.1	11	45	112						18MC-L03E-S03-Z1
Creek_E	10	836	NYSDEC SRI	18MC-L03E-S02	Surface	04/20/07	0	0.16	N	0.72		592	4.4	25	272	5190	36.64		0.042	0.0082	38500	18MC-L03E-S02-Z1
Creek_E	10	828	NYSDEC SRI	18MC-L03E-S01	Surface	04/20/07	0.5	1.5	N	0.24		175	4.1	20	70	275						18MC-L03E-S01-Z1
Creek_E	10	781	NYSDEC SRI	18MC-L02E-S03	Surface	04/20/07	0.5	1	N	0.03		166	6.3	15	53	108						18MC-L02E-S03-Z1
Creek_E	10	774	NYSDEC SRI	18MC-L02E-S02	Surface	04/20/07	0	0.16	N	0.03		176	2.9	7.7	46	88	6.592		0.18	0.37	14000	18MC-L02E-S02-Z1
Creek_E	10	761	NYSDEC SRI	18MC-L02E-S01	Subsurface	04/20/07	0.8	1.5	N	3.80		807	5.2	41	361	498						18MC-L02E-S01-Z1
Creek_E	10	759	NYSDEC SRI	18MC-L01E-S03	Surface	04/20/07	0	0.16	N	0.03		113	6.5	9.8	60	131	3.8		0.186		51400	18MC-L01E-S03-Z1
Creek_E	10	759	NYSDEC SRI	18MC-L01E-S03	Subsurface	04/20/07	0.5	1.2	N	0.18		170	3.4	11	131	158						18MC-L01E-S03-Z2

Table D-1

Detailed List of Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Creek_E	10	749	NYSDEC SRI	18MC-AS-S01	Surface	04/25/07	0	0.16	N	0.05		148	8.9	14	46	129	4.74	0.113	0.0053			18MC-AS-S01-Z1
Creek_E	10	749	NYSDEC SRI	18MC-AS-S01	Subsurface	04/25/07	0.8	1.5	N	0.01		63	11	9.4	32	66	1.857	0.174				18MC-AS-S01-Z2
Creek_E	10	749	NYSDEC RI	SED-13	Surface	09/01/05	0	0.17	N	0.25		183										SED-13-Z1
Creek_E	10	749	NYSDEC SRI	18MC-L01E-S01	Surface	04/20/07	0	0.16	N	0.04		145	1.2	8.3	58	292	3.598		0.0297		193000	18MC-L01E-S01-Z1
Creek_E	10	749	NYSDEC RI	SED-13	Surface	09/01/05	0.25	0.75	N	0.23		116										SED-13-Z2
Canal	Erie Canal	0	NYSDEC RI	SED-23 CANAL	Surface	09/01/05	0	1	N	14.00		216										SED-23 CANAL
Canal	Erie Canal	0	NYSDEC RI	SED-24 CANAL	Surface	09/01/05	0	1	N	66.00		272										SED-24 CANAL
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC03	Surface	06/15/07	0	0.5	FD	1.70		68	5.3	8.9	56	106	1.269			0.0028	33600	18MC-BC03-Z1/D
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SURFACE	08/20/98	0	0.33	N		0.12	33.6	5.7	29.4	40	212	1.87	0.118				DEC-8A-0-10 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S01	Surface	12/06/08	0	0.17	N	28.00		387	5.2	45	57	352					58200	BC-L02-S01-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S02	Surface	12/06/08	0	0.17	N	8.10		242	4.2	37	33	168					37000	BC-L02-S02-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S03	Surface	12/06/08	0	0.17	N	0.42		40	4.8	28	37	184					34100	BC-L02-S03-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S01	Surface	12/06/08	0	0.17	N	0.07		149	3.2	19	13	40					4440	BC-L03-S01-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S02	Surface	12/06/08	0	0.17	N	0.44		88	4.2	25	30	184					22300	BC-L03-S02-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S03	Surface	12/06/08	0	0.17	N	1.20		68	3.6	12	19	85					27800	BC-L03-S03-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S01	Surface	12/06/08	0	0.17	N	15.00		106	4.5	28	28	187					19200	BC-L04-S01-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	Surface	12/05/08	0	0.17	FD	8.10		51	4.9	28	44	191						BC-L04-S02-Z1A fines (passing the 200 sieve)
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	Surface	12/05/08	0	0.17	FD	17.00		97	6	33	48	223						BC-L04-S02-Z1B fine sand (passing through #40 sieve but retained on the #200 sieve
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	Surface	12/05/08	0	0.17	FD	64.00		72	5	28	38	190						BC-L04-S02-Z1C medium and coarse sand (passing through the #4 sieve but retained on the #40 sieve)
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	Surface	12/05/08	0	0.17	FD	0.10		3.3		1.3	2.7	12						BC-L04-S02-Z1D gravel-size particles (retained on the #4 sieve)
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	Surface	12/05/08	0	0.17	N	110.00		70	5.6	30	47	306					53100	BC-L04-S02-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S03	Surface	12/06/08	0	0.17	N	5.30		123	3.9	40	43	256					51400	BC-L04-S03-Z1
Canal	Erie Canal	0	NYSDEC RI	SED-10	Surface	09/01/05	0	0.17	N	0.10		483										SED-10-Z1
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC01	Surface	06/14/07	0	0.16	N	0.01		33	4.5	10	13	45						18MC-BC01-Z1
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC02	Surface	06/14/07	0	0.16	N			39	4.1	6.5	8.4	19						18MC-BC02-Z1
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC03	Surface	06/15/07	0	0.16	N	0.76		169	20	15	84	192	12.68			0.0063	32900	18MC-BC03-Z1
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC04	Surface	06/14/07	0	0.16	N	2.63		65	3.2	15	18	110						18MC-BC04-Z1
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC05	Surface	06/15/07	0	0.16	N	0.02		38	6.8	7.6	11	32	21.35				25400	18MC-BC05-Z1
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC06	Surface	06/13/07	0	0.16	N	0.84		190	5.5	17	61	253						18MC-BC06-Z1
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S02	Subsurface	12/06/08	0.17	1	N	1.40		121	4.2	16	59	149					29400	BC-L02-S02-Z2
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S02	Subsurface	12/06/08	0.17	1	FD	5.00		149	4.1	29	64	160					19200	BC-L02-S02-Z2/D
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S01	Subsurface	12/06/08	0.17	0.83	N	2.40		204	9.1	18	54	365					67500	BC-L02-S01-Z2
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S03	Subsurface	12/06/08	0.17	0.58	N	0.32		34	4.3	27	33	175					21500	BC-L02-S03-Z2
Canal	Erie Canal	0	NYSDEC RI	SED-10	Surface	09/01/05	0.17	0.58	N	0.07		392										SED-10-Z2
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S02	Subsurface	12/06/08	0.17	0.5	N	0.42		52	4.8	27	34	217					23800	BC-L03-S02-Z2
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S03	Subsurface	12/06/08	0.17	0.5	N	6.20		165	3.9	11	36	116					39000	BC-L03-S03-Z2
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S01	Subsurface	12/06/08	0.17	0.42	N	0.20		39	1.8	6.3	5.1	41					11400	BC-L03-S01-Z2

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Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S01	Subsurface	12/06/08	0.17	0.42	N	0.81		88	4.8	29	42	202					31400	BC-L04-S01-Z2
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	Subsurface	12/06/08	0.17	0.42	FD	5.00		149	4.1	29	64	160						BC-L04-S02-Z2/D
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	Subsurface	12/06/08	0.17	0.42	N	17.00		161	5.4	38	57	208					28600	BC-L04-S02-Z2
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S03	Subsurface	12/06/08	0.17	0.3	N	41.00		138	3.8	35	37	189					43500	BC-L04-S03-Z2
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	0.33	0.66	N		0.37	40.3	5.5	33.2	45.4	254	4.43	0.526				DEC-8A-10-20 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC RI	SED-14 CANAL	Surface	09/01/05	0.5	1.5	N	0.19		176										SED-14 CANAL
Canal	Erie Canal	0	NYSDEC RI	SED-15 CANAL	Surface	09/01/05	0.5	1.5	N	37.00		162										SED-15 CANAL
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	0.66	0.98	N		5.33	80.1	15.1	90.8	97.8	669	6.068	0.673	0.01461			DEC-8A-20-30 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	0.98	1.31	N		3.15	115	4.2	47.3	58.1	341	2.768	0.197	0.01202			DEC-8A-30-40 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	1.31	1.64	N		0.56	75.2	10	64.6	79.3	603	9.497	0.27				DEC-8A-40-50 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC RI	SED-14B CANAL	Subsurface	09/01/05	1.5	2.5	N	0.01		48										SED-14B CANAL
Canal	Erie Canal	0	NYSDEC RI	SED-15B CANAL	Subsurface	09/01/05	1.5	2.5	N	8.20		265										SED-15B CANAL
Canal	Erie Canal	0	NYSDEC RI	SED-23B CANAL	Subsurface	09/01/05	1.5	2.5	N	0.04		54										SED-23B CANAL
Canal	Erie Canal	0	NYSDEC RI	SED-24B CANAL	Subsurface	09/01/05	1.5	2.5	N	5.50		184										SED-24B CANAL
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	1.64	1.97	N		0.56	101	4.9	31.8	43.7	233	3.716	0.142				DEC-8A-50-60 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	1.97	2.3	N		0.24	55.4	4.9	36.3	50.2	263	8.518	0.18				DEC-8A-60-70 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC RI	SED-22 CANAL	Subsurface	09/01/05	2	3	N	310.00		286										SED-22 CANAL
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	2.3	2.62	N		0.32	54.2	5.1	39.6	51.8	277	14.959	0.195				DEC-8A-70-80 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	2.62	2.95	N		1.10	84	5.5	65.7	75.4	450	29.804	0.21				DEC-8A-80-90 CM CORE-8/20/1998
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	SUBSURFACE	08/20/98	2.95	3.08	N		3.22	99.7	7.5	90.5	106	899	16.23	0.455	0.01554			DEC-8A-90-94 CM CORE-8/20/1998
Upstream	Upstream	-9999	NYSDEC 2001	DEC-9	SURFACE	08/17/98	0	0.5	N		0.02	103	7.7	17.9	20.2	170	25.62		0.0088			DEC-9-SURFACE-8/17/1998
Upstream	Upstream	-9999	NYSDEC SRI	18MC-UP-S01	Surface	04/25/07	0.1	0.8	N			34	3.7	11	21	108	9.183			0.023	15500	18MC-UP-S01-Z1
Upstream	Upstream	-9999	NYSDEC SRI	18MC-UP-S01	Subsurface	04/25/07	1.1	1.8	N			8.6	3.3	9.2	12	44	5.632				1650	18MC-UP-S01-Z2
Tributary	04	53665	USEPA GLNPO	R4-119-T	Surface	11/17/09	0	0.5	N			20	2.6	13	9.5	63	0.4	0.053	0.0064		22000	R4-119-T
Tributary	07	27915	USEPA GLNPO	R7-120-T	Surface	11/24/09	0	0.5	N			36	5	23	25	134	0.75		0.015		20000	R7-120-T-Z1
Tributary	07	27915	USEPA GLNPO	R7-120-T	Subsurface	11/24/09	0.5	2.1	N			25	5.1	17	16	109	1	0.26			15000	R7-120-T-Z2
Tributary	07	27522	USEPA GLNPO	R7-201-T	Surface	06/25/10	0	1.1	N			22	3.8	15	15	88	0.28	0.083			28400	R7-201-T-COMP
Tributary	07	27522	USEPA GLNPO	R7-201-T	Surface	06/25/10	0	0.5	N			23	3.5	17	18	108	0.1				34200	R7-201-T-Z1A
Tributary	07	27500	NYSDEC 2001	DEC-10	SURFACE	08/18/98	0	0.5	N		0.00	26.4	6.5	22.5	24.2	130		0.058				DEC-10-SURFACE-8/18/1998
Tributary	07	26631	USEPA GLNPO	R7-202-T	Surface	06/29/10	0	0.9	N			19	3.4	16	16	96	0.21				30600	R7-202-T-COMP
Tributary	07	26631	USEPA GLNPO	R7-202-T	Surface	06/29/10	0	0.5	N			18	3.5	17	21	113	0.89				45900	R7-202-T-Z1A
Tributary	07	24253	USEPA GLNPO	R7-121-T	Surface	12/02/09	0	0.5	N	0.39		63	3.6	31	57	176	1.5	0.1	0.132	0.023	28000	R7-121-T-Z1
Tributary	07	17530	USEPA GLNPO	R7-122-T	Surface	11/25/09	0	0.5	N			15	1.7	9.9	14	56	0.2		0.029	0.028	11000	R7-122-T-Z1
Tributary	07	17530	USEPA GLNPO	R7-122-T	Subsurface	11/25/09	0.5	1	N			4.6	2.4	7.8	8.6	39	0.046				23000	R7-122-T-Z2
Tributary	07	13126	USEPA GLNPO	R7-123-T	Surface	11/23/09	0	0.5	N			94	5.4	39	68	317	1.8	0.17			30000	R7-123-T-Z1
Tributary	07	13126	USEPA GLNPO	R7-123-T	Subsurface	11/23/09	0.5	1	N			43	5.6	21	37	127	1.3	0.12			74000	R7-123-T-Z2
Tributary	07	12476	USEPA GLNPO	R7-124-T	Surface	11/23/09	0	0.4	N			18	6.4	16	16	133	1.2				17000	R7-124-T-Z1
Tributary	07	7893	USEPA GLNPO	R7-203-T	Surface	06/29/10	0	0.7	N			800	6.5	201	292	1600	97	0.22			57300	R7-203-T-COMP
Tributary	07	7893	USEPA GLNPO	R7-203-T	Surface	06/29/10	0	0.5	N			823	6.5	149	250	1490	9.5	0.13			50200	R7-203-T-Z1A
Tributary	07	7847	USEPA GLNPO	R7-125-T	Surface	11/30/09	0	0.5	N			586	5.2	136	239	1420	0.053	0.14			112000	R7-125-T-Z1
Tributary	07	7847	USEPA GLNPO	R7-125-T	Subsurface	11/30/09	0.5	0.8	N			790	6.8	201	292	1850	10	0.2			88000	R7-125-T-Z2
Tributary	07	7750	NYSDEC 2001	DEC-11	Surface	08/17/98	0	0.5	N		0.20	236	4.2	82.1	80.2	558	22.926	0.083				DEC-11-SURFACE-8/17/1998
Tributary	07	7122	USEPA GLNPO	R7-205-T	Surface	06/29/10	0	0.8	N			425	5.7	85	117	722	4.8	0.17			29600	R7-205-T-COMP
Tributary	07	7122	USEPA GLNPO	R7-205-T	Surface	06/29/10	0	0.5	N	0.11		521	8	78	179	841	8.5	0.18			45200	R7-205-T-Z1A
Tributary	07	7122	USEPA GLNPO	R7-204-T	Surface	06/29/10	0	0.3	N			679	1	89	270	1150	5.9				52300	R7-204-T-Z1A
Historic Creek	04	58365	USEPA GLNPO	R4-126-H	Surface	11/16/09	0	0.5	N	0.15		193	4.1	65	153	892		0.5			103000	R4-126-H

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Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	PCBs (total)	TOTAL PCB CONGENERS	LEAD	ARSENIC	CHROMIUM	COPPER	ZINC	PAHs (total)	MERCURY	Sum of DDT+DDE+DDD	DIELDRIN	TOTAL ORGANIC CARBON	Sample ID
Historic Creek	05	50439	USEPA GLNPO	R5-127-H	Surface	11/18/09	0	0.5	N			31	3.2	14	24	309	49		0.0157		54000	R5-127-H
Historic Creek	06	46767	USEPA GLNPO	R6-128-H	Surface	12/02/09	0	0.5	N	0.48		433	5.3	199	301	1280	4	0.64	0.0364	0.015	33000	R6-128-H
Historic Creek	06	41557	USEPA GLNPO	R6-129-H	Surface	12/02/09	0	0.5	N			359	12	95	210	557		1.9			23000	R6-129-H
Historic Creek	07	22493	USEPA GLNPO	R7-130-H	Surface	11/30/09	0	0.5	N			57	3.7	26	42	159		0.16			35000	R7-130-H
Historic Creek	07	20971	USEPA GLNPO	R7-131-H	Surface	11/30/09	0	0.5	N	1.30	15.00	309	3.6	88	268	717		1.5			60000	R7-131-H
Historic Creek	07	19323	USEPA GLNPO	R7-132-H	Surface	11/25/09	0	0.5	N	0.04		276	11	58	143	535		0.89			97000	R7-132-H
Historic Creek	07	15606	USEPA GLNPO	R7-133-H	Surface	11/24/09	0	0.5	N	0.05		139	6.4	34	67	193	29	1			46000	R7-133-H
Historic Creek	07	11544	USEPA GLNPO	R7-134-H	Surface	11/23/09	0	0.5	N	3.30		400	6.8	109	272	1030		0.27			71000	R7-134-H
Wetland	03	59706	USEPA GLNPO	R3-107-W	Surface	11/16/09	0	0.5	N	0.53	0.72	334	4.5	108	210	926		0.6			80000	R3-107-W
Wetland	03	59217	USEPA GLNPO	R3-108-W	Surface	11/16/09	0	0.5	N	0.30		310	5	111	211	899		0.69			68000	R3-108-W
Wetland	03	58946	USEPA GLNPO	R3-109-W	Surface	11/16/09	0	0.5	N	0.27		342	5.4	126	234	1050		1			44000	R3-109-W
Wetland	03	58435	USEPA GLNPO	R3-110-W	Surface	11/16/09	0	0.5	N	0.20		533	5.4	216	347	1710	2.1	0.72		0.007	73000	R3-110-W
Wetland	04	56998	USEPA GLNPO	R4-111-W	Surface	11/16/09	0	0.5	N			125	3.8	36	72	304		0.76			20000	R4-111-W
Wetland	04	52367	USEPA GLNPO	R4-112-W	Surface	11/18/09	0	0.5	N	0.15		170	4.2	62	110	444	2	0.71	0.0148		46000	R4-112-W
Wetland	05	51709	USEPA GLNPO	R5-113-W	Surface	11/18/09	0	0.5	N	0.13		345	5.4	121	218	975		0.8			48000	R5-113-W
Wetland	05	50833	USEPA GLNPO	R5-114-W	Surface	11/18/09	0	0.5	N	0.34		265	4.9	94	247	709		0.62			81000	R5-114-W
Wetland	05	50230	USEPA GLNPO	R5-115-W	Surface	11/18/09	0	0.5	N	1.20	0.18	344	8.6	146	182	728		0.51			175000	R5-115-W
Wetland	05	49252	USEPA GLNPO	R5-116-W	Surface	11/19/09	0	0.5	N	0.28		473	6	172	301	1310	5.3	0.81	0.039	0.011	73000	R5-116-W
Wetland	06	45170	USEPA GLNPO	R6-117-W	Surface	12/02/09	0	0.5	N	0.07		299	6.8	72	186	543		2.5			26000	R6-117-W
Wetland	07	7785	USEPA GLNPO	R7-118-W	Surface	11/30/09	0	0.5	N	0.19		339	4.3	78	275	820	25	0.99		0.0074	61000	R7-118-W

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List of Sediment Chemistry Locations for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	01	79984	USACE 2010	EMC-1	10/26/10	684917.1318	4800944.01
Creek	01	79868	USACE 2004	EM1-EBU1	08/27/03	684944.5913	4800918.83
Creek	01	79868	USACE 2004	EM1-EMC1	08/27/03	684944.5913	4800918.83
Creek	01	79667	NYSDEC 1998	DEC-2	10/11/94	684956.6807	4800822.83
Creek	01	79231	USACE 2004	EM1-EMC2	08/27/03	685093.8993	4800798.80
Creek	01	79170	USACE 2010	EMC-2	10/26/10	685094.5679	4800774.37
Creek	01	78639	NYSDEC 1998	DEC-3	10/11/94	685186.9278	4800643.90
Creek	01	78619	USACE 2004	EM1-EMC3	08/27/03	685190.2324	4800638.43
Creek	01	78615	USACE 2010	EMC-3	10/26/10	685190.0028	4800636.94
Creek	01	78185	USEPA 2008	EM3-DOWNSTREAM	08/01/08	685156.7753	4800517.11
Creek	01	77931	USACE 2010	EMC-4	10/26/10	685131.9984	4800444.19
Creek	01	77930	USACE 2004	EM1-EMC4	08/27/03	685134.7514	4800442.41
Creek	01	77743	NYSDEC 1998	DEC-4	10/12/94	685124.5588	4800386.97
Creek	01	77584	NYSDEC 1998	DEC-4a	05/25/94	685155.4001	4800149.06
Creek	01	77242	USACE 2010	EMC-5	10/26/10	685164.1621	4800247.23
Creek	01	77230	USACE 2004	EM1-EMC5	08/27/03	685175.2013	4800249.02
Creek	01	77230	USACE 2004	EM1-EBU2	08/27/03	685175.2013	4800249.02
Creek	01	76553	USACE 2004	EM1-EMC6	08/27/03	685210.4002	4800049.92
Creek	01	76529	USACE 2010	EMC-6	10/26/10	685209.5118	4800042.86
Creek	01	76048	USACE 2010	EMC-7	10/26/10	685195.7491	4799893.55
Creek	01	75868	USACE 2004	EM1-EMC7	08/27/03	685150.9103	4799851.94
Creek	01	75211	USACE 2010	EMC-8	10/26/10	685102.4060	4799657.59
Creek	01	75208	USACE 2004	EM1-EBU3	08/27/03	685087.1599	4799661.25
Creek	01	75208	USACE 2004	EM1-EMC8	08/27/03	685087.1599	4799661.25
Creek	01	74932	NYSDEC 1998	DEC-5	10/12/94	685039.8133	4799587.64
Creek	01	74793	USEPA 2008	EM3-MIDSTREAM	08/01/08	685023.0675	4799562.06
Creek	01	74620	USACE 2010	EMC-9	10/26/10	685030.4225	4799471.13
Creek	01	74596	USACE 2004	EM1-EMC9	08/27/03	685020.8041	4799466.79
Creek	01	73677	USACE 2010	EMC-10	10/26/10	685081.6108	4799320.26
Creek	01	73587	USACE 2004	EM1-EMC10	08/27/03	685109.7366	4799330.29

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Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	01	72858	USACE 2010	EMC-11	10/26/10	685179.1713	4799165.11
Creek	01	72851	USACE 2004	EM1-EBU4	08/27/03	685173.8062	4799163.48
Creek	01	72851	USACE 2004	EM1-EMC11	08/27/03	685173.8062	4799163.48
Creek	01	72106	USACE 2010	EMC-12	10/26/10	685308.5320	4799034.17
Creek	01	72101	USACE 2004	EM1-EMC12	08/27/03	685313.7958	4799039.50
Creek	01	71495	USACE 2004	EM1-EMC13	08/27/03	685344.0859	4798871.76
Creek	01	71416	USACE 2010	EMC-13	10/26/10	685336.4063	4798845.99
Creek	01	70848	USACE 2010	EMC-14	10/26/10	685213.0689	4798727.02
Creek	01	70798	USEPA 2008	EM3-UPSTREAM	08/01/08	685206.1963	4798711.27
Creek	01	70564	USACE 2004	EM1-EBU5	08/27/03	685143.8271	4798677.33
Creek	01	70564	USACE 2004	EM1-EMC14	08/27/03	685143.8271	4798677.33
Creek	01	70374	USACE 2010	EMC-15	10/26/10	685122.6405	4798621.18
Creek	01	70081	USACE 2004	EM1-EMC15	08/27/03	685159.8895	4798535.14
Creek	01	69355	USACE 2010	EMC-16	10/26/10	685284.9725	4798353.33
Creek	02	68416	USEPA GLNPO	R2-003-V-P	05/18/10	685201.5454	4798080.94
Creek	02	68415	USEPA GLNPO	R2-003-V	05/18/10	685201.4951	4798080.57
Creek	02	68410	USEPA GLNPO	R2-003-V-P2	05/24/10	685200.2984	4798079.78
Creek	02	68399	USEPA GLNPO	R2-002-V-P	05/18/10	685169.8595	4798091.52
Creek	02	68395	USEPA GLNPO	R2-002-V	05/18/10	685166.6434	4798092.01
Creek	02	68375	USEPA GLNPO	R2-001-V	05/18/10	685137.8950	4798094.87
Creek	02	68375	USEPA GLNPO	R2-001-V-P	05/18/10	685137.7916	4798094.22
Creek	02	68375	USEPA GLNPO	R2-001-V-P2	05/24/10	685136.9707	4798094.14
Creek	02	67111	USEPA GLNPO	R2-005-V	05/19/10	685320.1889	4797738.01
Creek	02	67109	USEPA GLNPO	R2-004-V	05/18/10	685273.7921	4797734.26
Creek	02	67108	USEPA GLNPO	R2-004-V-P	05/18/10	685274.7437	4797734.04
Creek	02	67108	USEPA GLNPO	R2-005-V-P	05/19/10	685321.1922	4797737.06
Creek	02	67107	USEPA GLNPO	R2-004-V-P2	05/24/10	685276.4597	4797733.76
Creek	02	67102	USEPA GLNPO	R2-006-V-P	05/24/10	685359.7498	4797737.72
Creek	02	67100	USEPA GLNPO	R2-006-V	05/19/10	685358.0593	4797737.12
Creek	02	65759	USEPA GLNPO	R2-007-V	05/25/10	685275.1616	4797390.92
Creek	02	65640	USEPA GLNPO	R2-008-V	05/19/10	685320.9428	4797394.87

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Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	02	65564	USEPA GLNPO	R2-009-V-P	05/25/10	685365.3447	4797402.22
Creek	02	65562	USEPA GLNPO	R2-009-V	05/19/10	685366.2310	4797402.16
Creek	02	63171	USEPA GLNPO	R2-010-V	05/25/10	685323.6467	4796659.82
Creek	02	63153	USEPA GLNPO	R2-011-V	05/25/10	685351.3246	4796667.61
Creek	02	63096	USEPA GLNPO	R2-012-V	05/25/10	685390.4857	4796674.81
Creek	02	62416	NYSDEC 2001	DEC-6BCEF	08/18/98	685525.3861	4796516.17
Creek	02	62416	NYSDEC 2001	DEC-6C	08/18/98	685525.3861	4796516.17
Creek	02	62234	NYSDEC 1998	DEC-6	10/11/94	685490.2112	4796427.50
Creek	02	61625	USEPA GLNPO	R2-013-V	05/25/10	685517.7850	4796256.10
Creek	02	61620	USEPA GLNPO	R2-015-V	05/25/10	685567.7056	4796256.11
Creek	02	61618	USEPA GLNPO	R2-014-V	05/25/10	685545.6604	4796254.96
Creek	03	60757	USEPA GLNPO	R3-018-V	05/25/10	685609.3077	4795994.57
Creek	03	60754	NYSDEC 2001	DEC-6E	08/18/98	685607.3532	4795993.58
Creek	03	60738	USEPA GLNPO	R3-017-V	05/26/10	685571.3260	4795987.71
Creek	03	60734	USEPA GLNPO	R3-016-V	05/26/10	685542.4741	4795985.71
Creek	03	60224	USEPA GLNPO	R3-019-V	05/26/10	685528.6315	4795823.35
Creek	03	60215	USEPA GLNPO	R3-020-V	05/26/10	685559.0056	4795826.49
Creek	03	60207	USEPA GLNPO	R3-021-V	05/26/10	685583.0014	4795828.74
Creek	03	59488	NYSDEC 2001	DEC-6F	08/18/98	685549.8900	4795621.53
Creek	03	59465	USEPA GLNPO	R3-022-V	05/26/10	685556.6643	4795611.27
Creek	03	59359	USEPA GLNPO	R3-024-V	05/26/10	685599.6786	4795549.61
Creek	03	59325	USEPA GLNPO	R3-023-V	05/26/10	685551.8594	4795566.55
Creek	03	58706	USEPA GLNPO	R3-027-V	05/27/10	685463.6520	4795377.37
Creek	03	58684	USEPA GLNPO	R3-026-V	05/27/10	685441.2544	4795394.71
Creek	03	58656	USEPA GLNPO	R3-025-V	05/26/10	685408.0485	4795421.99
Creek	04	58038	USEPA GLNPO	R4-135-C	06/21/10	685264.4320	4795314.61
Creek	04	57787	USEPA GLNPO	R4-028-C	11/17/09	685220.8250	4795246.51
Creek	04	57468	USEPA GLNPO	R4-136-C	06/21/10	685306.0170	4795192.16
Creek	04	56862	USEPA GLNPO	R4-029-C	11/16/09	685469.1483	4795115.82
Creek	04	56559	USEPA GLNPO	R4-137-C	06/21/10	685504.5940	4795032.30
Creek	04	56006	USEPA GLNPO	R4-030-C	11/16/09	685601.2389	4794897.41

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Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	04	55979	USEPA GLNPO	R4-138-C	06/21/10	685602.6700	4794889.44
Creek	04	55678	USEPA GLNPO	R4-031-C	11/16/09	685600.5692	4794797.76
Creek	04	55647	USEPA GLNPO	R4-139-C	06/22/10	685595.9170	4794788.20
Creek	04	55325	USEPA GLNPO	R4-140-C	06/23/10	685622.8750	4794692.63
Creek	04	55037	USEPA GLNPO	R4-032-C	11/16/09	685593.3969	4794608.00
Creek	04	54677	USEPA GLNPO	R4-141-C	06/23/10	685531.3110	4794520.59
Creek	04	54208	USEPA GLNPO	R4-033-C	11/17/09	685475.7376	4794396.07
Creek	04	53793	USEPA GLNPO	R4-142-C	06/23/10	685526.2060	4794290.59
Creek	04	53633	USEPA GLNPO	R4-034-C	11/17/09	685569.7138	4794262.84
Creek	04	53123	USEPA GLNPO	R4-143-C	06/23/10	685705.5350	4794218.19
Creek	04	52919	USEPA GLNPO	R4-035-C	11/17/09	685773.4465	4794227.22
Creek	04	52719	USEPA GLNPO	R4-036-C	11/17/09	685828.7503	4794256.34
Creek	04	52514	USEPA GLNPO	R4-037-C	11/17/09	685868.0085	4794303.65
Creek	04	52226	USEPA GLNPO	R4-038-C	11/18/09	685956.5722	4794324.25
Creek	05	52061	NYSDEC 2001	DEC-7A	08/19/98	686037.0115	4794307.34
Creek	05	51954	USEPA GLNPO	R5-039-V	05/21/10	686031.7366	4794293.35
Creek	05	51903	NYSDEC 1998	DEC-7	10/12/94	686045.2328	4794319.11
Creek	05	51887	USEPA GLNPO	R5-041-V	05/24/10	686049.0181	4794354.81
Creek	05	51876	USEPA GLNPO	R5-040-V	05/20/10	686053.4658	4794313.86
Creek	05	51152	USEPA GLNPO	R5-042-V	05/20/10	686227.9963	4794143.99
Creek	05	51134	USEPA GLNPO	R5-043-V	05/20/10	686255.1185	4794199.45
Creek	05	51122	USEPA GLNPO	R5-044-V	05/20/10	686263.9352	4794213.03
Creek	05	50710	USEPA GLNPO	R5-045-V	05/20/10	686373.1156	4794147.45
Creek	05	50627	NYSDEC 2001	DEC-7B	08/19/98	686380.1628	4794131.48
Creek	05	50099	USEPA GLNPO	R5-046-V	05/20/10	686436.8405	4793991.82
Creek	05	49732	NYSDEC 2001	DEC-7C	08/19/98	686386.9482	4793884.71
Creek	05	49723	USEPA GLNPO	R5-047-V	05/20/10	686395.7062	4793883.10
Creek	05	49556	USEPA GLNPO	R5-048-V	05/21/10	686379.1686	4793807.51
Creek	05	49472	USEPA GLNPO	R5-049-V	05/21/10	686435.8007	4793812.72
Creek	05	48925	USEPA GLNPO	R5-050-V	05/21/10	686538.1161	4793685.06
Creek	05	48794	USEPA GLNPO	R6-144-C	07/02/10	686555.3080	4793647.20

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Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	06	48613	USEPA GLNPO	R6-051-C	11/19/09	686566.1865	4793592.21
Creek	06	48468	USEPA GLNPO	R6-145-C	07/02/10	686579.8720	4793550.40
Creek	06	48245	USEPA GLNPO	R6-146-C	07/02/10	686583.3130	4793477.66
Creek	06	48241	USEPA GLNPO	R6-052-C	11/19/09	686580.9901	4793478.08
Creek	06	47676	USEPA GLNPO	R6-147-C	07/01/10	686547.0460	4793335.07
Creek	06	47630	USEPA GLNPO	R6-053-C	11/19/09	686536.4199	4793311.23
Creek	06	47394	USEPA GLNPO	R6-148-C	07/01/10	686602.6920	4793265.18
Creek	06	46875	USEPA GLNPO	R6-149-C	07/01/10	686632.4540	4793118.52
Creek	06	46600	USEPA GLNPO	R6-054-C	12/02/09	686693.3589	4793059.87
Creek	06	46461	USEPA GLNPO	R6-150-C	07/01/10	686690.4030	4793013.63
Creek	06	46094	USEPA GLNPO	R6-151-C	07/02/10	686696.2450	4792906.60
Creek	06	45738	USEPA GLNPO	R6-152-C	07/02/10	686651.7990	4792806.87
Creek	06	45097	USEPA GLNPO	R6-153-C	07/02/10	686484.9280	4792789.17
Creek	06	44611	USEPA GLNPO	R6-055-C	11/17/09	686500.4367	4792658.96
Creek	06	44475	USEPA GLNPO	R6-154-C	07/01/10	686517.2420	4792621.23
Creek	06	43904	USEPA GLNPO	R6-056-C	11/17/09	686706.1167	4792563.36
Creek	06	43766	USEPA GLNPO	R6-155-C	07/01/10	686657.8170	4792502.56
Creek	06	43252	USEPA GLNPO	R6-057-C	11/17/09	686588.3765	4792366.98
Creek	06	42790	USEPA GLNPO	R6-156-C	07/01/10	686594.0660	4792228.37
Creek	06	42279	USEPA GLNPO	R6-157-C	07/01/10	686507.1000	4792103.20
Creek	06	41988	USEPA GLNPO	R6-158-C	07/01/10	686523.3980	4792016.17
Creek	06	41258	USEPA GLNPO	R6-159-C	07/01/10	686587.9810	4791852.09
Creek	06	40369	USEPA GLNPO	R6-160-C	07/01/10	686855.9940	4791828.08
Creek	06	40268	USEPA GLNPO	R6-058-C	11/18/09	686884.2965	4791817.05
Creek	06	40082	USEPA GLNPO	R6-161-C	07/01/10	686935.1240	4791793.42
Creek	06	39209	USEPA GLNPO	R6-162-C	06/30/10	686937.8770	4791562.74
Creek	06	38848	USEPA GLNPO	R6-059-C	11/18/09	686876.9869	4791463.23
Creek	06	38173	USEPA GLNPO	R6-163-C	06/30/10	686826.2730	4791270.69
Creek	06	37526	USEPA GLNPO	R6-060-C	11/18/09	686918.3984	4791103.96
Creek	06	36804	USEPA GLNPO	R6-164-C	06/30/10	686772.7310	4790952.22
Creek	06	36085	USEPA GLNPO	R6-165-C	06/30/10	686936.8310	4790813.10

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Creek	06	35766	USEPA GLNPO	R6-061-C	11/18/09	686930.4741	4790713.94
Creek	06	35433	USEPA GLNPO	R6-166-C	06/30/10	686923.7090	4790618.28
Creek	06	35023	USEPA GLNPO	R6-167-C	06/30/10	686850.9970	4790521.56
Creek	06	34754	USEPA GLNPO	R6-062-C	11/19/09	686806.8785	4790447.21
Creek	06	34255	USEPA GLNPO	R6-168-C	06/30/10	686705.2590	4790340.94
Creek	06	33962	USEPA GLNPO	R6-063-C	11/19/09	686740.5754	4790258.36
Creek	06	33691	USEPA GLNPO	R6-169-C	06/28/10	686790.6770	4790195.25
Creek	06	33292	USEPA GLNPO	R6-064-C	11/19/09	686912.7015	4790181.79
Creek	06	32904	USEPA GLNPO	R6-065-C	11/19/09	686876.8074	4790072.55
Creek	06	32562	USEPA GLNPO	R6-066-C	11/25/09	686837.2086	4789978.00
Creek	06	32046	USEPA GLNPO	R6-067-C	11/25/09	686795.1900	4789827.66
Creek	06	31840	USEPA GLNPO	R6-170-C	06/25/10	686769.3030	4789768.00
Creek	06	31325	USEPA GLNPO	R6-171-C	06/25/10	686796.8470	4789608.43
Creek	07	30918	USEPA GLNPO	R7-068-C	11/25/09	686751.4157	4789497.25
Creek	07	30500	USEPA GLNPO	R7-172-C	06/25/10	686785.8450	4789379.34
Creek	07	29933	USEPA GLNPO	R7-069-C	11/25/09	686689.4039	4789251.88
Creek	07	29724	USEPA GLNPO	R7-070-C	11/25/09	686670.5293	4789187.30
Creek	07	29233	USEPA GLNPO	R7-071-C	11/25/09	686618.0832	4789053.93
Creek	07	28712	USEPA GLNPO	R7-072-C	11/24/09	686513.6174	4788954.99
Creek	07	28328	USEPA GLNPO	R7-173-C	06/25/10	686412.9470	4788897.90
Creek	07	28037	USEPA GLNPO	R7-174-C	06/25/10	686394.4270	4788808.13
Creek	07	28034	USEPA GLNPO	R7-073-C	11/24/09	686394.6254	4788807.32
Creek	07	27600	USEPA GLNPO	R7-175-C	06/24/10	686418.7470	4788679.43
Creek	07	27127	USEPA GLNPO	R7-074-C	11/24/09	686393.4623	4788572.04
Creek	07	26960	USEPA GLNPO	R7-075-C	11/24/09	686352.5823	4788562.57
Creek	07	26511	USEPA GLNPO	R7-076-C	11/24/09	686319.5573	4788449.54
Creek	07	26286	USEPA GLNPO	R7-176-C	06/24/10	686253.2910	4788450.77
Creek	07	25843	USEPA GLNPO	R7-077-C	11/24/09	686135.2506	4788387.83
Creek	07	25419	USEPA GLNPO	R7-177-C	06/24/10	686141.2310	4788265.79
Creek	07	25068	USEPA GLNPO	R7-078-C	12/02/09	686074.7301	4788187.20
Creek	07	24710	USEPA GLNPO	R7-079-C	12/02/09	685968.1177	4788180.60

Table D-2

List of Sediment Chemistry Locations for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	07	24295	USEPA GLNPO	R7-178-C	06/24/10	685903.9050	4788080.31
Creek	07	23960	USEPA GLNPO	R7-080-C	12/02/09	685824.0403	4788026.86
Creek	07	23569	USEPA GLNPO	R7-179-C	06/23/10	685714.0130	4787990.52
Creek	07	23100	USEPA GLNPO	R7-081-C	12/02/09	685640.7792	4787871.81
Creek	07	22856	USEPA GLNPO	R7-082-C	11/30/09	685611.1574	4787805.91
Creek	07	22470	USEPA GLNPO	R7-180-C	06/23/10	685513.4860	4787738.76
Creek	07	22057	USEPA GLNPO	R7-083-C	11/30/09	685461.3014	4787630.73
Creek	07	21809	USEPA GLNPO	R7-084-C	11/30/09	685419.0130	4787587.04
Creek	07	21492	USEPA GLNPO	R7-085-C	11/30/09	685374.9603	4787509.01
Creek	07	21130	USEPA GLNPO	R7-181-C	07/01/10	685281.2740	4787482.06
Creek	07	20624	USEPA GLNPO	R7-086-C	11/30/09	685310.4382	4787355.45
Creek	07	20394	USEPA GLNPO	R7-182-C	07/01/10	685257.4440	4787309.57
Creek	07	19884	USEPA GLNPO	R7-087-C	11/30/09	685306.9010	4787172.89
Creek	07	19601	USEPA GLNPO	R7-183-C	07/01/10	685335.7460	4787092.22
Creek	07	19406	USEPA GLNPO	R7-184-C	06/30/10	685350.9830	4787034.02
Creek	07	19391	USEPA GLNPO	R7-088-C	11/25/09	685351.9608	4787029.52
Creek	07	19132	USEPA GLNPO	R7-185-C	06/30/10	685340.7620	4786950.57
Creek	07	18838	USEPA GLNPO	R7-089-C	11/25/09	685354.7552	4786861.25
Creek	07	18836	USEPA GLNPO	R7-186-C	06/30/10	685352.2630	4786860.57
Creek	07	18638	USEPA GLNPO	R7-187-C	06/30/10	685350.1020	4786801.81
Creek	07	18255	USEPA GLNPO	R7-090-C	11/25/09	685394.4671	4786715.64
Creek	07	17701	USEPA GLNPO	R7-188-C	06/30/10	685479.9640	4786599.81
Creek	07	17307	USEPA GLNPO	R7-189-C	06/30/10	685524.6990	4786488.23
Creek	07	16833	USEPA GLNPO	R7-091-C	11/24/09	685563.9178	4786356.78
Creek	07	16587	USEPA GLNPO	R7-092-C	11/24/09	685576.5346	4786278.90
Creek	07	16217	USEPA GLNPO	R7-190-C	06/30/10	685629.6520	4786184.63
Creek	07	15878	USEPA GLNPO	R7-093-C	11/24/09	685674.1875	4786091.77
Creek	07	15682	USEPA GLNPO	R7-191-C	06/29/10	685682.8140	4786033.82
Creek	07	15136	USEPA GLNPO	R7-094-C	11/23/09	685773.4979	4785895.33
Creek	07	14846	USEPA GLNPO	R7-095-C	11/23/09	685813.0258	4785818.73
Creek	07	14397	USEPA GLNPO	R7-096-C	11/23/09	685809.3432	4785689.14

Table D-2
List of Sediment Chemistry Locations for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	07	13907	USEPA GLNPO	R7-192-C	06/29/10	685843.0070	4785543.31
Creek	07	13648	USEPA GLNPO	R7-097-C	11/23/09	685824.8319	4785463.70
Creek	07	13280	USEPA GLNPO	R7-193-C	06/29/10	685844.9070	4785361.31
Creek	07	12647	USEPA GLNPO	R7-098-C	11/23/09	685902.4854	4785186.58
Creek	07	12247	USEPA GLNPO	R7-099-C	11/23/09	685956.8314	4785089.84
Creek	07	11865	USEPA GLNPO	R7-100-C	11/23/09	686040.1985	4785008.59
Creek	07	11695	USEPA GLNPO	R7-194-C	06/29/10	686073.3770	4784968.00
Creek	07	11180	USEPA GLNPO	R7-101-C	11/30/09	686174.2126	4784856.48
Creek	07	11119	NCSWCD 2007	EMC-C-10-SD	08/24/06	686183.5977	4784841.09
Creek	07	11048	USEPA GLNPO	R7-195-C	06/29/10	686204.4820	4784834.23
Creek	07	10757	NCSWCD 2007	EMC-C-12-SD	09/08/06	686257.5212	4784772.94
Creek	07	10585	USEPA GLNPO	R7-102-C	11/30/09	686265.7812	4784724.04
Creek	07	10442	USEPA GLNPO	R7-196-C	06/29/10	686275.9600	4784684.54
Creek	07	10143	NCSWCD 2007	EMC-C-11-SD	09/08/06	686311.5111	4784600.99
Creek	07	9991	USEPA GLNPO	R7-103-C	11/30/09	686307.7959	4784553.09
Creek	07	9757	USEPA GLNPO	R7-197-C	06/28/10	686289.8200	4784485.17
Creek	07	9410	NCSWCD 2007	EMC-C-08-SD	08/24/06	686332.5661	4784405.88
Creek	07	9310	USEPA GLNPO	R7-198-C	06/28/10	686363.5950	4784395.75
Creek	07	9173	USEPA GLNPO	R7-104-C	12/02/09	686405.1271	4784403.92
Creek	07	9070	NCSWCD 2007	EMC-C-09-SD	08/24/06	686434.5095	4784406.24
Creek	07	8998	USEPA GLNPO	R7-199-C	06/28/10	686465.2080	4784411.89
Creek	07	8835	NCSWCD 2007	EMC-C-01-SD	08/23/06	686499.9151	4784372.21
Creek	07	8556	USEPA GLNPO	R7-105-C	11/30/09	686506.9640	4784299.05
Creek	07	8267	NCSWCD 2007	EMC-C-02-SD	08/23/06	686490.2121	4784236.30
Creek	07	7878	NCSWCD 2007	EMC-C-03-SD	08/23/06	686497.6081	4784129.28
Creek	07	7812	USEPA GLNPO	R7-200-C	06/28/10	686503.3560	4784108.95
Creek	07	7404	NCSWCD 2007	EMC-C-04-SD	08/23/06	686554.9353	4784006.17
Creek	07	6889	USEPA GLNPO	R7-106-C	11/30/09	686613.7039	4783887.02
Creek	07	6654	NCSWCD 2007	EMC-C-05-SD	08/23/06	686685.7419	4783876.87
Creek	09	3551	NCSWCD 2007	EMC-C-07-SD	08/24/06	687540.8442	4783723.40
Creek	09	3470	NYSDEC SRI	18MC-L18-S01	04/25/07	687565.4913	4783716.78

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List of Sediment Chemistry Locations for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	09	3469	NYSDEC SRI	18MC-L18-S02	04/25/07	687566.6756	4783724.86
Creek	09	3259	NYSDEC RI	SED-40	09/01/05	687621.7622	4783687.38
Creek	09	3243	NYSDEC SRI	18MC-L17-S03	04/25/07	687625.9806	4783684.44
Creek	09	3241	NYSDEC SRI	18MC-L17-S02	04/25/07	687621.7170	4783680.78
Creek	09	3231	NYSDEC SRI	18MC-L17-S01	04/25/07	687617.5771	4783674.42
Creek	09	3226	NCSWCD 2007	EMC-C-06-SD	08/24/06	687608.8529	4783666.53
Creek	09	3131	NYSDEC RI	SED-38	09/01/05	687654.4496	4783663.67
Creek	09	3131	NYSDEC RI	SED-39	09/01/05	687659.0548	4783669.65
Creek	09	3116	NYSDEC 2004	EM4-SED-01	12/30/99	687657.2909	4783658.78
Creek	09	3095	NYSDEC SRI	18MC-L16W-S03	04/25/07	687655.4500	4783650.30
Creek	09	3093	NYSDEC SRI	18MC-L16E-S03	04/24/07	687677.5704	4783663.46
Creek	09	3091	NYSDEC SRI	18MC-L16E-S02	04/24/07	687676.2249	4783661.84
Creek	09	3090	NYSDEC SRI	18MC-L16E-S01	04/24/07	687674.7899	4783660.36
Creek	09	3082	NYSDEC SRI	18MC-L16W-S01	04/24/07	687645.7712	4783639.45
Creek	10	3409	NYSDEC 2001	DEC-12	08/17/98	687696.1136	4783638.32
Creek	10	2978	NYSDEC RI	SED-37	09/01/05	687693.6696	4783636.97
Creek	10	2909	NYSDEC 2004	EM4-SED-02	08/07/96	687715.4507	4783610.86
Creek	10	2898	NYSDEC SRI	18MC-L15W-S01	04/24/07	687675.2486	4783593.32
Creek	10	2894	NYSDEC SRI	18MC-L15W-S03	04/24/07	687683.9747	4783595.05
Creek	10	2891	NYSDEC SRI	18MC-L15E-S02	04/24/07	687720.7410	4783604.95
Creek	10	2891	NYSDEC SRI	18MC-L15E-S03	04/24/07	687722.8954	4783606.36
Creek	10	2890	NYSDEC SRI	18MC-L15E-S01	04/24/07	687717.6450	4783603.24
Creek	10	2870	NYSDEC 2004	EM4-SED-03	08/07/96	687728.2455	4783600.10
Creek	10	2833	NYSDEC RI	SED-35	09/01/05	687724.3018	4783587.28
Creek	10	2681	NYSDEC SRI	18MC-L14W-S02	04/24/07	687708.6432	4783537.96
Creek	10	2680	NYSDEC SRI	18MC-L14W-S03	04/24/07	687709.3268	4783538.22
Creek	10	2664	NYSDEC SRI	18MC-L14W-S01	04/24/07	687703.1918	4783528.08
Creek	10	2605	NYSDEC RI	SED-32	09/01/05	687717.3906	4783511.80
Creek	10	2482	NYSDEC 2004	EM4-SED-A	10/27/95	687754.7517	4783524.38
Creek	10	2454	NYSDEC 2004	EM4-SED-04	08/07/96	687750.6854	4783565.73
Creek	10	2454	NYSDEC 2004	EM4-SED-4A	12/30/99	687751.8799	4783555.15

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Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	10	2454	NYSDEC RI	SED-34	09/01/05	687748.1685	4783562.85
Creek	10	2454	NYSDEC SRI	18MC-L14E-S01	04/24/07	687749.0716	4783572.30
Creek	10	2454	NYSDEC SRI	18MC-L14E-S02	04/24/07	687749.5875	4783567.04
Creek	10	2454	NYSDEC SRI	18MC-L14E-S03	04/24/07	687752.2060	4783564.16
Creek	10	2412	NYSDEC RI	SED-FS	09/01/05	687780.2722	4783537.09
Creek	10	2371	NYSDEC 2004	EM4-SED-05	08/07/96	687792.8631	4783528.78
Creek	10	2369	NYSDEC SRI	18MC-L13-S03	04/24/07	687786.9172	4783523.48
Creek	10	2369	NYSDEC RI	SED-29	09/01/05	687788.1207	4783523.82
Creek	10	2363	NYSDEC SRI	18MC-L13-S02	04/24/07	687780.9321	4783519.67
Creek	10	2357	NYSDEC SRI	18MC-L13-S01	04/24/07	687770.5181	4783514.21
Creek	10	2328	NYSDEC RI	SED-30	09/01/05	687773.6555	4783505.79
Creek	10	2297	NYSDEC RI	SED-28	09/01/05	687793.7971	4783503.26
Creek	10	2205	NYSDEC RI	SED-43	09/01/05	687805.4644	4783478.82
Creek	10	2185	NYSDEC RI	SED-27	09/01/05	687795.5995	4783465.27
Creek	10	2182	NYSDEC SRI	18MC-L12-S03	04/24/07	687805.6992	4783470.76
Creek	10	2180	NYSDEC SRI	18MC-L12-S02	04/24/07	687802.6227	4783468.12
Creek	10	2177	NYSDEC SRI	18MC-L12-S01	04/24/07	687796.4286	4783462.79
Creek	10	2115	NYSDEC RI	SED-42	09/01/05	687820.4135	4783454.26
Creek	10	1974	NYSDEC SRI	18MC-L11-S01	04/24/07	687826.7118	4783411.20
Creek	10	1974	NYSDEC SRI	18MC-L11-S03	04/24/07	687834.8425	4783413.81
Creek	10	1973	NYSDEC SRI	18MC-L11-S02	04/24/07	687831.8534	4783412.42
Creek	10	1940	NYSDEC RI	SED-25	09/01/05	687831.3757	4783401.91
Creek	10	1784	NYSDEC SRI	18MC-L10-S03	04/23/07	687853.4097	4783357.92
Creek	10	1760	NYSDEC SRI	18MC-L10-S01	04/23/07	687842.3882	4783348.34
Creek	10	1713	NYSDEC 2004	EM4-SED-06	08/07/96	687851.2539	4783335.42
Creek	10	1713	NYSDEC RI	SED-6	07/23/02	687851.2539	4783335.42
Creek	10	1712	NYSDEC RI	SED-23	09/01/05	687850.8062	4783335.01
Creek	10	1634	NYSDEC RI	SED-22	09/01/05	687859.6813	4783312.75
Creek	10	1587	NYSDEC RI	SED-20	09/01/05	687868.4875	4783300.81
Creek	10	1566	NYSDEC SRI	18MC-L09-S03	04/23/07	687870.3729	4783294.54
Creek	10	1565	NYSDEC SRI	18MC-L09-S01	04/23/07	687861.5272	4783291.61

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List of Sediment Chemistry Locations for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	10	1565	NYSDEC SRI	18MC-L09-S02	04/23/07	687866.2275	4783292.94
Creek	10	1539	NYSDEC RI	SED-21	09/01/05	687863.7385	4783283.76
Creek	10	1454	NYSDEC 2004	EM4-SED-08	11/26/02	687869.9349	4783256.44
Creek	10	1379	NYSDEC 2004	EM4-SED-07	11/26/02	687872.0837	4783239.24
Creek	10	1363	NYSDEC RI	SED-18	09/01/05	687874.1186	4783234.94
Creek	10	1363	NYSDEC 2004	EM4-OLC-08	12/30/99	687881.4668	4783237.03
Creek	10	1361	NYSDEC SRI	18MC-L08-S02	04/23/07	687884.1093	4783237.20
Creek	10	1358	NYSDEC SRI	18MC-L08-S01	04/23/07	687863.0800	4783229.82
Creek	10	1350	NYSDEC SRI	18MC-L08-S03	04/23/07	687890.8994	4783235.71
Creek	10	1329	NYSDEC RI	SED-16	09/01/05	687868.3051	4783221.75
Creek	10	1249	NYSDEC 2004	EM4-SED-09	11/26/02	687866.2268	4783197.05
Creek	10	1176	NYSDEC RI	SED-17	09/01/05	687876.8077	4783174.82
Creek	10	1134	NYSDEC SRI	18MC-L07-S03	04/23/07	687885.4401	4783161.65
Creek	10	1125	NYSDEC SRI	18MC-L07-S02	04/23/07	687869.7260	4783159.41
Creek	10	1106	NYSDEC SRI	18MC-L07-S01	04/23/07	687857.8834	4783153.73
Creek	10	1056	NYSDEC RI	SED-15	09/01/05	687878.6690	4783137.87
Creek	10	993	NYSDEC SRI	18MC-L06-S03	04/19/07	687874.9966	4783118.79
Creek	10	985	NYSDEC RI	SED-14	09/01/05	687864.5157	4783116.63
Creek	10	983	NYSDEC SRI	18MC-L06-S01	04/23/07	687861.6872	4783115.64
Creek	10	983	NYSDEC SRI	18MC-L06-S02	04/18/07	687870.2627	4783116.66
Creek	10	837	NYSDEC RI	SED-44	09/01/05	687889.9994	4783076.22
Creek	10	825	NYSDEC SRI	18MC-L05W-S01	04/19/07	687875.9170	4783069.18
Creek	10	819	NYSDEC 1998	DEC-8	10/12/94	687763.8933	4783240.62
Creek	10	819	NYSDEC 2004	DEC-8	12/30/99	687880.8096	4783068.44
Creek	10	817	NYSDEC SRI	18MC-L05W-S02	04/19/07	687881.2440	4783067.16
Creek	10	805	NYSDEC SRI	18MC-L05W-S03	04/19/07	687887.8444	4783063.04
Creek	10	789	NYSDEC RI	SED-12	09/01/05	687874.1592	4783057.53
Creek	10	737	NYSDEC SRI	18MC-L04W-S03	04/20/07	687884.2702	4783036.80
Creek	10	733	NYSDEC SRI	18MC-L04W-S02	04/20/07	687876.4448	4783038.61
Creek	10	729	NYSDEC SRI	18MC-L04W-S01	04/19/07	687867.1347	4783040.71
Creek	10	538	NYSDEC RI	SED-11	09/01/05	687850.3626	4782985.05

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List of Sediment Chemistry Locations for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Creek	10	534	NYSDEC SRI	18MC-L03W-S03	04/19/07	687859.2701	4782980.34
Creek	10	534	NYSDEC SRI	18MC-L03W-S02	04/19/07	687853.1410	4782982.58
Creek	10	532	NYSDEC SRI	18MC-L03W-S01	04/19/07	687847.1702	4782984.01
Creek	10	335	NYSDEC SRI	18MC-L02W-S01	04/18/07	687830.6753	4782926.54
Creek	10	333	NYSDEC SRI	18MC-L02W-S02	04/18/07	687832.4576	4782925.76
Creek	10	329	NYSDEC SRI	18MC-L02W-S03	04/18/07	687840.0351	4782922.95
Creek	10	181	NYSDEC SRI	18MC-L01W-S03	04/18/07	687823.2839	4782879.79
Creek	10	174	NYSDEC SRI	18MC-L01W-S02	04/18/07	687824.4355	4782877.21
Creek	10	167	NYSDEC SRI	18MC-L01W-S01	04/18/07	687819.1749	4782874.20
Creek_E	10	847	NYSDEC SRI	18MC-L03E-S03	04/20/07	687923.2499	4783087.14
Creek_E	10	836	NYSDEC SRI	18MC-L03E-S02	04/20/07	687921.8321	4783083.28
Creek_E	10	828	NYSDEC SRI	18MC-L03E-S01	04/20/07	687919.3086	4783080.20
Creek_E	10	781	NYSDEC SRI	18MC-L02E-S03	04/20/07	687959.7416	4783045.47
Creek_E	10	774	NYSDEC SRI	18MC-L02E-S02	04/20/07	687959.3208	4783043.11
Creek_E	10	761	NYSDEC SRI	18MC-L02E-S01	04/20/07	687956.8701	4783039.68
Creek_E	10	759	NYSDEC SRI	18MC-L01E-S03	04/20/07	688026.9610	4783031.04
Creek_E	10	749	NYSDEC SRI	18MC-AS-S01	04/25/07	687985.9272	4783009.89
Creek_E	10	749	NYSDEC RI	SED-13	09/01/05	687987.0573	4783006.44
Creek_E	10	749	NYSDEC SRI	18MC-L01E-S01	04/20/07	688013.8241	4783025.78
Canal	Erie Canal	0	NYSDEC 2001	DEC-8A	08/20/98	9999.0000	9999.00
Canal	Erie Canal	0	NYSDEC RI	SED-10	09/01/05	687826.8239	4782810.13
Canal	Erie Canal	0	NYSDEC RI	SED-14 CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-14B CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-15 CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-15B CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-22 CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-23 CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-23B CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-24 CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC RI	SED-24B CANAL	09/01/05	99999.0000	99999.00
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC01	06/14/07	687727.6064	4782628.50

Table D-2

List of Sediment Chemistry Locations for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC02	06/14/07	687780.7515	4782715.62
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC03	06/15/07	687873.2338	4782820.97
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC04	06/14/07	687954.9702	4782900.72
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC05	06/15/07	688045.9725	4782989.14
Canal	Erie Canal	0	NYSDEC SRI	18MC-BC06	06/13/07	688170.4446	4783113.91
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S01	12/06/08	687685.9562	4782590.30
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S02	12/06/08	687698.3642	4782581.35
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L02-S03	12/06/08	687710.2119	4782573.13
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S01	12/06/08	687874.0065	4782842.89
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S02	12/06/08	687883.6229	4782834.06
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L03-S03	12/06/08	687893.2450	4782825.70
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S01	12/06/08	688008.3369	4782975.18
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S02	12/06/08	688018.3890	4782964.73
Canal	Erie Canal	0	NYSDEC SRI-A	BC-L04-S03	12/06/08	688028.9704	4782954.54
Upstream	Upstream	-9999	NYSDEC 2001	DEC-9	08/17/98	9999.0000	9999.00
Upstream	Upstream	-9999	NYSDEC SRI	18MC-UP-S01	04/25/07	688994.1844	4782449.43
Tributary	04	53665	USEPA GLNPO	R4-119-T	11/17/09	685534.8089	4794248.59
Tributary	07	27915	USEPA GLNPO	R7-120-T	11/24/09	686433.4491	4788774.23
Tributary	07	27522	USEPA GLNPO	R7-201-T	06/25/10	686523.8410	4788668.30
Tributary	07	27500	NYSDEC 2001	DEC-10	08/18/98	9999.0000	9999.00
Tributary	07	26631	USEPA GLNPO	R7-202-T	06/29/10	686798.7240	4788044.18
Tributary	07	24253	USEPA GLNPO	R7-121-T	12/02/09	685923.2709	4788051.66
Tributary	07	17530	USEPA GLNPO	R7-122-T	11/25/09	685475.8699	4786544.34
Tributary	07	13126	USEPA GLNPO	R7-123-T	11/23/09	685849.7213	4785320.69
Tributary	07	12476	USEPA GLNPO	R7-124-T	11/23/09	685894.5970	4785132.12
Tributary	07	7893	USEPA GLNPO	R7-203-T	06/29/10	686316.0780	4784006.08
Tributary	07	7847	USEPA GLNPO	R7-125-T	11/30/09	686462.3623	4784092.71
Tributary	07	7750	NYSDEC 2001	DEC-11	08/17/98	9999.0000	9999.00
Tributary	07	7122	USEPA GLNPO	R7-204-T	06/29/10	685645.8790	4783570.53
Tributary	07	7122	USEPA GLNPO	R7-205-T	06/29/10	685105.1640	4782883.78

Table D-2
List of Sediment Chemistry Locations for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Sample Date	X Coordinate	Y Coordinate
Historic Creek	04	58365	USEPA GLNPO	R4-126-H	11/16/09	685379.2685	4795296.93
Historic Creek	05	50439	USEPA GLNPO	R5-127-H	11/18/09	686487.6107	4794125.03
Historic Creek	06	46767	USEPA GLNPO	R6-128-H	12/02/09	686636.7785	4793062.14
Historic Creek	06	41557	USEPA GLNPO	R6-129-H	12/02/09	686491.8568	4791885.80
Historic Creek	07	22493	USEPA GLNPO	R7-130-H	11/30/09	685509.7439	4787755.14
Historic Creek	07	20971	USEPA GLNPO	R7-131-H	11/30/09	685323.1280	4787462.63
Historic Creek	07	19323	USEPA GLNPO	R7-132-H	11/25/09	685462.0313	4787012.05
Historic Creek	07	15606	USEPA GLNPO	R7-133-H	11/24/09	685685.8198	4786007.11
Historic Creek	07	11544	USEPA GLNPO	R7-134-H	11/23/09	686083.6047	4784919.36
Wetland	03	59706	USEPA GLNPO	R3-107-W	11/16/09	685565.9342	4795682.82
Wetland	03	59217	USEPA GLNPO	R3-108-W	11/16/09	685547.2585	4795530.91
Wetland	03	58946	USEPA GLNPO	R3-109-W	11/16/09	685488.4384	4795463.37
Wetland	03	58435	USEPA GLNPO	R3-110-W	11/16/09	685356.9321	4795379.65
Wetland	04	56998	USEPA GLNPO	R4-111-W	11/16/09	685417.8120	4795099.12
Wetland	04	52367	USEPA GLNPO	R4-112-W	11/18/09	685906.0119	4794295.41
Wetland	05	51709	USEPA GLNPO	R5-113-W	11/18/09	686108.4243	4794301.27
Wetland	05	50833	USEPA GLNPO	R5-114-W	11/18/09	686326.6280	4794132.31
Wetland	05	50230	USEPA GLNPO	R5-115-W	11/18/09	686461.3575	4794032.79
Wetland	05	49252	USEPA GLNPO	R5-116-W	11/19/09	686470.2348	4793757.45
Wetland	06	45170	USEPA GLNPO	R6-117-W	12/02/09	686502.3495	4792802.86
Wetland	07	7785	USEPA GLNPO	R7-118-W	11/30/09	686540.4577	4784132.48

Table D-3
AVS/SEM Sediment Chemistry Results for Remedial Investigation
Eighteenmile Creek Area of Concern

	Reach 2		Reach 3				Reach 4			
Sample ID	**R2-002-V-Z1P**	**R2-005-V-Z1P**	**R3-016-V-Z1**	**R3-018-V-Z1**	**R3-020-V-Z1**	**R3-027-V-Z1**	**R4-028-C**	**R4-030-C**	**R4-031-C**	**R4-034-C**
Sample Date	**05/18/10**	**05/19/10**	**05/26/10**	**05/25/10**	**05/26/10**	**05/27/10**	**11/17/09**	**11/16/09**	**11/16/09**	**11/17/09**
Sample depth (ft):	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1.55**	**0 - 1.1**	**0 - 0.8**	**0 - 0.4**
AVS (µmole/g)										
Sulfide	0.4873	3.3583	4.732	5.0498	4.167	0.8616	20.8	15.3	61.1	4.1
SEM by SW6010B (µmole/g)										
Cadmium	0.0125 J	0.0107 J	0.0302 J	0.0116 J	0.0249 J	0.0125 J	0.014 J	0.002 J	0.032	0.0017 J
Copper	0.2486 J	0.3619	0.0346 J	0.1007 J	0.2298 J	1.506	0.013 J	0.12 J	0.006 J	0.23
Lead	0.7577	0.6226	2.0415	0.7143	0.8736	0.8929	1	0.23	4.2	0.24
Nickel	0.1925 J	0.1499 J	1.1211	0.1823 J	0.2454 J	0.2709 J	0.84	0.22 J	1.1	0.14 J
Silver	0.0797 U	0.0695 U	0.0816 U	0.0667 U	0.0658 U	0.0566 U	0.048 U	0.04 U	0.06 U	0.038 U
Zinc	5.8428	5.1086	25.8489	7.9688	8.3665	7.6476	15.6	2.8	64.5	2

Table D-3
AVS/SEM Sediment Chemistry Results for Remedial Investigation
Eighteenmile Creek Area of Concern

	Reach 5							Reach 6			
Sample ID	**R4-119-T**	**R5-044-V-Z1**	**R5-050-V-Z1**	**R5-116-W**	**R6-051-C**	**R6-051-CR**	**R6-052-C**	**R6-053-C**	**R6-055-C**	**R6-058-C**	**R6-061-C**
Sample Date	**11/17/09**	**05/20/10**	**05/21/10**	**11/19/09**	**11/19/09**	**11/19/09**	**11/19/09**	**11/19/09**	**11/17/09**	**11/18/09**	**11/18/09**
Sample depth (ft):	**0 - 0.5**	**0 - 1**	**0 - 1**	**0 - 0.5**	**0 - 1.2**	**0 - 1.2**	**0 - 1.3**	**0 - 1.2**	**0 - 1.1**	**0 - 2.2**	**0 - 4**
AVS (µmole/g)											
Sulfide	2.1	9.358	17.586	1.8	9	44.6	37.4	54.6	26.1	11.6	15.3
SEM by SW6010B (µmole/g)											
Cadmium	0.00059 J	0.0347 J	0.024 J	0.017 J	0.004 J	0.0041 J	0.023 J	0.0059 J	0.0056 J	0.0098 J	0.0054 J
Copper	0.011 J	0.0692 J	0.0614 J	2.5	0.54	0.53	0.29 U	0.047 J	0.087 J	0.4	0.066 J
Lead	0.024	3.8224	1.5154	1.3	0.45	0.42	6.3	0.84	0.72	0.97	0.44
Nickel	0.013 J	1.0939	0.5895	0.47 J	0.14 J	0.16 J	0.99	0.29 J	0.29 J	0.18 J	0.18 J
Silver	0.031 U	0.0946 U	0.0658 U	0.0029 J	0.067 U	0.07 U	0.069 U	0.096 U	0.064 U	0.068 U	0.066 U
Zinc	0.1	42.9795	13.8422	7.9	2.8	2.9	21.7	6.7	5.6	5.9	4.5

Table D-3
AVS/SEM Sediment Chemistry Results for Remedial Investigation
Eighteenmile Creek Area of Concern

	Reach 7							Reach 7				
Sample ID	**R7-068-C**	**R7-068-CR**	**R7-073-C**	**R7-075-C**	**R7-083-C**	**R7-085-C**	**R7-087-C**	**R7-089-C**	**R7-093-C**	**R7-094-C**	**R7-095-C**	**R7-095-CR**
Sample Date	**11/25/09**	**11/25/09**	**11/24/09**	**11/24/09**	**11/30/09**	**11/30/09**	**11/30/09**	**11/25/09**	**11/24/09**	**11/23/09**	**11/23/09**	**11/23/09**
Sample depth (ft):	**0 - 2.1**	**0 - 2.1**	**0 - 2.4**	**0 - 2.1**	**0 - 3.3**	**0 - 1.6**	**0 - 2.1**	**0 - 2.9**	**0 - 0.9**	**0 - 1**	**0 - 1.3**	**0 - 1.3**
AVS (µmole/g)												
Sulfide	61.7	48.6	35.2	41.5	32.1	22.9	27.7	19	19.9	49.6	11.1	9.3
SEM by SW6010B (µmole/g)												
Cadmium	0.034 J	0.027 J	0.016 J	0.034 J	0.0089 J	0.013 J	0.012 J	0.0089 J	0.0071 J	0.012 J	0.025 J	0.028 J
Copper	0.32 U	0.0036 J	0.074 J	0.011 J	0.024 J	0.0099 J	0.0083 J	0.1 J	0.022 J	0.25 J	1.7	2
Lead	3.7	3.6	1.7	2.1	0.71	1.2	1	0.62	0.78	1.5	1.8	2
Nickel	1.1	0.97	0.39 J	0.99	0.2 J	0.35 J	0.26 J	0.25 J	0.32 J	0.3 J	0.45 J	0.5
Silver	0.075 U	0.062 U	0.068 U	0.077 U	0.0021 J	0.0043 J	0.054 U	0.055 U	0.062 U	0.09 U	0.067 U	0.064 U
Zinc	45.4	41.1	13.3	22.9	5.2	14.3	7.3	5.8	6.7	9.7	9.3	10.2

Table D-3
AVS/SEM Sediment Chemistry Results for Remedial Investigation
Eighteenmile Creek Area of Concern

	Reach 7					
Sample ID	**R7-099-C**	**R7-100-C**	**R7-104-C**	**R7-105-C**	**R7-106-C**	**R7-120-T-Z1**
Sample Date	**11/23/09**	**11/23/09**	**12/02/09**	**11/30/09**	**11/30/09**	**11/24/09**
Sample depth (ft):	**0 - 1.3**	**0 - 1.2**	**0 - 1**	**0 - 1.4**	**0 - 0.5**	**0 - 0.5**
AVS (µmole/g)						
Sulfide	35.9	7.2	30.1	3.8	12.1	3.9
SEM by SW6010B (µmole/g)						
Cadmium	0.013 J	0.006 J	0.0077 J	0.0098 J	0.002 J	0.0013 J
Copper	0.022 J	0.25	0.039 J	0.035 J	0.066 J	0.035 J
Lead	1.2	1.1	2.2	2.6	0.36	0.046
Nickel	0.31 J	0.22 J	0.39 J	0.52	0.11 J	0.031 J
Silver	0.072 U	0.046 U	0.0051 J	0.0083 J	0.0022 J	0.045 U
Zinc	8.5	5	7.2	11.3	1.8	0.36

Key:

AVS = Acid Volatile Sulfides
-C = Hand-core creek location/sample.
-CR = Duplicate hand-core creek sample.
ft = Feet.
J = Estimated at the concentration listed.
µmole/g = Micromole per gram.
-P = Ponar creek location/sample.
SEM = Simultaneously extracted metals.
-T = Tributary location/sample.
U = Non-detect.
-V = Vibracore creek location/sample.
-W = Wetland location/sample.
-Z = Sample depth interval consecutively numbered.

Table D-4

Dioxin TEQ Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	TCDD TEQ	Sample ID
Creek	01	79667.36	NYSDEC 1998	DEC-2	Surface	9/12/1994	0	2	N	0.00258	DEC-2-0-61 CM CORE-9/12/1994
Creek	01	79667.36	NYSDEC 1998	DEC-2	Subsurface	9/12/1994	2	3.84	N	0.0066	DEC-2-61-117 CM CORE-9/12/1994
Creek	01	78639.06	NYSDEC 1998	DEC-3	Surface	9/12/1994	0	2	N	0.00051	DEC-3-0-61 CM CORE-9/12/1994
Creek	01	78639.06	NYSDEC 1998	DEC-3	Subsurface	9/12/1994	2	5.84	N	0.00028	DEC-3-61-178 CM CORE-9/12/1994
Creek	01	78639.06	NYSDEC 1998	DEC-3	Subsurface	9/12/1994	5.84	6.66	N	0.00029	DEC-3-178-203 CM CORE-9/12/1994
Creek	01	78639.06	NYSDEC 1998	DEC-3	Subsurface	9/12/1994	6.66	9.15	N	0.00033	DEC-3-203-279 CM CORE-9/12/1994
Creek	01	77742.53	NYSDEC 1998	DEC-4	Surface	9/12/1994	0	2	N	0.0004	DEC-4-0-24 IN CORE-9/12/1994
Creek	01	77742.53	NYSDEC 1998	DEC-4	Subsurface	9/12/1994	2	6.67	N	0.000369	DEC-4-24-80 IN CORE-9/12/1994
Creek	01	77742.53	NYSDEC 1998	DEC-4	Subsurface	9/12/1994	2.62	3.71	N	0.00011	DEC-4-80-113 IN CORE-9/12/1994
Creek	01	74931.51	NYSDEC 1998	DEC-5	Surface	9/12/1994	0	2	N	0.0006	DEC-5-0-24 IN CORE-9/12/1994
Creek	01	74931.51	NYSDEC 1998	DEC-5	Subsurface	9/12/1994	2	8	N	0.00031	DEC-5-24-96 IN CORE-9/12/1994
Creek	01	74931.51	NYSDEC 1998	DEC-5	Subsurface	9/12/1994	8	10	N	0.00036	DEC-5-96-120 IN CORE-9/12/1994
Creek	02	62416.30	NYSDEC 2001	DEC-6BCEF	Surface	8/18/1998	0	0.5	N	0.0000183	DEC-6BCEF-SURFACE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Surface	8/18/1998	0	0.33	N	0.0000156	DEC-6C-0-10 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Surface	8/18/1998	0.34	0.66	N	0.0000169	DEC-6C-10-20 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	0.66	0.98	N	0.0000302	DEC-6C-20-30 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	0.98	1.31	N	0.0000428	DEC-6C-30-40 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	1.31	1.64	N	0.0000916	DEC-6C-40-50 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	1.64	1.97	N	0.0001677	DEC-6C-50-60 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	1.97	2.3	N	0.0002287	DEC-6C-60-70 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	2.3	2.62	N	0.000318	DEC-6C-70-80 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	2.62	2.95	N	0.0002231	DEC-6C-80-90 CM CORE-8/18/1998
Creek	02	62416.30	NYSDEC 2001	DEC-6C	Subsurface	8/18/1998	2.95	3.25	N	0.000193	DEC-6C-90-99 CM CORE-8/18/1998
Creek	02	62233.91	NYSDEC 1998	DEC-6	Surface	10/11/1994	0	1.7	N	0.1329	DEC-6-0-20 IN CORE-10/11/1994
Creek	02	62233.91	NYSDEC 1998	DEC-6	Subsurface	10/11/1994	1.67	2	N	1.3053	DEC-6-20-24 IN CORE-10/11/1994
Creek	03	60753.83	NYSDEC 2001	DEC-6E	Surface	8/18/1998	0	0.85	N	0.0000407	DEC-6E-0-26 CM CORE-8/18/1998
Creek	03	60753.83	NYSDEC 2001	DEC-6E	Subsurface	8/18/1998	0.85	1.31	N	0.0000823	DEC-6E-26-40 CM CORE-8/18/1998
Creek	03	60753.83	NYSDEC 2001	DEC-6E	Subsurface	8/18/1998	1.31	1.84	N	0.0004366	DEC-6E-40-56 CM CORE-8/18/1998
Creek	03	60753.83	NYSDEC 2001	DEC-6E	Subsurface	8/18/1998	1.84	2.43	N	0.0002581	DEC-6E-56-74 CM CORE-8/18/1998
Creek	03	59487.84	NYSDEC 2001	DEC-6F	Surface	8/18/1998	0	0.33	N	0.0000134	DEC-6F-0-10 CM CORE-8/18/1998
Creek	03	59487.84	NYSDEC 2001	DEC-6F	Surface	8/18/1998	0.33	0.92	N	0.000034	DEC-6F-10-28 CM CORE-8/18/1998

Table D-4

Dioxin TEQ Sediment Chemistry Results for Remedial Investigation

Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	TCDD TEQ	Sample ID
Creek	03	59487.84	NYSDEC 2001	DEC-6F	Subsurface	8/18/1998	0.92	1.71	N	0.0000888	DEC-6F-28-52 CM CORE-8/18/1998
Creek	03	59487.84	NYSDEC 2001	DEC-6F	Subsurface	8/18/1998	1.71	2.3	N	0.000016	DEC-6F-52-70 CM CORE-8/18/1998
Creek	03	59487.84	NYSDEC 2001	DEC-6F	Subsurface	8/18/1998	2.3	3.61	N	0.0000001	DEC-6F-70-110 CM CORE-8/18/1998
Creek	04	52060.78	NYSDEC 2001	DEC-7A	Surface	8/19/1998	0	0.66	N	0.0000535	DEC-7A-0-20 CM CORE-8/19/1998
Creek	04	52060.78	NYSDEC 2001	DEC-7A	Surface	8/19/1998	0	0.5	N	0.0000371	DEC-7ABC-SURFACE-8/19/1998
Creek	04	52060.78	NYSDEC 2001	DEC-7A	Subsurface	8/19/1998	0.66	1.64	N	0.0002183	DEC-7A-20-50 CM CORE-8/19/1998
Creek	04	52060.78	NYSDEC 2001	DEC-7A	Subsurface	8/19/1998	1.64	2.95	N	0.0000041	DEC-7A-50-90 CM CORE-8/19/1998
Creek	04	52060.78	NYSDEC 2001	DEC-7A	Subsurface	8/19/1998	2.95	3.41	N	0.0000087	DEC-7A-90-104 CM CORE-8/19/1998
Creek	05	51902.61	NYSDEC 1998	DEC-7	Surface	10/12/1994	0	1	N	0.6476	DEC-7-0-12 IN CORE-10/12/1994
Creek	05	51902.61	NYSDEC 1998	DEC-7	Subsurface	10/12/1994	1	1.67	N	0.7133	DEC-7-12-20 IN CORE-10/12/1994
Creek	05	50626.56	NYSDEC 2001	DEC-7B	Surface	8/19/1998	0	0.66	N	0.0000391	DEC-7B-0-20 CM CORE-8/19/1998
Creek	05	50626.56	NYSDEC 2001	DEC-7B	Subsurface	8/19/1998	0.66	1.9	N	0.0000107	DEC-7B-20-58 CM CORE-8/19/1998
Creek	05	50626.56	NYSDEC 2001	DEC-7B	Subsurface	8/19/1998	1.9	2.17	N	0.0000001	DEC-7B-58-66 CM CORE-8/19/1998
Creek	05	49732.26	NYSDEC 2001	DEC-7C	Surface	8/19/1998	0	0.66	N	0.0001213	DEC-7C-0-20 CM CORE-8/19/1998
Creek	05	49732.26	NYSDEC 2001	DEC-7C	Subsurface	8/19/1998	0.66	2.3	N	0.0000001	DEC-7C-20-70 CM CORE-8/19/1998
Creek	05	49732.26	NYSDEC 2001	DEC-7C	Subsurface	8/19/1998	2.3	2.72	N	0.0000007	DEC-7C-70-83 CM CORE-8/19/1998
Creek	10	3408.73	NYSDEC 2001	DEC-12	SURFACE	8/17/1998	0	0.59	N	0.0001591	DEC-12-0-18 CM CORE-8/19/1998
Creek	10	3408.73	NYSDEC 2001	DEC-12	SUBSURFACE	8/17/1998	0.59	0.89	N	0.0000667	DEC-12-18-27 CM CORE-8/19/1998
Creek	10	818.58	NYSDEC 1998	DEC-8	Surface	10/12/1994	0	1.07	N	0.06053	DEC-8-0-33 cm core-10/12/1994
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SURFACE	8/20/1998	0	0.33	N	0.0000018	DEC-8A-0-10 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	0.33	0.66	N	0.0000244	DEC-8A-10-20 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	0.66	0.98	N	0.0000528	DEC-8A-20-30 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	0.98	1.31	N	0.0001827	DEC-8A-30-40 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	1.31	1.64	N	0.0000486	DEC-8A-40-50 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	1.64	1.97	N	0.0000165	DEC-8A-50-60 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	1.97	2.3	N	0.000013	DEC-8A-60-70 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	2.3	2.62	N	0.0000262	DEC-8A-70-80 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	2.62	2.95	N	0.0001473	DEC-8A-80-90 CM CORE-8/20/1998
Canal	Erie Canal	0.00	NYSDEC 2001	DEC-8A	SUBSURFACE	8/20/1998	2.95	3.08	N	0.0000613	DEC-8A-90-94 CM CORE-8/20/1998
Upstream	Upstream	-9999.00	NYSDEC 2001	DEC-9	SURFACE	8/17/1998	0	0.5	N	0.0000017	DEC-9-SURFACE-8/17/1998
Tributary	07	27500.00	NYSDEC 2001	DEC-10	SURFACE	8/18/1998	0	0.5	N	0.0000007	DEC-10-SURFACE-8/18/1998
Tributary	07	7750.00	NYSDEC 2001	DEC-11	Surface	8/17/1998	0	0.5	N	0.0000067	DEC-11-SURFACE-8/17/1998

Table D-5
Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	FINES	FINE SAND	COARSE SAND	MEDIUM SAND	SAND	GRAVEL	SIEVE BOTTOM PLATE	SIEVE NO. 4	SIEVE NO. 10	SIEVE NO. 16	SIEVE NO. 35	SIEVE, NO. 20	SIEVE NO. 40	SIEVE NO. 50	SIEVE, NO. 60	SIEVE NO. 80	SIEVE, NO. 100	SIEVE NO. 200	SIEVE, 19000 MICRONS	SIEVE, 25000 MICRONS	SIEVE, 37500 MICRONS	SIEVE, 50000 MICRONS	SIEVE, 75000 MICRONS	SIEVE, 9500 MICRONS	SOLIDS, PERCENT	Sample ID
Creek	02	68416	USEPA GLNPO	R2-003-V-P	Surface	05/18/10	0	1	N	98	0.9	0.1	0.1		0.5		99	99			99	99		99	99	99	98	100	100	100	100	100	100	28	R2-003-V-Z1P
Creek	02	68415	USEPA GLNPO	R2-003-V	Surface	05/18/10	0	1	N	98	0.6	0.5	0.3		0.6		99	99			99	99		98	98	98	98	100	100	100	100	100	100	28	R2-003-V-Z1
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	1	2	N	99	0.3	0.2	0.1				100	100			100	100		100	99	99	99	100	100	100	100	100	100	33	R2-003-V-Z2
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	2	3	N	98	1.2	0.2	0.3				100	100			100	99		99	99	99	98	100	100	100	100	100	100	29	R2-003-V-Z3
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	3	4	N	99	0.6	0.3	0.2				100	100			100	99		99	99	99	99	100	100	100	100	100	100	34	R2-003-V-Z4
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	4	5	N	96	1.6	0.1	2.1				100	100			99	98		97	97	97	96	100	100	100	100	100	100	46	R2-003-V-Z5
Creek	02	68415	USEPA GLNPO	R2-003-V	Subsurface	05/18/10	6	7	N	55	31	4.6	7		1.5		98	94			91	87		84	80	77	55	100	100	100	100	100	100	54	R2-003-V-Z6
Creek	02	68399	USEPA GLNPO	R2-002-V-P	Surface	05/18/10	0	1	N	98	0.4	1	0.1				100	99			99	99		99	99	99	98	100	100	100	100	100	100	27	R2-002-V-Z1P
Creek	02	68395	USEPA GLNPO	R2-002-V	Surface	05/18/10	0	1	N	99	0.1	1.1					100	99			99	99		99	99	99	99	100	100	100	100	100	100	28	R2-002-V-Z1
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	1	2	N	98	0.9	0.5	0.9				100	99			99	99		98	98	98	98	100	100	100	100	100	100	30	R2-002-V-Z2
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	2	3	N	99	0.1	0.7	0.3				100	99			99	99		99	99	99	99	100	100	100	100	100	100	32	R2-002-V-Z3
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	3	4	N	96	1.8	0.5	1.4				100	99			99	98		98	98	98	96	100	100	100	100	100	100	31	R2-002-V-Z4
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	4	6	FD	89	9.1	0.4	1.7		0.2		100	99			98	98		97	97	96	89	100	100	100	100	100	100	39	R2-002-VR
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	4	6	N	88	9.6	0.8	1.3		0.3		100	99			98	98		97	96	96	88	100	100	100	100	100	100	46	R2-002-V-Z5
Creek	02	68395	USEPA GLNPO	R2-002-V	Subsurface	05/18/10	6	7.5	N	91	8.1	0.6	0.8				100	99			99	99		98	98	97	91	100	100	100	100	100	100	48	R2-002-V-Z6
Creek	02	68375	USEPA GLNPO	R2-001-V-P	Surface	05/18/10	0	1	N	99	0.3	0.5	0.1				100	99			99	99		99	99	99	99	100	100	100	100	100	100	30	R2-001-V-Z1P
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	1	2	N	99	0.5	0.2	0.5				100	100			99	99		99	99	99	99	100	100	100	100	100	100	30	R2-001-V-Z2
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	2	3	N	98	1.1	0.6	0.4				100	99			99	99		99	99	99	98	100	100	100	100	100	100	28	R2-001-V-Z3
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	3	4	N	97	1.1	0.6	1.1				100	99			99	98		98	98	98	97	100	100	100	100	100	100	33	R2-001-V-Z4
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	4	5	N	88	7.1		5				100	100			98	95		93	92	92	88	100	100	100	100	100	100	53	R2-001-V-Z5
Creek	02	68375	USEPA GLNPO	R2-001-V	Subsurface	05/18/10	6	7	N	92	6.2	0.6	1.7				100	99			98	98		97	96	95	92	100	100	100	100	100	100	76	R2-001-V-Z6
Creek	02	67111	USEPA GLNPO	R2-005-V	Surface	05/19/10	0	1	N	99	0.9		0.3				100	100			100	100		100	99	99	99	100	100	100	100	100	100	34	R2-005-V-Z1
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	1	2	N	99	0.4	0.1	0.3				100	100			100	100		99	99	99	99	100	100	100	100	100	100	37	R2-005-V-Z2
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	2	3	N	98	1.3		0.7				100	100			100	99		99	99	99	98	100	100	100	100	100	100	31	R2-005-V-Z3
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	3	4	N	97	2		0.7				100	100			100	99		99	99	98	97	100	100	100	100	100	100	34	R2-005-V-Z4
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	4	6	N	97	1.9		0.8				100	100			100	99		99	98	98	97	100	100	100	100	100	100	42	R2-005-V-Z5
Creek	02	67111	USEPA GLNPO	R2-005-V	Subsurface	05/19/10	6	7	N	99	0.6		0.6				100	100			99	99		99	99	99	99	100	100	100	100	100	100	39	R2-005-V-Z6
Creek	02	67109	USEPA GLNPO	R2-004-V	Surface	05/18/10	0	1	N	99	0.3		0.2				100	100			100	100		100	100	100	99	100	100	100	100	100	100	31	R2-004-V-Z1
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	1	2	FD	99	0.6						100	100			100	100		100	100	99	99	100	100	100	100	100	100	33	R2-004-VR
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	2	3	N	100	0.3		0.1				100	100			100	100		100	100	100	100	100	100	100	100	100	100	33	R2-004-V-Z2
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	3	3.5	N	98	1.5		0.4				100	100			100	100		99	99	99	98	100	100	100	100	100	100	30	R2-004-V-Z3
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	3.5	4	N	98	0.9		0.7				100	100			100	99		99	99	99	98	100	100	100	100	100	100	35	R2-004-V-Z4
Creek	02	67109	USEPA GLNPO	R2-004-V	Subsurface	05/18/10	4	4.5	N	78	10	3.3	4.4		4.3		96	92			91	88		86	85	84	78	100	100	100	100	100	100	70	R2-004-V-Z5
Creek	02	67108	USEPA GLNPO	R2-004-V-P	Surface	05/18/10	0	1	N	99	0.3		0.2				100	100			100	100		100	100	100	99	100	100	100	100	100	100	26	R2-004-V-Z1P
Creek	02	67108	USEPA GLNPO	R2-005-V-P	Surface	05/19/10	0	1	N	99	0.4	0.1	0.1				100	100			100	100		100	100	100	99	100	100	100	100	100	100	34	R2-005-V-Z1P
Creek	02	67102	USEPA GLNPO	R2-006-V-P	Surface	05/19/10	0	1	N	98	1.4	0.6	0.3				100	99			99	99		99	99	99	98	100	100	100	100	100	100	35	R2-006-V-Z1P
Creek	02	67100	USEPA GLNPO	R2-006-V	Surface	05/19/10	0	1	N	94	4.9	0.4	0.6				100	100			99	99		98	98	98	94	100	100	100	100	100	100	45	R2-006-V-Z1
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	1	2	N	98	1.4	0.1	0.5				100	100			100	99		99	99	99	98	100	100	100	100	100	100	38	R2-006-V-Z2
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	2	3	FD	92	6.2	0.4	1.7				100	100			99	98		97	96	95	92	100	100	100	100	100	100	32	R2-006-VR
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	2	3	N	94	4.3	0.4	1				100	100			99	99		98	98	97	94	100	100	100	100	100	100	38	R2-006-V-Z3
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	3	4	N	99	0.3		0.4				100	100			100	100		100	99	99	99	100	100	100	100	100	100	40	R2-006-V-Z4
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	4	5	N	99	0.4		0.3				100	100			100	100		100	100	100	99	100	100	100	100	100	100	39	R2-006-V-Z5A
Creek	02	67100	USEPA GLNPO	R2-006-V	Subsurface	05/19/10	5	6	N	97	2.9		0.4				100	100			100	100		99	99	99	97	100	100	100	100	100	100	59	R2-006-V-Z5B
Creek	02	65759	USEPA GLNPO	R2-007-V	Surface	05/19/10	0	1	N	100	0.1		0.2				100	100			100	100		100	100	100	100	100	100	100	100	100	100	31	R2-007-V-Z1
Creek	02	65759	USEPA GLNPO	R2-007-V	Surface	05/19/10	0	1	N	100	0.1						100	100			100	100		100	100	100	100	100	100	100	100	100	100	33	R2-007-V-Z1P
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	1	2	N	100							100	100			100	100		100	100	100	100	100	100	100	100	100	100	35	R2-007-V-Z2
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	2	3	N	100	0.1		0.1				100	100			100	100		100	100	100	100	100	100	100	100	100	100	30	R2-007-V-Z3
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	3	4	N	100	0.1						100	100			100	100		100	100	100	100	100	100	100	100	100	100	37	R2-007-V-Z4
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	4	5	N	65	9.1	3.6	12		11		89	86			79	74		72	69	69	65	100	100	100	100	100	94	63	R2-007-V-Z5A
Creek	02	65759	USEPA GLNPO	R2-007-V	Subsurface	05/19/10	5	6	N	80	16	0.7	3.1		0.4		100	99			98	96		93	89	88	80	100	100	100	100	100	100	81	R2-007-V-Z5B
Creek	02	65640	USEPA GLNPO	R2-008-V	Surface	05/19/10	0	1	N	100	0.2		0.1				100	100			100	100		100	100	100	100	100	100	100	100	100	100	33	R2-008-V-Z1
Creek	02	65640	USEPA GLNPO	R2-008-V	Surface	05/19/10	0	1	N	100	0.1	0.3					100	100			100	100		100	100	100	100	100	100	100	100	100	100	31	R2-008-V-Z1P
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	1	2	N	99	0.7		0.4				100	100			100	100		99	99	99	99	100	100	100	100	100	100	36	R2-008-V-Z2
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	2	3	N	99	0.4		0.7				100	100			99	99		99	99	99	99	100	100	100	100	100	100	33	R2-008-V-Z3
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	3	4	N	99	0.4		0.5				100	100			100	99		99	99	99	99	100	100	100	100	100	100	38	R2-008-V-Z4
Creek	02	65640	USEPA GLNPO	R2-008-V	Subsurface	05/19/10	4.5	5	N	66	14	2.3	14		3.3		97	94			85	80		76	73	72	66	100	100	100	100	100	99	84	R2-008-V-Z5
Creek	02	65562	USEPA GLNPO	R2-009-V	Surface	05/19/10	0	1	N	99	0.4		0.4				100	100			100	100		99	99	99	99	100	100	100	100	100	100	34	R2-009-V-Z1
Creek	02	65562	USEPA GLNPO	R2-009-V	Surface	05/19/10	0	1	N	99	0.8		0.4				100	100			100	100		99	99	99	99	100	100	100	100	100	100	30	R2-009-V-Z1P
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	1	2	N	99	0.5		0.6				100	100			100	99		99	99	99	99	100	100	100	100	100	100	36	R2-009-V-Z2
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	2	3	N	97	2.3	0.2	0.4				100	100			100	99		99	99	99	97	100	100	100	100	100	100	34	R2-009-V-Z3
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	3	4	FD	99	0.4		0.4				100	100			100	100		99	99	99	99	100	100	100	100	100	100	38	R2-009-VR
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	3	4	N	92	5.3	0.3	2.9				100	100			98	97		96	95	95	92	100	100	100	100	100	100	39	R2-009-V-Z4
Creek	02	65562	USEPA GLNPO	R2-009-V	Subsurface	05/19/10	4	5.5	N	65	22	2.6	8.9		1.4		99	96			93	87		80	75	73	65	100	100	100	100	100	100	49	R2-009-V-Z5
Creek	02	63171	USEPA GLNPO	R2-010-V	Surface	05/25/10	0	1	N	99	0.9		0.2				100	100			100	100		100	100	99	99	100	100	100	100	100	100	29	R2-010-V-Z1
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	1	2	N	98	1.3		0.2				100	100			100	100		100	99	99	98	100	100	100	100	100	100	34	R2-010-V-Z2
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	2	3	N	99	0.6		0.3				100	100			100	100		100	99	99	99	100	100	100	100	100	100	38	R2-010-V-Z3
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	3	4	N	98	0.7		1.4				100	100			99	99		98	98	98	98	100	100	100	100	100	100	32	R2-010-V-Z4

Table D-5
Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	FINES	FINE SAND	COARSE SAND	MEDIUM SAND	SAND	GRAVEL	SIEVE BOTTOM PLATE	SIEVE NO. 4	SIEVE NO. 10	SIEVE NO. 16	SIEVE NO. 35	SIEVE, NO. 20	SIEVE NO. 40	SIEVE NO. 50	SIEVE, NO. 60	SIEVE NO. 80	SIEVE, NO. 100	SIEVE NO. 200	SIEVE, 19000 MICRONS	SIEVE, 25000 MICRONS	SIEVE, 37500 MICRONS	SIEVE, 50000 MICRONS	SIEVE, 75000 MICRONS	SIEVE, 9500 MICRONS	SOLIDS, PERCENT	Sample ID
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	4	6	N	98	0.8		0.7				100	100			99	99		99	99	99	98	100	100	100	100	100	100	36	R2-010-V-Z5
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	6	8	FD	98	2		0.5				100	100			100	99		99	99	99	98	100	100	100	100	100	100	48	R2-010-VR
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	6	8	N	98	1.8		0.3				100	100			100	100		99	99	99	98	100	100	100	100	100	100	50	R2-010-V-Z6
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	8	9	N	90	9.4		0.6				100	100			100	99		98	97	96	90	100	100	100	100	100	100	79	R2-010-V-Z7A
Creek	02	63171	USEPA GLNPO	R2-010-V	Subsurface	05/25/10	9	10	N	85	13		2				100	100			99	98		96	93	92	85	100	100	100	100	100	100	79	R2-010-V-Z7B
Creek	02	63153	USEPA GLNPO	R2-011-V	Surface	05/25/10	0	1	N	95	4.3		0.8				100	100			100	99		99	98	98	95	100	100	100	100	100	100	30	R2-011-V-Z1
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	1	2	N	98	1.6		0.7				100	100			99	99		99	99	99	98	100	100	100	100	100	100	40	R2-011-V-Z2
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	2	3	N	97	2.3		0.5				100	100			100	99		99	99	99	97	100	100	100	100	100	100	40	R2-011-V-Z3
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	3	4	N	99	0.8		0.6				100	100			100	99		99	99	99	99	100	100	100	100	100	100	37	R2-011-V-Z4
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	4	6	N	98	1.1		1.4				100	100			99	99		98	98	98	98	100	100	100	100	100	100	34	R2-011-V-Z5
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	6	8	N	98	0.8		1.1				100	100			99	99		99	99	99	98	100	100	100	100	100	100	37	R2-011-V-Z6
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	8	10	N	96	3.1		0.7				100	100			100	99		99	99	99	96	100	100	100	100	100	100	45	R2-011-V-Z7
Creek	02	63153	USEPA GLNPO	R2-011-V	Subsurface	05/25/10	10	11.5	N	99	0.7		0.3				100	100			100	100		100	100	100	99	100	100	100	100	100	100	52	R2-011-V-Z8
Creek	02	63096	USEPA GLNPO	R2-012-V	Surface	05/25/10	0	1	N	97	2.3		0.3				100	100			100	100		99	99	99	97	100	100	100	100	100	100	29	R2-012-V-Z1
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	1	2	N	99	0.9		0.2				100	100			100	100		100	100	100	99	100	100	100	100	100	100	38	R2-012-V-Z2
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	2	3	N	94	4.4	0.5	0.8				100	99			99	99		98	97	97	94	100	100	100	100	100	100	40	R2-012-V-Z3
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	3	4	FD	99	0.9		0.4				100	100			100	100		99	99	99	99	100	100	100	100	100	100	37	R2-012-VR
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	3	4	N	97	2.2	0.2	0.8				100	100			99	99		98	98	98	97	100	100	100	100	100	100	37	R2-012-V-Z4
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	4	6	N	93	2.8	0.6	3.3		0.6		99	99			96	95		95	94	94	93	100	100	100	100	100	100	35	R2-012-V-Z5
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	6	8	N	77	8.5	2.6	5.4		6.7		93	91			89	85		82	81	80	77	100	100	100	100	100	94	48	R2-012-V-Z6
Creek	02	63096	USEPA GLNPO	R2-012-V	Subsurface	05/25/10	8	9	N	42	11	6.8	24		17		83	76			61	52		48	46	45	42	100	100	100	100	100	92	78	R2-012-V-Z7
Creek	02	61625	USEPA GLNPO	R2-013-V	Surface	05/25/10	0	1	N	92	5.9	0.6	1.6				100	99			99	98		97	96	96	92	100	100	100	100	100	100	25	R2-013-V-Z1
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	1	2	N	93	5	0.8	1.3				100	99			98	98		97	97	96	93	100	100	100	100	100	100	34	R2-013-V-Z2
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	2	3	N	92	5.4	0.3	2.3				100	100			99	97		96	95	95	92	100	100	100	100	100	100	39	R2-013-V-Z3
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	3	4	N	95	3.8	0.2	1.2				100	100			99	99		98	98	97	95	100	100	100	100	100	100	40	R2-013-V-Z4
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	4	6	N	92	3.1	1.5	3.9				100	98			96	95		94	93	93	92	100	100	100	100	100	100	32	R2-013-V-Z5
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	6	8	N	89	4.9	0.7	5				100	99			97	94		93	92	91	89	100	100	100	100	100	100	35	R2-013-V-Z6
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	8	10	N	89	6.2	0.8	4.1				100	99			98	95		93	92	91	89	100	100	100	100	100	100	38	R2-013-V-Z7
Creek	02	61625	USEPA GLNPO	R2-013-V	Subsurface	05/25/10	10	12	N	87	6.9	0.1	5.6				100	100			98	94		92	91	91	87	100	100	100	100	100	100	43	R2-013-V-Z8
Creek	02	61620	USEPA GLNPO	R2-015-V	Surface	05/25/10	0	1	N	90	8.2	0.3	1.7				100	100			99	98		97	96	95	90	100	100	100	100	100	100	38	R2-015-V-Z1
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	1	2	N	86	13	0.3	1.6				100	100			99	98		97	96	95	86	100	100	100	100	100	100	31	R2-015-V-Z2
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	2	3	N	92	4.1	1.6	2.5				100	98			97	96		95	94	94	92	100	100	100	100	100	100	31	R2-015-V-Z3
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	3	4	N	91	3.7	0.4	5				100	100			96	94		93	93	92	91	100	100	100	100	100	100	31	R2-015-V-Z4
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	4	6	N	89	3.9		6.6				100	100			96	93		92	91	91	89	100	100	100	100	100	100	38	R2-015-V-Z5
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	6	8	N	93	3.4	0.1	3.2		0.4		100	99			98	96		95	95	95	93	100	100	100	100	100	100	47	R2-015-V-Z6
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	8	10	N	91	8.4		0.3				100	100			100	100		98	97	96	91	100	100	100	100	100	100	62	R2-015-V-Z7A
Creek	02	61620	USEPA GLNPO	R2-015-V	Subsurface	05/25/10	9	9.5	N	93	6.8		0.2				100	100			100	100		99	98	98	93	100	100	100	100	100	100	82	R2-015-V-Z7B
Creek	02	61618	USEPA GLNPO	R2-014-V	Surface	05/25/10	0	1	N	73	22	1.1	4.1				100	99			98	95		91	88	86	73	100	100	100	100	100	100	29	R2-014-V-Z1
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	1	2	N	75	21	0.4	2.8				100	100			99	97		94	91	89	75	100	100	100	100	100	100	40	R2-014-V-Z2
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	2	3	N	88	9.4	0.6	1.6				100	99			99	98		96	95	94	88	100	100	100	100	100	100	32	R2-014-V-Z3
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	3	4	N	92	5	1	1.9				100	99			99	97		96	95	94	92	100	100	100	100	100	100	29	R2-014-V-Z4
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	4	6	FD	88	5.3	0.4	6				100	100			98	94		91	90	90	88	100	100	100	100	100	100	32	R2-014-VR
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	4	6	N	89	7	1	2.6				100	99			99	96		94	93	92	89	100	100	100	100	100	100	32	R2-014-V-Z5
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	6	8	N	90	6.2		3.9				100	100			100	96		93	92	92	90	100	100	100	100	100	100	36	R2-014-V-Z6
Creek	02	61618	USEPA GLNPO	R2-014-V	Subsurface	05/25/10	8	10	N	95	3.3		1.7				100	100			99	98		98	97	97	95	100	100	100	100	100	100	29	R2-014-V-Z7
Creek	03	60757	USEPA GLNPO	R3-018-V	Surface	05/25/10	0	1	N	84	14	0.6	1.1				100	99			99	98		97	97	96	84	100	100	100	100	100	100		R3-018-V-Z1
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	1	2	N	90	8.6	0.2	0.9				100	100			99	99		98	98	98	90	100	100	100	100	100	100	37	R3-018-V-Z2
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	2	3	N	95	2.7	0.1	1.9				100	100			98	98		98	98	98	95	100	100	100	100	100	100	29	R3-018-V-Z3
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	3	4	N	97	1.4		1.3				100	100			99	99		98	98	98	97	100	100	100	100	100	100	30	R3-018-V-Z4
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	4	6	N	97	2.3	0.1	0.6				100	100			100	99		99	99	99	97	100	100	100	100	100	100	31	R3-018-V-Z5
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	6	8	N	93	5.9	0.1	0.8				100	100			99	99		99	98	98	93	100	100	100	100	100	100	39	R3-018-V-Z6
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	8	10	N	95	3.9	0.2	0.6				100	100			99	99		99	99	99	95	100	100	100	100	100	100	45	R3-018-V-Z7
Creek	03	60757	USEPA GLNPO	R3-018-V	Subsurface	05/25/10	10	12	N	99	0.8		0.3				100	100			100	100		100	99	99	99	100	100	100	100	100	100	54	R3-018-V-Z8
Creek	03	60738	USEPA GLNPO	R3-017-V	Surface	05/26/10	0	1	N	60	19	2.4	18		1.7		98	96			89	78		71	65	64	60	100	100	100	100	100	100	36	R3-017-V-Z1
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	1	2	N	42	36	4.6	14		3.8		96	92			87	78		64	51	48	42	100	100	100	100	100	99	47	R3-017-V-Z2
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	2	3	N	46	30	3.8	5.3		15		85	81			79	76		71	60	56	46	100	100	100	100	100	90	40	R3-017-V-Z3
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	3	4	N	95	3.5	0.2	1.6				100	100			99	98		97	97	96	95	100	100	100	100	100	100	30	R3-017-V-Z4
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	4	6	FD	89	6.7	0.2	4.5				100	100			99	95		94	92	92	89	100	100	100	100	100	100	32	R3-017-VR
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	4	6	N	94	4.3	0.1	1.6				100	100			99	98		98	97	97	94	100	100	100	100	100	100	35	R3-017-V-Z5
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	6	8	N	98	1.4		0.7				100	100			100	99		99	99	99	98	100	100	100	100	100	100	43	R3-017-V-Z6
Creek	03	60738	USEPA GLNPO	R3-017-V	Subsurface	05/26/10	8	8.5	N	97	2.6		0.8				100	100			100	99		99	98	98	97	100	100	100	100	100	100	48	R3-017-V-Z7
Creek	03	60734	USEPA GLNPO	R3-016-V	Surface	05/26/10	0	1	N	65	30	2	1.7		0.8		99	97			97	96		93	88	84	65	100	100	100	100	100	99		R3-016-V-Z1
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	1	2	N	89	8.4		2.9				100	100			99	97		96	94	94	89	100	100	100	100	100	100	32	R3-016-V-Z2
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	2	3	N	93	5.4		1.4				100	100			100	99		98	97	97	93	100	100	100	100	100	100	37	R3-016-V-Z3
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	3	4	FD	92	6		1.6				100	100			100	98		98	97	96	92	100	100	100	100	100	100	42	R3-016-VR
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	3	4	N	93	5.9		0.8				100	100			100	99		99	98	97	93	100	100	100	100	100	100	41	R3-016-V-Z4
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	4	6	N	94	3.6	0.2	1.9				100	100			99	98		97	96	96	94	100	100	100	100	100	100	44	R3-016-V-Z5

Table D-5
Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	FINES	FINE SAND	COARSE SAND	MEDIUM SAND	SAND	GRAVEL	SIEVE BOTTOM PLATE	SIEVE NO. 4	SIEVE NO. 10	SIEVE NO. 16	SIEVE NO. 35	SIEVE, NO. 20	SIEVE NO. 40	SIEVE NO. 50	SIEVE, NO. 60	SIEVE NO. 80	SIEVE, NO. 100	SIEVE NO. 200	SIEVE, 19000 MICRONS	SIEVE, 25000 MICRONS	SIEVE, 37500 MICRONS	SIEVE, 50000 MICRONS	SIEVE, 75000 MICRONS	SIEVE, 9500 MICRONS	SOLIDS, PERCENT	Sample ID
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	6	8	N	92	5.9	0.2	2.1				100	100			99	98		97	95	95	92	100	100	100	100	100	100	47	R3-016-V-Z6
Creek	03	60734	USEPA GLNPO	R3-016-V	Subsurface	05/26/10	8	9	N	92	7.5		0.5				100	100			100	99		99	98	98	92	100	100	100	100	100	100	80	R3-016-V-Z7
Creek	03	60224	USEPA GLNPO	R3-019-V	Surface	05/26/10	0	1	N	99	0.9	0.1	0.4				100	100			100	100		99	99	99	99	100	100	100	100	100	100	25	R3-019-V-Z1
Creek	03	60224	USEPA GLNPO	R3-019-V	Subsurface	05/26/10	1	2	N	99	0.9		0.3				100	100			100	100		99	99	99	99	100	100	100	100	100	100	29	R3-019-V-Z2
Creek	03	60224	USEPA GLNPO	R3-019-V	Subsurface	05/26/10	2	3	N	98	1.1		1				100	100			100	99		99	98	98	98	100	100	100	100	100	100	31	R3-019-V-Z3
Creek	03	60224	USEPA GLNPO	R3-019-V	Subsurface	05/26/10	3	4	N	98	0.8	0.1	1.1				100	100			99	99		99	98	98	98	100	100	100	100	100	100	38	R3-019-V-Z4
Creek	03	60215	USEPA GLNPO	R3-020-V	Surface	05/26/10	0	1	N	61	35	0.3	3.1		0.3		100	99			98	96		95	88	83	61	100	100	100	100	100	100		R3-020-V-Z1
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	1	2	N	94	4.8		1.4				100	100			99	99		98	98	97	94	100	100	100	100	100	100	29	R3-020-V-Z2
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	2	3	N	94	4.6		1.5				100	100			99	98		98	98	97	94	100	100	100	100	100	100	30	R3-020-V-Z3
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	3	4	N	93	5.9		0.9				100	100			100	99		99	98	98	93	100	100	100	100	100	100	30	R3-020-V-Z4
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	4	6	N	95	4.6		0.7				100	100			100	99		99	99	98	95	100	100	100	100	100	100	38	R3-020-V-Z5
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	6	8	N	95	4		0.7				100	100			100	99		99	98	98	95	100	100	100	100	100	100	45	R3-020-V-Z6
Creek	03	60215	USEPA GLNPO	R3-020-V	Subsurface	05/26/10	8	10	N	96	3.2		0.6		0.2		100	100			99	99		99	99	98	96	100	100	100	100	100	100	53	R3-020-V-Z7
Creek	03	60207	USEPA GLNPO	R3-021-V	Surface	05/26/10	0	1	N	55	20	1.2	7.4		16		83	82			79	75		73	70	69	55	100	100	100	100	100	86	67	R3-021-V-Z1
Creek	03	60207	USEPA GLNPO	R3-021-V	Subsurface	05/26/10	1	2	N	61	21	0.7	15		1.6		98	98			88	82		78	73	72	61	100	100	100	100	100	100	79	R3-021-V-Z2
Creek	03	60207	USEPA GLNPO	R3-021-V	Subsurface	05/26/10	2	3	N	77	18	0.5	3.7		0.5		99	99			97	95		93	89	88	77	100	100	100	100	100	100	82	R3-021-V-Z3
Creek	03	59465	USEPA GLNPO	R3-022-V	Surface	05/26/10	0	1	N	34	46	2.5	14		3.4		97	94			91	80		57	41	39	34	100	100	100	100	100	99	39	R3-022-V-Z1
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	1	2	FD																									43	R3-022-VR
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	1	2	N	51	43	2	2.8		1.2		99	97			96	94		83	69	64	51	100	100	100	100	100	100	51	R3-022-V-Z2
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	2	3	N	73	23	0.7	2		1.7		98	98			97	96		93	88	85	73	100	100	100	100	100	99	43	R3-022-V-Z3
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	3	4	N	79	16		5.5				100	100			99	94		87	84	83	79	100	100	100	100	100	100	51	R3-022-V-Z4
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	4	6	N	85	13	0.2	1.8		0.3		100	99			99	98		95	93	92	85	100	100	100	100	100	100	57	R3-022-V-Z5
Creek	03	59465	USEPA GLNPO	R3-022-V	Subsurface	05/26/10	6	6.8	N	63	10	6.9	7.5		13		88	81			77	73		70	69	68	63	100	100	100	100	100	94	81	R3-022-V-Z6
Creek	03	59359	USEPA GLNPO	R3-024-V	Surface	05/26/10	0	1	N	83	15	0.6	1.1		0.3		100	99			99	98		97	95	94	83	100	100	100	100	100	100	28	R3-024-V-Z1
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	1	2	N	91	6.6	0.6	1.6				100	99			99	98		97	96	96	91	100	100	100	100	100	100	29	R3-024-V-Z2
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	2	3	N	96	2.1	0.2	1.3				100	100			99	98		98	98	97	96	100	100	100	100	100	100	27	R3-024-V-Z3
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	3	4	N	97	2.2	0.1	0.8				100	100			100	99		98	98	98	97	100	100	100	100	100	100	31	R3-024-V-Z4
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	4	6	N	93	5.1	0.1	1		0.8		99	99			99	98		97	96	95	93	100	100	100	100	100	99	49	R3-024-V-Z5
Creek	03	59359	USEPA GLNPO	R3-024-V	Subsurface	05/26/10	6	8	N	83	4.5	2.3	4		6.7		93	91			89	87		86	85	85	83	100	100	100	100	100	100	64	R3-024-V-Z6
Creek	03	59325	USEPA GLNPO	R3-023-V	Surface	05/26/10	0	1	N	22	9.9	26	20		23		77	52			36	32		28	25	25	22	100	100	100	100	100	97	74	R3-023-V-Z1
Creek	03	59325	USEPA GLNPO	R3-023-V	Subsurface	05/26/10	1	2	N	74	15	1.9	7		2.1		98	96			93	89		85	83	81	74	100	100	100	100	100	99	78	R3-023-V-Z2
Creek	03	58706	USEPA GLNPO	R3-027-V	Surface	05/27/10	0	1	N	76	22	1.3	1.2				100	99			99	98		96	93	90	76	100	100	100	100	100	100	31	R3-027-V-Z1
Creek	03	58706	USEPA GLNPO	R3-027-V	Subsurface	05/27/10	1	2	N	56	37	1.7	3		2		98	96			96	93		88	75	69	56	100	100	100	100	100	100	40	R3-027-V-Z2
Creek	03	58706	USEPA GLNPO	R3-027-V	Subsurface	05/27/10	2	3	N	92	6.5	0.3	1.1				100	100			99	99		98	96	95	92	100	100	100	100	100	100	31	R3-027-V-Z3
Creek	03	58706	USEPA GLNPO	R3-027-V	Subsurface	05/27/10	3	4	N	76	19	0.8	2.7		1.6		98	98			97	95		90	84	83	76	100	100	100	100	100	100	33	R3-027-V-Z4
Creek	03	58684	USEPA GLNPO	R3-026-V	Surface	05/27/10	0	1	N	60	35	1.2	2.6		0.9		99	98			97	95		86	74	70	60	100	100	100	100	100	100	40	R3-026-V-Z1
Creek	03	58684	USEPA GLNPO	R3-026-V	Subsurface	05/27/10	1	2	N	67	26	1.2	1.9		4.3		96	94			94	93		87	81	78	67	100	100	100	100	100	99	36	R3-026-V-Z2
Creek	03	58684	USEPA GLNPO	R3-026-V	Subsurface	05/27/10	2	3	N	87	9.9	1.8	1.7				100	98			98	97		95	94	93	87	100	100	100	100	100	100	31	R3-026-V-Z3
Creek	03	58684	USEPA GLNPO	R3-026-V	Subsurface	05/27/10	3	4	N	77	17	2	3.9				100	98			97	94		89	85	84	77	100	100	100	100	100	100	35	R3-026-V-Z4
Creek	03	58656	USEPA GLNPO	R3-025-V	Surface	05/26/10	0	1	N	7.9	2.7	20	8.8		61		39	20			14	11		8.9	8.5	8.4	7.9	100	100	100	100	100	76	90	R3-025-V-Z1
Creek	04	58038	USEPA GLNPO	R4-135-C	Surface	06/21/10			N	21	18	15	40	72	6.5		93	79			58	39		29	26	25	21	100	100	100	100	100	100	52	R4-135-C-COMP
Creek	04	58038	USEPA GLNPO	R4-135-C	Surface	06/21/10			N	47	29	4.7	10	44	9		91	86			84	76		64	57	55	47	100	100	100	100	100	98	24	R4-135-C-Z1A
Creek	04	57787	USEPA GLNPO	R4-028-C	Surface	11/17/09	0	1.55	N							61			0.3	10		7.6			10	10							46	R4-028-C
Creek	04	57468	USEPA GLNPO	R4-136-C	Surface	06/21/10			N	46	8.8	13	17	38	16		84	71			60	54		51	49	49	46	100	100	100	100	100	96	31	R4-136-C-Z1A
Creek	04	56862	USEPA GLNPO	R4-029-C	Surface	11/16/09	0	1.2	N							62			0.6	8.7		5.7			10	13								R4-029-C
Creek	04	56559	USEPA GLNPO	R4-137-C	Surface	06/21/10	0	0.7	N	44	20	8.3	17	45	11		89	81			74	64		56	52	50	44	100	100	100	100	100	96	40	R4-137-C-Comp
Creek	04	56006	USEPA GLNPO	R4-030-C	Surface	11/16/09	0	1.1	N							48		0.002	2.7	27		7.7			7	6.9							53	R4-030-C
Creek	04	55979	USEPA GLNPO	R4-138-C	Surface	06/21/10	0	0.4	N	13	21	18	36	75	13		87	70			50	34		23	19	17	13	100	100	100	100	100	98	26	R4-138-C-Comp
Creek	04	55678	USEPA GLNPO	R4-031-C	Surface	11/16/09	0	0.8	N							58		0.001	1	9.2		7.1			11	13							36	R4-031-C
Creek	04	55647	USEPA GLNPO	R4-139-C	Surface	06/22/10	0	0.3	N	64	23	2.9	6.8	32	3.4		97	94			93	87		81	76	74	64	100	100	100	100	100	100	30	R4-139-C-Z1A
Creek	04	55325	USEPA GLNPO	R4-140-C	Surface	06/23/10			N	13	7.1	29	36	72	16		84	56			30	20		16	15	15	13	100	100	100	100	100	98	68	R4-140-C-Z1A
Creek	04	55037	USEPA GLNPO	R4-032-C	Surface	11/16/09	0	0.7	N							53			0.1	11		10			13	13								R4-032-C
Creek	04	54677	USEPA GLNPO	R4-141-C	Surface	06/23/10			N	33	18	12	21	51	16		84	73			64	51		43	39	38	33	100	100	100	100	100	93	43	R4-141-C-COMP
Creek	04	54677	USEPA GLNPO	R4-141-C	Surface	06/23/10			FD	38	17	13	26	56	6.2		94	81			70	55		47	44	43	38	100	100	100	100	100	97	47	R4-141-CR
Creek	04	54677	USEPA GLNPO	R4-141-C	Surface	06/23/10			N	43	16	11	21	48	8.8		91	80			70	58		51	48	47	43	100	100	100	100	100	100	46	R4-141-C-Z1A
Creek	04	54208	USEPA GLNPO	R4-033-C	Surface	11/17/09	0	0.4	N							66		0.002	3.8	18		3.8			3.8	4.4								R4-033-C
Creek	04	53793	USEPA GLNPO	R4-142-C	Surface	06/23/10			N	20	18	14	15	47	33		67	53			45	38		32	29	27	20	100	100	100	100	100	82	60	R4-142-C-Z1A
Creek	04	53633	USEPA GLNPO	R4-034-C	Surface	11/17/09	0	0.4	N							51		1.2	4.2	25		6.3			5.8	6.3							58	R4-034-C
Creek	04	53123	USEPA GLNPO	R4-143-C	Surface	06/23/10			N	34	34	9.7	7.3	51	15		85	75			73	68		55	46	43	34	100	100	100	100	100	92	26	R4-143-C-Z1A
Creek	04	52919	USEPA GLNPO	R4-035-C	Surface	11/17/09	0	0.8	N							52			0.4	13		11			13	10								R4-035-C
Creek	04	52719	USEPA GLNPO	R4-036-C	Surface	11/17/09	0	0.9	N							51			0.5	14		10			13	11								R4-036-C
Creek	04	52514	USEPA GLNPO	R4-037-C	Surface	11/17/09	0	0.6	N							45		0.03	1.3	19		13			12	9.4								R4-037-C
Creek	04	52226	USEPA GLNPO	R4-038-C	Surface	11/18/09	0	0.4	N							55		0.001	1.2	18		7.4			8.5	9.7								R4-038-C
Creek	05	51954	USEPA GLNPO	R5-039-V	Surface	05/21/10	0	1	N	18	5	24	39		14		86	62			36	23		20	20	19	18	100	100	100	100	100	97	45	R5-039-V-Z1
Creek	05	51887	USEPA GLNPO	R5-041-V	Surface	05/24/10	0	1	N	99	0.7		0.3		0.3		100	100			100	99		99	99	99	99	100	100	100	100	100	100	32	R5-041-V-Z1
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	1	2	N	99	0.9		0.2				100	100			100	100		100	100	99	99	100	100	100	100	100	100	40	R5-041-V-Z2
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	2	3	N	100	0.3		0.1				100	100			100	100		100	100	100	100	100	100	100	100	100	100	43	R5-041-V-Z3

Table D-5
Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	FINES	FINE SAND	COARSE SAND	MEDIUM SAND	SAND	GRAVEL	SIEVE BOTTOM PLATE	SIEVE NO. 4	SIEVE NO. 10	SIEVE NO. 16	SIEVE NO. 35	SIEVE, NO. 20	SIEVE NO. 40	SIEVE NO. 50	SIEVE, NO. 60	SIEVE NO. 80	SIEVE, NO. 100	SIEVE NO. 200	SIEVE, 19000 MICRONS	SIEVE, 25000 MICRONS	SIEVE, 37500 MICRONS	SIEVE, 50000 MICRONS	SIEVE, 75000 MICRONS	SIEVE, 9500 MICRONS	SOLIDS, PERCENT	Sample ID
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	3	4	N	97	1.7		1.2				100	100			99	99		98	98	98	97	100	100	100	100	100	100	43	R5-041-V-Z4
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	4	5	N	96	2.6	0.9	0.8				100	99			99	98		98	97	97	96	100	100	100	100	100	100	48	R5-041-V-Z5A
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	5	6	N	97	2.7		0.5				100	100			100	99		99	99	99	97	100	100	100	100	100	100	54	R5-041-V-Z5B
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	6	7	N	98	1.3		0.3				100	100			100	100		99	99	99	98	100	100	100	100	100	100	61	R5-041-V-Z6A
Creek	05	51887	USEPA GLNPO	R5-041-V	Subsurface	05/24/10	7	7.5	N	75	10	2.1	9.3		3.3		97	95			89	85		81	79	78	75	100	100	100	100	100	100	86	R5-041-V-Z6B
Creek	05	51876	USEPA GLNPO	R5-040-V	Surface	05/20/10	0	1	N	90	7.4	2.1	0.4				100	98			98	97		97	96	95	90	100	100	100	100	100	100	39	R5-040-V-Z1
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	1	2	N	95	4.8		0.2				100	100			100	100		99	99	99	95	100	100	100	100	100	100	50	R5-040-V-Z2
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	2	3	N	97	3.1		0.2				100	100			100	100		100	99	99	97	100	100	100	100	100	100	51	R5-040-V-Z3
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	3	4	N	91	6.9		2.2				100	100			99	98		97	97	96	91	100	100	100	100	100	100	50	R5-040-V-Z4
Creek	05	51876	USEPA GLNPO	R5-040-V	Subsurface	05/20/10	4.5	5	N	59	8.6	3.5	16		12		88	84			73	68		65	63	63	59	100	100	100	100	100	92	80	R5-040-V-Z5A
Creek	05	51152	USEPA GLNPO	R5-042-V	Surface	05/20/10	0	1	N	95	4.4		0.8				100	100			99	99		99	99	98	95	100	100	100	100	100	100	40	R5-042-V-Z1
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	1	2	N	97	2.9		0.3				100	100			100	100		99	99	99	97	100	100	100	100	100	100	50	R5-042-V-Z2
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	2	3	N	67	6.4	3.2	20		2.6		97	94			80	74		71	70	70	67	100	100	100	100	100	98	38	R5-042-V-Z3
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	3	4	N	89	3.6	2.9	3.3		0.6		99	96			95	93		92	92	91	89	100	100	100	100	100	100	42	R5-042-V-Z4
Creek	05	51152	USEPA GLNPO	R5-042-V	Subsurface	05/20/10	4.5	5	N	98	1.5		0.1				100	100			100	100		100	100	99	98	100	100	100	100	100	100	60	R5-042-V-Z5A
Creek	05	51134	USEPA GLNPO	R5-043-V	Surface	05/20/10	0	1	N	35	20	6.2	5.9		33		67	61			58	55		47	41	39	35	71	100	100	100	100	71	33	R5-043-V-Z1
Creek	05	51134	USEPA GLNPO	R5-043-V	Surface	05/20/10	0	1	N	87	9.9	0.6	2		0.6		99	99			98	97		94	92	91	87	100	100	100	100	100	100	27	R5-043-V-Z1P
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	1	2	N	63	12	5.9	9.1		10		90	84			79	75		70	67	66	63	100	100	100	100	100	96	45	R5-043-V-Z2
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	2	3	N	67	9.3	7.5	5.6		11		89	82			78	76		74	72	71	67	100	100	100	100	100	98	48	R5-043-V-Z3
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	3	4	N	88	7	1.3	2.9		0.4		100	98			97	95		93	92	91	88	100	100	100	100	100	100	48	R5-043-V-Z4
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	4	4.5	N	84	13	1.2	1.4		0.9		99	98			97	96		95	92	91	84	100	100	100	100	100	100	53	R5-043-V-Z5A
Creek	05	51134	USEPA GLNPO	R5-043-V	Subsurface	05/20/10	4.5	5	N	31	9.3	11	25		24		76	65			47	40		36	35	34	31	100	100	100	100	100	91	84	R5-043-V-Z5B
Creek	05	51122	USEPA GLNPO	R5-044-V	Surface	05/20/10	0	1	N																									21	R5-044-V-Z1
Creek	05	51122	USEPA GLNPO	R5-044-V	Subsurface	05/20/10	1	2	FD	94	5		1.2				100	100			99	99		98	97	97	94	100	100	100	100	100	100	33	R5-044-VR
Creek	05	51122	USEPA GLNPO	R5-044-V	Subsurface	05/20/10	1	2	N	94	5		1.2				100	100			100	99		98	97	97	94	100	100	100	100	100	100	34	R5-044-V-Z2
Creek	05	51122	USEPA GLNPO	R5-044-V	Subsurface	05/20/10	2	3	N	86	13	0.1	0.8		0.2		100	100			99	99		97	95	93	86	100	100	100	100	100	100	80	R5-044-V-Z3
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	1	2	N	76	10	1.7	3.3		8.8		91	89			88	86		84	82	81	76	100	100	100	100	100	100	33	R5-045-V-Z2
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	2	3	N	52	12	6	6.9		24		76	70			67	63		59	56	55	52	97	100	100	100	100	88	42	R5-045-V-Z3
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	3	4	FD																									58	R5-045-VR
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	3	4	N	75	20	1	3.8		0.7		99	98			98	94		88	85	83	75	100	100	100	100	100	100	52	R5-045-V-Z4
Creek	05	50710	USEPA GLNPO	R5-045-V	Subsurface	05/20/10	4.5	5	N	83	12	0.4	4		0.4		100	99			97	95		93	91	90	83	100	100	100	100	100	100	58	R5-045-V-Z5A
Creek	05	50099	USEPA GLNPO	R5-046-V	Surface	05/20/10	0	1	N	88	6.4	0.5	2.6		3.1		97	96			96	94		93	92	91	88	100	100	100	100	100	98	33	R5-046-V-Z1
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	1	2	N	94	3.9	0.2	0.4		1		99	99			99	98		98	98	97	94	100	100	100	100	100	100	45	R5-046-V-Z2
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	2	3	N	95	4.8		0.2				100	100			100	100		99	98	98	95	100	100	100	100	100	100	48	R5-046-V-Z3
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	3	4	N	93	6.5		1				100	100			100	99		98	97	97	93	100	100	100	100	100	100	49	R5-046-V-Z4
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	4	5	N	91	7.8		0.9				100	100			100	99		98	97	96	91	100	100	100	100	100	100	48	R5-046-V-Z5A
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	5	6	N	74	16	1.9	6.3		1.9		98	96			93	90		87	82	81	74	100	100	100	100	100	98	51	R5-046-V-Z5B
Creek	05	50099	USEPA GLNPO	R5-046-V	Subsurface	05/20/10	6	7	N	58	10	1.5	19		11		89	88			77	69		66	64	63	58	100	100	100	100	100	92	63	R5-046-V-Z6A
Creek	05	49723	USEPA GLNPO	R5-047-V	Surface	05/20/10	0	1	N	96	3.6	0.1	0.3		0.2		100	100			100	99		99	98	98	96	100	100	100	100	100	100	31	R5-047-V-Z1
Creek	05	49723	USEPA GLNPO	R5-047-V	Subsurface	05/20/10	1	2	N	94	4.8	0.4	0.6		0.3		100	99			99	99		98	98	97	94	100	100	100	100	100	100	33	R5-047-V-Z2
Creek	05	49723	USEPA GLNPO	R5-047-V	Subsurface	05/20/10	2	3	N	96	3.5		1				100	100			99	99		98	98	97	96	100	100	100	100	100	100	46	R5-047-V-Z3
Creek	05	49723	USEPA GLNPO	R5-047-V	Subsurface	05/20/10	3	4	N	96	3.2		0.9				100	100			99	99		99	98	98	96	100	100	100	100	100	100	46	R5-047-V-Z4
Creek	05	49556	USEPA GLNPO	R5-048-V	Surface	05/21/10	0	1	N	83	9.8	1.8	4.8		0.9		99	97			95	93		88	86	85	83	100	100	100	100	100	100	30	R5-048-V-Z1
Creek	05	49556	USEPA GLNPO	R5-048-V	Subsurface	05/21/10	1	2	N	96	3.1	0.1	0.5				100	100			100	99		99	99	98	96	100	100	100	100	100	100	67	R5-048-V-Z2
Creek	05	49556	USEPA GLNPO	R5-048-V	Subsurface	05/21/10	2	3	N	76	6.6	3.1	7		7.7		92	89			86	82		80	78	78	76	100	100	100	100	100	100	84	R5-048-V-Z3
Creek	05	49472	USEPA GLNPO	R5-049-V	Surface	05/21/10	0	1	N	81	15	1.1	2.8				100	99			97	96		94	92	91	81	100	100	100	100	100	100	32	R5-049-V-Z1
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	1	2	N	86	12	0.2	1.6				100	100			99	98		97	96	95	86	100	100	100	100	100	100	43	R5-049-V-Z2
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	2	3	N	89	5.8	0.7	1.4		2.5		98	97			96	95		94	93	93	89	100	100	100	100	100	100	35	R5-049-V-Z3
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	3	4	N	81	16	0.7	2.4		0.8		99	98			98	96		93	90	89	81	100	100	100	100	100	100	52	R5-049-V-Z4
Creek	05	49472	USEPA GLNPO	R5-049-V	Subsurface	05/21/10	4	4.5	N	89	8.8	1.2	1.1				100	99			99	98		96	95	94	89	100	100	100	100	100	100	45	R5-049-V-Z5A
Creek	05	48925	USEPA GLNPO	R5-050-V	Surface	05/21/10	0	1	N	52	18	2.5	28				100	98			70	69		67	64	62	52	100	100	100	100	100	100	29	R5-050-V-Z1
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	1	2	FD	85	7.7	6.2	0.9				100	94			94	93		92	91	90	85	100	100	100	100	100	100	39	R5-050-VR
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	1	2	N	89	8.9	1.8	0.7				100	98			98	98		96	95	94	89	100	100	100	100	100	100	38	R5-050-V-Z2
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	2	3	N	91	5.7	0.9	2				100	99			98	97		96	95	95	91	100	100	100	100	100	100	33	R5-050-V-Z3
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	3	4	N	91	5.3	0.2	3.1				100	100			98	97		96	95	94	91	100	100	100	100	100	100	36	R5-050-V-Z4
Creek	05	48925	USEPA GLNPO	R5-050-V	Subsurface	05/21/10	4	4.5	N	41	12	1.6	4.9		40		60	58			58	53		50	48	46	41	72	100	100	100	100	62	56	R5-050-V-Z5A
Creek	05	48794	USEPA GLNPO	R6-144-C	Surface	07/02/10			N	94	4.5	0.4	0.6	5.5			100	100			99	99		98	98	98	94	100	100	100	100	100	100	38	R6-144-C-COMP
Creek	05	48794	USEPA GLNPO	R6-144-C	Surface	07/02/10			N	95	4.2		0.5	4.7			100	100			100	99		99	98	98	95	100	100	100	100	100	100	28	R6-144-C-Z1A
Creek	06	48613	USEPA GLNPO	R6-051-C	Surface	11/19/09	0	1.2	N							58			0.8	11			8.1			11	11							33	R6-051-C
Creek	06	48613	USEPA GLNPO	R6-051-C	Surface	11/19/09	0	1.2	FD							56		0.02	1.8	12			8.1			11	11							32	R6-051-CR
Creek	06	48468	USEPA GLNPO	R6-145-C	Surface	07/02/10			N	59	28	0.9	9.9	39	2.1		98	97			94	87		75	70	68	59	100	100	100	100	100	100	48	R6-145-C-COMP
Creek	06	48468	USEPA GLNPO	R6-145-C	Surface	07/02/10			N	77	19	0.6	3.7	23			100	99			99	96		89	85	83	77	100	100	100	100	100	100	36	R6-145-C-Z1A
Creek	06	48245	USEPA GLNPO	R6-146-C	Surface	07/02/10			N	70	12	4.2	7.6	24	6.2		94	90			87	82		78	75	75	70	100	100	100	100	100	100	46	R6-146-C-COMP
Creek	06	48245	USEPA GLNPO	R6-146-C	Surface	07/02/10			N	85	12	0.7	2.1	15			100	99			99	97		93	90	89	85	100	100	100	100	100	100	42	R6-146-C-Z1A
Creek	06	48241	USEPA GLNPO	R6-052-C	Surface	11/19/09	0	1.3	N							68			0.1	4.8			5.5			9.9	12							33	R6-052-C
Creek	06	47676	USEPA GLNPO	R6-147-C	Surface	07/01/10			N	77	16	1	4	21	1.9		98	97			96	93		90	87	85	77	100	100	100	100	100	100	43	R6-147-C-COMP
Creek	06	47676	USEPA GLNPO	R6-147-C	Surface	07/01/10			N	87	10	0.7	2	13			100	99			99	97		95	94	93	87	100	100	100	100	100	100	41	R6-147-C-Z1A

Table D-5
Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	FINES	FINE SAND	COARSE SAND	MEDIUM SAND	SAND	GRAVEL	SIEVE BOTTOM PLATE	SIEVE NO. 4	SIEVE NO. 10	SIEVE NO. 16	SIEVE NO. 35	SIEVE, NO. 20	SIEVE NO. 40	SIEVE NO. 50	SIEVE, NO. 60	SIEVE NO. 80	SIEVE, NO. 100	SIEVE NO. 200	SIEVE, 19000 MICRONS	SIEVE, 25000 MICRONS	SIEVE, 37500 MICRONS	SIEVE, 50000 MICRONS	SIEVE, 75000 MICRONS	SIEVE, 9500 MICRONS	SOLIDS, PERCENT	Sample ID
Creek	06	47630	USEPA GLNPO	R6-053-C	Surface	11/19/09	0	1.2	N							65		0.001	0.4	7.3			5.5			9.4	13								21	R6-053-C
Creek	06	47394	USEPA GLNPO	R6-148-C	Surface	07/01/10			N	56	26	4.2	6.4	37	7.2		93	89			85	82		80	78	76	56	100	100	100	100	100	95	49	R6-148-C-COMP
Creek	06	47394	USEPA GLNPO	R6-148-C	Surface	07/01/10			FD	72	19	2.4	4.7	26	2.3		98	95			92	91		89	87	85	72	100	100	100	100	100	100	47	R6-148-CR
Creek	06	46875	USEPA GLNPO	R6-149-C	Surface	07/01/10			N	24	21	7.9	34	63	13		87	79			62	45		36	31	29	24	100	100	100	100	100	96	56	R6-149-C-COMP
Creek	06	46600	USEPA GLNPO	R6-054-C	Surface	12/02/09	0	0.5	N							57			0.3	10			7.4			12	13								R6-054-C
Creek	06	46461	USEPA GLNPO	R6-150-C	Surface	07/01/10			N	67	24	1	7.2	32	1.4		99	98			94	90		83	78	76	67	100	100	100	100	100	100	43	R6-150-C-COMP
Creek	06	46094	USEPA GLNPO	R6-151-C	Surface	07/02/10			N	94	4.6	1.1	0.3	6			100	99			99	99		98	98	98	94	100	100	100	100	100	100	34	R6-151-C-COMP
Creek	06	45738	USEPA GLNPO	R6-152-C	Surface	07/02/10			N	79	15	0.9	1.4	17	4		96	95			95	94		92	90	89	79	100	100	100	100	100	100	37	R6-152-C-COMP
Creek	06	45738	USEPA GLNPO	R6-152-C	Surface	07/02/10			FD	82	13	0.9	1.1	15	2.5		98	97			96	96		94	93	92	82	100	100	100	100	100	100	43	R6-152-CR
Creek	06	45097	USEPA GLNPO	R6-153-C	Surface	07/02/10			N	86	9.9	2	2.1	14			100	98			98	96		93	92	91	86	100	100	100	100	100	100	41	R6-153-C-COMP
Creek	06	44611	USEPA GLNPO	R6-055-C	Surface	11/17/09	0	1.1	N							62			0.3	9.9			6.5			9.3	12							35	R6-055-C
Creek	06	44475	USEPA GLNPO	R6-154-C	Surface	07/01/10			N	62	15	5.3	7.1	27	11		89	84			80	77		73	70	69	62	100	100	100	100	100	100	36	R6-154-C-COMP
Creek	06	44475	USEPA GLNPO	R6-154-C	Surface	07/01/10			N	75	18	1	4.6	24	1		99	98			96	93		90	87	86	75	100	100	100	100	100	100	34	R6-154-C-Z1A
Creek	06	43904	USEPA GLNPO	R6-056-C	Surface	11/17/09	0	1.2	N							57		0.001	1.2	15			8.7			9.2	9.2								R6-056-C
Creek	06	43904	USEPA GLNPO	R6-056-C	Surface	11/17/09	0	1.2	FD							53			0.8	20			9.1			9	8.8								R6-056-CR
Creek	06	43766	USEPA GLNPO	R6-155-C	Surface	07/01/10			N	89	9.4	0.3	1.4	11			100	100			99	98		97	95	94	89	100	100	100	100	100	100	32	R6-155-C-COMP
Creek	06	43252	USEPA GLNPO	R6-057-C	Surface	11/17/09	0	1.4	N							81			0.02	0.4			0.6			6.4	12								R6-057-C
Creek	06	42790	USEPA GLNPO	R6-156-C	Surface	07/01/10			N	45	47	1.6	4.6	53	1.8		98	97			95	92		81	68	63	45	100	100	100	100	100	100	42	R6-156-C-COMP
Creek	06	42279	USEPA GLNPO	R6-157-C	Surface	07/01/10			N	79	18	0.5	2.1	21			100	99			99	97		94	91	89	79	100	100	100	100	100	100	48	R6-157-C-COMP
Creek	06	42279	USEPA GLNPO	R6-157-C	Surface	07/01/10			N	61	37	0.8	1.5	39			100	99			99	98		92	83	78	61	100	100	100	100	100	100	46	R6-157-C-Z1A
Creek	06	41988	USEPA GLNPO	R6-158-C	Surface	07/01/10			N	74	24	0.5	1.3	26			100	99			99	98		93	87	85	74	100	100	100	100	100	100	46	R6-158-C-COMP
Creek	06	41988	USEPA GLNPO	R6-158-C	Surface	07/01/10			FD	49	48	0.3	2.1	50	0.2		100	99			99	97		84	71	66	49	100	100	100	100	100	100	57	R6-158-CR
Creek	06	41988	USEPA GLNPO	R6-158-C	Surface	07/01/10			N	48	50	0.3	1.6	52	0.8		99	99			99	97		85	72	67	48	100	100	100	100	100	100	67	R6-158-C-Z1A
Creek	06	41258	USEPA GLNPO	R6-159-C	Surface	07/01/10			N	74	25	0.2	1.2	26	0.2		100	100			99	98		96	91	88	74	100	100	100	100	100	100	42	R6-159-C-COMP
Creek	06	41258	USEPA GLNPO	R6-159-C	Surface	07/01/10			N	82	17	0.1	0.8	18	0.4		100	99			99	99		97	95	93	82	100	100	100	100	100	100	42	R6-159-C-Z1A
Creek	06	40369	USEPA GLNPO	R6-160-C	Surface	07/01/10			N	93	6		1.2	7.2			100	100			100	99		98	97	96	93	100	100	100	100	100	100	38	R6-160-C-COMP
Creek	06	40369	USEPA GLNPO	R6-160-C	Surface	07/01/10			N	93	6.1	0.3	0.7	7.1	0.3		100	99			99	99		98	97	96	93	100	100	100	100	100	100	32	R6-160-C-Z1A
Creek	06	40268	USEPA GLNPO	R6-058-C	Surface	11/18/09	0	2.2	N							71			0.2	5.4			4.1			7.9	11							34	R6-058-C
Creek	06	40082	USEPA GLNPO	R6-161-C	Surface	07/01/10			N	58	24	6.8	6.9	38	4.9		95	88			86	81		71	65	63	58	100	100	100	100	100	99	30	R6-161-C-Z1
Creek	06	40082	USEPA GLNPO	R6-161-C	Surface	07/01/10			N	65	29	0.8	3.7	34	1.1		99	98			97	94		82	75	73	65	100	100	100	100	100	99	39	R6-161-C-Z1A
Creek	06	39209	USEPA GLNPO	R6-162-C	Surface	06/30/10			N	80	17	0.5	1.2	19	1.5		98	98			98	97		96	94	93	80	100	100	100	100	100	99	46	R6-162-C-COMP
Creek	06	38848	USEPA GLNPO	R6-059-C	Surface	11/18/09	0	1.3	N							71			0.03	2.8			5			8.6	13								R6-059-C
Creek	06	38173	USEPA GLNPO	R6-163-C	Surface	06/30/10			N	77	22	0.4	1	23	0.2		100	99			99	98		96	93	92	77	100	100	100	100	100	100	60	R6-163-C-Z1
Creek	06	38173	USEPA GLNPO	R6-163-C	Surface	06/30/10			N	71	27		2.2	29			100	100			99	98		93	91	90	71	100	100	100	100	100	100	66	R6-163-C-Z1A
Creek	06	37526	USEPA GLNPO	R6-060-C	Surface	11/18/09	0	0.8	N							77				0.6			0.9			7.8	13								R6-060-C
Creek	06	36804	USEPA GLNPO	R6-164-C	Surface	06/30/10			N	87	11	0.5	0.6	13	0.3		100	99			99	99		98	97	96	87	100	100	100	100	100	100	57	R6-164-C-COMP
Creek	06	36804	USEPA GLNPO	R6-164-C	Surface	06/30/10			N	78	22	0.1	0.5	23			100	100			100	99		99	98	97	78	100	100	100	100	100	100	46	R6-164-C-Z1A
Creek	06	36085	USEPA GLNPO	R6-165-C	Surface	06/30/10			N	85	9.4	1.9	1.6	13	2.4		98	96			95	94		92	91	90	85	100	100	100	100	100	100	37	R6-165-C-COMP
Creek	06	36085	USEPA GLNPO	R6-165-C	Surface	06/30/10			N	91	7.8	0.6	0.3	8.7	0.8		99	99			99	98		98	97	96	91	100	100	100	100	100	100	18	R6-165-C-Z1A
Creek	06	35766	USEPA GLNPO	R6-061-C	Surface	11/18/09	0	4	N							73			0.2	3.6			2.6			7.9	12							33	R6-061-C
Creek	06	35433	USEPA GLNPO	R6-166-C	Surface	06/30/10			N	85	11	0.8	1.8	14	0.8		99	98			98	97		95	93	92	85	100	100	100	100	100	100	41	R6-166-C-COMP
Creek	06	35433	USEPA GLNPO	R6-166-C	Surface	06/30/10			N	83	11	0.4	0.7	12	4.3		96	95			95	95		93	92	91	83	97	100	100	100	100	97	32	R6-166-C-Z1A
Creek	06	35023	USEPA GLNPO	R6-167-C	Surface	06/30/10			N	86	11	0.7	1.6	13	0.9		99	98			98	97		94	92	91	86	100	100	100	100	100	100	34	R6-167-C-COMP
Creek	06	35023	USEPA GLNPO	R6-167-C	Surface	06/30/10			N	96	4.1		0.4	4.5			100	100			100	100		99	98	98	96	100	100	100	100	100	100	27	R6-167-C-Z1A
Creek	06	34754	USEPA GLNPO	R6-062-C	Surface	11/19/09	0	3.7	N							68			0.3	7.1			4.4			8.4	12								R6-062-C
Creek	06	34255	USEPA GLNPO	R6-168-C	Surface	06/30/10			N	70	27	0.3	0.8	29	1.8		98	98			98	97		96	95	94	70	100	100	100	100	100	98	50	R6-168-C-COMP
Creek	06	34255	USEPA GLNPO	R6-168-C	Surface	06/30/10			N	89	10	0.3	0.8	11	0.3		100	99			99	99		98	97	97	89	100	100	100	100	100	100	32	R6-168-C-Z1A
Creek	06	33962	USEPA GLNPO	R6-063-C	Surface	11/19/09	0	1.1	N							64			0.4	9.3			6.7			9	11								R6-063-C
Creek	06	33691	USEPA GLNPO	R6-169-C	Surface	06/28/10			N	77	16	0.7	6.4	23	0.3		100	99			97	93		88	85	83	77	100	100	100	100	100	100	42	R6-169-C-COMP
Creek	06	33691	USEPA GLNPO	R6-169-C	Surface	06/28/10			N	70	15	1.7	13	30	0.6		99	98			92	85		81	78	77	70	100	100	100	100	100	100	30	R6-169-C-Z1A
Creek	06	33292	USEPA GLNPO	R6-064-C	Surface	11/19/09	0	1.4	N							59			0.9	13			7.7			9.4	11								R6-064-C
Creek	06	32904	USEPA GLNPO	R6-065-C	Surface	11/19/09	0	2.4	N							48		0.3	1.2	19			9.5			11	11								R6-065-C
Creek	06	32562	USEPA GLNPO	R6-066-C	Surface	11/25/09	0	1.9	N							70			0.1	4.9			4.2			8.6	12								R6-066-C
Creek	06	32046	USEPA GLNPO	R6-067-C	Surface	11/25/09	0	2.1	N							67			0.5	7.8			4.5			8.8	11								R6-067-C
Creek	06	31840	USEPA GLNPO	R6-170-C	Surface	06/25/10			N	80	13	0.6	5.8	19	1.1		99	98			96	93		89	87	86	80	100	100	100	100	100	100	36	R6-170-C-COMP
Creek	06	31840	USEPA GLNPO	R6-170-C	Surface	06/25/10			N	78	15	1	5.1	21	1.4		99	98			96	93		89	87	86	78	100	100	100	100	100	100	39	R6-170-C-Z1A
Creek	06	31325	USEPA GLNPO	R6-171-C	Surface	06/25/10			N	81	14	0.6	3.7	19	0.2		100	99			97	96		93	91	89	81	100	100	100	100	100	100	44	R6-171-C-COMP
Creek	06	31325	USEPA GLNPO	R6-171-C	Surface	06/25/10			N	70	19	1	10	30	0.6		99	98			92	88		85	82	80	70	100	100	100	100	100	100	36	R6-171-C-Z1A
Creek	07	30918	USEPA GLNPO	R7-068-C	Surface	11/25/09	0	2.1	N							73			0.02	2.4			2.7			9.7	12							30	R7-068-C
Creek	07	30918	USEPA GLNPO	R7-068-C	Surface	11/25/09	0	2.1	FD							66			0.1	5.3			5.9			10	13							35	R7-068-CR
Creek	07	30500	USEPA GLNPO	R7-172-C	Surface	06/25/10			N	35	47	5.2	9.8	62	2.8		97	92			89	82		60	49	45	35	100	100	100	100	100	100	43	R7-172-C-COMP
Creek	07	30500	USEPA GLNPO	R7-172-C	Surface	06/25/10			N	30	53	5.2	9	67	2.6		97	92			89	83		62	47	41	30	100	100	100	100	100	100	48	R7-172-C-Z1A
Creek	07	29933	USEPA GLNPO	R7-069-C	Surface	11/25/09	0	2.4	N							77				2			1.9			7.7	12								R7-069-C
Creek	07	29724	USEPA GLNPO	R7-070-C	Surface	11/25/09	0	2.4	N							70				3.7			4.1			9.6	13								R7-070-C
Creek	07	29233	USEPA GLNPO	R7-071-C	Surface	11/25/09	0	1.5	N							64			0.1	6.5			5.7			10	13								R7-071-C
Creek	07	28712	USEPA GLNPO	R7-072-C	Surface	11/24/09	0	0.8	N							67				0.8			3.7			13	15								R7-072-C
Creek	07	28328	USEPA GLNPO	R7-173-C	Surface	06/25/10			N	77	18	1.5	3.1	23			100	98			98	95		92	89	87	77	100	100	100	100	100	100	36	R7-173-C-COMP

Table D-5
Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	FINES	FINE SAND	COARSE SAND	MEDIUM SAND	SAND	GRAVEL	SIEVE BOTTOM PLATE	SIEVE NO. 4	SIEVE NO. 10	SIEVE NO. 16	SIEVE NO. 35	SIEVE, NO. 20	SIEVE NO. 40	SIEVE NO. 50	SIEVE, NO. 60	SIEVE NO. 80	SIEVE, NO. 100	SIEVE NO. 200	SIEVE, 19000 MICRONS	SIEVE, 25000 MICRONS	SIEVE, 37500 MICRONS	SIEVE, 50000 MICRONS	SIEVE, 75000 MICRONS	SIEVE, 9500 MICRONS	SOLIDS, PERCENT	Sample ID
Creek	07	28328	USEPA GLNPO	R7-173-C	Surface	06/25/10			N	78	19	0.5	2.9	23			100	99			99	97		93	89	88	78	100	100	100	100	100	100	35	R7-173-C-Z1A
Creek	07	28037	USEPA GLNPO	R7-174-C	Surface	06/25/10			N	72	17	2.5	6	26	2.5		98	95			92	89		86	83	81	72	100	100	100	100	100	100	37	R7-174-C-COMP
Creek	07	28037	USEPA GLNPO	R7-174-C	Surface	06/25/10			N	79	14	2.3	2.3	19	2.2		98	96			95	93		91	89	88	79	100	100	100	100	100	100	27	R7-174-C-Z1A
Creek	07	28034	USEPA GLNPO	R7-073-C	Surface	11/24/09	0	2.4	N							67				2.2			3.3			11	16							34	R7-073-C
Creek	07	27600	USEPA GLNPO	R7-175-C	Surface	06/24/10			N	84	12	0.6	0.8	14	2		98	97			97	97		95	94	93	84	100	100	100	100	100	100	40	R7-175-C-Z1
Creek	07	27600	USEPA GLNPO	R7-175-C	Surface	06/24/10			N	80	15	0.7	2.3	18	2.2		98	97			96	95		93	91	90	80	100	100	100	100	100	99	33	R7-175-C-Z1A
Creek	07	27127	USEPA GLNPO	R7-074-C	Surface	11/24/09	0	2.3	N							63			0.01	2.2			4.5			13	18								R7-074-C
Creek	07	26960	USEPA GLNPO	R7-075-C	Surface	11/24/09	0	2.1	N							73			0.04	3.8			3.5			8.1	11							29	R7-075-C
Creek	07	26511	USEPA GLNPO	R7-076-C	Surface	11/24/09	0	2	N							62			0.2	3.1			4.9			13	17								R7-076-C
Creek	07	26286	USEPA GLNPO	R7-176-C	Surface	06/24/10			N	31	39	9.4	12	60	8.5		92	82			80	70		58	50	46	31	100	100	100	100	100	96	37	R7-176-C-COMP
Creek	07	26286	USEPA GLNPO	R7-176-C	Surface	06/24/10			N	45	45	4.6	4.5	55	0.6		99	95			94	90		82	73	68	45	100	100	100	100	100	100	26	R7-176-C-Z1A
Creek	07	25843	USEPA GLNPO	R7-077-C	Surface	11/24/09	0	1.2	N							69			0.2	3.2			3.7			9.7	14								R7-077-C
Creek	07	25419	USEPA GLNPO	R7-177-C	Surface	06/24/10			FD	73	20	1.7	2.4	24	3.3		97	95			94	93		90	87	84	73	100	100	100	100	100	100	37	R7-177-CR
Creek	07	25419	USEPA GLNPO	R7-177-C	Surface	06/24/10			N	72	23	0.8	4.7	28	0.1		100	99			97	94		91	87	85	72	100	100	100	100	100	100	36	R7-177-C-Z1
Creek	07	25419	USEPA GLNPO	R7-177-C	Surface	06/24/10			N	75	17	0.9	5.3	23	1.8		98	97			95	92		89	87	85	75	100	100	100	100	100	100	30	R7-177-C-Z1A
Creek	07	25068	USEPA GLNPO	R7-078-C	Surface	12/02/09	0	4	N							62			0.1	7			7			11	13								R7-078-C
Creek	07	24710	USEPA GLNPO	R7-079-C	Surface	12/02/09	0	2.4	N							60			0.1	8.3			7.1			11	13								R7-079-C
Creek	07	24295	USEPA GLNPO	R7-178-C	Surface	06/24/10			N	34	33	2.5	20	55	11		89	87			76	68		58	50	46	34	100	100	100	100	100	98	32	R7-178-C-Z1
Creek	07	24295	USEPA GLNPO	R7-178-C	Surface	06/24/10			N	52	24	6.5	6.3	37	11		89	83			81	77		71	65	62	52	100	100	100	100	100	97	22	R7-178-C-Z1A
Creek	07	23960	USEPA GLNPO	R7-080-C	Surface	12/02/09	0	1.7	N							64			0.2	5.4			4.9			11	14								R7-080-C
Creek	07	23569	USEPA GLNPO	R7-179-C	Surface	06/23/10			N	81	16	0.7	2.2	18	0.9		99	98			98	96		94	92	91	81	100	100	100	100	100	100	31	R7-179-C-COMP
Creek	07	23569	USEPA GLNPO	R7-179-C	Surface	06/23/10			N	56	37	2.2	4.4	44	0.6		99	97			95	93		89	84	81	56	100	100	100	100	100	100	34	R7-179-C-Z1A
Creek	07	23100	USEPA GLNPO	R7-081-C	Surface	12/02/09	0	1.7	N							43			0.1	16			12			13	16								R7-081-C
Creek	07	22856	USEPA GLNPO	R7-082-C	Surface	11/30/09	0	1.6	N							63			0.01	3.8			6.6			13	14								R7-082-C
Creek	07	22856	USEPA GLNPO	R7-082-C	Surface	11/30/09	0	1.6	FD							62			0.07	3.9			7.2			13	14								R7-082-CR
Creek	07	22470	USEPA GLNPO	R7-180-C	Surface	06/23/10			N	43	44	2.8	8.8	56	1.5		98	96			93	87		78	67	62	43	100	100	100	100	100	99	49	R7-180-C-COMP
Creek	07	22470	USEPA GLNPO	R7-180-C	Surface	06/23/10			N	61	31	2.5	5.2	38	0.8		99	97			95	92		86	78	75	61	100	100	100	100	100	100	31	R7-180-C-Z1A
Creek	07	22057	USEPA GLNPO	R7-083-C	Surface	11/30/09	0	3.3	N							55			0.2	12			8.5			11	13							36	R7-083-C
Creek	07	21809	USEPA GLNPO	R7-084-C	Surface	11/30/09	0	3.3	N							48			0.03	11			10			14	17								R7-084-C
Creek	07	21492	USEPA GLNPO	R7-085-C	Surface	11/30/09	0	1.6	N							46			0.3	13			11			14	16							43	R7-085-C
Creek	07	21130	USEPA GLNPO	R7-181-C	Surface	07/01/10			N	35	54	2.2	8.1	64	0.5		99	97			95	89		74	58	51	35	100	100	100	100	100	100	73	R7-181-C-COMP
Creek	07	21130	USEPA GLNPO	R7-181-C	Surface	07/01/10			N	43	53	0.6	2.8	57	0.3		100	99			98	96		88	75	68	43	100	100	100	100	100	100	63	R7-181-C-Z1A
Creek	07	20624	USEPA GLNPO	R7-086-C	Surface	11/30/09	0	3.2	N							44		0.001	0.6	19			12			12	13								R7-086-C
Creek	07	20394	USEPA GLNPO	R7-182-C	Surface	07/01/10			N	80	15	0.3	2.8	18	2.6		97	97			96	94		92	89	88	80	98	100	100	100	100	98	67	R7-182-C-COMP
Creek	07	19884	USEPA GLNPO	R7-087-C	Surface	11/30/09	0	2.1	N							59			0.04	3.7			7.2			13	17							41	R7-087-C
Creek	07	19601	USEPA GLNPO	R7-183-C	Surface	07/01/10			N	58	33	1.7	5.4	40	1.6		98	97			95	91		84	76	72	58	100	100	100	100	100	100	51	R7-183-C-COMP
Creek	07	19601	USEPA GLNPO	R7-183-C	Surface	07/01/10			N	63	33	0.2	2.5	36	0.6		99	99			99	97		91	82	77	63	100	100	100	100	100	100	28	R7-183-C-Z1A
Creek	07	19406	USEPA GLNPO	R7-184-C	Surface	06/30/10			N	68	25	1.5	5.7	32	0.4		100	98			96	92		89	82	80	68	100	100	100	100	100	100	46	R7-184-C-COMP
Creek	07	19391	USEPA GLNPO	R7-088-C	Surface	11/25/09	0	1	N							62			0.02	4.8			6.8			12	13								R7-088-C
Creek	07	19132	USEPA GLNPO	R7-185-C	Surface	06/30/10			N	70	25	1.2	2.1	29	0.8		99	98			98	96		93	88	86	70	100	100	100	100	100	100	43	R7-185-C-COMP
Creek	07	19132	USEPA GLNPO	R7-185-C	Surface	06/30/10			N	87	11	0.6	0.8	13	0.7		99	99			98	98		97	96	96	87	100	100	100	100	100	100	31	R7-185-C-Z1A
Creek	07	18838	USEPA GLNPO	R7-089-C	Surface	11/25/09	0	2.9	N							34			1.6	25			14			14	12							40	R7-089-C
Creek	07	18836	USEPA GLNPO	R7-186-C	Surface	06/30/10			N	31	47	4.2	13	64	4.4		96	91			87	78		70	59	54	31	100	100	100	100	100	99	46	R7-186-C-COMP
Creek	07	18836	USEPA GLNPO	R7-186-C	Surface	06/30/10			N	39	57	0.2	3.5	61	0.1		100	100			99	96		91	82	76	39	100	100	100	100	100	100	48	R7-186-C-Z1A
Creek	07	18638	USEPA GLNPO	R7-187-C	Surface	06/30/10			N	71	22	1.3	3.9	27	2.1		98	97			96	93		88	83	81	71	100	100	100	100	100	99	36	R7-187-C-COMP
Creek	07	18638	USEPA GLNPO	R7-187-C	Surface	06/30/10			N	96	3.7	0.2	0.3	4.2			100	100			100	99		99	99	99	96	100	100	100	100	100	100	26	R7-187-C-Z1A
Creek	07	18255	USEPA GLNPO	R7-090-C	Surface	11/25/09	0	3.5	N							60			0.2	7			7.4			12	13								R7-090-C
Creek	07	17701	USEPA GLNPO	R7-188-C	Surface	06/30/10			N	41	53	0.6	4.5	58	1.2		99	98			97	94		78	59	53	41	100	100	100	100	100	100	60	R7-188-C-Z1
Creek	07	17701	USEPA GLNPO	R7-188-C	Surface	06/30/10			N	90	10	0.1	0.1	10			100	100			100	100		99	98	98	90	100	100	100	100	100	100	27	R7-188-C-Z1A
Creek	07	17307	USEPA GLNPO	R7-189-C	Surface	06/30/10			N	68	28	0.2	3.5	32	0.3		100	99			98	96		93	89	87	68	100	100	100	100	100	100	46	R7-189-C-COMP
Creek	07	17307	USEPA GLNPO	R7-189-C	Surface	06/30/10			FD	69	28	0.2	2.8	31	0.6		99	99			98	96		94	90	88	69	100	100	100	100	100	100	45	R7-189-CR
Creek	07	17307	USEPA GLNPO	R7-189-C	Surface	06/30/10			N	58	17	0.6	23	41	0.6		99	99			89	76		68	64	63	58	100	100	100	100	100	100	38	R7-189-C-Z1A
Creek	07	16833	USEPA GLNPO	R7-091-C	Surface	11/24/09	0	1.4	N							45				5.2			12			19	19								R7-091-C
Creek	07	16587	USEPA GLNPO	R7-092-C	Surface	11/24/09	0	1	N							53			0.07	9.7			9.4			13	15								R7-092-C
Creek	07	16217	USEPA GLNPO	R7-190-C	Surface	06/30/10			N	47	43	0.9	8.5	52	0.7		99	98			94	90		84	77	72	47	100	100	100	100	100	100	57	R7-190-C-COMP
Creek	07	15878	USEPA GLNPO	R7-093-C	Surface	11/24/09	0	0.9	N							44			0.07	14			13			14	15							37	R7-093-C
Creek	07	15682	USEPA GLNPO	R7-191-C	Surface	06/29/10			N	70	28	0.3	1.8	30	0.4		100	99			99	98		94	92	89	70	100	100	100	100	100	100	40	R7-191-C-COMP
Creek	07	15682	USEPA GLNPO	R7-191-C	Surface	06/29/10			N	77	20	0.4	1.4	22	0.4		100	99			99	98		96	93	92	77	100	100	100	100	100	100	28	R7-191-C-Z1A
Creek	07	15136	USEPA GLNPO	R7-094-C	Surface	11/23/09	0	1	N							62			0.07	5.9			7.2			11	14							25	R7-094-C
Creek	07	14846	USEPA GLNPO	R7-095-C	Surface	11/23/09	0	1.3	N							62			0.07	2.2			4			14	18							34	R7-095-C
Creek	07	14846	USEPA GLNPO	R7-095-C	Surface	11/23/09	0	1.3	FD							60			0.01	4.4			6.1			13	17							34	R7-095-CR
Creek	07	14397	USEPA GLNPO	R7-096-C	Surface	11/23/09	0	1.3	N							52			0.04	2.8			6.3			17	22								R7-096-C
Creek	07	13907	USEPA GLNPO	R7-192-C	Surface	06/29/10			N	43	37	0.4	1.9	39	17		83	82			82	80		77	73	70	43	91	100	100	100	100	85	39	R7-192-C-Z1A
Creek	07	13648	USEPA GLNPO	R7-097-C	Surface	11/23/09	0	0.9	N							42			0.01	6.7			13			19	19								R7-097-C
Creek	07	13280	USEPA GLNPO	R7-193-C	Surface	06/29/10			N	55	36	1	7.3	44	0.9		99	98			96	91		83	76	72	55	100	100	100	100	100	99	50	R7-193-C-COMP
Creek	07	13280	USEPA GLNPO	R7-193-C	Surface	06/29/10			N	54	40	0.8	4.7	45	1.2		99	98			97	93		87	81	77	54	100	100	100	100	100	99	41	R7-193-C-Z1A
Creek	07	12647	USEPA GLNPO	R7-098-C	Surface	11/23/09	0	1.9	N							39			0.1	15			15			15	16								R7-098-C

Table D-5
Sediment Geotechnical Results for Remedial Investigation
Eighteenmile Creek Area of Concern

Sample Location	Reach	Distance from Erie Canal (ft)	Study	Location	Overall Depth	Sample Date	Start Depth (ft)	End Depth (ft)	Sample Type	FINES	FINE SAND	COARSE SAND	MEDIUM SAND	SAND	GRAVEL	SIEVE BOTTOM PLATE	SIEVE NO. 4	SIEVE NO. 10	SIEVE NO. 16	SIEVE NO. 35	SIEVE, NO. 20	SIEVE NO. 40	SIEVE NO. 50	SIEVE, NO. 60	SIEVE NO. 80	SIEVE, NO. 100	SIEVE NO. 200	SIEVE, 19000 MICRONS	SIEVE, 25000 MICRONS	SIEVE, 37500 MICRONS	SIEVE, 50000 MICRONS	SIEVE, 75000 MICRONS	SIEVE, 9500 MICRONS	SOLIDS, PERCENT	Sample ID
Creek	07	12247	USEPA GLNPO	R7-099-C	Surface	11/23/09	0	1.3	N							37		0.01	0.8	20			12			14	15								29	R7-099-C
Creek	07	11865	USEPA GLNPO	R7-100-C	Surface	11/23/09	0	1.2	N							69				0.5			1.9			12	17								48	R7-100-C
Creek	07	11695	USEPA GLNPO	R7-194-C	Surface	06/29/10			N	22	35	11	25	71	7.6		92	81			69	56		43	35	32	22	100	100	100	100	100	98	39	R7-194-C-COMP
Creek	07	11180	USEPA GLNPO	R7-101-C	Surface	11/30/09	0	0.5	N							47			0.06	9.8			11			15	17									R7-101-C
Creek	07	11048	USEPA GLNPO	R7-195-C	Surface	06/29/10			N	23	45	5.1	18	68	8.8		91	86			78	68		57	49	44	23	100	100	100	100	100	96	49	R7-195-C-COMP
Creek	07	10585	USEPA GLNPO	R7-102-C	Surface	11/30/09	0	1.5	N							66			0.05	3.4			4.9			11	15									R7-102-C
Creek	07	10442	USEPA GLNPO	R7-196-C	Surface	06/29/10			N	57	40	0.6	2	42	0.5		99	99			98	97		94	90	87	57	100	100	100	100	100	100	52	R7-196-C-COMP
Creek	07	10442	USEPA GLNPO	R7-196-C	Surface	06/29/10			N	61	26	1.7	8.9	37	2.3		98	96			93	87		82	79	77	61	100	100	100	100	100	99	39	R7-196-C-Z1A
Creek	07	9991	USEPA GLNPO	R7-103-C	Surface	11/30/09	0	2.3	N							59			0.1	7.3			7.8			12	14									R7-103-C
Creek	07	9757	USEPA GLNPO	R7-197-C	Surface	06/28/10			N	31	55	1.4	12	68	0.9		99	98			93	86		78	71	67	31	100	100	100	100	100	100	55	R7-197-C-COMP
Creek	07	9757	USEPA GLNPO	R7-197-C	Surface	06/28/10			FD	36	51	2.4	9.8	63	1		99	97			93	87		80	74	69	36	100	100	100	100	100	100	60	R7-197-CR
Creek	07	9757	USEPA GLNPO	R7-197-C	Surface	06/28/10			N	31	62	0.8	5.7	69	0.5		99	99			97	93		86	79	74	31	100	100	100	100	100	100	47	R7-197-C-Z1A
Creek	07	9310	USEPA GLNPO	R7-198-C	Surface	06/28/10			N	28	61	1.7	7.1	70	1.7		98	97			94	89		82	70	60	28	100	100	100	100	100	100	57	R7-198-C-COMP
Creek	07	9310	USEPA GLNPO	R7-198-C	Surface	06/28/10			N	23	67	1.2	8.1	77	0.5		99	98			96	90		80	66	55	23	100	100	100	100	100	100	53	R7-198-C-Z1A
Creek	07	9173	USEPA GLNPO	R7-104-C	Surface	12/02/09	0	1	N							54				8.7			10			14	13							39	R7-104-C
Creek	07	8998	USEPA GLNPO	R7-199-C	Surface	06/28/10			N	27	51	4.9	13	68	4.7		95	90			85	78		66	56	50	27	100	100	100	100	100	99	45	R7-199-C-COMP
Creek	07	8998	USEPA GLNPO	R7-199-C	Surface	06/28/10			N	42	43	4.1	7.8	55	3.1		97	93			92	85		76	69	64	42	100	100	100	100	100	100	33	R7-199-C-Z1A
Creek	07	8556	USEPA GLNPO	R7-105-C	Surface	11/30/09	0	1.4	N							59			0.06	5.3			7.6			13	15							45	R7-105-C
Creek	07	7812	USEPA GLNPO	R7-200-C	Surface	06/28/10			N	16	56	5.4	19	80	4.8		95	90			84	71		55	42	35	16	100	100	100	100	100	99	62	R7-200-C-COMP
Creek	07	7812	USEPA GLNPO	R7-200-C	Surface	06/28/10			N	24	71	0.3	5.3	76	0.3		100	99			99	94		85	72	61	24	100	100	100	100	100	100	52	R7-200-C-Z1A
Creek	07	6889	USEPA GLNPO	R7-106-C	Surface	11/30/09	0	0.5	N							43			0.2	11			14			18	15							51	R7-106-C
Tributary	04	53665	USEPA GLNPO	R4-119-T	Surface	11/17/09	0	0.5	N							80			0.4	1.8			1.4			6.3	9.8							70	R4-119-T
Tributary	07	27915	USEPA GLNPO	R7-120-T	Surface	11/24/09	0	0.5	N							82				1.1			1.1			6.1	9.5							47	R7-120-T-Z1
Tributary	07	27915	USEPA GLNPO	R7-120-T	Subsurface	11/24/09	0.5	2.1	N							77				2.4			3.2			8.4	8.9								R7-120-T-Z2
Tributary	07	27522	USEPA GLNPO	R7-201-T	Surface	06/25/10			N	52	15	7.9	7.7	30	17		83	75			70	67		63	60	58	52	100	100	100	100	100	100	50	R7-201-T-COMP
Tributary	07	27522	USEPA GLNPO	R7-201-T	Surface	06/25/10			N	89	8.9	0.7	1.1	11			100	99			99	98		97	96	95	89	100	100	100	100	100	100	33	R7-201-T-Z1A
Tributary	07	26631	USEPA GLNPO	R7-202-T	Surface	06/29/10			N	65	19	3.9	4.3	28	7.4		93	89			87	84		82	77	74	65	100	100	100	100	100	95	43	R7-202-T-COMP
Tributary	07	26631	USEPA GLNPO	R7-202-T	Surface	06/29/10			N	85	9.1	1.8	1.2	12	3		97	95			95	94		93	91	90	85	100	100	100	100	100	99	34	R7-202-T-Z1A
Tributary	07	24253	USEPA GLNPO	R7-121-T	Surface	12/02/09	0	0.5	N							64				5.2			7.6			11	12								R7-121-T-Z1
Tributary	07	17530	USEPA GLNPO	R7-122-T	Surface	11/25/09	0	0.5	N							55			0.02	8.5			12			13	12								R7-122-T-Z1
Tributary	07	17530	USEPA GLNPO	R7-122-T	Subsurface	11/25/09	0.5	1	N							54			0.02	4.1			9.3			16	16								R7-122-T-Z2
Tributary	07	13126	USEPA GLNPO	R7-123-T	Surface	11/23/09	0	0.5	N							80			0.01	0.2			0.8			6.7	12								R7-123-T-Z1
Tributary	07	13126	USEPA GLNPO	R7-123-T	Subsurface	11/23/09	0.5	1	N							81			0.07	1.9			1.2			6.4	9.2								R7-123-T-Z2
Tributary	07	12476	USEPA GLNPO	R7-124-T	Surface	11/23/09	0	0.4	N							69			0.5	9			7			7.8	6.5								R7-124-T-Z1
Tributary	07	7893	USEPA GLNPO	R7-203-T	Surface	06/29/10			N	52	32	2.5	8.9	43	4.5		96	93			91	84		71	64	62	52	100	100	100	100	100	98	39	R7-203-T-COMP
Tributary	07	7893	USEPA GLNPO	R7-203-T	Surface	06/29/10			N	54	39	0.8	6.5	46	0.3		100	99			98	92		79	71	67	54	100	100	100	100	100	100	46	R7-203-T-Z1A
Tributary	07	7847	USEPA GLNPO	R7-125-T	Surface	11/30/09	0	0.5	N							53			0.2	12			9.8			12	12								R7-125-T-Z1
Tributary	07	7847	USEPA GLNPO	R7-125-T	Subsurface	11/30/09	0.5	0.8	N							56			0.3	9			9.1			12	14								R7-125-T-Z2
Tributary	07	7122	USEPA GLNPO	R7-204-T	Surface	06/29/10			N	40	34	4.5	8.8	47	12		88	83			80	74		66	60	56	40	100	100	100	100	100	93	44	R7-204-T-Z1A
Tributary	07	7122	USEPA GLNPO	R7-205-T	Surface	06/29/10			N	42	39	3.5	16	58	0.5		99	96			90	80		65	57	53	42	100	100	100	100	100	100	64	R7-205-T-COMP
Tributary	07	7122	USEPA GLNPO	R7-205-T	Surface	06/29/10			N	51	35	1.1	12	48	1.3		99	98			94	86		73	66	63	51	100	100	100	100	100	100	62	R7-205-T-Z1A
Creek	04	58365	USEPA GLNPO	R4-126-H	Surface	11/16/09	0	0.5	N							53			0.8	15			8.2			11	12								R4-126-H
Creek	05	50439	USEPA GLNPO	R5-127-H	Surface	11/18/09	0	0.5	N							49			0.4	16			7.4			9.5	18								R5-127-H
Creek	06	46767	USEPA GLNPO	R6-128-H	Surface	12/02/09	0	0.5	N							70			0.03	2.9			5			10	12								R6-128-H
Creek	06	41557	USEPA GLNPO	R6-129-H	Surface	12/02/09	0	0.5	N							89							0.07			3	8								R6-129-H
Creek	07	22493	USEPA GLNPO	R7-130-H	Surface	11/30/09	0	0.5	N							79			0.02	1.6			1.6			6.9	11								R7-130-H
Creek	07	20971	USEPA GLNPO	R7-131-H	Surface	11/30/09	0	0.5	N							60				4.5			8.8			13	14								R7-131-H
Creek	07	19323	USEPA GLNPO	R7-132-H	Surface	11/25/09	0	0.5	N							55			0.08	7.2			9.8			14	14								R7-132-H
Creek	07	15606	USEPA GLNPO	R7-133-H	Surface	11/24/09	0	0.5	N							78				1.8			2.3			7.4	11								R7-133-H
Creek	07	11544	USEPA GLNPO	R7-134-H	Surface	11/23/09	0	0.5	N							59			0.2	11			9.7			11	9								R7-134-H
Wetland	03	59706	USEPA GLNPO	R3-107-W	Surface	11/16/09	0	0.5	N							55			1.1	12			8.1			11	13								R3-107-W
Wetland	03	59217	USEPA GLNPO	R3-108-W	Surface	11/16/09	0	0.5	N							60				3.6			8.5			14	14								R3-108-W
Wetland	03	58946	USEPA GLNPO	R3-109-W	Surface	11/16/09	0	0.5	N							59				4.2			8.6			14	15								R3-109-W
Wetland	03	58435	USEPA GLNPO	R3-110-W	Surface	11/16/09	0	0.5	N							61		0.001	0.3	7.7			7.5			11	13								R3-110-W
Wetland	04	56998	USEPA GLNPO	R4-111-W	Surface	11/16/09	0	0.5	N							81			0.02	1.6			1.3			6.3	10								R4-111-W
Wetland	04	52367	USEPA GLNPO	R4-112-W	Surface	11/18/09	0	0.5	N							78			0.05	1.8			2.6			8.4	9.7								R4-112-W
Wetland	05	51709	USEPA GLNPO	R5-113-W	Surface	11/18/09	0	0.5	N							73			0.2	4			4			9.1	10								R5-113-W
Wetland	05	50833	USEPA GLNPO	R5-114-W	Surface	11/18/09	0	0.5	N							59			0.4	13			8.4			9.2	10								R5-114-W
Wetland	05	50230	USEPA GLNPO	R5-115-W	Surface	11/18/09	0	0.5	N							44			0.2	15			13			14	14								R5-115-W
Wetland	05	49252	USEPA GLNPO	R5-116-W	Surface	11/19/09	0	0.5	N							76				1.4			2.6			9	11							28	R5-116-W
Wetland	06	45170	USEPA GLNPO	R6-117-W	Surface	12/02/09	0	0.5	N							75			0.02	3			4.8			8	8.7								R6-117-W
Wetland	07	7785	USEPA GLNPO	R7-118-W	Surface	11/30/09	0	0.5	N							70				2.9			6.4			10	11								R7-118-W

Table D-6

Estimated Sediment Volumes in Great Lakes Legacy Act Investigation

Eighteen Mile Creek Area of Concern

Reach	Estimate Sediment Volume (cubic feet)	Ending Distance from Start (feet)	Ending Distance from Start (feet)
7.3	11931	6388	6866
7.3	21700	6866	7375
7.3	109810	7375	7878
7.3	86976	7878	8402
7.3	43206	8402	8863
7.3	35347	8863	9334
7.3	24685	9334	9859
7.3	54326	9859	10362
7.3	40255	10362	10856
7.3	14539	10856	11360
7.3	24509	11360	11872
7.3 Total	467284		
7.2	26490	11872	12359
7.2	29106	12359	12877
7.2	19157	12877	13378
7.2	19577	13378	13891
7.2	23118	13891	14398
7.2	20368	14398	14908
7.2	16969	14908	15415
7.2	18773	15415	15930
7.2	23406	15930	16425
7.2	26149	16425	16951
7.2	38381	16951	17449
7.2	53455	17449	17951
7.2	38652	17951	18435
7.2	42106	18435	18947
7.2	87531	18947	19463
7.2	43523	19463	19962
7.2	41837	19962	20481
7.2	42172	20481	20986
7.2	35266	20986	21535
7.2	55206	21535	22107
7.2	34589	22107	22613
7.2	32155	22613	23091
7.2	41440	23091	23622
7.2	33108	23622	24121
7.2 Total	842533		

Table D-6

Estimated Sediment Volumes in Great Lakes Legacy Act Investigation

Eighteen Mile Creek Area of Concern

7.1	36014	24121	24635
7.1	43862	24635	25120
7.1	28998	25120	25632
7.1	23381	25632	26130
7.1	38715	26130	26618
7.1	65341	26618	27103
7.1	54123	27103	27690
7.1	58904	27690	28194
7.1	46049	28194	28692
7.1	30377	28692	29191
7.1	62437	29191	29691
7.1	73043	29691	30195
7.1	36737	30195	30693
7.1	35246	30693	31190
7.1 Total	633226		
6.2	55969	31190	31690
6.2	69871	31690	32192
6.2	71873	32192	32693
6.2	49188	32693	33192
6.2	44330	33192	33718
6.2	21761	33718	34223
6.2	23242	34223	34723
6.2	61167	34723	35218
6.2	47939	35218	35717
6.2	45845	35717	36200
6.2	30285	36200	36701
6.2	26590	36701	37233
6.2	20428	37233	37702
6.2	16218	37702	38216
6.2	19900	38216	38717
6.2	24601	38717	39224
6.2 Total	629207		
6.1	13457	39224	39740
6.1	30155	39740	40246
6.1	36283	40246	40738
6.1	6178	40738	41230
6.1	13732	41230	41736
6.1	15955	41736	42249
6.1	15912	42249	42765
6.1	25038	42765	43277
6.1	17611	43277	43772

Table D-6

Estimated Sediment Volumes in Great Lakes Legacy Act Investigation

Eighteen Mile Creek Area of Concern

6.1	9269	43772	44270
6.1	24497	44270	44758
6.1	11310	44758	45286
6.1	8523	45286	45780
6.1	15267	45780	46253
6.1	18663	46253	46740
6.1	16830	46740	47279
6.1	30406	47279	47768
6.1	19811	47768	48285
6.1	38004	48285	48771
6.1 Total	366900		
5	112539	48771	49280
5	101610	49280	49776
5	675703	49776	50283
5	425554	50283	50794
5	173496	50794	51290
5	240933	51290	51798
5	120254	51798	52311
5 Total	1850088		
4	25691	52311	52808
4	19749	52808	53302
4	21258	53302	53804
4	15418	53804	54307
4	19485	54307	54819
4	18162	54819	55332
4	13769	55332	55840
4	25421	55840	56345
4	19656	56345	56847
4	14857	56847	57382
4	18858	57382	57873
4	42009	57873	58395
4	249439	58395	58897
4 Total	503771		
3	146468	58897	59389
3	468526	59389	59898
3	652671	59898	60399
3	1275250	60399	60898
3	1561530	60898	61402
3 Total	4104446		
2	1601536	61402	61899
2	1965988	61899	62375

Table D-6

Estimated Sediment Volumes in Great Lakes Legacy Act Investigation

Eighteen Mile Creek Area of Concern

2	2096286	62375	62871
2	2031171	62871	63375
2	1815417	63375	63888
2	1620378	63888	64393
2	1336273	64393	64884
2	1253059	64884	65384
2	1508162	65384	65889
2	1697736	65889	66400
2	1700138	66400	66894
2	2279190	66894	67400
2	2063737	67400	67897
2	2137341	67897	68500
2 Total	25106410		

Table D-7
Detailed Final Sediment Model Output
Eighteenmile Creek Area of Concern

ID	Segment	Start Meter	Start Feet	End Meter	End Feet	Area (SQ FT)	Ave Volume (cubic ft)	Elevation (top of water - ft)	Water_Dept (ft)	Ave Depth (ft)	Reach	TopofSediment	BottomofSediment
1	0	0.00	0.00	152.40	500.02			499.535304	1	2	10	498.535304	496.535304
2	1	152.40	500.00	296.62	973.21			481.1576911	1.3	2.1	10	479.8576911	477.7576911
3	2	296.62	973.21	421.04	1381.42	29109.87	61130.73699	481.3201294	1.3	2.1	10	480.0201294	477.9201294
4	3	421.04	1381.42	579.56	1901.52	16765.88	26825.40046	468.0223084	5	1.6	10	463.0223084	461.4223084
5	4	579.56	1901.52	729.62	2393.87	19622.29	29433.43686	464.383728	2	1.5	10	462.383728	460.883728
6	5	729.62	2393.87	889.26	2917.67	18623.92	27935.8782	461.8357544	3	1.5	10	458.8357544	457.3357544
7	6	889.26	2917.67	1034.75	3395.01	19334.89	5135.113195	452.5186157	2	0.265587986	10	450.5186157	450.2530277
8	7	1034.75	3395.01	1189.45	3902.58	18616.43	18731.51941	446.6833191	1.5	1.006181955	9	445.1833191	444.1771371
9	8	1189.45	3902.58	1339.93	4396.32	15990.40	15014.77786	442.5895996	1	0.938987255	9	441.5895996	440.6506124
10	9	1339.93	4396.32	1497.23	4912.42	14282.46	11660.76943	426.0411072	0.5	0.816440046	8	425.5411072	424.7246671
11	10	1497.23	4912.42	1641.18	5384.71	14727.17	10351.00085	402.8050232	0.5	0.702850401	8	402.3050232	401.6021728
12	11	1641.18	5384.71	1793.58	5884.75	12730.52	7356.021429	379.7573242	0.5	0.577825725	8	379.2573242	378.6794985
13	12	1793.58	5884.75	1947.15	6388.60	12922.52	8424.373433	366.9920044	0.5	0.651913941	8	366.4920044	365.8400905
14	13	1947.15	6388.60	2092.81	6866.50	17770.57	11927.89172	359.3586426	0.6	0.67121619	7	358.7586426	358.0874264
15	14	2092.81	6866.50	2247.99	7375.66	21874.73	21699.74201	357.9343872	1.8	0.992000401	7	356.1343872	355.1423868
16	15	2247.99	7375.66	2401.31	7878.68	51138.12	109783.9999	357.8499451	2.625	2.146813393	7	355.2249451	353.0781317
17	16	2401.31	7878.68	2560.90	8402.31	43164.97	87006.35882	357.7324829	2.5	2.015670538	7	355.2324829	353.2168124
18	17	2560.90	8402.31	2701.31	8863.01	23200.17	43159.56228	357.3547058	4.33333333	1.860312581	7	353.0213725	351.1610599
19	18	2701.31	8863.01	2844.86	9334.00	23348.48	35345.09258	356.9441834	3.66666667	1.513807297	7	353.2775167	351.7637094
20	19	2844.86	9334.00	3005.12	9859.78	21499.16	24712.90858	356.1674194	4	1.149482369	7	352.1674194	351.0179371
21	20	3005.12	9859.78	3158.31	10362.42	20801.46	54264.64285	356.1358337	2.75	2.608694315	7	353.3858337	350.7771394
22	21	3158.31	10362.42	3308.81	10856.20	23672.04	40335.47841	356.2094116	3	1.703929424	7	353.2094116	351.5054822
23	22	3308.81	10856.20	3462.48	11360.39	23092.65	14502.52127	355.9387512	2.66666667	0.628014505	7	353.2720846	352.64407
24	23	3462.48	11360.39	3618.64	11872.76	24524.75	24559.24485	354.2185059	2.4375	1.001406431	7	351.7810059	350.7795994
25	24	3618.64	11872.76	3767.04	12359.67	24071.49	26458.30536	354.7064819	2.66666667	1.099155307	7	352.0398153	350.94066
26	25	3767.04	12359.67	3925.00	12877.94	27890.74	29018.24422	354.5476685	2.625	1.040425777	7	351.9226685	350.8822427
27	26	3925.00	12877.94	4077.69	13378.90	25026.83	19196.56832	354.0009766	3.16666667	0.767039537	7	350.8343099	350.0672704
28	27	4077.69	13378.90	4233.98	13891.67	27174.01	19611.96236	353.4012451	2.25	0.721717596	7	351.1512451	350.4295275
29	28	4233.98	13891.67	4388.63	14399.09	25713.90	23108.44662	353.5402527	2.33333333	0.898675323	7	351.2069194	350.308244
30	29	4388.63	14399.09	4543.98	14908.78	23754.05	20371.62676	353.7527771	2.66666667	0.857606351	7	351.0861104	350.2285041
31	30	4543.98	14908.78	4698.54	15415.90	20984.31	16976.76843	352.9365234	2.83333333	0.809022188	7	350.1031901	349.2941679
32	31	4698.54	15415.90	4855.59	15931.20	25390.91	18766.6285	352.2999268	2.5625	0.739108145	7	349.7374268	348.9983186
33	32	4855.59	15931.20	5006.41	16426.04	31206.76	23410.68168	352.6569519	2.0625	0.750179887	7	350.5944519	349.844272
34	33	5006.41	16426.04	5166.68	16951.87	30124.11	26127.03595	352.1873474	1.83333333	0.867313027	7	350.3540141	349.4867011
35	34	5166.68	16951.87	5318.40	17449.67	32962.70	38396.22783	351.2046204	2	1.164838791	7	349.2046204	348.0397816
36	35	5318.40	17449.67	5471.48	17951.92	37579.45	53461.15391	350.5743713	2.25	1.422616839	7	348.3243713	346.9017545
37	36	5471.48	17951.92	5618.87	18435.53	23652.11	38654.97312	350.5348511	2.65	1.634313822	7	347.8848511	346.2505373
38	37	5618.87	18435.53	5775.04	18947.90	29528.58	42111.42588	350.0516052	1.61666667	1.426124096	7	348.4349386	347.0088145
39	38	5775.04	18947.90	5932.27	19463.78	78207.10	87538.70785	350.0514526	2.4375	1.119319201	7	347.6139526	346.4946334
40	39	5932.27	19463.78	6084.32	19962.65	23718.54	43510.94621	349.4164124	1.875	1.834470034	7	347.5414124	345.7069423
41	40	6084.32	19962.65	6242.55	20481.79	29044.22	41792.29748	349.8161011	1.4	1.438919783	7	348.4161011	346.9771813
42	41	6242.55	20481.79	6396.53	20987.03	27069.70	42202.28615	349.5658569	1.6	1.559022784	7	347.9658569	346.4068341
43	42	6396.53	20987.03	6563.81	21535.87	25856.55	35274.85867	348.5662231	2.16666667	1.364252329	7	346.3995565	345.0353041
44	43	6563.81	21535.87	6738.32	22108.42	27380.82	55217.39822	348.0633545	2.20454545	2.016645432	7	345.858809	343.8421636
45	44	6738.32	22108.42	6892.51	22614.32	26973.65	34587.31601	348.9796448	2.48125	1.282262921	7	346.4983948	345.2161319
46	45	6892.51	22614.32	7038.12	23092.08	27602.45	32158.23738	348.3471375	2	1.165049911	7	346.3471375	345.1820875
47	46	7038.12	23092.08	7199.98	23623.15	28792.44	41428.9834	348.4877014	1.83333333	1.438883901	7	346.6543681	345.2154842
48	47	7199.98	23623.15	7351.97	24121.80	25356.63	33084.32172	348.4045715	2.29166667	1.304760098	7	346.1129049	344.8081448
49	48	7351.97	24121.80	7508.66	24635.90	25828.85	36018.97528	348.0162354	3.04166667	1.394524813	7	344.9745687	343.5800439
50	49	7508.66	24635.90	7656.51	25121.00	21053.74	43869.56906	347.7474976	2.33333333	2.083694935	7	345.4141642	343.3304693
51	50	7656.51	25121.00	7812.53	25632.91	23119.14	29022.47784	347.5789185	2.125	1.255344152	7	345.4539185	344.1985743
52	51	7812.53	25632.91	7964.33	26130.96	20966.28	23370.90804	346.9330444	0	1.114690065	7	346.9330444	345.8183544
53	52	7964.33	26130.96	8113.05	26618.91	23220.62	38749.09598	347.0387573	2.7625	1.668736458	7	344.2762573	342.6075209
54	53	8113.05	26618.91	8260.88	27103.94	34240.24	65322.5152	346.5205688	1.6875	1.907770157	7	344.8330688	342.9252987
55	54	8260.88	27103.94	8439.94	27691.45	27991.05	54057.27517	345.7487183	2.0625	1.931234002	7	343.6862183	341.7549843
56	55	8439.94	27691.45	8593.49	28195.22	30412.65	58928.75839	345.4259949	2.325	1.937639833	7	343.1009949	341.163355
57	56	8593.49	28195.22	8745.20	28693.02	33478.94	46088.9312	344.7920837	2.15	1.376654267	7	342.6420837	341.2654295
58	57	8745.20	28693.02	8897.42	29192.44	35582.29	30361.91484	344.5110779	2.16666667	0.85328728	7	342.3444112	341.4911239
59	58	8897.42	29192.44	9049.94	29692.87	32422.18	62431.51003	344.2672119	2.33333333	1.925580025	7	341.9338786	340.0082986
60	59	9049.94	29692.87	9203.50	30196.68	37640.58	73015.18093	344.4709778	2.2	1.939799666	7	342.2709778	340.3311781
61	60	9203.50	30196.68	9355.34	30694.87	29765.75	36725.36205	344.5047302	1.91666667	1.233812809	7	342.5880636	341.3542507
62	61	9355.34	30694.87	9506.67	31191.38	33016.12	35236.37177	343.7678833	2.8	1.067247629	7	340.9678833	339.9006357
63	62	9506.67	31191.38	9659.22	31691.89	37097.10	55964.36641	342.9605713	2.36666667	1.508591533	6	340.5939046	339.0853131
64	63	9659.22	31691.89	9812.06	32193.37	35553.89	69878.69276	343.1202393	2.71666667	1.96543026	6	340.4035726	338.4381423
65	64	9812.06	32193.37	9964.73	32694.29	38941.22	71903.22943	343.3993835	2.43333333	1.846455336	6	340.9660502	339.1195949
66	65	9964.73	32694.29	10117.07	33194.11	34959.65	49166.85287	343.0069885	2.53	1.40638876	6	340.4769885	339.0705998

Table D-7
Detailed Final Sediment Model Output
Eighteenmile Creek Area of Concern

ID	Segment	Start Meter	Start Feet	End Meter	End Feet	Area (SQ FT)	Ave Volume (cubic ft)	Elevation (top of water - ft)	Water_Dept (ft)	Ave Depth (ft)	Reach	TopofSediment	BottomofSediment
67	66	10117.07	33194.11	10277.31	33719.86	41801.85	44332.05762	342.558197	2.8	1.060528517	6	339.758197	338.6976685
68	67	10277.31	33719.86	10431.12	34224.50	30995.85	21776.00661	342.1056824	2.625	0.702545881	6	339.4806824	338.7781365
69	68	10431.12	34224.50	10583.42	34724.19	29419.19	23217.47023	342.1375122	2.16666667	0.789194643	6	339.9708455	339.1816509
70	69	10583.42	34724.19	10734.35	35219.40	36237.49	61187.95966	342.1589355	2.9	1.68852663	6	339.2589355	337.5704089
71	70	10734.35	35219.40	10886.39	35718.24	34063.25	47957.44097	342.0321655	2.025	1.407893777	6	340.0071655	338.5992718
72	71	10886.39	35718.24	11033.68	36201.51	39709.33	43812.53764	341.8181458	2.17857143	1.103331089	6	339.6395743	338.5362432
73	72	11033.68	36201.51	11186.43	36702.68	36972.79	30241.92243	341.7588501	2.51666667	0.817950785	6	339.2421834	338.4242326
74	73	11186.43	36702.68	11348.55	37234.59	35033.76	26615.49098	341.5316162	1.84	0.759709895	6	339.6916162	338.9319063
75	74	11348.55	37234.59	11491.62	37703.99	39861.48	20407.78863	341.3197327	2.025	0.511967719	6	339.2947327	338.7827649
76	75	11491.62	37703.99	11648.20	38217.73	34896.45	16275.08556	340.1358948	1.06	0.466382235	6	339.0758948	338.6095125
77	76	11648.20	38217.73	11800.92	38718.82	33385.37	19846.53231	338.7853699	1.26666667	0.594467998	6	337.5187032	336.9242352
78	77	11800.92	38718.82	11955.58	39226.25	46599.59	24574.07775	338.4640198	1.37142857	0.527345359	6	337.0925912	336.5652458
79	78	11955.58	39226.25	12112.76	39741.96	34551.29	13437.71838	337.5701599	1.125	0.388920903	6	336.4451599	336.056239
80	79	12112.76	39741.96	12267.01	40248.06	33544.81	27515.07162	337.3370972	1.6	0.820248306	6	335.7370972	334.9168489
81	80	12267.01	40248.06	12416.91	40739.89	44737.02	36272.70158	337.3152161	1.48	0.810798287	6	335.8352161	335.0244178
82	81	12416.91	40739.89	12567.02	41232.39	39590.02	6188.028475	337.3588257	1.13333333	0.15630272	6	336.2254924	336.0691896
83	82	12567.02	41232.39	12721.08	41737.88	38140.70	13719.95918	336.0807495	1.45	0.359719634	6	334.6307495	334.2710299
84	83	12721.08	41737.88	12877.52	42251.15	32594.02	15952.47053	335.1014099	1.9	0.489429355	6	333.2014099	332.7119806
85	84	12877.52	42251.15	13034.69	42766.83	35355.39	15892.14434	334.8875732	2.34	0.449497074	6	332.5475732	332.0980762
86	85	13034.69	42766.83	13190.84	43279.15	36350.67	25072.84993	339.730957	1.95714286	0.689749241	6	337.7738142	337.0840649
87	86	13190.84	43279.15	13341.66	43773.99	31996.53	17608.61861	338.9846191	2.15	0.55032903	6	336.8346191	336.2842901
88	87	13341.66	43773.99	13493.61	44272.54	23981.28	9271.454586	337.4215393	1.2	0.386612117	6	336.2215393	335.8349272
89	88	13493.61	44272.54	13642.37	44760.63	40769.20	24553.26889	341.0439148	1.36666667	0.602250516	6	339.6772481	339.0749976
90	89	13642.37	44760.63	13803.04	45287.78	34878.05	11270.42853	343.9470215	1.175	0.323138177	6	342.7720215	342.4488833
91	90	13803.04	45287.78	13953.61	45781.79	33429.52	8524.042184	333.4397278	1.06923077	0.254985452	6	332.370497	332.1155116
92	91	13953.61	45781.79	14098.00	46255.55	45060.22	15261.88278	332.8553467	1.1125	0.338699669	6	331.7428467	331.404147
93	92	14098.00	46255.55	14246.23	46741.88	52700.80	18707.73735	330.2552795	0.95	0.354980111	6	329.3052795	328.9502994
94	93	14246.23	46741.88	14410.67	47281.40	45775.98	16784.19894	327.9925842	1.31428571	0.366659552	6	326.6782985	326.311639
95	94	14410.67	47281.40	14559.67	47770.28	42666.88	30418.10077	331.9057312	1.50769231	0.712920606	6	330.3980389	329.6851183
96	95	14559.67	47770.28	14717.22	48287.20	33547.09	19824.03235	331.6696167	1.77142857	0.590931535	6	329.8981881	329.3072566
97	96	14717.22	48287.20	14865.41	48773.40	35483.11	37959.36251	325.0798645	2.16666667	1.069786906	6	322.9131978	321.8434109
98	97	14865.41	48773.40	15020.50	49282.28	45013.89	112573.4113	324.0160217	2.71818182	2.500859499	5	321.2978399	318.7969804
99	98	15020.50	49282.28	15171.76	49778.54	44555.01	116454.1266	323.8613892	4.02666667	2.61371541	5	319.8347225	317.2210071
100	99	15171.76	49778.54	15326.32	50285.67	198732.44	675727.8295	325.4964905	5.01538462	3.400188923	5	320.4811059	317.0809169
101	100	15326.32	50285.67	15482.13	50796.88	139619.64	425614.2695	325.1246643	3.13333333	3.048383951	5	321.991331	318.942947
102	101	15482.13	50796.88	15633.27	51292.76	46606.26	173798.6226	323.9744568	3.85714286	3.729083538	5	320.1173139	316.3882304
103	102	15633.27	51292.76	15787.95	51800.27	63799.87	240555.6137	324.4642029	5.75454545	3.770471811	5	318.7096574	314.9391856
104	103	15787.95	51800.27	15944.42	52313.66	71127.96	120174.6424	316.5213623	0.525	1.689555526	5	315.9963623	314.3068068
105	104	15944.42	52313.66	16095.99	52810.94	53720.68	25748.81434	309.354126	0.95833333	0.479309142	4	308.3957926	307.9164835
106	105	16095.99	52810.94	16246.44	53304.56	46668.24	19714.80644	308.3756104	1.41666667	0.422445863	4	306.9589437	306.5364978
107	106	16246.44	53304.56	16399.32	53806.19	51522.51	21267.41124	307.3479614	1.21666667	0.412779003	4	306.1312948	305.7185158
108	107	16399.32	53806.19	16552.68	54309.35	54945.51	15423.98058	305.9180908	0.97222222	0.280714124	4	304.9458686	304.6651545
109	108	16552.68	54309.35	16708.69	54821.22	46412.38	19469.20857	304.0596924	0.875	0.419483095	4	303.1846924	302.7652093
110	109	16708.69	54821.22	16865.15	55334.56	41532.39	18165.32813	301.8963318	1.01666667	0.437377363	4	300.8796651	300.4422878
111	110	16865.15	55334.56	17020.05	55842.79	38893.19	13730.9089	299.1167297	0.58333333	0.3530415	4	298.5333964	298.1803549
112	111	17020.05	55842.79	17174.05	56348.06	35671.38	25471.6262	296.8483276	1	0.714063346	4	295.8483276	295.1342643
113	112	17174.05	56348.06	17326.98	56849.81	56288.01	19660.99462	295.4355164	0.86666667	0.349292755	4	294.5688497	294.2195569
114	113	17326.98	56849.81	17489.90	57384.35	47643.69	14854.70502	301.9115601	1.8	0.311787426	4	300.1115601	299.7997726
115	114	17489.90	57384.35	17639.82	57876.26	40833.23	18873.08324	292.7607422	1.08333333	0.462199181	4	291.6774089	291.2152097
116	115	17639.82	57876.26	17798.68	58397.46	36322.86	42006.43243	292.5579834	2.75	1.156473756	4	289.8079834	288.6515096
117	116	17798.68	58397.46	17951.82	58899.93	91057.93	249460.3711	292.0029602	2.28333333	2.739578724	4	289.7196269	286.9800482
118	117	17951.82	58899.93	18101.87	59392.22	52424.03	146464.8602	292.1612854	2.61111111	2.793849707	3	289.5501743	286.7563246
119	118	18101.87	59392.22	18256.84	59900.69	88072.54	468380.2978	292.0572205	2.73636364	5.318119526	3	289.3208568	284.0027373
120	119	18256.84	59900.69	18409.50	60401.57	113003.07	652833.4736	291.7993469	2.75	5.777130604	3	289.0493469	283.2722163
121	120	18409.50	60401.57	18561.78	60901.21	148511.21	1274917.431	291.7580872	2.625	8.584654808	3	289.1330872	280.5484323
122	121	18561.78	60901.21	18715.21	61404.59	153537.58	1560133.617	291.5548401	1.929917097	10.16124916	3	289.624923	279.4636738
123	122	18715.21	61404.59	18866.73	61901.75	123743.00	1605661.951	291.4485474	2.911648273	12.97578049	2	288.5368991	275.5611186
124	123	18866.73	61901.75	19011.99	62378.32	151670.90	1963668.935	291.6161194	3.270491838	12.94690609	2	288.3456275	275.3987215
125	124	19011.99	62378.32	19162.99	62873.77	157298.50	2095600.013	291.7182617	4.647833824	13.3224411	2	287.0704279	273.7479868
126	125	19162.99	62873.77	19316.72	63378.17	148921.11	2031799.778	291.8797607	6.884516716	13.64346409	2	284.995244	271.3517799
127	126	19316.72	63378.17	19473.08	63891.18	136193.95	1817672.049	292.2738647	8.968509674	13.34620285	2	283.3053551	269.9591522
128	127	19473.08	63891.18	19627.00	64396.18	134556.86	1618356.103	292.2338562	10.91026497	12.02730274	2	281.3235912	269.2962885
129	128	19627.00	64396.18	19776.77	64887.58	129179.30	1336046.834	291.9216919	13.8598423	10.34257698	2	278.0618496	267.7192726
130	129	19776.77	64887.58	19929.06	65387.26	139624.27	1252827.919	291.7963562	15.21031189	8.972851753	2	276.5860443	267.6131926
131	130	19929.06	65387.26	20082.98	65892.25	175465.49	1507650.694	291.7854309	17.48854637	8.592291832	2	274.2968845	265.7045927
132	131	20082.98	65892.25	20238.64	66402.99	176050.36	1698221.511	291.3763428	19.32685661	9.646225929	2	272.0494862	262.4032602

Table D-7
Detailed Final Sediment Model Output
Eighteenmile Creek Area of Concern

ID	Segment	Start Meter	Start Feet	End Meter	End Feet	Area (SQ FT)	Ave Volume (cubic ft)	Elevation (top of water - ft)	Water_Dept (ft)	Ave Depth (ft)	Reach	TopofSediment	BottomofSediment
133	132	20238.64	66402.99	20389.32	66897.36	156260.93	1700529.011	291.4753418	20.68552208	10.88262463	2	270.7898197	259.9071951
134	133	20389.32	66897.36	20543.50	67403.21	196186.67	2279034.971	291.2065735	24.17591667	11.61666584	2	267.0306568	255.413991
135	134	20543.50	67403.21	20695.06	67900.49	171327.88	2063470.286	291.5057983	25.08471489	12.04398441	2	266.4210835	254.377099
136	135	20695.06	67900.49	20840.09	68376.34	171838.29	2137506.198	291.5727844	27.49741554	12.4390564	2	264.0753689	251.6363125
137	136	20840.09	68500.00	21031.20	68500.00			291.4744461	2	1	2	289.4744461	288.4744461
138	137	21031.20	69000.00	21183.60	69000.00			247.2169109	2	1	1	245.2169109	244.2169109
139	138	21183.60	69500.00	21336.00	69500.00			245.8312212	2.25	1.125	1	243.5812212	242.4562212
140	139	21336.00	70000.00	21488.40	70000.00			245.6295856	2.5	1.25	1	243.1295856	241.8795856
141	140	21488.40	70500.00	21640.80	70500.00			245.4612359	3.5	1.75	1	241.9612359	240.2112359
142	141	21640.80	71000.00	21793.20	71000.00			245.8198148	4.5	2.25	1	241.3198148	239.0698148
143	142	21793.20	71500.00	21945.60	71500.00			245.5802361	5.5	2.75	1	240.0802361	237.3302361
144	143	21945.60	72000.00	22098.00	72000.00			245.6269989	6.5	3.25	1	239.1269989	235.8769989
145	144	22098.00	72500.00	22250.40	72500.00			245.7332609	5.5	2.75	1	240.2332609	237.4832609
146	145	22250.40	73000.00	22402.80	73000.00			251.1242886	5	2.5	1	246.1242886	243.6242886
147	146	22402.80	73500.00	22555.20	73500.00			245.9099455	5	2.5	1	240.9099455	238.4099455
148	147	22555.20	74000.00	22707.60	74000.00			245.7085964	4.5	2.25	1	241.2085964	238.9585964
149	148	22707.60	74500.00	22860.00	74500.00			245.1482905	4	2	1	241.1482905	239.1482905
150	149	22860.00	75000.00	23012.40	75000.00			245.4594389	8	4	1	237.4594389	233.4594389
151	150	23012.40	75500.00	23164.80	75500.00			245.3836877	8.25	4.125	1	237.1336877	233.0086877
152	151	23164.80	76000.00	23317.20	76000.00			245.2960052	8.5	4.25	1	236.7960052	232.5460052
153	152	23317.20	76500.00	23469.60	76500.00			245.4393691	10.5	5.25	1	234.9393691	229.6893691
154	153	23469.60	77000.00	23622.00	77000.00			245.6084218	8.5	4.25	1	237.1084218	232.8584218
155	154	23622.00	77500.00	23774.40	77500.00			245.6888863	10	5	1	235.6888863	230.6888863
156	155	23774.40	78000.00	23926.80	78000.00			245.8157484	9.5	4.75	1	236.3157484	231.5657484
157	156	23926.80	78500.00	24079.20	78500.00			245.9129006	9	4.5	1	236.9129006	232.4129006
158	157	24079.20	79000.00	24231.60	79000.00			245.7160034	6	3	1	239.7160034	236.7160034
159	158	24231.60	79500.00	24384.00	79500.00			245.7055203	13.5	6.75	1	232.2055203	225.4555203
160	159	24384.00	80000.00	25000.00	80000.00			245.5655116	14	7	1	231.5655116	224.5655116