

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name:	<u>LOVE CANAL</u>	ProjectID: 02-13
Last Updated:	08/01/01	
City:	Niagara Falls	
County:	Niagara	
State:	NY	
Country:	USA	
Bodies of Water:	Black Creek; Bergholtz Creek; Cayuga Creek; Niagara River	
US EPA Region:	II	
Status (Active, Complete, or Monitoring Only):	Complete	
Date On NPL:	1983	
ROD/ESD Date:	ROD 1985; ROD 1987; ESD 1989; ESD 1996; ESD 1998	
Operable Unit:	NA	
Areas of Concern (length or acres):	Black Creek flows into Bergholtz Creek; both pass through the northern portion of the Emergency Declaration Area (EDA) and flow into Cayuga Creek which, in turn, flows to the Niagara River. No lengths or widths are available.	
Other Characteristics of Water Body:	Backyards of occupied homes abut these creeks. Signs had been posted advising against fishing in these creeks; however, fishing may still occur in the creeks. Niagara River water, after treatment, is used for drinking water. A small area of the EDA north of Love Canal proper and adjacent to Bergholtz Creek is within the 100 year floodplain.	
Contaminants of Concern:	Dioxins (including 2,3,7,8 - TCDD)	
Source of Contamination:	Hooker Chemicals & Plastics Corporation, chemical wastes, from 1942-1953; dioxin reportedly originates with trichlorophenol wastes. Water and leachate from Love Canal entered the Cayuga Creek drainage basin via storm drain discharges to Black Creek.	
Contaminated Area Physical Characteristics:	Sediment concentrations of 2,3,7,8-TCDD in Bergholtz Creek, and its tributary Black Creek, averaged 380 pg/g with areas in excess of 1 ppt. Sediments in the main stem of Cayuga Creek downstream of Bergholtz Creek contained 2,3,7,8-TCDD concentrations averaging 300 pg/g. Excluding elevated dioxin concentrations at the mouths of storm sewer outfalls, Cayuga Creek contained an average 213 pg/g 2,3,7,8-TCDD in sediments.	
Type of Regulatory Action:	Superfund. Final.	
Overall Status Summary:	<p>Encapsulation of the Love Canal on-land site was completed during 1979 and 1980. These activities included installation of a leachate collection and treatment system. Sanitary and storm sewers, including those discharging to Black and Bergholtz Creeks, were cleaned in 1986 and 1987. These sewers contained as much as 600 ng/g 2,3,7,8-TCDD in the sediments. In 1989, dioxin-contaminated sediments variously reported as totaling 17,000 - 31,000 cy were removed from Black and Bergholtz Creeks in Niagara Falls, NY (provided as 3,000 cy in 1998 ESD). The creeks flow into the Cayuga River which in turn flows into the Niagara River.</p> <p>Black and Bergholtz Creeks were excavated from the point of interception of storm water drainage from the Love Canal area downstream to the junction with Cayuga Creek during 1989. The linear distance excavated was approximately 10,000 feet. Method of sediment removal was dry excavation. Dimensions of the creek from which sediments were removed are unavailable.</p> <p>A 1987 ROD required all dioxin contaminated materials, regardless of concentration, to be thermally treated onsite in a thermal destruction unit to a "six nines" destruction removal</p>	

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efficiency and that treatment residuals be disposed in selected onsite areas. A 1989 partial consent decree changed the incineration location to Occidental Chemical Corporation's Buffalo Avenue Plant Site and the materials were relocated to that plant site and stored in a permitted storage facility. Establishment of universal treatment standards (UTSs) in 1990 allowed these wastes to be reclassified and, along with other regulatory changes, a decision was entered (ESD, 1996) which allowed those portions of the wastes which exceeded UTSs (UTS for dioxins is 1 ppb) to be incinerated commercially and those that don't to be landfilled commercially. Sampling of these materials to determine waste categorization was performed in 1997. A variance was approved by EPA (ESD, 1998) to raise the UTS for dioxins and furans from 1 ppb to 10 ppb for creek sediments and related materials from the haul roads and sediment dewatering facility. It was estimated that the variance would result in about one-third of the contaminated materials requiring incineration and two-thirds requiring landfilling, including nearly all of the creek sediments.

Between 1996 and 1999, a total of 5,234 bags were sent to Rollins/Laidlaw facilities in Deer Park, Texas and Aragonite, Utah for incineration. The remaining 10,262 bags were directly landfilled either because they qualified based on the F039 LDRs or because they qualified based on the variance. Each bag was about 2.3 tons.

Remedial Action Planned: ☒

Risk Assessment: ☒

Remedial Action Implemented: ☒

Status of Dredging ☐

PRPs: ☒

Contacts: ☒

References: ☒

Modeling: ☐

Fishing Advisory: ☒

Key Conditions: commercial landfill, incineration, solidification/stabilization

REMEDIAL ACTION PLANNED

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Target Sediment Cleanup Standards (TSCS):	1 ppb 2,3,7,8-TCDD	
How TSCS Established:	CDC action level	
Target Bank and Floodplain Cleanup Levels (if applicable):	1 ppb 2,3,7,8-TCDD	
Other Target:		
Environmental Sample Data References:		
• Sediment:	Reference A-3	
• Water:		
• Fish:	Reference A-3 and A-250	
Estimated Target Volume:	16,000 - 21,000 cy (ROD, 1985)	
Planned Disposal Method:	Removal to a secure landfill was considered, but no facilities were willing and/or able to take the (dioxin-containing) wastes. Incineration was also considered but did not seem to be a viable alternative for the immediate future. However, these options may become more feasible and may prove to be the ultimate source of disposal. Because the sediments can be removed more rapidly than they can be treated or disposed of, and because all treatment or disposal methods require preparation of the sediments (dewatering, sizing, etc.) all sediments must be stored. An interim secure storage facility meeting all technical requirements of RCRA is proposed. The wastes will be stored until such time as one of the above means of disposal/destruction becomes available or until another method becomes technically feasible.	
Estimated Calendar Time to Implement Remedy:		
Estimated Time to Implement Remedy:		
Estimated Cost to Implement Remedy:	\$13 million (1985 ROD), excluding disposal	
Stated Remedial Action Objectives (and Source):	Not explicitly stated. The 1985 ROD states the following: "The detailed evaluation included consideration of the following factors: <ul style="list-style-type: none">• Rehabilitation of the area is being is being evaluated and cannot be ruled out.• There is presently an apparent stable population in the EDA.• Creeks form the border of the EDA; therefore, there is a population that will always exist adjacent to the creeks.• Dioxin has been found in the creeks at levels significantly higher that the one ppb CDC "action level" used at other sites. No standards currently exist for chemicals within sediment	

REMEDIAL ACTION PLANNED

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08/11/98

and, therefore, the impacts on the human population are unknown. Fish sampled in the study area contain significant levels of dioxin, levels that exceed by over three times the FDA advisory levels."

"... the conclusion has been reached that the length of Bergholtz Creek from 150 feet upstream of the confluence of Black Creek to the confluence of Cayuga Creek and the stretch of Black Creek from 98th St. culverts to the confluence of Bergholtz Creek should be dredged. Of major concern is the dioxin that has been found in the sediment."

"Sampling has indicated that the potential exists that Love Canal-related contaminants might have been discharged or may be discharged in the future) to Cayuga Creek and ultimately the Niagara River. It is being recommended that Bergholtz Creek be cleaned to its confluence with Cayuga Creek, and that sediment trap be placed there to deter the backflow of sediment. It has been assessed that Bergholtz Creek is just one point source of contamination, specifically dioxin, that may be entering Cayuga Creek. Additional sampling of Cayuga will determine a strategy for the remediation for this creek."

"The NYDEC has recommended that interim storage of these dioxin-tainted sediments be at the Love Canal or the 93rd St. School. In addition, it is recommended that the above reaches be fenced during creek cleaning to restrict access."

Measures of Success to be Used:

Planned Monitoring and Restoration:

Agency Position on Sediment Removal (and Source): Source: 1985 ROD

"Black Creek must be mechanically excavated, because of engineering constraints associated with hydraulic dredging. The decision to go with either hydraulic dredging or mechanical excavation for remediating Bergholtz Creek will be finalized during the design phase. Both options have comparable capital costs. The selection will be dependent on technical considerations. If it is determined that the banks of Bergholtz Creek need to be cleaned, mechanical excavation can only be used since this method will adequately clean these sloped areas. Based upon settling tests that are planned during design to determine the filtering and dewatering characteristics of this clayey sediment, hydraulic dredging may be ruled out due to the high water content of the waste that will be generated."

RISK ASSESSMENT

Project Name **LOVE CANAL**

ProjectID: 02-13

Last Updated: 08/11/98

RA Type:

RA Status:

RA Objectives:

Company CH2M Hill

Performing RA:

RA Reference Report:

***RA Summary and
Conclusions:*** Source: 1985 ROD

"Four sediment samples were taken by NYSDEC in the vicinity of the 93rd Street storm sewer outfall and analyzed by DOH for dioxin during April 1984. Results revealed significant levels of dioxin (6.4-10.2 ppb). Sampling of Bergholtz Creek sediments by DEC in the summer of 1984 indicated dioxin at 11 ppb as far downstream as 90th St."

"The dioxin in the Emergency Declaration Area (EDA) has been found in sediment deposits. The potential has existed and will continue to be present for exposure since the location of the dioxin is found in creeks bordering residential areas. These are areas that are inhabited and are considered for rehabilitation, and potential increased populations will subsequently increase the population at risk. Since dioxin is persistent in the environment; has been shown to bioaccumulate in the tissues of plants and animals; and has low solubility in water, the contamination will remain in the environment unless efforts are undertaken to contain it. This has been recognized in other cases such as U.S. vs. Vertac, 489 F. SUPP. 870 (E.D. Arkansas, 1980), and in consent decrees, such as United States vs. Hooker Chemicals and Plastics Corp., 540 F. SUPP. 1067 (W.D.N.Y., 1982), where Occidental Chemical Corporation agreed to clean up TCDD laden sediment from a local creek and clean out contaminated sediment in a storm sewer system. This consent decree demonstrates that TCDD remedial actions are feasible and have been ordered by the courts or agreed to by responsible parties."

"There are several pathways of human exposure to contaminated waters and sediments, as summarized below:

- Ingestion of fish. A compelling rationale for the elimination of stream and sewer sediments as sources of TCDD is that the discharge of TCDD and TCDD-laden sediment from these sewers and streams is contributing to levels of TCDD in many fish in the Niagara River and Lake Ontario that exceed New York Department of Health, Canadian, and Federal Food and Drug Administration health advisories (10 ppt, 20 ppt, and 25 ppt, respectively).

"Chemical analyses of various species of fish indicate levels of TCDD up to 417 ppt (near Love Canal) and an average level of approximately 34 ppt. US EPA and New York State have identified a limited number of sources of TCDD along the Niagara River and Love Canal is one of the most significant sources. TCDD concentrates at high levels in fish tissue from the water, sediment, and ingestion of other fish through what is known as bioconcentration, bioaccumulation, and biomagnification. US EPA, States, and other researchers have also detected significant levels of TCDD in fish near other TCDD sites, particularly sites in the State of Missouri, and the State of Michigan."

"As a matter of general practice, New York State and US EPA would not permit additional discharges to a river where the existing discharges already cause violations of health-based fish advisories. New York State, Canada, and FDA have already issued health advisories for fish based on concentrations of Mirex, PCBs, and mercury." "The discharge of these chemicals, therefore, should also be eliminated from the

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streams and sewers to the Niagara River."

"Transport of creek sediment with stream flow will tend to decrease the concentrations over time, but this possibility is reduced by the continued loading from the storm sewer outfalls. Potential human exposure may occur in two scenarios:

- Recreational activities. Exposure will occur during swimming, wading or other recreational use of the creeks. Access is temporarily limited along Black and Bergholtz Creeks because of fencing along the banks down to the 93rd Street School grounds. While the general effect of fences is to reduce exposure, they can be breached, and therefore, are neither an effective nor a permanent remedy pursuant to CERCLA. Access to Cayuga Creek is open but the sediment here had the lowest concentrations. During recreational activities, water may be ingested or absorbed through the skin. The exposure factors and their uncertainty is much the same as discussed in the section on sewer surcharging. Ingestion of dried sediment along the creek banks is a potential additional exposure route.

- Migration to residential yards. A high rainfall rate and/or a high stage of the Niagara River could produce flooding of the creeks into local residential yards. The qualitative nature of the human exposure potential is much the same as discussed above for surcharged sewer sediments."

"Correspondence (February 22, 1984) by the NYSDOH states, "It is clear that the presence of Love Canal associated chemicals, especially dioxin, in the sewers and creeks does pose a direct threat to children playing in the creeks, and persons exposed to biota downstream subject to exposure to chemicals being washed down to them."

"The potential exists for contamination of the drinking water supply taken from the Niagara River through creek sediment transport and suspension of the 102nd St. outfall sediment."

"The no-action alternative was thus eliminated based upon the existence of hazardous chemicals (especially dioxin) within the study area waterways and fish populations and the potential that exists for continued exposure to the local community."

REMEDIAL ACTION IMPLEMENTED

Project Name:	<u>LOVE CANAL</u>	ProjectID: 02-13
Last Updated:	08/01/01	
Physical Target:	Approximately 10,000 linear feet of creek and creek bank.	
Goals:	Removal to 1 ppb of 2,3,7,8-TCDD.	
Primary Contractor:	Sevenson Environmental Services	
Other Contractors:	TAMS Consultants (remedial design); Conestoga-Rovers & Associates (remedial design and long-term monitoring); Safety-Kleen (previously Laidlaw Environmental) (incineration of contaminated materials).	
Generic Remediation Method:	Dry excavation	
Equipment:	Excavators; cofferdams; a dewatering containment facility for storage of contaminated creek sediments.	
Material Handling:	Details not available.	
Volume Removed:	Creek sediment: 17,000 - 31,000 cy (variously reported; 31,000 cy reported in 1998 ESD); sewer remediation sediments: 2,500 cy; creek debris: 1,300 cy; road materials: 3,900 cy; and leachate treatment residues, such as spent carbon: 200 cy.	
Calendar Time:	August 3, 1989 to October 26, 1989 for removal and restoration of flow.	
Time To Implement:	About 3 months.	
Total Cost:	The total project cost was reportedly about \$14 million, without disposal. An undetermined portion of this cost also included the cleaning of storm sewers with outfalls leading to the creeks.	
Dredging Cost:	N/A	
Disposal of Sediment:	<p>Sediment and other materials identified as F039 have been stored since about 1988 at Occidental's Buffalo Avenue Plant. Prior to placement at the property, the materials were stabilized using lime and kiln dust and placed in double-lined plastic bags (2.3 ton of material per bag). An EPA-approved variance raised the UTS for dioxins and furans from 1 ppb to 10 ppb (ESD, 1998) that would allow most of the 38,900 cy of contaminated material, including 31,000 cy of sediments, to be disposed of in a RCRA Subtitle C-permitted landfill in the State of Utah. Those materials unable to meet the higher UTS would be sent to either Rollins/Laidlaw's Deer Park, Texas, or Aragonite, Utah facilities for high-temperature (>2,000F) incineration. The material was estimated to weigh 62,000 tons and was to be shipped offsite via railcar, 20 bags per car (160 bags or 368 tons per week). Project duration was estimated at about 3.25 years and total cost was estimated at \$15 - 27 million prior to release of the 1998 ESD.</p> <p>Between 1996 and 1999, a total of 5,234 bags were sent to Rollins/Laidlaw facilities in Deer Park, Texas and Aragonite, Utah for incineration. The remaining 10,262 bags were directly landfilled either because they qualified based on the F039 LDRs or because they qualified based on the variance.</p>	
Volume of Water:	Not available.	
Method of Water Treatment:		
Water Discharge Limit:		

REMEDIAL ACTION IMPLEMENTED

Project Name: LOVE CANAL

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Air Monitoring During Remediation:

Water Monitoring During Remediation:

Outcome: No details regarding outcome are available.

Restoration and Post-Monitoring:

Final restoration work included reseeding and revegetation.

A barrier drain and treatment system are presently in place and operating to capture leachate from the site and prevent offsite migration of chemicals. (Reference P-2)

Source: Reference A-250

"The Cayuga Creek drainage basin has served as the receiving waters for leachates originating from the inactive hazardous waste site known as Love Canal. Among the numerous chemical compounds originating from the site, the most toxic is 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD). To examine the efficacy of remedial work associated with Love Canal, monitoring of young for dioxins and dibenzofurans was conducted. Of the chemicals examined, the sole compound diagnostic for Love Canal was 2,3,7,8-TCDD. Declines in 2,3,7,8-TCDD concentrations averaged 70 percent between 1982 and 1987, and further declines ranging between 46 and 86 percent occurred between 1987 and 1992 dependent on location in the basin. The reductions were consistent with completion of encapsulation of the Love Canal site, and later cleaning of storm water drainage systems and removal of the most highly contaminated sediments from tributaries of Cayuga Creek. Total reduction of 2,3,7,8-TCDD concentrations in young-of-the-year fish were 84 percent more."

"Despite the reduction in 2,3,7,8-TCDD concentrations, young fish continue to possess dioxin levels in excess of criteria recommended for the protection of piscivorous wildlife, i.e. in excess of 2.3 pg/g. At downstream locations, some fish samples exceed the New York State Department of Health recommendation of 10 pg/g 2,3,7,8-TCDD for human consumption of fish. However, the concentrations observed in 1992 are dramatically improved when compared to values in excess of 50 pg/g observed in 1982. These latter values occurred in some species from downstream locations, most notably Bergholtz Creek immediately downstream of Love Canal and Cayuga Creek at Lindberg Avenue."

Site-Specific Difficulties: None identified.

Monitoring Data

References:

- **Sediment**
- **Water:** Reference P-2
- **Fish:** Reference A-250

POTENTIALLY RESPONSIBLE PARTIES

Project Name **LOVE CANAL**

ProjectID: 02-13

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name LOVE CANAL

ProjectID: 02-13

Last Name: KEY CONTACT INFORMATION NOT RELEASED

Contact ID:

First Name:

Title:

Company:

Address:

City:

State:

Postal Code:

Work Phone # :

Other Phone #:

Fax # :

Email Address:

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: A
Title: ***Record of Decision: Love Canal - 1985***
Location: AEM
Category: ROD/Proposed Plan/Action Memo/Decision Document
Prepared by/Author: US EPA Region II
Preparer/Author Address: 290 Broadway
New York, NY 10007-1866
Prepared For: General Public
Date Published: 1987
Key Words and Phrases:

ReferenceID: 2

Reference Type: A
Title: ***Record of Decision: Love Canal - 1987***
Location: AEM
Category: ROD/Proposed Plan/Action Memo/Decision Document
Prepared by/Author: US EPA Region II
Preparer/Author Address: 290 Broadway
New York, NY 10007-1866
Prepared For: General Public
Date Published: 1985
Key Words and Phrases:

ReferenceID: 3

Reference Type: A
Title: ***EPA Superfund Explanation of Significant Difference for the Record of Decision (EPA/ESD/R02-96/290)***
Location: AEM
Category: ROD/Proposed Plan/Action Memo/Decision Document
Prepared by/Author: US EPA Region II
Preparer/Author Address: 290 Broadway
New York, NY 10007-1866
Prepared For: General Public
Date Published: September 5, 1996
Key Words and Phrases:

ReferenceID: 202

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: A

ReferenceID: 250

Title: *Dioxins and Furans in Fish Below Love Canal, New York: Concentration Reduction Following Remediation*

Location: AEM

Category: Site Update

Prepared by/Author: Lawrence C. Skinner

Preparer/Author Address: New York State Dept. of Environmental Conservation
50 Wolf Road
Albany, NY 12233

Prepared For: NYSDEC Evaluation Project

Date Published: August 1993

Key Words and Phrases:

Reference Type: A

ReferenceID: 280

Title: *Study and Clean Up Program: Love Canal Landfill*

Location: AEM

Category: Site Update

Prepared by/Author: New York State Department of Environmental Conservation

Preparer/Author Address:

Prepared For:

Date Published: October 1990

Key Words and Phrases:

Reference Type: A

ReferenceID: 281

Title: *Remedial Chronology: The Love Canal Hazardous Waste Site*

Location: AEM

Category: Site Update

Prepared by/Author: New York State Department of Environmental Conservation

Preparer/Author Address:

Prepared For:

Date Published: July 1994

Key Words and Phrases:

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: A
Title: *Explanation of Significant Differences (III)*
Location: AEM
Category: ROD/Proposed Plan/Action Memo/Decision Document
Prepared by/Author: US EPA Region II
Preparer/Author Address:
Prepared For: General Public
Date Published: December 1998
Key Words and Phrases:

ReferenceID: 331

Reference Type: A
Title: *Remedial Action Report*
Location: BBL
Category: ROD/Proposed Plan/Action Memo/Decision Document
Prepared by/Author: New York State Department of Environmental Conservation
Preparer/Author Address: Division of Environmental Remediation
50 Wolf Road
Albany, NY 12233-7010
Prepared For: General Public
Date Published: April 18, 2000
Key Words and Phrases:

ReferenceID: 674

Reference Type: B
Title: *Love Canal; NYSDEC Inactive Hazardous Waste Disposal Report*
Location: AEM
Category: Site Update
Prepared by/Author: New York State Department of Environmental Conservation
Preparer/Author Address: Albany, NY
Prepared For: General Public
Date Published: April 1998
Key Words and Phrases:

ReferenceID: 279

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: B

ReferenceID: 344

Title: *Love Canal Fact Sheet*

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region II

Preparer/Author Address: http://www.epa.gov/region02/superfund/site_sum/0201644c.htm

Prepared For: General Public

Date Published: April 1998

Key Words and Phrases:

Reference Type: B

ReferenceID: 768

Title: *Realizing Remediation I - Great Lakes Contaminated Sediments
Black and Bergholtz Creeks - Love Canal
(see Reference A-905)*

Location: AEM

Category: Dredging; Remedial (Contaminated Sediments)

Prepared by/Author: US EPA Great Lakes National Program Office (GLNPO)

Preparer/Author Address: 77 West Jackson Boulevard (G-17J)
Chicago, IL 60604

Prepared For: General Public

Date Published: August 1, 2002

Key Words and Phrases:

Reference Type: B

ReferenceID: 826

Title: *Realizing Remediation II - Updated Summary:
Niagara River AOC: Black and Bergholtz Creeks - Love Canal
(see Reference A-907)*

Location: AEM

Category: Dredging; Remedial (Contaminated Sediments)

Prepared by/Author: US EPA Great Lakes National Program Office (GLNPO)

Preparer/Author Address: 77 West Jackson Boulevard (G-17J)
Chicago, IL 60604

Prepared For: General Public

Date Published: July 2000

Key Words and Phrases:

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: B

ReferenceID: 1054

Title: *EPA proposes to Remove Three Niagara County Sites from the Superfund List*

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region II

**Preparer/Author
Address:**

Prepared For: General Public

Date Published: March 17, 2004

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 31

Title: *Love Canal sediment cleanup needed in N.Y.*

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: April 25, 1997

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 180

Title: *Closing the book on Love Canal*

Location: AEM

Category: Site Update

Prepared by/Author: David Hanson

**Preparer/Author
Address:**

Prepared For: Chemical and Engineering News (C&EN)

Date Published: May 4, 1998

**Key Words and
Phrases:**

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: C

ReferenceID: 432

Title: *New Standards in Love Canal ESD Pares Sediment Incineration Plan*

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: February 5, 1999

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 576

Title: *Sediment Remediation Can Improve Great Lakes Water Quality*

Location: AEM

Category: Miscellaneous

Prepared by/Author: (1) John H. Hartig, (2) Lisa Maynard, (3) Michael A. Zarull, (4) Gail Krantzberg

**Preparer/Author
Address:** (1) Greater Detroit American Heritage River Institute
Detroit, MI

(2) International Joint Commission
Windsor, Ontario, Canada

(3) National Water Research Institute
Burlington, Ontario, Canada

(4) Ontario Ministry of Environment

Prepared For: Water Environment & Technology (WE&T)

Date Published: October 1999

**Key Words and
Phrases:**

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: C

ReferenceID: 900

Title: *Return to Love Canal - Portrait of an Environmental Catastrophe*

Location: AEM

Category: Miscellaneous

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Brownfield News

Date Published: August 1998

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 1107

Title: *EPA Completes its Cleanup Work at Love Canal, First Superfund Site*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Hazardous Waste/Superfund Week

Date Published: March 29, 2004

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 361

Title: *Look to Love Canal for dredging answer*

Location: AEM

Category: Site Update

Prepared by/Author: Werner Hetzner (Letter to Editor)

Preparer/Author

Address:

Prepared For: The Troy (NY) Record

Date Published: March 10, 2001

**Key Words and
Phrases:**

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: D **ReferenceID:** 362
Title: *Death and disease surround Canada's Love Canal*
Location: AEM
Category: Site Update
Prepared by/Author: Tom Cohen
Preparer/Author Address: The Associated Press
Prepared For: The Glens Falls (NY) Post Star
Date Published: July 15, 2001
Key Words and Phrases:

Reference Type: I **ReferenceID:** 29
Title: *Love Canal Landfill Site*
Location: AEM
Category: Site Update
Prepared by/Author: Conestoga-Rovers & Associates
Preparer/Author Address:
Prepared For: Distribution
Date Published: 2000 circa
Key Words and Phrases:

Reference Type: M **ReferenceID:** 367
Title: *Results of Contaminated Sediment Cleanups Relevant to the Hudson River:
Black and Bergholtz Creeks, New York (Love Canal)*
Location: AEM
Category: Contaminated Sediments: Overview of Issues
Prepared by/Author: Joshua Cleland
Preparer/Author Address:
Prepared For: Scenic Hudson
9 Vassar Street
Poughkeepsie, NY 12601
Date Published: October 2000
Key Words and Phrases:

REFERENCES

Project Name LOVE CANAL

ProjectID: 02-13

Reference Type: P
Title: ***1997 Monitoring Report***
Location: AEM
Category: Site Update
Prepared by/Author: Conestoga-Rovers & Associates
Preparer/Author Address:
Prepared For: Occidental Chemical Corporation
Date Published: January 1998
Key Words and Phrases:

ReferenceID: 2

Reference Type: R
Title: ***Letter to PRP re: Case Histories: Contaminated Sediment Sites (wirh response from CRA Services)***
Location: AEM
Category: Site Update
Prepared by/Author: AEM, Inc. with response from CRA Services
Preparer/Author Address: Malvern, PA 19355
Prepared For: CRA Services, submitted to
Date Published: August 14, 1998
Key Words and Phrases:

ReferenceID: 18

FISH ADVISORIES

Project Name **LOVE CANAL**

ProjectID: 02-13

Advisory: Cayuga Creek ***AdvisoryID:*** 296
Extent: Niagara County
Pollutant: dioxin
Species: all fish
Population: NCGP
Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: River ***Advisory Number:*** 729

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Tony Forti ***Contact Number:*** 518-402-7815

Advisory: Cayuga Creek ***AdvisoryID:*** 297
Extent: Niagara County
Pollutant: dioxin
Species: all fish
Population: NCSP
Population Definition: No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children.

Advisory Type: River ***Advisory Number:*** 729

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Tony Forti ***Contact Number:*** 518-402-7815

Advisory: Niagara River ***AdvisoryID:*** 975
Extent: Below falls (Great Lake connecting waterbody)
Pollutant: dioxin
Species: all fish
Population: NCSP
Population Definition: No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children.

Advisory Type: Great Lake ***Advisory Number:*** 750

Status (Active or Rescinded): Active ***Date Rescinded:***

Contact Name: Tony Forti ***Contact Number:*** 518-402-7815

FISH ADVISORIES

Project Name LOVE CANAL

ProjectID: 02-13

Advisory: Niagara River

AdvisoryID: 976

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: bass-smallmouth

Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 987

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: carp-common

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 977

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: catfish-channel

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

FISH ADVISORIES

Project Name LOVE CANAL

ProjectID: 02-13

Advisory: Niagara River

AdvisoryID: 986

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: eel-american

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 980

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: perch-white

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 979

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: salmon-chinook

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

FISH ADVISORIES

Project Name LOVE CANAL

ProjectID: 02-13

Advisory: Niagara River

AdvisoryID: 978

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: salmon-coho

Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 985

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: sucker-white

Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 983

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: trout-brown

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

FISH ADVISORIES

Project Name LOVE CANAL

ProjectID: 02-13

Advisory: Niagara River

AdvisoryID: 984

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: trout-brown

Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 982

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: trout-lake

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Niagara River

AdvisoryID: 981

Extent: Below falls (Great Lake connecting waterbody)

Pollutant: dioxin

Species: trout-rainbow

Population: RGP

Population Definition: Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

Advisory Type: Great Lake

Advisory Number: 750

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815
