

*Love Canal
Inactive Hazardous Waste Site:
A History Of The Remediation By Operable Unit*

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Operable Unit 01 - Site Containment/Leachate Treatment System

The remediation of the Love Canal Hazardous Waste Site began on August 22, 1978 with the State installing an eight-foot high chain link fence around the former canal and the first two rings of houses. At the same time, design work was completed on systems to halt the outward migration of chemicals from landfill. On October 10, 1978, work began on the Love Canal Leachate Collection System which consisted of about 7,000 ft. of barrier drains around the canal. This collection system was substantially complete by November of that year. On September 10, 1979 construction started on the Leachate Treatment Facility, which began operations on December 7, 1979. The NYSDEC completed placement of a 22-acre, three-foot thick clay cap over the landfill in July 1980.

Operable Unit 02 - Site Containment and Cap Extension

In October 1981, design work began on a program to improve the efficiency of the Containment System. These plans included; repairs to Leachate Collection System, upgrading the cap to include a synthetic membrane and expanding the cap to over 40 acres, installation of a below-grade concrete groundwater cutoff wall (which was later deleted because it was not cost effective), improved surface drainage near the canal, and the cleaning, plugging and abandonment of storm and sanitary sewers within rings I and II. Work on these improvements started in June 1982 with the demolition of the homes in Rings I and II. By November 9, 1984 the work was complete, the plastic liner was in place, covered with 18 inches of fill and seeded to provide a healthy vegetative cover.

Operable Unit 03 - Creeks Remediation

As early as 1979 Dioxin contamination was known to exist in Black Creek. In response the USEPA announced, in February 1980, that it would federally fund cleanup of sewers and dioxin-contaminated creeks. The NYSDEC collected numerous samples from the Black and Bergholtz Creeks. These studies identified Dioxin-contaminated sections of Bergholtz Creek from 150 feet upstream of its confluence with Black Creek to 93rd Street footbridge. On May 6, 1985, the USEPA signed a ROD, also covering Operable Units 04, 05, and 15, and design work began in July, 1985 for the remediation of the creeks. Construction starting on May 2, 1988 and the remediation was near completion by October 26, 1989 when water was allowed back into creeks.

Operable Unit 04 - 1986 Sewer Cleaning

The USEPA released its Love Canal Environmental Monitoring Report in May 1982 and the U.S. Department of Health and Human Services advised that the EDA would be as habitable as the control comparison area once the contaminated storm sewers were cleaned. NYSDEC collected over 1,000 samples from the storm and sanitary sewers and, in October 1983, a final report recommended cleaning over 60,000 linear feet of storm and sanitary sewers. On May 6, 1985, as part of the Creeks ROD (Operable Unit 03), the USEPA required the cleaning of these sewers. Cleaning began in April 1986 using both mechanical and hydraulic techniques, followed by a television inspection. Work continued through summer with 300 cu. yds. of sediments removed and stored at the Sediment Dewatering Facility.

Operable Unit 05 - Frontier Avenue Storm Sewer

The reconstruction and realignment of the Frontier Avenue storm sewer between its former intersections with 97th and 99th Streets was done in the spring of 1987. This was necessary because the sewer was located inside the utility cut-off walls, constructed as part of Operable Unit 02, across Frontier Avenue and also passed through the barrier drain system. The existing sewer was sealed with concrete and abandoned in place, with drainage rerouted either through shallow piping to the LaSalle Expressway drainage system or to two new catch basins connected to the existing storm sewer which remained in service beyond the abandoned section, to the east.

Operable Unit 06 - Additional Sewer Cleaning

Confirmatory testing done in October 1986, as part of Operable Unit 04, indicated some additional contaminated sanitary sewers between 76th and 81st Streets, along Frontier Avenue. Sediment sample analytical results indicate concentrations of dioxin in excess of 600 parts per billion (ppb). On October 5, 1987 the additional sanitary sewer cleaning began. The work consisted of cleaning and inspecting a total of approximately 3400 linear feet of sewer line using the same techniques as the previous sewer cleaning. About 15 cubic yards of material was removed from these sewers.

Operable Unit 07 - 102nd Street Storm Sewer Outfall

The 102nd Street Storm Sewer Outfall, which is located outside the EDA, has been impacted by Love Canal contamination. Recognizing this, the USEPA identified an interim remedy for this area in its May 6, 1985 ROD covering the cleanup of the Black and Bergholtz Creeks and the storm and sanitary sewers (Operable Units 03 and 04). It is now NYSDEC's recommendation that this problem be addressed as part of the remedial program for the 102nd Street Landfill Site. The recommendation is based on the fact that subsequent studies of the 102nd Street site confirm contamination well beyond the limits of construction defined in the May 6, 1985 ROD. However, the NYSDEC plans to line a section of this sewer, near the LaSalle Expressway as work to be done under Operable Unit 18.

Operable Unit 08 - Perimeter Survey and Long Term Monitoring Program

In the fall of 1985, the NYSDEC began installing approximately 100 monitoring wells around the Love Canal site. Soil samples were analyzed during the boring of 38 shallow groundwater wells to determine the areal extent of the contamination. A number of wells were installed directly into the canal in order to monitor liquid elevations within the waste and to better monitor the effectiveness of the leachate collection system. Thirteen bedrock wells were installed near the canal site to evaluate the potential for contamination of the bedrock groundwater system and provide insight into the need for additional dewatering efforts. In addition, five sets of nested piezometers were installed to determine the influence of the collection system on the groundwater system.

Operable Unit 09 - Habitability Study

On September 27, 1988, Dr. David Axelrod, Commissioner of the New York State Department of Health, issued his "Decision of Habitability" for the Emergency Declaration Area. The criteria used was recommended by an expert panel of independent scientists, pilot tested in 1986-87 and modified by the Technical Review Committee, after public review. The criteria compared areas of the EDA with three similar Western New York neighborhoods. The process involved 2,500 soil samples tested for eight indicator chemicals and additional testing for dioxin. The results found that EDA areas 4 - 7 met all the criteria and were suitable for residential use, while EDA areas 1, 2 and 3 did not meet all the criteria due to levels of indicator chemicals above the comparison areas.

Operable Unit 11 - Administration Building Construction

Construction of the Love Canal Administration Building began in July 1986 and the NYSDEC on-site personnel occupied the building in February 1987. It is a single story, wood framed, 2,900 square foot building and is used by leachate treatment facility operators. The building provides proper hygiene facilities, storage room and office space. Included in the building is an administration office/conference room, washroom, locker rooms, shower room, equipment storage room, mechanical room, garage and laboratory. Work under the Administration Building project also included the installation of a remote controlled entrance gate and communications system as well as an entrance gate flood light.

Operable Unit 12 - EDA Home Maintenance Program

The NYSDEC began, on August 5, 1987, a comprehensive maintenance survey of the homes within the EDA. LCARA and NYSDEC agreed on a stabilizing maintenance program, with work starting on June 29, 1988. The work included repairing roofs, boarding up windows and removing damaged interior material both north and south of Colvin Boulevard. Due to the amount of work needed, all the contract budgeted amount was used to fund ongoing work in EDA Area 4 and on 93rd and 96th Streets. The remaining work would be done the next construction season, through a second contract. The Habitability Decision led to the Cooperative Agreement between LCARA and USEPA on May 22, 1989. It provided for technical assistance and funding for LCARA to assume responsibility for home maintenance.

Operable unit 13 - Thermal Destruction Technology

On October 26, 1987 the USEPA issued a ROD which called for on-site thermal destruction of contaminated sewer and creek sediments (Operable Unit 03 and 04), and other Love Canal remedial wastes. This resulted in the construction of a dewatering/containment facility for on-site storage of treatment facility wastes and other remedial debris, and plans for a transportable thermal destruction unit with an efficiency performance standard of 99.9999%. On June 1, 1989, OCC signed a Partial Consent Degree formalizing their February 1988 proposal to build a storage facility and solids incinerator at their Niagara Falls Main Plant site for the contaminated wastes. This eliminated the need for NYSDEC to use the containment facility and a thermal destruction unit at the site.

Operable Unit 14 - 100th Street Remediation - Lot "C"

Lot C, a vacant lot on 100th Street, was found to have 2,3,7,8 - TCDD contamination ranging from 17 to 21 ppb in one soil sample taken for the Habitability Study (Operable Unit 09). In February 1988, the NYSDEC placed 480 feet of fence around the area. To define the contamination's extent, additional sampling was done in April, 1988, which confirmed that the dioxin contamination was; in the 5.9 to 35.1 ppb range, in the upper 12 inches of soil, and limited to the fenced area. On November 2 & 3, 1988, ten cu. yds. of soil was removed, drummed and stored at the Love Canal Site. The drums were eventually taken by OCC under the June 1, 1989 Partial Consent Degree (Operable Unit 13). Testing done on November 13, 1988, confirmed that the remediation was successful.

Operable Unit 15 - Cayuga Creek Fish Study

In January 1985 the NYSDEC released the Cayuga Creek fish and sediment sampling report which found two possible areas of dioxin contaminated sediments with levels of 1.09, 1.28, and 0.99 ppb in the vicinity of Love Canal storm sewer outfalls. The report identified the creek as an impacted area and was included in the May 6, 1985 ROD, which also dealt with Operable Units 03, 04 & 07. As a result, in October 1987, the Division of Fish and Wildlife began a fish study to assess the impacts of the sewer and the Black and Bergholtz Creek projects. The October 1987 and October 1990 samplings found the dioxin levels declining since the 1982 sampling. A final sampling round is scheduled for October 1992 and, if required, a limited sediment excavation is possible.

Operable Unit 16 (A9) - EDA Areas 2 and 3

With the Habitability Decision (Operable Unit 09), LCARA adopted, in May 1990, a Master Plan calling for commercial or light industrial use of EDA Areas 2 and 3 because it was not economically feasible to remediate these areas to meet residential criteria. The NYS Disaster Preparedness Commission's (DPC) Findings Statement found that LCARA's Master Plan did not fully address the economic issues allowing for residential use. By analyzing 82 soil borings at depths of 0-3, 3-6, and 6-12 inches; the December 1989 EDA 2 and 3 Remediation Study determined that removal of six inches of soil throughout the areas would render them suitable for residential use. The NYSDEC's May 1991 Cost Analysis Report provided LCARA and the DPC with the cost of remediating EDA 2 and 3.

Operable Unit 17 (B9) - I.R.M Area 4

As a result of testing done to develop the 1988 "Decision of Habitability" for the EDA (Operable Unit 09), two areas of BHC contamination were discovered in EDA Area 4. In April and September 1990, NYSDEC and NYSDOH collected over 50 soil borings, to a maximum depth of six feet or native soil. A review of the data found the contamination is confined to three lots, 9909 and 9903 Black Creek Drive, and 1044 100th Street; and indicated that contaminated soils were used as fill material. On March 25, 1991, the NYSDOH recommended the lots be remediated and the Department will pursue removal of the contaminated soil. This removal will involve about 900 - 1,000 cu. yds. of soil. The NYSDEC sampled on February 4, 1991 to identify Potentially Responsible Parties.

Operable Unit 18 (A9) - Frontier Avenue Sewer Investigation

Long term monitoring program sampling found a small amount of a Non-Aqueous Phase-Liquid in the Frontier Avenue storm sewer in May 1988. The NYSDEC investigated and developed plans to immobilize this material. Various cutoff walls were installed and a section of the storm sewer was abandon (Operable Unit 05), however, in August, 1990, during installation of a cutoff wall, unexpected, historic, contamination was discovered in the storm sewer pipe bedding. Immediately four test pits were dug downstream, between 100th and 101st Streets, and contamination was found in three of the four pits. To further investigate, on April 15, 1991, four test pits were excavated. In all four pits, the pipe bedding was stiff clay and no contamination was found.