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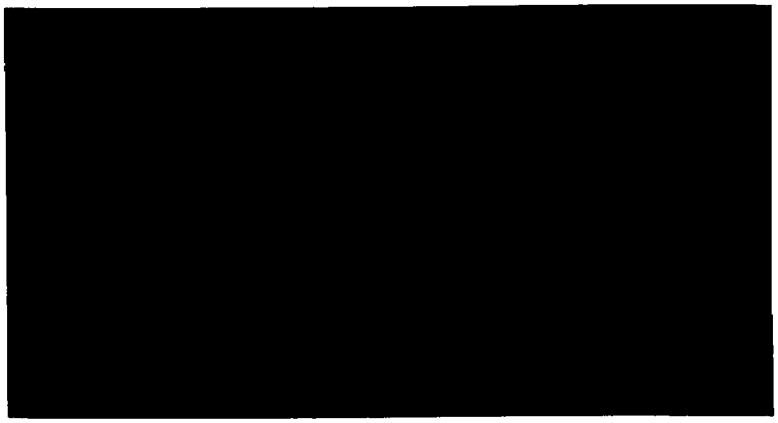

LOUREIRO ENGINEERING ASSOCIATES, P.C.

New York State Department of Environmental Conservation
93rd Street School, Niagara Falls
Contract No. D002740
Site No. 9-32-078
☒ Approved ☐ Approved As Noted ☐ Resubmit With Revisions ☐ Disapp
COMMISSIONER OF ENVIRONMENTAL CONSERVATION
James Von Hoesen, P.E.
Designated Representative
Date 1-7-93

FINAL REPORT
FOR
REMEDIATION OF THE 93RD STREET SCHOOL SITE
(SITE NO. 9-32-078)
CITY OF NIAGARA FALLS
NIAGARA, NEW YORK

Prepared for:

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY, NEW YORK 12233

September 18, 1992

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COMM. NO. 506-04

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I. INTRODUCTION

The 93rd Street School Site is located within the Love Canal Emergency Declaration Area in Niagara Falls, N.Y. Remediation of the site had been found necessary because of contaminated fill deposited on the site between 1938 and 1951. The Remedial Investigation Feasability Study (RIFS) conducted on site, the Post Decision Proposed Plan (PDPP), and Record of Decision Amendment (RCDA), selected soil excavation, removal and off-site disposal of the contaminated materials at the 102nd Street Landfill in Niagara Falls, N.Y. This option was determined to be the best cost effective remedial solution allowing for the highest effective use of the site, a fully functional educational facility. Funding for this project has been provided under the United States Environmental Protection Agency (EPA) Superfund program.

The principal part of the remediation program was the excavation, removal and disposal off-site of approximately 16,000 tons of contaminated soil, stone, and pavement at the 102nd Street Landfill. All site remediation work was performed and conducted in accordance with the Contract Documents (Plans and Specifications) for the Remediation of the 93rd Street School Site prepared for NYSDEC by Loureiro Engineering Associates, Contract No. D-001B19, dated July 9, 1991.

The site remediation work called for and performed under this contract included:

- excavation, removal and off-site disposal at the 102nd Street Landfill of contaminated soils;
- decommissioning, removal and disposal of groundwater monitoring wells;
- decommissioning, removal and disposal of an underground heating oil storage tank and appurtenances;
- backfilling the site, placing of top soil and seeding;
- installation of subbase and asphalt pavement;
- cleaning the exterior surface of the school building;

- site restoration;
- all support activities including site security, preparation of plans, air monitoring, sampling, disposal of all process residuals and compliance with applicable laws and regulations; and
- Site topographic surveys were performed throughout all excavation and backfill phases by Larsen Engineers of Rochester New York.

In addition to the above work, site conditions dictated that additional remediation be conducted which was beyond the scope of work called for in the Contract Documents. The supporting documentation for this additional work and this work is described more fully in the body of this report. A summary of this work follows:

- excavation, segregation, transportation and disposal off-site at an approved Treatment, Storage, and Disposal Facility (TSDF) 269.98 tons of hazardous soils (lead);
- excavation, transportation and disposal of an on-site concrete decon pad not used by the contractor; and
- placement of filter fabric in deep excavations containing fly ash and in areas to be paved over fly ash backfill.

The remediation contractor for this project was Tricil Environmental Response, out of Burlington, North Carolina.

The contractor mobilized the week of November 18, 1991. Remediation activities were initiated on December 4, 1991 and substantially completed on June 4, 1992 with completion and site restoration completed on June 30, 1992. A winter shut down ran from March 6, 1992 to April 15, 1992. The contractor shut down operations during the holiday break from December 20, 1991 to January 1, 1992.

The following report describes more fully the work performed, changes in on-site conditions, the disposal locations, drawings and the substantial completion inspection.

II. WORK PERFORMED

A. General

The work performed to satisfy the contract requirements for the remediation of the 93rd Street School site is detailed in the following section. A time line is presented to outline the schedule of major portions of the project work.

B. Time Line

November 18, 1991

- Notice to Proceed

November 19, 1991 - December 6, 1991

- Mobilization
- Administrative Area Layout
- Temporary Fencing Installation
- Commenced Well Abandonment
- Wastewater Holding Tank Delivered and Installed

December 7, 1991 - December 20, 1991

- Decon Facilities Constructed
- Completed Well Abandonment
- 24-Hour Site Security Begins
- Access Road Installation
- Truck Scale Delivered and Installed
- Contaminated Soil Excavation and Disposal Commences

December 21, 1991 - January 1, 1992

- Holiday Shut Down

January 2, 1992 - March 5, 1992

- Underground Storage Tank Excavation and Disposal
- Contaminated Soil Excavation and Disposal Completed
- Concrete Decon Pad Excavation and Disposal (See Section IV of This Report)
- Temporary Backfilling of Deep Excavations
- Level B Hazardous Material Excavation (See Section IV of this Report)

March 6, 1992 - April 14, 1992

- Winter/Spring Shut Down

April 15, 1992 - May 7, 1992

- Cleaning of School Building Exterior
- Backfill and Compaction of Deep Excavations
- Installation of Stabilization Fabric
  (See Section IV of This Report)
- Hazardous Material Removal and Disposal
  (See Section IV of This Report)

May 8, 1992 - June 30, 1992

- Sub-base Stone Placement and Compaction
- Asphalt and Concrete Placement
- Sub-Soil and Top-Soil Placement
- Seeding and Site Restoration
- Substantial Completion Inspection
- Completion of Punch-list Items

C. Mobilization and Site Development

Tricil Environmental Response mobilized equipment and supplies to initiate operations at the 93rd Street School site remediation project. Construction trailers were installed and the administrative area was laid out. Layout of the administrative area included the installation of temporary site utilities as well as a parking area and site access road.

Temporary perimeter fencing was installed by Fox Fence Co. of Niagara Falls, N.Y. Existing fencing on the property was removed and re-installed to encompass the 93rd St. School site. New fencing and gates were provided as required to close the site.

The installation of a truck decontamination pad was necessary to eliminate the migration of contaminated soil into the clean zone of the site as well as the surrounding areas. A pit was excavated large enough to contain rinse water used to decontaminate each dump truck leaving the site. A 40 mil HDPE liner was installed to contain the water and a sump was installed to collect water and

provide an area from which to pump. The pit was filled with pea stone and a series of wood planks were used to construct a ramp for the truck traffic. A wind screen was installed to prevent wash water from spraying outside the decontamination area.

A personnel boot wash and decontamination area was set up in and adjacent to the truck decon pad and a boot drying area was installed adjacent to the truck pad and the decontamination trailer. The decontamination trailer consisted of personnel lockers and changing areas, toilet facilities and showers.

A temporary crusher run stone road was installed to gain access to the northern portion of the site. The quantity of gravel used for construction of the road was subtracted from the excavated material quantity and the gravel road was eventually excavated and disposed of with the contaminated soils.

A 16,000 gallon contaminated fluid holding tank was installed in a bermed and lined containment area. This tank was necessary for on-site temporary storage of rinse water from the truck decon pad, groundwater pumped from the contaminated soil operations, and rinse water from the school building cleaning operation. The contents of the tank were periodically transported to the Love Canal Wastewater Treatment Plant for treatment.

A truck scale was installed on concrete footings in line with the truck decon pad and the entrance gate. Trucks hauling contaminated fill were decontaminated and then weighed prior to leaving and entering the site. Payment to the Contractor for

contaminated soil excavation was based on the net weights displayed on the electronically transmitted weight tickets. The scale was calibrated by the manufacturers representative and certified by the New York State Bureau of Weights and Measures.

A 24 hour security guard was required to track and log visitor and vehicle traffic onto the project site as well as provide security during non-operational hours and holidays. Security was provided for the duration of the remediation work at the site. A security trailer was installed adjacent to the entrance gate to the site and visitors were required to sign in and out with the security guard prior to entering or existing the site.

D. Well Abandonment

Decommissioning, removal and disposal of 14 existing groundwater monitoring wells commenced on December 4, 1991. This work was performed by J.E. Fritts and Associates from Voorhees, N.J. Abandonment of each well consisted of the removal of well riser and screen, auguring to remove all remaining grout and sand pack, and injection of a Portland Cement/bentonite grout to secure the hole.

Two of the 16 monitoring wells which were to be removed could not be located in the field and it was determined that these monitoring wells had been removed during a previous remediation project at the 93rd Street School site. Monitoring well MW-1 was found to be damaged at the well riser. This well was not decommissioned in accordance with the contract documents at the direction of NYSDEC.

E. Contaminated Soil Excavation and Disposal

A primary objective in the remediation of the 93rd Street School site was the excavation and off-site disposal of contaminated soil. The process of removing contaminated soil involved the excavation to pre-determined limits and stockpiling of contaminated soil. The soil was then loaded onto dump trucks which proceeded to a decontamination pad where dirt and dust were removed, and the truck was inspected for cleanliness prior to leaving the site. The truck was then weighed on a truck scale (each truck was weighed coming onto the site as well). The trucks hauled the material approximately 2 miles to the 102nd Street landfill. The haul route from the site was 93rd Street to Colvin Boulevard to 95th Street south to Frontier Avenue east; Frontier Avenue to 102nd Street south; 102nd Street to River Road to the 102nd Street Landfill.

The receiving operation at the 102nd Street landfill was managed by Occidental Chemical Corporation. A security guard logged vehicle traffic in and out of the landfill. A gravel haul road and ramp was installed for trucks to access the cell in which material from the 93rd Street School site was to be deposited. The unloading area was manned by a foreman, a dozer operator and a laborer to sweep off each truck after dumping.

Hauling of the contaminated soil to the 102nd Street Landfill commenced on December 16, 1991 and both hauling and excavating operations were completed on February 16, 1992. The total quantity of contaminated material excavated and hauled to the 102nd St.

Landfill is 15,956.97 tons. This quantity includes 199.50 tons excavated from the Decon Pad described in Section IV, Part B of this report. The excavation and disposal of contaminated soils at the 93rd Street site had no major variations from the contract scope except for the following incident:

- High readings exceeding site specified action levels were registered with on-site photo-ionization detectors air monitoring instruments on January 10, 1992, alarming on-site personnel to the presence of unknown volatile organic compounds. The contractor shut the job down in accordance with the site Health and Safety Plan. Excavation operations were delayed from January 10 to January 27, 1992 and is further explained in Section IV of this report.

F. Health and Safety

The potential risks involved with the remediation of the 93rd Street School site project required Tricil to implement strict health and safety measures in accordance with the Contract Documents. A Health and Safety Plan (HASP), drafted by Tricil and approved by NYSDEC and LEA, required Tricil to have an on-site health and saftey officer during the course of the remediation work. Responsibilities of the health and safety officer included the following:

- Implementation of the HASP.
- Monitoring of air quality in and around the excavation and the perimeter of the site.
- Initial training of on-site workers with respect to the contents of the HASP.

- Conduct weekly health and safety meetings.
- Maintain and distribute personnel protective equipment.
- Maintain and submit to LEA daily and weekly records of health and safety concerns.

The project site was divided into three project work zones as defined in the site Health and Safety Plan. The area of the extent of identified contaminated soils was designated the exclusion zone, and required workers to dress in appropriate protective clothing. The decontamination area, comprised of the truck decon pad, boot wash and decon trailer, was designated the contamination reduction zone. The administrative and support area was designated the clean zone.

The nature of the excavation of contaminated soil at the 93rd Street School site required the workers to wear level D protective equipment while in the exclusion zone. Level D protection included the use of chemically resistent coveralls, gloves and boots, safety glasses and hard-hat. The exception to this occurred while excavating hazardous material which required Level B personal protective equipment (supplied air respirator). Details of this can be found in Section IV of this report.

Protecting the health of on-site personnel and the surrounding community was a prime objective of the air monitoring conducted during the course of the remediation work. Both real-time air monitoring and documentation monitoring were performed on-site.

Real-time air monitoring in the vicinity of the excavation was performed by the health and safety officer and designated workers. The following instruments were utilized for real-time air monitoring:

- A Photoionization Detector (PID) was used to detect the presence of volatile or semi-volatile organic vapors.
- A Real-Time Aerosal Monitor (RAM) was used to measure total particulates.
- A combustible gas and oxygen monitor was used during operations at the underground oil tank removal.
- A geiger counter able to detect beta and gamma radiation was used on-site.

Documentation air monitoring was performed both in and around the excavation and at the perimeter of the site. Organic vapors were monitored using air sampling pumps and charcoal tubes and total dust samples were collected using sampling pumps and appropriate filters. "High Risk" workers in and around the excavation were fitted with documentation monitoring instruments.

Perimeter documentation monitoring was performed by selecting 7 stations along the perimeter of the project boundry which could be used throughout the course of the remediation work. Four (4) sites were chosen on a daily basis by the health and safety officer and LEA's resident representative to locate one (1) upwind and three (3) downwind sampling stations. Results of the documentation and real-time air monitoring were prepared by the health and safety officer and submitted to the engineer.

Results of the documentation and real-time air monitoring concluded no releases of volatile organics or total particulates above action levels specified in the Contract Documents or the Health and Safety Plan at the perimeter of the site. Action levels were not detected in the vicinity of the excavation except for the incident described in Section IV a. of this report.

G. Underground Storage Tank Removal

The 20,000 gallon underground heating oil storage tank had approximately 4,000 gallons of No. 6 fuel oil remaining which had to be removed prior to excavation. Tricil mixed the No. 6 fuel oil with 1300 gallons of No. 2 diesel fuel in order to gain a consistency of liquid which could be pumped. The mixture was then transferred by tanker truck to LaSalle High School in Niagara Falls.

SLC excavated and pulled the tank in the presence of the City of Niagara Falls Building Inspector and Fire Inspector. Confirmatory samples of the remaining soil around the excavation were taken and analyzed to prevent backfilling over oil contaminated soil. The tank was freed of sludge, decontaminated and hauled off for salvage.

H. School Building Exterior Cleaning

The three sides of the exterior of the school building which were exposed to areas of contaminated soil excavations were required to be decontaminated. This was done using a gasoline powered pressure water washer. A man lift was used to elevate the worker and the building was sprayed from the top down. Wash water was collected in a sump constructed of polyethylene and lumber. The

collected water was then pumped into the wastewater holding tank for removal of solids prior to transport to the Love Canal Wastewater Treatment Plant.

I. Backfill and Compaction

The deep excavations were backfilled and compacted to meet contract specifications. The backfill product used was a crusher run stone processed gravel which was submitted and approved as a substitute material to bank run gravel.

Backfill material was placed in accordance with lines and grades specified on the drawings. Compaction tests were taken throughout the backfilled areas in accordance with the contract documents. SLC Construction Company of Lockport, NY placed a total quantity of 3,763 c.y. of material to the specified lines and grades.

J. Sub-base Stone and Pavement

All sub-base stone, asphaltic pavement and concrete was installed by Merrit Paving, Inc. of Niagara Falls, NY. Sub-base stone was crusher run stone similar to the backfill material used. Compaction of sub-base was achieved using a hydraulic vibratory roller and compaction tests were taken in accordance with the contract documents. The pavement consisted of 1-1/2" of Type 3 binder course and 1-1/2" compacted Type 8 top course to lines and grades shown on the drawing, and concrete aprons at the north and east entrances to the school.

The total quantities of sub-base stone and asphalt/ concrete installed are as follows:

Sub-base Stone - 1,636 c.y.

Asphalt and Concrete - 6,498 s.y.

K. Sub-Soil, Topsoil and Seeding

SLC Construction Company placed the sub-soil and topsoil to the lines and grades required in the contract documents. The seed and fertilizer were applied by the hydroseeding technique. The quantities of sub-soil, topsoil and seeding and mulch are as follows:

Sub-Soil - 4,085 c.y.

Topsoil - 2,757 c.y.

Seeding and Mulch - 22,805 s.y.

L. Site Restoration and Substantial Completion

Any property, roadway, sidewalks, etc., which were damaged due to Tricil or it's sub-contractor's operations, were restored to their original condition at the completion of the project. Additional restoration items were brought to Tricil's attention in the form of a punch list.

The punch list was drafted as a result of a meeting which signified substantial completion of the project. The substantial completion meeting was attended by Jim Van Hoesen of NYSDEC, Jim Tuk of NYSDEC, representatives of LCARA (Love Canal Revitalization Agency), the housing authority, the Town of Wheatfield and representatives from the Niagara Falls School Board as well as Tricil representatives (the contractor) and NYSDEC's engineers, Loureiro Engineering Associates.

Since the substantial completion meeting, there have been 2 additional site inspections by LEA's resident representative. A 12-month inspection of the project completion is yet to be scheduled.

III. DISPOSAL LOCATIONS

Materials generated as a result of the remediation of the 93rd Street School site were disposed at the following locations:

a)	Excavated Contaminated Soil	102nd St. Landfill, Niagara Falls, NY
b)	Lead Contaminated Soil	Michigan Disposal Inc. Belleville, Michigan
c)	No. 6 Fuel Oil	Niagara Falls School Board, LaSalle High School, Niagara Falls, NY
d)	Underground Fuel Oil Storage Tank	William Kugler & Bros., Inc. Salvage, Lockport, NY
e)	Waste Personal Protective Equipment and Oil Sludge 55 Gallon Drums	Chem Met Services, Inc. Wyandotte, Michigan
f)	Wastewater	Love Canal Treatment Facility, Niagara Falls, NY

IV. CHANGE ORDERS

Work performed beyond the scope of the project included the following:

- Discovery of hazardous soil which was excavated, sampled, stockpiled, analyzed, and disposed of at a Treatment, Storage and Disposal facility (TSDF).
- Excavation and disposal of a concrete decontamination pad and wastewater holding tank which were installed and used on a previous project.
- The placement of stabilization fabric to minimize potential settlement problems associated with backfilling on unstable fly ash material.

A. Hazardous Material

On January 10, 1992, on-site photoionization detectors indicated the presence of volatile organic compounds with readings of 80-90 ppm near the area of excavation. These readings exceeded action levels defined in the site Health and Safety Plan. The immediate work area was evacuated in accordance with the project Health and Safety Plan, and the perimeter of the site was monitored.

Implementation of engineering measures included the sampling, excavation and segregation of soil which demonstrated readings of greater than 5 ppm on air monitoring instruments. This segregated material was then transferred to a lined, bermed stockpile area while the sample was being analyzed. Excavation was performed in Level B personal protection, which required the use of breathing air while in the exclusion zone.

The staging area for stockpiled materials was constructed from January 20 to January 22, 1992. The staging area consisted of 6,030 sq. ft. of 60 mil HDPE liner installed in a bermed containment area.

Snow and rain events during the time period from January 10th caused the need for significant dewatering operations prior to continued excavation. The excavation in the area of contaminated soils was dewatered from January 22 to January 27, 1992.

Excavation in Level B protection commenced on January 28, 1992 and all material which exhibited high readings on the air monitoring instrument was segregated and stockpiled. A soil sample was taken from the contaminated soil on January 28, 1992.

Analysis on the soil sample revealed the presence of lead in

the soil above TCLP levels. The material was transported to the TSDF on April 24, 27, May 1 and May 7, 1992. A total of 269.98 tons of lead-contaminated soil was received at the TSDF from the 93rd Street School site. The addition of an average of approximately 800 pounds of cement per truck load of material stablized any liquid in the soil prior to leaving the site.

B. Concrete Decontamination Pad and Wastewater Holding Tank

A concrete decon pad, utilized on a previous remediation project, remained in an area adjacent to the 93rd Street School site. LEA and NYSDEC directed Tricil to excavate and dispose of the material at the 102nd Street Landfill for a negotiated price of $65.00 per ton.

Tricil used a hydraulic hammer attached to a backhoe to break the concrete on February 21, 1992. A total of 199.5 tons of concrete and stone was hauled to the 102nd Street Landfill on February 25, 1992.

The concrete waste water holding tank associated with the decon pad was excavated and hauled to the 102nd Street Landfill. This work was completed on March 3, 1992 and was agreed to be paid on a time and material basis.

C. Stabilization Fabric Placement

Closure concerns were raised regarding settlement and compaction of the pavement and final cover to be placed over the fly ash that remained in place after the contaminated soil excavation was complete. Measures were therefore implemented to reduce the impact of backfilling over the unstable fly ash materials.

LEA and NYSDEC directed Tricil to place stabilization fabric

over the fly ash in the following areas. These areas are shown on Sheet 3 in Section V of this report.

- Unpaved areas - Areas where gravel fill material was to be placed above fly ash received a layer of stabilization fabric prior to backfilling.
- Paved areas - Prior to placement of sub-base stone a layer of filter fabric was placed in areas where fly ash is suspected to exist.

A total of 15 rolls (4500 sq. ft. ea.) of stabilization fabric were placed and paid for on a time and material basis.

V. RECORD DRAWINGS (To be Submitted)

Sheet 1 - As Built Site Plan

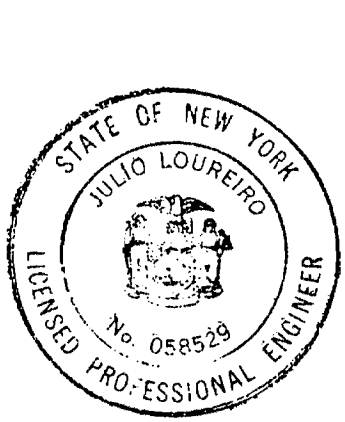
Sheet 2 - Contour Map of Excavated Area

Sheet 3 - Areas of Stabilization Fabric Placement

VI. ENGINEERS CERTIFICATION

The 93rd Street School Site (Site No. 9-23-078) Remediation, City of Niagara Falls New York was completed in accordance with the Contract Documents (Contract No. D-001319) dated July 9, 1991 and Addendum No. 1 dated August 9, 1991.

September 18, 1992



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