Engineering Report

REMEDIAL ACTION
FINAL ENGINEERING REPORT

COLUMBUS McKINNON CORPORATION
TONAWANDA, NEW YORK

AUGUST 1995

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COLUMBUS MCKINNON CORPORATION
REMEDIAL ACTION
FINAL ENGINEERING REPORT

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1.0 INTRODUCTION

1.1 INTRODUCTION

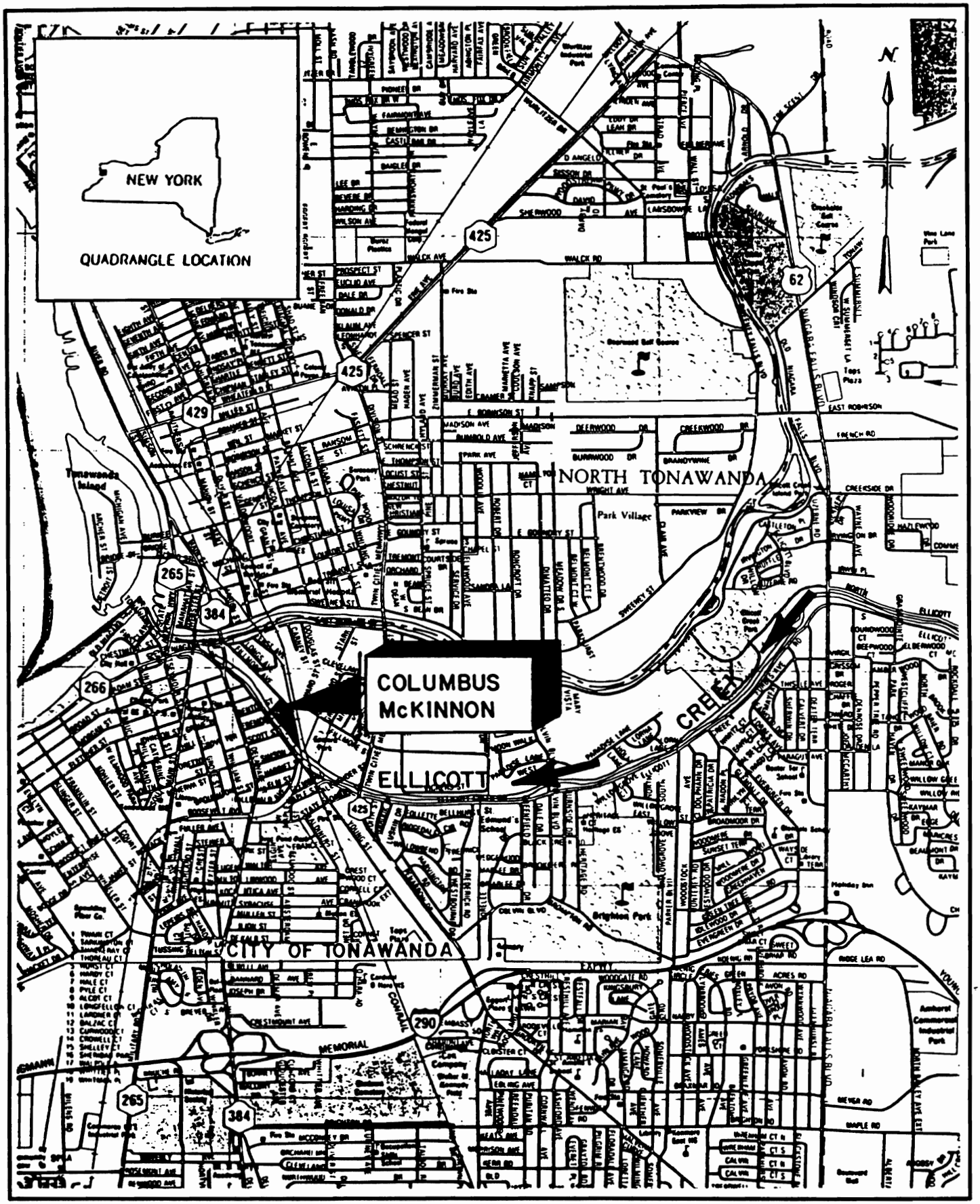
This remedial action final engineering report was prepared by Malcolm Pirnie, Inc. on behalf of Columbus McKinnon Corporation in conjunction with the Remedial Design/Remedial Action Order-on-Consent, Index #B9-0240-88-10, for a facility which is owned by Columbus McKinnon Corporation in Tonawanda, New York. The facility is listed on New York's Registry of Inactive Hazardous Waste Disposal Sites as Site Number 915016. This report describes all construction activities associated with the approved Remedial Design, provides as-built plans, and certifies that the Remedial Design was implemented and all construction activities were completed in accordance with such approved Remedial Design.

1.2 SITE LOCATION AND DESCRIPTION

The Site is located along Ellicott Creek at Columbus McKinnon Corporation's (CMC's) industrial facility at One Fremont Street in the City of Tonawanda, New York (Figure 1-1). The Site, as defined in the Remedial Investigation (RI) Work Plan (Malcolm Pirnie, 1989) and shown on Figure 1-2, encompasses an area of known or suspected contamination measuring approximately 320 feet by 60 feet including a portion of the CMC property along Ellicott Creek and a triangular-shaped parcel owned by the Consolidated Railway Corporation (Conrail) located south of and adjacent to the CMC property.

1.3 SITE BACKGROUND

CMC's facility was operated until 1984 for the manufacture of a variety of chain products. Since 1984, the facility has been used by CMC primarily to house a small forging, metal fabrication, and heat treating operation and for the storage of CMC products for sale.



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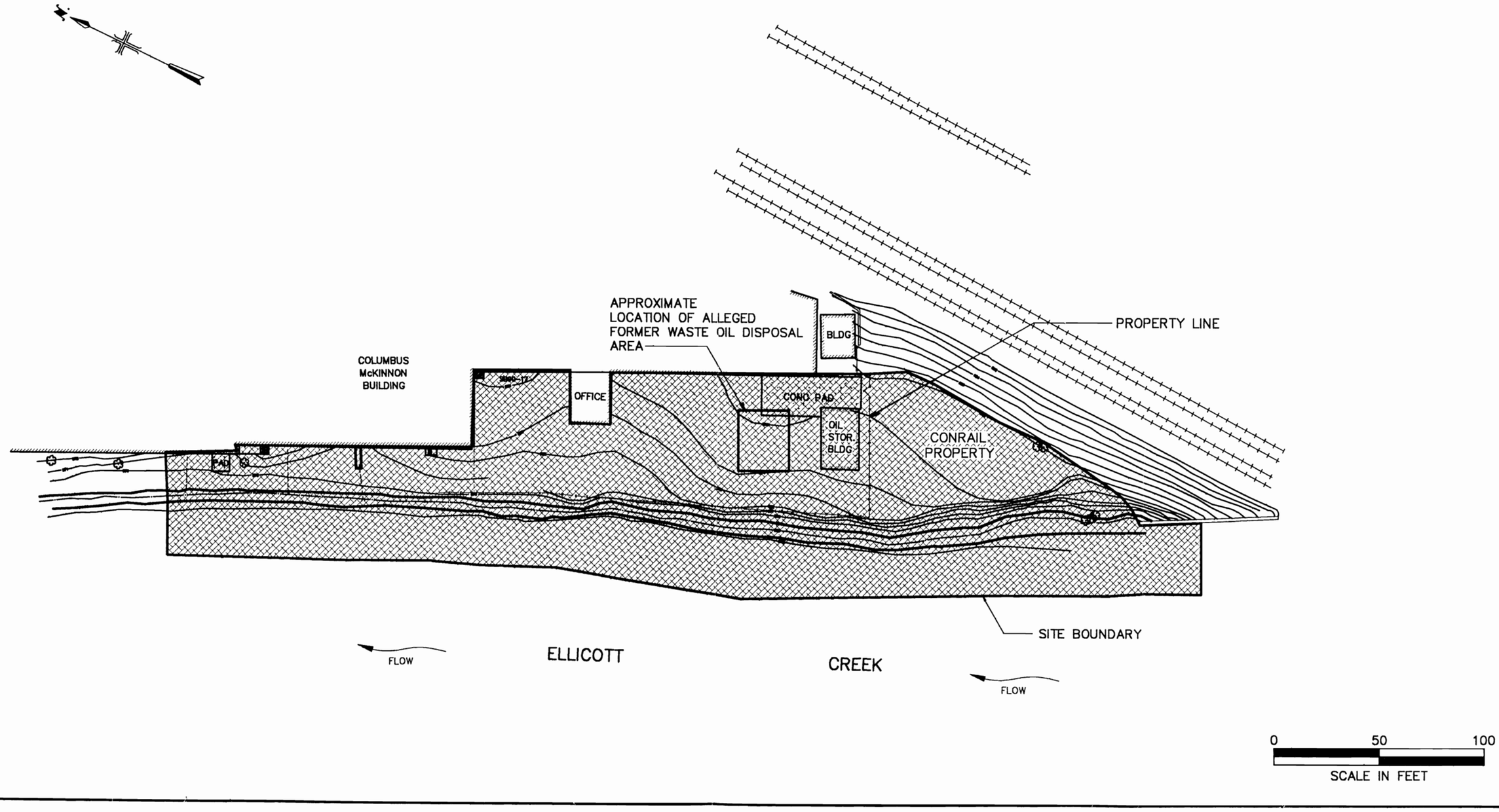
COL-01-MAP

COLUMBUS McKINNON PLANT SITE

GENERAL LOCATION MAP

COLUMBUS McKINNON CORP. JULY 1995



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REMEDIAL CONSTRUCTION MONITORING REPORT

PROJECT SITE LOCATION

COLUMBUS McKINNON CORPORATION JULY 1995

A portion of the property is also leased by CMC to other companies for warehousing and light manufacturing purposes.

The Site is listed by the New York State Department of Environmental Conservation (NYSDEC) on the New York State Registry of Inactive Hazardous Waste Disposal Sites (Site Number 915016). The NYSDEC has classified the Site as "2", having found that portions of the Site present a significant threat to the public health or the environment.

Columbus McKinnon conducted preliminary site investigations from 1979 through 1986. In October 1989 Columbus McKinnon entered into an Order On Consent with the NYSDEC to conduct a Remedial Investigation and Feasibility Study (RI/FS) and install an Interim Remedial Measure (IRM). IRM construction, completed in November 1990, consisted of grading of the creek bank to uniform slopes and installation of filter fabric and riprap. The filter fabric and riprap reduced erosion of contaminated creek bank soils from overland storm water runoff, as well as channel and wave erosion caused by stream flow in Ellicott Creek.

The RI was completed in June, 1991 and identified three areas requiring further remedial action:

- The creek bank adjacent to the Site.
- Site soils.
- Ellicott Creek sediments adjacent to the Site which exhibited elevated PCB concentrations.

The FS, completed in April 1992, evaluated alternative remedial measures relative to remedial action objectives. A preliminary remedial action plan (PRAP) was developed by the NYSDEC based upon the findings of the FS. After considering public comment received on the PRAP, the NYSDEC signed a Record of Decision (ROD) on October 30, 1992 delineating final remedial actions to be completed at the Site. The ROD was amended by NYSDEC on May 13, 1994 at CMC's request to accommodate minor design changes suggested by the remediation contractor (the ROD as amended). See Appendix D for a copy of the Minor Modification to the Record of Decision.

CMC entered into an Order-on-Consent dated September 28, 1993 (Index No. B9--0240-88-10) with NYSDEC to: a) submit a remedial design to implement the remedial alternative for the Site selected by the NYSDEC in the Record of Decision (ROD); and b) implement the construction in accordance with the NYSDEC-approved Remedial Design.

CMC contracted with Malcolm Pirnie, Inc. to prepare the Remedial Design and the contract documents and to monitor the construction activities. The remedial construction contract was competitively bid and awarded to OHM Remediation Services, Inc. and the transportation and disposal contract was awarded to Waste Technology Services.

1.4 REMEDIAL ACTION PLAN

A summary of the remedial action plan as delineated in the ROD as amended is presented below.

Site Soils:

- Removal of PCB-contaminated soil at or above 10 ppm with off-site disposal in a TSCA/RCRA approved landfill.
- Providing a minimum of 1 foot of clean soil cover for all areas where PCB concentrations exceeded 1 ppm.

Creek Bank Soil and Creek Sediment:

- Removal of the IRM from the creek bank and creek bed.
- Installation of a temporary silt curtain to control the migration of disturbed sediment particles during removal of the IRM materials and during sediment dredging operations.
- Installation of sheetpiling along the creek bank at water level and at the top of the bank.
- Removal of all contaminated creek bank soil with PCB concentrations at or above 10 mg/kg between the two rows of sheetpiling. Off-site disposal of contaminated soils in a TSCA/RCRA approved landfill, and backfilling of the area between the sheetpiling with clean fill.

- Dredging of PCB-contaminated sediment from Ellicott Creek adjacent to the Site.

- Treatment of dredged creek sediment on-site in a plate and frame filter press, with final disposition of the solids in an off-site TSCA/RCRA-approved landfill. Discharge of treated water, meeting appropriate effluent limits, into Ellicott Creek within the confines of the silt curtain.

The remedial design, including the Remedial Design Engineering Report and the contract documents (and addenda) were reviewed and approved by the NYSDEC.

1.5 PURPOSE AND SCOPE

The purpose of this Final Engineering Report is to document the remedial construction activities at the Columbus McKinnon Site in accordance with CMC's Order on Consent (Par. III D). Specifically, this report provides the following:

- A general description of the work performed.

- Identification of any modifications during construction from the Design Engineering Report or the contract documents.

- Laboratory test results.

- As-built drawings showing the horizontal grid system, contour plans showing the depth of excavation/dredging, cross-sections of the creek, sheetpiling wall details, and other miscellaneous construction details.

- Color photographs of the work while it was in progress.

- Professional engineering certification that the remedial design was implemented and all construction activities were completed in accordance with the Department-approved remedial design.

2.0 SITE REMEDIATION ACTIVITIES

2.1 GENERAL

Site remediation activities were performed under two separate contracts. A remedial construction contract was competitively bid and awarded to OHM Remediation Services, Inc. (OHM) for demolition, excavation, dredging, sheetpile wall construction, and all related on-site remediation requirements. A separate contract was awarded to Waste Technology Services, Inc. (WTS) for off-site transportation and disposal of contaminated soils and dewatered dredge sediment in a permitted hazardous waste landfill. Construction activities began in August 1994 and were substantially completed in May 1995. Final completion was achieved in July 1995.

Malcolm Pirnie personnel were on-site on a daily basis as the Owner's representative to monitor construction activities, coordinate the work between all involved parties and collect and analyze cleanup verification samples. A NYSDEC representative was also present on a routine basis to monitor site activities.

2.2 REMEDIAL DESIGN MODIFICATIONS

The remedial design documents, as approved by the NYSDEC and put out to bid, involved construction of a dredged sediment dewatering basin, construction and operation of a temporary treatment plant within the Columbus McKinnon building, and transportation of contaminated soils and sediment to a staging area across Ellicott Creek using a barge. The project also called for placement of gabion baskets along the creek bank north of the sheetpiling wall to help stabilize the shoreline.

During the selective bidding process, OHM Corporation proposed an alternative approach which included the construction and operation of a treatment plant within Columbus McKinnon's courtyard area located north of the Site rather than inside the building, utilizing a plate-and-frame filter press to mechanically dewater dredged sediment rather than the dewatering basin, and transportation of contaminated materials along a temporary access road

adjacent to the Creek rather than the utilization of a barge. The alternative approach also proposed eliminating the use of gabion baskets by placing riprap on the creek bank from the creek bottom to the top of the shoreline. The alternative project approach was subsequently reviewed and approved by the NYSDEC and a Minor Modification to the Record of Decision was granted on May 19, 1994 (see Appendix D). The remedial construction contract document entered into by CMC and OHM were revised to reflect these approved changes.

Changes to these remedial construction contract documents which have been implemented during construction as the result of site conditions are noted within the discussion of each construction element below.

2.3 CLEARING AND GRUBBING

The general work area and creek access road area were first cleared of trees and brush, then the existing chain link fence around the Site and the plastic sheets and chain which covered portions of the Site were removed. All non-hazardous debris was placed in roll-off containers and transported to the Lake View landfill in Pennsylvania for disposal.

On-site groundwater monitoring wells were abandoned according to the procedure specified in the contract documents (i.e., they were filled with a cement/bentonite grout mixture and were cut off at the appropriate depth in accordance with the contract documents).

2.4 ACCESS ROAD CONSTRUCTION

Following clearing and grubbing, a temporary access road was constructed along the creek bank from the courtyard area located between the two Columbus McKinnon buildings to the Site. After removing existing fencing along the creek bank, the area was graded to form a road surface. Timber mats were then placed to distribute the weight of haul vehicles and prevent sloughing of the creek bank. The mats and graded road area were then covered with run-of-crusher stone for the haul road surface.

2.5 BUILDING DEMOLITION

Prior to excavation of contaminated soils, the existing concrete block office area and concrete block oil storage building located within the Site excavation area were demolished. The above-grade materials (walls, windows, roof materials, etc.) were placed in roll-off containers and disposed of as C&D debris at the Lake View landfill. Below-grade building materials (broken pieces of the concrete pads and foundation walls) were excavated, pressure-washed, and placed in roll-off containers. Representative chip samples of the material in each container were collected by Malcolm Pirnie for laboratory analysis of PCBs in accordance with USEPA Method 8080. All laboratory test results indicated less than 10 mg/kg PCBs (see Appendix B1 for laboratory reports). The foundation materials were then staged until soil excavation activities were complete and used as backfill in the bottom of the excavation area.

Prior to demolition of the oil storage building, two exterior doors were determined to contain asbestos insulation. After implementation of asbestos abatement procedures by OHM, the doors were disposed of separately at Chemical Waste Management's (CWM) Model City landfill.

2.6 IRM REMOVAL

The existing riprap above the water line was removed from the creek bank using a track excavator and staged on Conrail property for future use as site backfill material. (It was decided during the construction that utilizing the IRM riprap as backfill rather than stream bank protection was more economical.) After installing the double-row of silt curtains described in Section 2.9.1, riprap removal below the water line of the creek began. Each bucket full of excavated riprap was pressure washed over a temporary lined containment pool to remove creek sediments and then staged for later use as backfill. Wash waters from the containment pool were collected in a vacuum trailer unit and transported to the dewatering/ water treatment system. The erosion control fabric beneath the riprap was removed and disposed off-site with the PCB-contaminated soils. The removal of all riprap was verified

through an underwater inspection by a diver. A total of 389 cubic yards of riprap were removed.

2.7 SOILS EXCAVATION

2.7.1 General

The excavation of PCB-contaminated soils followed the NYSDEC-approved contoured excavation plan and installation of the outer (western) wall of sheetpiling. The sheetpiling wall acted as an erosion barrier during soils excavation activities. Excavated soils were placed in 2-cy geotextile sacks which were then loaded into 30-cy roll-off containers for transportation to and disposal at the CWM Model City, New York TSCA/RCRA permitted landfill. Additional excavation was performed where verification sample results indicated 10 mg/kg or greater PCB concentrations. A topographic survey was performed by the Contractor upon completion of the excavation activities to verify the depth of excavation. A total of 2,672 cy of contaminated soil material was removed from the area located between the Columbus McKinnon building and edge of water.

2.7.2 Sampling and Verification

This section describes the sample locations, sampling methodology, analytical methodology and data interpretation that was employed during the soil verification sampling.

2.7.2.1 Soil Sample Locations and Collection Methodology

The excavation area was divided into grids for the purpose of verification sampling. After the Contractor excavated soils to the elevations shown on the approved excavation plan, Malcolm Pirnie performed verification sampling within each grid. A grab sample representing zero to 6-inches below the excavated ground surface was collected from the center of each grid (see Plate 1 in Appendix E). The samples were collected by hand using a stainless steel trowel. The trowel was cleaned with a non-phosphate soap solution and deionized water between samples. The grab samples were transported to an independent, NYSDOH ELAP-certified laboratory for PCB analysis.

2.7.2.2 Analytical Laboratory Methodology/Detection Limits

Soil samples were analyzed for PCBs by General Testing Corporation. Table 2-1 identifies the testing method, method reference, detection limit, holding time, preservative, and container specifications for PCB analysis of these soil samples.

TABLE 2-1

ANALYTICAL METHODS & PROTOCOLS FOR SOIL VERIFICATION SAMPLING

Parameter	Method	Method Ref.	Maximum Detection Limit	Holding Time	Preservation	Container
PCBs - Soils	8080	1	1 mg/kg	Note 1	Cool to 4°C	4 oz. glass jar with teflon-lined lid

Note (1): Samples submitted for PCB analysis were extracted within seven (7) days of sample receipt and analyzed within 40 days of extraction. Sample extraction was performed in accordance with USEPA Method 3550.

Method Reference 1: USEPA SW-846, Third Edition

2.7.2.3 Data Interpretation

The cleanup goal for the Site soils was established as less than 10 mg/kg PCBs. Thus, when verification sample results indicated a PCB concentration of the remaining soils to be below 10 mg/kg for a particular grid, the excavation was considered complete for that area. When the PCB concentration was 10 mg/kg or greater, however, an additional 6 inches of soil was excavated from the grid and the grid was retested. (In some instances, greater than 6-inch increments were sampled and excavated when high concentrations of PCBs had been identified) This procedure was continued until acceptable PCB concentrations were detected. Laboratory analytical results for the soil verification sampling are provided in Appendix B2.

2.7.3 Caisson Excavation

Five spot locations shown on the as-built drawings were excavated using 4'-0" diameter caissons as approved by NYSDEC, to provide the integrity of the buildings at the site by permitting excavation to the desired depth, and to ensure that soils at or above the threshold levels were sent for off-site disposal. After excavation of the soils within each caisson, the hole was backfilled with select fill and the steel caisson was removed.

2.7.4 Four Locations Subject to Special Handling

Four locations of the Site as shown on Sheet 3 of 15 of the approved contract documents were anticipated to contain soils with PCB concentrations less than 10 mg/kg. Soils excavated from these locations were placed in specially-marked soil bags and staged until representative verification sampling results were received. Only one of the four locations (the one located under the Office Building) was determined to contain soils with PCB concentrations less than 10 mg/kg. Those soils were utilized as general backfill within the excavation area. Soils from the other three locations were transported to the CWM landfill for disposal. Final verification sampling within the appropriate grids indicated less than 10 mg/kg PCBs.

2.7.5 Drum Excavation and Disposal

During excavation for the relocation of the roof drain at the north end of the sheetpiling a 55-gallon drum of unidentified contents was uncovered. The drum was handled using required safety measures and placed in an overpack container. Sample analysis of the contents revealed no hazardous waste present. At the suggestion of the transportation and disposal contractor, the drum was transported to the CWM landfill and disposed of with PCB-contaminated material. Complete analytical results are provided in Appendix B7.

2.8 SHEETPILE INSTALLATION

Following removal of the IRM materials, OHM's subcontractor (Manson Construction Co., Inc.) began the installation of the outer (western) wall of sheetpiling. This row of sheetpiling was installed from a barge using a crane with a vibratory pile-driver. The outer wall was installed along the water line of the creek prior to any soil excavation activities on shore.

The inner (eastern) row of sheetpiling was installed in a similar fashion following completion of all dredging/excavation activities and removal of the silt curtain. The bracing and walers were then installed according to the approved plans to strengthen and tie the two

walls together. Clean off-site select fill was used to backfill the area between the sheetpiling walls. A mechanical tamper was used for compacting the backfill in approximate 12-inch lifts.

The Contractor elected to install the sheetpiling as described rather than all at once to speed up the on-shore soil excavation work and to avoid the physical difficulties involved with excavating PCB-contaminated soil materials between the walls. Delaying installations of the inner row of sheetpiling also facilitated mechanical dredging as described further in Section 2.9.

2.9 CREEK DREDGING OPERATION

2.9.1 Silt Curtains

Two silt curtains were utilized to mitigate the release of potentially PCB-contaminated sediments from the dredged area to the Creek channel during dredging operations. The silt curtains were placed in the Creek prior to removal of the IRM riprap below the water line and remained there until all dredging activities were completed. The curtains were manufactured by Parker Systems, Inc. of a 22-ounce PVC-coated nylon, covered with vinyl. Each curtain was weighted at the bottom with 5/16″ galvanized chain and had expanded polystyrene flotation devices attached to the top. The curtains were 50-foot and 100-foot lengths and fastened together with extruded aluminum connectors. Each curtain was moored as required with Danforth anchors and marked with PSI boom lights.

The inner curtain (the one closest to shore) was installed approximately five feet outside the dredge limits to allow the dredge sufficient room to remove sediment up to the defined dredge limit line. The outer curtain was placed approximately two feet from the inner curtain and was attached to it with ropes. The bottom of both curtains rested on the creek bottom.

Whenever possible, a silt curtain was installed perpendicular to the creek bank to isolate areas where dredging had been completed; however, due to the long length of the dredge and dredge discharge hose, use of perpendicular silt curtains was not always practical.

A sorbent boom was placed between the inner and outer curtains to capture any

floating scum, oil, or solids that might escape the inner curtain. Absorbent pads were also utilized within the dredge area to remove any oil film or scum from the surface of the water.

Upon completion of the creek excavation/dredging and dewatering/water treatment operations the silt curtains were removed. After removal of the silt curtains from the creek, they were placed within the treatment facility secondary containment area, and decontaminated using a high pressure washer. After decontamination the contractor removed the curtains from the Site.

2.9.2 Dredge Methods and Operation

The method utilized for removing creek sediment was revised twice during the dredging operation as a result of unanticipated site conditions on the creek bottom. Each time the NYSDEC was advised of the circumstances and approval was received for the revised methods.

The original method of sediment removal used a horizontal augerhead hydraulic dredge to remove the sediment in lifts. The system used an 8-foot wide horizontal augerhead to suspend and direct sediment to the middle of the auger where it was then hydraulically suctioned into the dredge pump intake. The pump transferred the sediment slurry to the dewatering facility via a double-containment pipeline made of 8- and 12-inch HDPE pipe. The pump and augerhead were mounted on an 8-foot by 40-foot dredge barge provided and operated by Aqua Dredge, Inc.

After the initial pass of the dredge limits was completed, a significant amount of debris was encountered along the creek bottom which prevented the augerhead from advancing deeper into the sediment. With NYSDEC's approval, the dredge method was revised to remove the augerhead and replace it with a suction manifold. Three divers with hoses attached to the suction manifold could then direct the hose nozzles around the debris to dredge the sediment. The same sediment slurry pipeline and dewatering facility were used.

The revised dredging method removed loose sediment but was unable to dredge the more compacted sediment at deeper depths in an area located between sample grids C-6 to C-15 (Refer to Plate 2 in Appendix F). A mixture of rubble and debris along the creek

bottom also presented removal problems in this area. (The rubble and debris consisted of a non-uniform mixture of sediment, sands, metals, wood, broken glass, concrete, bricks, etc.) The third dredge method, also approved by NYSDEC, involved the use of a shore-based track mechanical excavator (i.e. backhoe) working in conjunction with the diver-directed suction manifold dredge. The mechanical excavator was outfitted with a trash rack to remove compacted sediment and debris and allow it to drain above the dredge area prior to placement in lined rolloff boxes. Portland cement was added to the rolloff to stabilize the sediment and to absorb any free water prior to transportation and disposal at CWM's landfill. During the mechanical dredging process, large quantities of concrete, brick, and stone were excavated. To avoid the substantial and unnecessary cost of disposing of this material off-site, it was instead washed off using a high-pressure washer and used as on-site backfill in the area between the sheetpiling wall and the Columbus McKinnon building. This procedure was approved by the NYSDEC prior to implementation.

Following the mechanical dredging, and with the approval of NYSDEC, the entire dredge area between grids C-6 and C-15 was dredged by the divers two more times to ensure contaminated sediment removal. A total of 2,349 in-place cubic yards of sediment and debris was removed from the creek bottom.

2.9.3 Sediment Sampling and Verification

2.9.3.1 Sample Locations

Sediment samples were collected from the creek bed immediately following the completion of the dredging activities. Sample locations were spaced at 20-foot intervals, based upon the Contractor's site grid system, with one sample collected near shore and one further out into the creek (see Plate 2 in Appendix F). Each sample was analyzed separately (viz., not composited) for PCBs.

2.9.3.2 Sample Collection Methodologies

Three methods of sample collection all pre-approved by NYSDEC were used for this project. The type employed was dependent upon the dredging method being utilized.

Initially Malcolm Pirnie personnel collected sediment samples with a ponar dredge from a rowboat as described in the approved Construction Quality Assurance Plan. When the use of divers began it was decided to have one of the divers collect sediment samples in a 4-ounce glass jar under Malcolm Pirnie's directions.

Following completion of the mechanical excavation of the creek sediment and final dredge of that area with the divers, core samples were collected in the area from grid C-6 to C-15. Details of the coring methodology and sampling results are included in Appendix B3.

2.9.3.3 Analytical Methodology and PCB Detection Limits

Sediment samples were analyzed for PCBs by a New York State Department of Health ELAP-certified laboratories (Acts Testing Labs, Inc. and General Testing Corp.) Table 2-2 identifies the method, method reference, holding time, preservative, and container specifications for PCB analysis of sediment samples. Since additional dredging was based on the results of the verification sampling, 24-hour turnaround of the results was required. The sample results were reported on a dry weight basis. The target detection limit was 0.2 mg/kg on a wet weight basis which equates to a dry weight detection limit of 1 mg/kg with sediments consisting of 20 percent solids.

TABLE 2-2

ANALYTICAL METHODS & PROTOCOLS FOR SEDIMENT VERIFICATION SAMPLING

Parameter	Method	Method Ref.	Maximum Detection Limit[a]	Holding Time	Preservation	Container
PCBs - Sediment	8080	1	0.2 mg/kg	Note 1	Cool to 4°C	4 oz. glass jar with teflon-lined lid

Notes:
(1) Samples submitted for PCB analysis were extracted within seven (7) days of sample receipt and analyzed within 40 days of extraction. Sample extraction was performed in accordance with USEPA Method 3550.
(2) Wet weight basis.
***Method Reference 1:** USEPA SW-846, Third Edition*

2.9.3.4 Data Interpretation

The specified cleanup goal for the creek sediments was nondetectable concentrations (i.e., 1 mg/kg PCBs on a dry weight basis). The detection of PCBs at dry weight concentrations greater than 1 mg/kg necessitated further dredging and re-sampling until sediment samples indicated conformance with the cleanup goal in each portion of the dredge area being tested. If both samples within each grid indicated non-conformance with the PCB cleanup goal, that grid was re-dredged and re-sampled until the cleanup goal was achieved. If only one of the samples in the grid indicated non-conformance with the PCB cleanup goal, the re-dredging and re-sampling occurred in connection with the near-shore or far-shore sediments, depending on which sample had failed to meet the cleanup goal until laboratory analysis indicated achievement with the cleanup goal. Complete analytical results are provided in Appendix B4.

2.10 DREDGE WATER TREATMENT/DEWATERING SYSTEM

Prior to initiating the site excavation or sediment dredging operations, a dewatering/ water treatment system was constructed in the courtyard area located north of the Site between the Columbus McKinnon buildings. The system treated dredged water and sediments, contaminated water that accumulated in the site excavation, contaminated waters from previous site investigations stored in 55-gallon drums and equipment decontamination waters.

The dewatering system consisted of a shaker screen and tank, five 20,000-gallon mix tanks and a recessed chamber filter press along with appurtenant pumps and piping. The dredge water passed through the shaker screen to remove large solids, entered the mix tanks where diatomaceous earth and lime were added and then was pumped to the filter press for solids dewatering. The filter cake was discharged onto a conveyor and loaded into roll-off containers. Portland cement was added to the filter cake for stabilization prior to landfilling in CWM's TSCA/RCRA-permitted facility. The filter press effluent was pumped to the water treatment system for further processing.

The water treatment facility contained two 20,000-gallon influent holding tanks, two downflow sand filters, four bag filters, two downflow carbon filters, and one 20,000-gallon effluent tank used for pH adjustment prior to discharge. The effluent pipeline emptied into Ellicott Creek within the confines of the silt curtains.

The complete dewatering/water treatment system was installed within a secondary containment area consisting of primary and secondary HDPE liners with a 3-inch thick sand cushion between them. The containment area was surrounded by temporary berms. The containment system prevented the subgrade from becoming contaminated during the treatment system operation.

During operation of the dewatering/water treatment system, QA personnel collected daily samples of the water treatment systems influent and effluent. Samples were analyzed for PCBs by a New York State Department of Health ELAP-certified laboratory. Table 2-3 identifies the method, method reference, holding time, preservative and container specifications for PCB analysis of aqueous samples. As indicated on Table 2-3, PCB analyses were performed using USEPA methodology as published in 40 CFR Part 136. A detection limit of 65 parts per trillion for the process effluent was stipulated to ensure that total PCBs were non-detectable. During the entire time the system was in operation from October 20, 1994 to January 21, 1995 PCBs were nondetectable in the effluent. A total of 5,060,600 gallons of effluent was processed. Complete analytical results are provided in Appendix B5.

TABLE 2-3

ANALYTICAL METHODS & PROTOCOLS FOR DREDGE RETURN WATER VERIFICATION SAMPLING

Parameter	Method	Method Ref.	Maximum Detection Limit	Holding Time	Preservation	Container
PCBs - Aqueous	608	1	0.065 ug/l	Note 1	Cool to 4°C	Two 1-liter amber glass jars with teflon-lined lids

Notes:

(1) Samples submitted for PCB analysis were extracted within seven (7) days of sample receipt and analyzed within 40 days of extraction. Sample extraction was performed in accordance with USEPA Method 3510.

Method Reference:

(1) Method 608 - Guidelines Establishing Test Procedures for the Analysis of Pollutants under the Clean Water Act, 40 CFR Part 136, October 1984.

2.11 SITE RESTORATION ACTIVITIES

2.11.1 General

Upon completion of the site remediation work the excavation and courtyard areas were cleared of construction debris which was disposed of at a C&D landfill.

2.11.2 Treatment/Dewatering System Demobilization

Following completion of the creek sediment dredging operation the dewatering system equipment was decontaminated and taken off-site. The water treatment system remained in operation to treat the decon waters and was demobilized in stages to allow treatment of the remaining decon waters. The sand and carbon filter media was disposed of in CWM's TSCA/ RCRA-permitted facility.

The primary liner of the secondary containment system was sampled by the QA personnel to verify that no loss of contaminated sediments or water occurred. The liner was divided into 400-square foot areas and a wipe sample was collected in the middle of each. Twenty-four samples were collected and analyzed for PCBs by a NYSDOH ELAP-certified laboratory. Table 2-4 identifies the method, method reference, holding time, preservative, and container specifications for PCB analysis of liner samples. As indicated on Table 2-4, PCB analyses were performed using USEPA methodology as published in USEPA SW-846, Third Edition. A maximum detection limit of 20 ug/100 cm^3 was specified.

TABLE 2-4

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ANALYTICAL METHODS & PROTOCOLS FOR LINER VERIFICATION SAMPLING

Parameter	Method	Method Ref.	Maximum Detection Limit	Holding Time	Preservation	Container
PCBs - Wipes	8080	1	20 ug/100 $cm^{(2)}$	Note 1	Cool to 4°C	4 oz. open-mouth glass jar with teflon-lined lid

Note 1: *Samples submitted for PCB analysis were extracted within seven (7) days of sample receipt and analyzed within 40 days of extraction. Sample extraction was performed in accordance with USEPA Method 3510.*

Method Reference 1: *USEPA SW-846, Third Edition*

None of the 24 wipe samples taken detected PCBs. The Contractor removed the primary liner along with the secondary liner and geotextile below it and disposed of it off-site as C&D debris. The sand used between the two liners was placed as backfill in the excavation area between the east sheetpile wall and the building.

2.11.3 Site Backfilling

Upon completion of all soil excavation activities and receipt of acceptable soil verification sampling results, the Site was backfilled with a mixture of broken concrete, building foundation materials, IRM riprap, appropriate on-site soils, the washed rubble and debris from the excavation of the creek bottom (see Section 2.9.2), and select fill from off-site. On-site backfill materials were placed in the bottom of the excavation area between the inner sheetpiling wall and the Columbus McKinnon building and then select fill was placed on top of it. Only clean, off-site select fill was utilized between the sheetpiling walls.

2.12 CONSTRUCTION PHOTOGRAPHS

Color photographs of major project aspects are presented in Appendix C. A complete set of construction photographs was presented to the NYSDEC on March 28, 1995.

2.13 AS-BUILT DRAWINGS

Completed copies of the shop drawings necessary for construction may be reviewed at the Malcolm Pirnie, Inc. Buffalo, New York office . As-built drawings prepared by the Contractor and approved by Malcolm Pirnie, Inc. accompany this report.

3.0 LIMITATIONS

Limitations to this report are contained in Appendix A.

4.0 CERTIFICATION

Malcolm Pirnie personnel have monitored the 1994 and 1995 construction for the Columbus McKinnon Corporation, Remedial Site Cleanup Project. Based upon the field observations made by Malcolm Pirnie personnel, laboratory test data and data provided by the Contractor, Malcolm Pirnie hereby certifies that the Remedial Design was implemented and all construction activities at the Site were completed in accordance with the Department-approved Remedial Design, as required by the Order-on-Consent.