9151416

Department of Environmental Conservation

Division of Hazardous Waste Remediation

Record of Decision

Niagara Transformer Site

I.D. Number 9-15-146

December 1993

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Niagara Transformer Corporation Site
Cheektowaga, New York
Site No. 9-15-146

Statement of Purpose and Basis

This Record of Decision (ROD) presents the selected accelerated remedial action for the Niagara Transformer Corporation inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution contingency Plan of March 8, 1990 (40 CFR 300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Niagara Transformer Corporation Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix A of this Document.

Assessment of the Site

The actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this Record of Decision, may present a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the Remedial Investigation/Feasibility Study (RI/FS) for the Niagara Transformer Corporation Site and the criteria identified for the evaluation of alternatives, the NYSDEC has selected a remedy to excavate and remove from the site contaminated soils and sediments.

The major elements of the selected remedy include:

- **Excavation of contaminated soils and sediments** (above clean-up goals) from the site and the drainage ditches and retention pond downstream of the site;

- **Disposal of the excavated material** at an appropriate off-site landfill; and

- Implementation of a **long-term groundwater, surface water, and sediment**

monitoring program to gauge the effectiveness of the remedial program after the excavations have been completed.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedial action selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

December 30, 1993
Date

Ann Hill DeBarbieri
Deputy Commissioner
Office of Environmental Remediation
New York State Department of Environment Conservation

NIAGARA TRANSFORMER CORPORATION SITE
Site #915146

FIGURES

TABLES

APPENDICES

RECORD OF DECISION
NIAGARA TRANSFORMER CORPORATION SITE
SITE NO. 915146

Section I. Site Location and Description

The 3.6 acre site is owned by Niagara Transformer Corporation (NTC), a local manufacturer of electrical transformers. The site is located at 1747 Dale Road, between Harlem Road and Interstate 90, in the Erie County Town of Cheektowaga (Figure 1). On site, there is a large, active manufacturing/office facility with a smaller storage building and above-ground oil storage tanks to the south. An abandoned rail spur from a Conrail railyard to the south crosses an open field and paved parking lot to a loading bay in the southwest corner of the manufacturing facility (Figure 2).

The topography of the site is characterized by a gentle slope to the south. Along the east perimeter of the site, there is a drainage ditch which directs runoff from the parking lot south, to another ditch which flows to the west, between the site's southern perimeter and the Conrail railyard. To the west of the site is a cemetery and to the east, an undeveloped parcel, purchased by Niagara Transformer in 1983. The properties north of the site, along Dale Road, are occupied primarily by light industries. While there are a few homes northwest of the site on Dale Road, the nearest residential area is located approximately 1000 feet to the southwest (Figure 3).

The soils on site consist of a surface layer of fill material; as much as three and one-half feet of asphalt and gravel subgrade, miscellaneous shotrock and silty clay. Beneath this surface is a forty to fifty foot thick layer of silty clay till and clay which separates two groundwater aquifers, one "perched" above the clay and the other beneath, in a two to three foot layer of gravel and sand overlying bedrock. The depth of the "perched" groundwater varies from six inches to three feet below ground surface. Both aquifers flow southward. There were no private water wells identified within a one mile radius of the site. Residences and commercial properties in the area are supplied with water by a municipal system. Soil

Section II. Site History

Niagara Transformer purchased the property on Dale Road in 1958 and built its manufacturing facility. There is no record of industrial activity at the site prior to this. Until 1980, oils containing polychlorinated biphenyls (PCBs) were stored or used on-site as an insulating fluid in the manufacture of some liquid filled transformers. Currently, Niagara Transformer uses only non-PCB mineral oils.

On April 10, 1990, Town of Cheektowaga Highway Department employees reported to the New York State Department of Environmental Conservation (NYSDEC) that oil was found seeping into the drainage ditch between the Conrail railyard and the Niagara Transformer property (Figure 2). Samples of this oily leachate contained approximately 57,000 parts per million (ppm) of PCBs. In New York State, waste material containing more than 50 ppm PCBs is regulated as a hazardous waste. Sediments from locations in the ditch near the seep area, west to a receiving culvert beneath the railyard, contained PCBs in concentrations ranging from 44 to 3700 ppm. The discharge of the culvert was an open ditch located approximately 1800 feet to the south, near an industrial warehouse.

This so-called lower ditch continues south and westward, passing near several light industrial properties and immediately south of the residential neighborhood. Here the ditch sediments were found to contain levels of PCBs ranging from less than 1 to approximately 32 ppm of PCBs. Later investigations were to find two isolated locations in the lower ditch where the sediments contained as much as 613 ppm PCBs. A concentration of 1 ppm in residential soils has been determined by the New York State Department of Health (NYSDOH) to be considered an acceptable level. This lower ditch joins a subsurface storm sewer at Harlem Road, which in turn discharges to the Buffalo River, approximately three miles to the southwest.

Niagara Transformer complied with DEC instructions to fence and post warning signs along the drainage ditch north of the railyard. Dams were also constructed in this upper ditch as an interim remedial measure, to mitigate the continued release of PCB oil/sediment.

Section III. Current Status

A. Remedial Investigation

The Remedial Investigation (RI) and preliminary studies included the sampling of sediments, soils and surface water as well as the installation and sampling of groundwater wells.

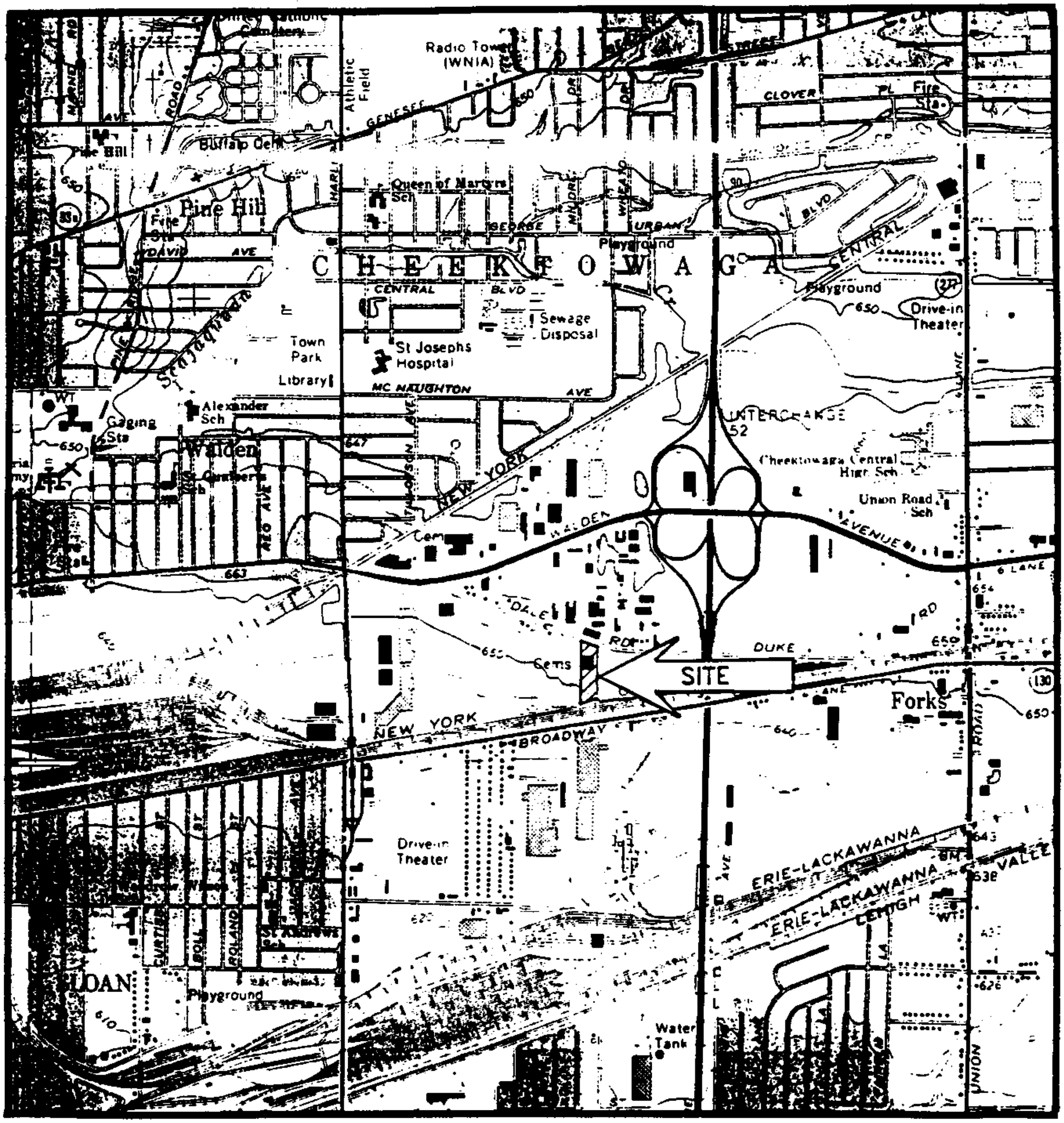
The RI found PCBs to be the contaminant of prominent concern because of their prevalence across the site and the concentrations found. Volatile organic compounds were also detected; dichloro- and trichlorobenzene compounds were found in the groundwater at concentrations as high as 335 micrograms per liter (ug/L), well above the maximum level of 5 ug/L set by New York State Groundwater Quality Standards. Chlorobenzenes, therefore, have to be considered in any groundwater remediation.

PCB contamination was found in sediments, soils, surface water and groundwater throughout the site. PCB contamination was also found in the soils of the adjacent St. Adalbert's Cemetery, within an area ten feet from the Niagara Transformer property line.

The extent of contamination, described in the RI report, is summarized below:

Surficial Soils: The highest concentrations of PCBs were found along the cemetery fence and on either side of the storage building. In the area between the main plant building and cemetery fence, concentrations of 10,000 to 280,000 ppm PCBs were found in the soil. Across the site, PCB concentrations rapidly decreased to the south, in the southeast corner of the Niagara Transformer property, concentrations were less than 10 ppm.

Subsurface Soil: During the installation of groundwater monitoring wells and at two soil boring locations, samples of the subsurface soils were collected for PCB analyses. Except for the parking lot area south of the main building, PCB contamination was limited primarily to the top 4



NIAGARA TRANSFORMER
CHEEKTOWAGA, NEW YORK

WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists

SITE LOCATION MAP

Job No.: 9002139	Drawing No.	Date:
Checked by:	Rev. No.:	
Scale:		

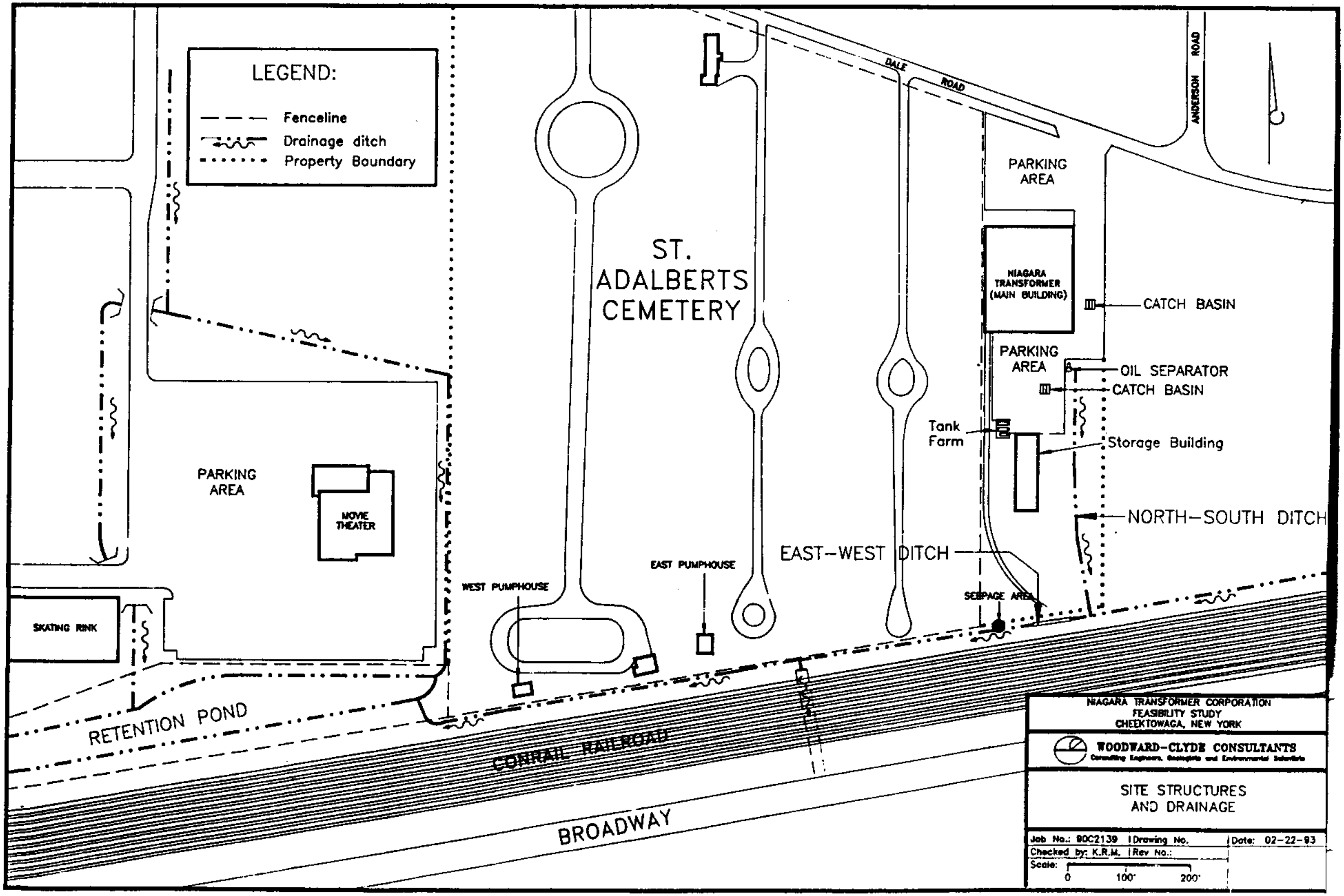
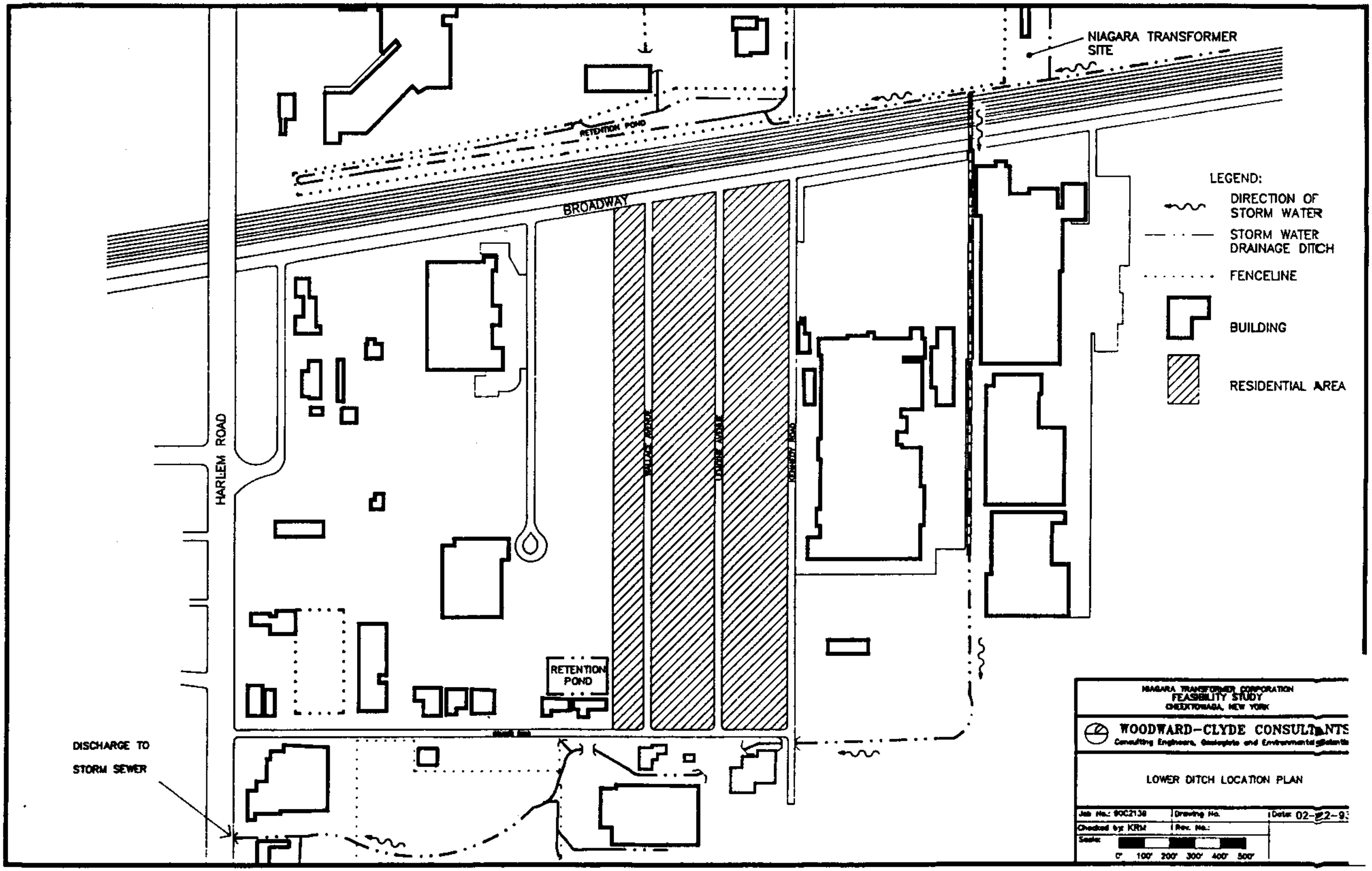

LEGEND:
Fenceline
Drainage ditch
Property Boundary
ST. ADALBERTS CEMETERY
DALE ROAD
ANDERSON ROAD
PARKING AREA
NIAGARA TRANSFORMER (MAIN BUILDING)
CATCH BASIN
PARKING AREA
OIL SEPARATOR
CATCH BASIN
Tank Farm
Storage Building
NORTH-SOUTH DITCH
EAST-WEST DITCH
SEEPAGE AREA
EAST PUMPHOUSE
WEST PUMPHOUSE
PARKING AREA
MOVIE THEATER
SKATING RINK
RETENTION POND
CONRAIL RAILROAD
BROADWAY
NIAGARA TRANSFORMER CORPORATION
FEASIBILITY STUDY
CHEEKTOWAGA, NEW YORK
WOODWARD-CLYDE CONSULTANTS
SITE STRUCTURES AND DRAINAGE
Job No.: 90C2139
Drawing No.
Date: 02-22-93
Checked by: K.R.M.
Rev No.:
Scale:
0
100'
200'

FIGURE 2

FIGURE 5



NIAGARA TRANSFORMER SITE
RETENTION POND
BROADWAY
HARLEM ROAD
RETENTION POND
DISCHARGE TO STORM SEWER
LEGEND:
DIRECTION OF STORM WATER
STORM WATER DRAINAGE DITCH
FENCELINE
BUILDING
RESIDENTIAL AREA
NIAGARA TRANSFORMER CORPORATION
FEASIBILITY STUDY
CHEEKTOWAGA, NEW YORK
WOODWARD-CLYDE CONSULTANTS
LOWER DITCH LOCATION PLAN
Job No.: 90C2138
Checked by: KRM
Date: 02-22-93
Scale:
0' 100' 200' 300' 400' 500'

feet of soil. In the parking lot, at location NTC-2S, high levels of PCBs were found over the entire depth of the boring (10 feet) with PCB levels exceeding 1000 ppm in the upper 8 feet. Elsewhere in the parking lot, PCBs were not detected at depths below 12 feet.

The evidence of PCB contamination coincides with reports of waste disposal on site. Interviews conducted with Niagara Transformer employees during the course of the RI found that until the early 1970s, waste PCB oil was used to control dust in the formerly unpaved parking lot and driveway. Waste oil was also used to kill weeds along the cemetery fence.

Ditch Sediments: PCB levels in excess of 500 ppm were found in the upper ditch area closest to the site, between the site and a culvert passing beneath the railyard, and at two isolated sample locations in the upstream section of the lower ditch. Downstream of this section, PCB results for the lower ditch were as high as 32 ppm, but most samples contained less than 10 ppm PCBs. PCBs were also found, at concentrations ranging from 12 to 3200 ppm, in the upper ditch beyond (i.e. west of) the culvert passing beneath the railyard, and in a stormwater retention pond near a shopping mall parking lot west of the site. While stormwater currently flows from the site to the culvert and south to the lower ditch, it is suspected that stormwaters may have, on occasion, been diverted past the culvert to the retention pond. In the upper ditch, PCB contamination was generally found throughout the top foot of sediment, while in the lower ditch PCB contamination was primarily limited to the top 6 inches. In the retention pond, total PCB concentrations ranged from 1.1 to 31 ppm, primarily in the top 4 inches of sediment.

Surface Water: Surface water samples were collected in the upper ditch immediately downstream of the dams on a monthly basis from May 1992 through September 1992 (except for June when there was no flow). The concentration of PCBs ranged from 1.3 to 4.7 ug/L. Chlorobenzenes were either not detected or reported as estimated concentrations at levels below the detection limits. In the lower ditch, east of Kennedy Road, the surface water contained 1.6 ug/L PCBs. The most southerly sample, collected near Harlem Road, contained 1.2 ug/L. For comparison purposes, it is noted the water quality standards for streams of this nature is 0.001 ug/L PCBs.

Off-site Soil: Samples were collected from soils adjacent to the upper and lower ditches, in areas prone to flooding. In the cemetery, near the upper ditch the PCB concentrations ranged from 1 to 160 ppm. The higher levels found might be attributed to previous dredgings being piled along the ditch banks. Adjacent to the lower ditch, soil levels of PCBs remained lower (2.78 to 11.8 ppm).

Public concerns prompted the collection of soil samples from the residential area, between the lower ditch and Niagara Transformer site. PCBs were not detected (ND) in eleven of fourteen samples collected from fourteen residential lots (Figure 4). In only one of the three remaining samples was the PCB concentration high enough to accurately quantify; at 0.38 ppm this concentration was below Federal and New York State cleanup guidelines for residential soils.

Groundwater: Sixteen groundwater monitoring wells were installed and sampled for PCBs. PCBs were not detected in the in the wells installed in the cemetery or in the upgradient well north of the main building. PCB concentrations were in the 1 to 10 ug/L range for many of the samples from the groundwater "perched" above the clay layer underlying the site. New York State Groundwater Quality Standards set a limit of 0.1 ug/L PCBs in groundwater. In the samples from monitoring wells NTC-2S and NTC-11S, the PCB concentrations were 5,050 and 22,000 ug/L respectively, far in excess of the PCB water solubility limit. This is probably due to entrainment of non-aqueous phase liquid (NAPL) in the sample. The presence of NAPL on site is further discussed below.

PCBs were also detected in the groundwater beneath the layer of clay underlying the site. Concentrations of 2.0 and 6.7 ug/L PCBs were detected in this deeper aquifer.

The groundwater sampled from monitoring well NTC-7S was also analyzed for the U.S. Environmental Protection Agency's Target Compound List (TCL) of environmental contaminants. In addition to PCBs, five chemicals were measured above detection limits, including dichloro - and trichlorobenzenes at concentrations of 17 to 335 ug/L, and bis (2-ethylhexyl) phthalate at 11.9 ug/L. Chlorinated benzene compounds are commonly present in PCB mixtures. Bis (2-ethylhexyl) phthalate is commonly found in plastics and may be an artifact of the sampling equipment used.

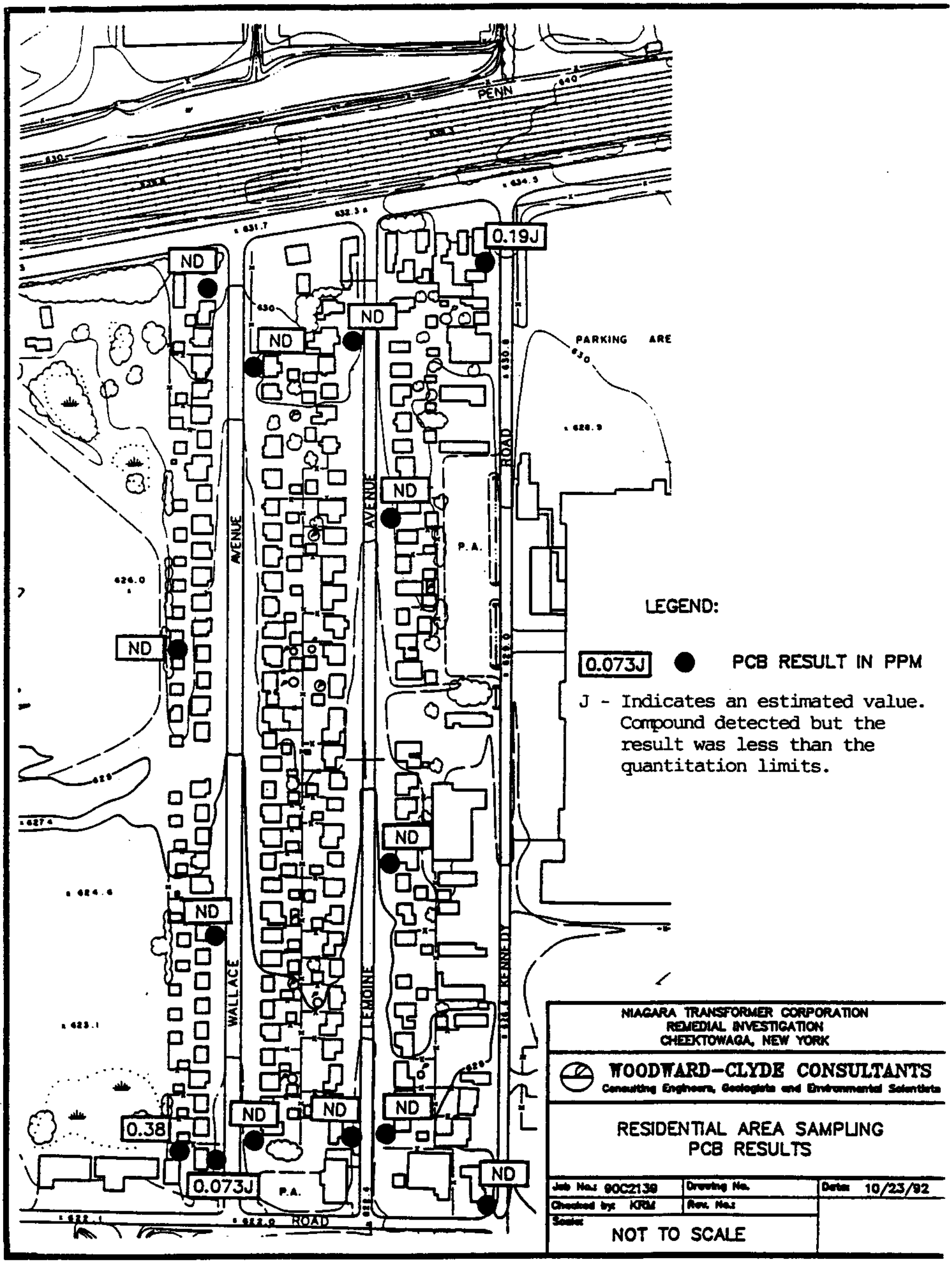
Non-Aqueous Phase Liquid (NAPL): NAPL was observed in water at the following locations: monitoring wells NTC-2S and NTC-11S, in the ditch seep area at the southwest corner of the site; and in two test pits excavated on-site adjacent to the seep. NAPL was not observed as a discrete fluid phase in any of the soil samples obtained during the investigation. No NAPL was observed in the groundwater of the deeper aquifer.

At monitoring well NTC-2S, located in the parking lot south of the main building, a sheen was observed on the surface of the water samples obtained from the top of the water column. This suggests that a NAPL with a lighter density than water (LNAPL) may be present in groundwater at this location. The LNAPL was observed only as surface film and did not have an appreciable thickness. This LNAPL is probably residual mineral oil which was applied or spilled at the site. There are reports that a mineral oil storage tank was ruptured in 1971, releasing 2000 to 4000 gallons of the non-PCB transformer fluid to the parking lot area.

During a purging of monitoring well NTC-2S, approximately 0.25 liters of a denser-than-water NAPL (DNAPL) was evacuated from the well. The DNAPL probably consists primarily of the type of transformer fluid which contains a high percentage of PCBs. Similar conditions were observed during purging of monitoring well NTC-11S, located in the Conrail railyard opposite the seep area.

NAPL was observed during the RI at seeps into the ditch near the southwest corner of the site. As in wells NTC-2S and NTC-11S, both LNAPL and DNAPL were observed. LNAPL in seepage was observed at two locations spaced several feet apart. Containment structures were built and maintained around the seeps as part of the Interim Remedial Measures program (IRM). A sample of seepage water containing some LNAPL was analyzed for PCBs and total petroleum hydrocarbons (TPH) and was found to contain 230,000 ug/L PCBs. The TPH concentration in the sample was 7,200,000 ug/L.

FIGURE 4


PENN
PARKING ARE
P.A.
AVENUE
WALLACE
LEMOINE
KENNEDY
ROAD
ND
0.19J
0.38
0.073J
LEGEND:
0.073J ● PCB RESULT IN PPM
J - Indicates an estimated value. Compound detected but the result was less than the quantitation limits.
NIAGARA TRANSFORMER CORPORATION
REMEDIAL INVESTIGATION
CHEEKTOWAGA, NEW YORK
WOODWARD-CLYDE CONSULTANTS
Consulting Engineers, Geologists and Environmental Scientists
RESIDENTIAL AREA SAMPLING
PCB RESULTS
Job No.: 90C2139
Drawing No.
Date: 10/23/92
Checked by: KRM
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NOT TO SCALE

DNAPL was found to accumulate in the bottom of the upper ditch. The first observation of this material was in March 1991. The DNAPL appeared to have a very high surface tension, tending to form beads on the sediment. After the first observation, Niagara Transformer undertook a program of regular DNAPL removal from the ditch. When found, it was present between the groundwater seep area and the nearest dam downstream. A sample of the DNAPL was collected for PCB analysis. Analytical results showed it contained 140,000 ppm or 14 percent PCB.

The RI report concluded that NAPL was unlikely to have migrated from the probable source areas to the seepage points (a distance of more than 250 feet) through the low-permeability soils encountered and characterized during the subsurface investigation. This suggested that a preferential pathway existed between the source and the seepage points. Three test pits and two soil borings were advanced adjacent to the seeps and within the rail bedding traversing the site to investigate the preferential migration of NAPL.

No evidence of NAPL was found in the railroad bedding. The other two test pits were excavated on site, adjacent to the seep areas. Subsurface tile drains containing NAPL, were found in each of the test pits, 2 to 3 feet below ground surface. These drains were directed from the north and had likely caused the preferential migration of NAPL south to the seep areas.

B. Baseline Risk Assessment

As part of the Feasibility Study report submitted for the Niagara Transformer site, a baseline risk assessment was conducted to evaluate the potential human health risks associated with existing conditions (i.e. baseline conditions). Health risks associated with anticipated, future human activities were also evaluated.

The baseline risk assessment found that the greatest risks of cancer posed by the Niagara Transformer site is from direct contact and/or accidental ingestion of PCB contaminated soil, sediment and surface water. Sensitive populations include workers maintaining the drainage ditches, trespassers or children playing in the lower ditches and cemetery personnel working in contaminated areas adjacent to the site. Based on conservative estimates of PCB concentrations and exposure, cancer risks were found to be above levels accepted by the U.S. Environmental Protection Agency for construction workers on site, cemetery workers and ditch maintenance personnel. Hence, remediation of soils on site and in the cemetery, and the sediments in the upper and lower ditches is warranted. The baseline risk assessment did not identify any significant non-cancer risks.

The RI determined there were limited ecological resources on site or in areas potentially impacted by the site. The protection of human health is considered to be the primary remedial action objective.

Section IV. Enforcement Status

The New York State Department of Environmental Conservation (NYSDEC) negotiated an Order on Consent (Index #B9-0334-90-05) with the Niagara Transformer Corporation pursuant to Article 27 of the Environmental Conservation Law. The Order was signed by NYSDEC Deputy Commissioner Edward O. Sullivan on March 21, 1991. The Order on Consent is a legal obligation between NYSDEC and Niagara Transformer which committed Niagara Transformer to investigate the extent of contamination and identify the means for cleaning up the site. Completion of the remedy selection process, which culminates in this Departmental Record of Decision (ROD), will complete Niagara Transformer's obligation under this Order. A new Order will be required to implement the remedy set out in the ROD.

Section V. Goals for the Remedial Action

Remedial Action is proposed for the purpose of 1) reducing or controlling the risks to human health by preventing the incidental ingestion, inhalation or direct contact with contaminated soils, sediments and water, 2) protecting the environment by preventing the transport of contaminated sediments and surface water in the drainage ditches and the continued migration of contaminated groundwater from the site, and 3) accomplishing these objectives while satisfying the requirements of applicable laws and regulations that apply to contaminants associated with this site. These objectives are best achieved by removing the contaminated media from areas of potentialhuman exposure for disposal or treatment, and eliminating the source of contamination to the groundwater and surface water.

To mitigate the human exposure to PCBs by direct contact, incidental ingestion or inhalation of contaminated soil or sediment and to protect downstream water resources, such material found in off-site locations containing more than 1 ppm PCBs will be excavated for disposal and/or treatment. Soils found on the Niagara Transformer property exceeding 10 ppm PCBs will also be treated and/or disposed. Excavation of contaminated soil and treatment of the water it contains is expected to protect surface waters and groundwater in both the "perched" and deep aquifer at the site.

For surface water, the New York State surface water quality standard for PCB is set at 0.01 ug/L for the protection of human health, and 0.001 ug/L for the protection of aquatic life. A goal of remediation will be to achieve a level of 0.001 ug/L PCBs in the water within the drainage ditches and retention pond. The remedial action objective for groundwater is 0.1 ug/L PCB.

To meet these objectives, several areas will require remediation:

Area 1 - The Niagara Transformer property, between the main building and the Conrail property opposite the leachate seep areas.

Area 2- The drainage ditches north of Broadway and the Conrail yard, including those areas adjacent to the ditches prone to flooding.

Area 3- The stormwater retention pond south of the Thruway Mall

Area 4- The section of "lower" drainage ditch (south of Broadway) located east of Kennedy Road.

Area 5- The section of "lower" drainage ditch located between Kennedy and Harlem Roads.

Area 6- The stormwater culvert connecting the "upper" drainage ditch (north of Broadway) with the "lower" drainage ditch, passing beneath the Conrail yard, Broadway and the Kennedy Industrial Park.

Area 7- A portion of the St. Adalbert cemetery, immediately adjacent to the Niagara Transformer site.

It has been estimated (Table 1) that a total of 21,565 cubic yards or approximately 32,000 tons of soil and sediment will require remediation in these areas.

Section VI. Summary and Evaluation of Alternatives

The October 1992 Preliminary Feasibility Study report identified several cleanup technologies, focusing on those which were both effective in remediating PCB contamination and capable of being implemented at this site. Effectiveness was measured by the technology's ability to 1) reduce the toxicity, mobility or volume of contamination through treatment, 2) minimize long-term risk and afford long-term protection, 3) comply with the applicable or relevant and appropriate requirements of law, and 4) minimize short-term impacts and quickly achieve protection of the public health and environment. Implementability considers the availability of the necessary equipment, specialists and/or treatment facilities, and the ability of the technology to achieve the remedial action objectives described.

The October 1992 Preliminary Feasibility Study evaluated three general categories of remedial technologies: removal, containment and treatment.

The various technologies were then combined and assembled into several alternatives for remediating the site. The 1993 Feasibility Study report provides a detailed description of each alternative. The DEC identified a preferred alternative based on an evaluation of all the alternatives in terms of the following criteria.

- OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT-

Under this criterion an alternative is assessed as to whether it can adequately protect the environment and human health, in both the short- and long-term, from unacceptable risks posed by hazardous substances present on the site by eliminating, reducing or controlling exposures to those substances.

- COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE NY STATE STANDARDS, CRITERIA AND GUIDANCE VALUES (SCGs) -

The alternatives were evaluated as to their ability to achieve the desired clean-up levels and meet all applicable standards. This criterion would also address whether or not a waiver from any such requirements is justified.

SCGs are divided into the categories of chemical-specific (e.g. groundwater standards), action-specific (e.g. design of a landfill) and location-specific (e.g. protection of wetlands). The primary requirements for alternatives addressing PCBs derive from the Federal Toxic Substances Control Act (TSCA).

- LONG-TERM EFFECTIVENESS AND PERMANENCE -

This criterion evaluates the degree of certainty that the remedial alternative will protect human health and the environment, and continue to protect after remedial action objectives have been initially met. The primary focus is on the extent, effectiveness and reliability of the controls (e.g. property deed restrictions, and containment systems such as landfill caps and leachate collection systems) that may be required to manage the risk posed by untreated wastes or treatment residuals that remain on site after the remedy has been implemented.

- REDUCTION OF MOBILITY, TOXICITY OR VOLUME OF CONTAMINANTS THROUGH TREATMENT -

This criterion evaluates the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce the mobility, toxicity or volume of hazardous substances as their principal element. The assessment focuses on the remedial process employed; the amount of hazardous substances destroyed, treated, contained or recycled; degree of expected reduction; degree to which the alternative is irreversible; the characteristics of any treatment residuals; and the degree to which the inherent hazards at the site are reduced.

- SHORT-TERM EFFECTIVENESS -

This criterion evaluates risks to the environment and the health of the community and remedial workers that may result from implementation of the remedy, considering the effectiveness and reliability of protective measures taken during implementation, and the time required to achieve the clean up goals.

- IMPLEMENTABILITY -

This criterion evaluates the ease or difficulty in carrying out an alternative, focusing on: the technical difficulties and unknowns associated with the construction and operation of a particular technology and its reliability; the ability to monitor the effectiveness of the remedy and the risks posed if monitoring is insufficient to detect system failure; the ease of undertaking additional remedial action if necessary; the ability and time required to obtain the necessary government approvals and permits; the adequacy of off-site treatment and storage capacities and the availability of disposal services, necessary equipment and specialists.

- COST -

An estimate was made of the costs for each alternative based on such items as: construction; labor; materials and equipment; engineering, financial, and legal services; and power, utilities, and monitoring requirements for operating and maintaining the remedy. The total cost

TABLE 1

ESTIMATED SOIL AND SEDIMENT VOLUMES EXCEEDING ACTION LEVELS
NIAGARA TRANSFORMER CORPORATION FEASIBILITY STUDY

		Soil Volumes in Cubic Yards			
Area	Description	Exceed 10 PPM	Exceed 25 PPM	50 PPM or more	NAPL Contaminated
Area 1	NTC property[1]	15,100	12,420	9,500	375
		Exceed 1 PPM	Exceed 10 PPM	50 PPM or more	NAPL Contaminated
Area 2	Upper ditch and flood-prone soils	2,145	1,690	950	
Area 3	Retention pond	2,500	200	0	
Area 4	Lower ditch east	650	350	25	
Area 5	Lower ditch west	830	370	0	
Area 6	Stormwater pipe	80	80	0	
Area 7	East cemetery soils	260	80	40	
	Totals	21,565	15,190	10,515	375

(1) Includes adjacent soils near the seepage areas and monitoring well NTC-11S, located adjacent to the southeast corner of the NTC property.

for each alternative is expressed interms of the net present worth, a single cost representing an amount that if invested at today's interest and inflation rates and disbursed as needed, would be sufficient to cover all the costs of a remedy over its lifetime.

- COMMUNITY ACCEPTANCE -

Components of the alternatives which interested persons in the community support, have reservations about, or oppose, are evaluated. This assessment could not be completed until comments on Proposed Remedial Action Plan and the RI/FS reports were received. Based on public comment or new information, the preferred alternative may be modified or another remedial action selected.

Remedial alternatives must be protective of human health and the environment and comply with SCGs in order to be eligible for selection. These are the threshold criteria.

The detailed analysis of alternatives, found in the FS report, identified and compared the alternatives with respect to long-term effectiveness and permanence; reduction of toxicity, mobility or volume through treatment; short-term effectiveness; implementability; and cost criteria. This initial comparison focuses attention on the extent to which permanent treatment alternatives can be practicably utilized in a cost effective manner. The preferred alternative is the one which is protective of human health and the environment, compliant with SCGs and affords the best combination of attributes. Community acceptance is factored into the final balance, assessing which of the alternatives interested individuals express support, have reservation about, or oppose.

A detailed analysis of each alternative was provided in the Feasibility Study report. Based on its evaluation of the health risks posed by the contaminated soils and sediments, Niagara Transformer proposed alternative remedial action levels: 10 ppm PCBs for off-site soil and 25 ppm PCBs for on-site soils. Remedial Alternatives employing these action levels were described in the FS report with the letter suffix "a". The DEC determined that the more conservative action levels of 1 ppm PCB for off-site soils and 10 ppm PCB for on-site soils should be employed for site remediation; these alternatives are described by the letter suffix "b". For comparative purposes, Niagara Transformer described a third subset of alternatives based on the DEC's stated action levels except for the retention pond, where the action level would be 10 ppm PCBs. These alternatives are described by the letter suffix "c".

A description of each alternative was provided in the FS report and have been summarized here.

Alternative 1: Incineration and Off-Site Land Disposal

Under this alternative, soils and sediments within the project area which contain PCBs in excess of the action levels would be excavated. Excavated soils and sediments containing more than 50 ppm PCBs would be sent off site to a TSCA permitted incinerator for destruction. The remainder of the excavated material would be sent off site to an approved landfill for disposal.

Excavation activities under this and other alternatives would be completed using proven earth moving methods and equipment. Measures would be taken to reduce the potential for fugitive dust emissions during the excavation and transport of soil and sediment. Some areas would have to be dewatered during excavation activities. The water collected would be filtered and treated with granulated activated carbon prior to disposal. It is expected that groundwater and surface water quality standards would be attained through removal of the contaminated soil and dewatering of the perched aquifer during excavation. Post remediation monitoring of the sediment, surface water and groundwater, over an extended period, would be required to confirm this. A water quality monitoring program would be developed using relevant and appropriate provisions of New York State regulations as guidance.

Incineration would permanently and irreversibly destroy PCBs and other contaminants; disposing excavated material in a landfill would not actually treat the contaminants but it would significantly mitigate the mobility of the PCBs, for the design lifetime of the landfill. While this remedy would be protective of the public health and the environment, it could be difficult to implement. Because of the limited number of permitted incinerators available, a lengthy waiting period could be expected. This alternative is also by far the most expensive; a similar degree of protection may be afforded by another alternative at a lower cost. The total present worth costs for the alternatives la, lb and lc were estimated to be $48.3, $49.5 and $49.0 million respectively.

Alternative 2: Off-site Land Disposal

Under this alternative, all of the excavated material would be sent off site to an approved landfill for disposal. Wet soils and sediments would have to be stabilized with the addition of cement, fly ash or equivalent prior to off-site land disposal. If any free flowing NAPL is found, containing more than 500 ppm PCB, it would be collected and sent to an off-site facility for incineration. Post remediation monitoring of the groundwater, surface water and ditch sediments over an extended period would be conducted to assess the effectiveness of the cleanup.

Land disposal is a reliable, fully demonstrated technology for containing contamination. The remedy would not actually treat the contaminants, but would mitigate the potential for PCBs to migrate in the environment. The remedy would be permanent in the sense that soils contaminated at levels above cleanup goals would be removed from the Niagara Transformer site. Several approved landfills are available, and the remedy could be readily implemented. The total present worth costs of alternatives 2a, 2b and 2c were estimated to be $7.49, $8.65 and $8.23 million respectively.

Alternative 3: On-site Thermal Desorption

Under this alternative, excavated soils and sediments would be treated in a thermal reactor, to be built on Niagara Transformer property. In the reactor, contaminated soils would be heated to temperatures of approximately 1100 to 1500 degrees Fahrenheit, removing PCBs and other contaminants by volatilization (vaporization). The vapor would then be condensed into an oily residue and sent off site to an incinerator for destruction. Treated soil would be used as backfill on site. Surface water and groundwater remediation would be attained through excavation and treatment of the contaminated soil and sediment, and dewatering during excavations. Post remediation monitoring of the groundwater surface water and sediments would be conducted to assess the effectiveness of the clean-up.

Soils treated by thermal desorption may lose their structure and load-bearing capabilities. The treated material may have to be stabilized with the addition of cement prior to use as backfill or be disposed off site in a landfill. Thermal desorption can achieve the irreversible removal of PCBs from soil, such that residual PCBs in the treated soil are at or below actions levels. While thermal desorption has been demonstrated full scale and its reliability established, the availability of equipment is limited. Implementing the remedy could be delayed. The present worth cost were estimated assuming that treated soils could be used as backfill on site; for alternatives 3a, 3b, 3c those estimates were $13.4, $17.3 and $15.9 million respectively.

Alternative 4: Off-site Land Disposal and Bioremediation

With the exception of the Thruway Mall stormwater retention pond, this alternative is identical to alternative 2. Remediation of contaminated sediments in the retention pond would rely on the natural process of biodegradation. The native microorganisms would be allowed to consume and break the PCBs and other contaminants down into simpler, less toxic hydrocarbons. Initially, the remedy would entail the annual collection and analysis of sediment samples from the pond over a three year period. If, after three years of monitoring, it appears that degradation is occurring too slowly to achieve the remedial action objectives, plans would be prepared and implemented for enhancing the biodegradation rate through the addition of nutrients or other microorganisms.

Natural biodegradation is a slow process, the half-life for the degradation of PCBs could be several years long. In fact, biodegradation has not yet been proven to effectively reduce the concentration of the highly chlorinated type of PCBs present here. The total present worth costs for alternatives 4a and 4b were estimated to be $7.62 and $8.62 million respectively.

Alternative 5: On-site Containment and Bioremediation

By this alternative, most of the contaminated soil on Niagara Transformer property would be left in place. NAPL-contaminated soils would be excavated and transported off site for landfill disposal. Free flowing NAPL, containing more than 500 ppm PCB, would be collected and sent to an off-site facility for incineration. The soil remaining on site would be contained within a subsurface barrier, a slurry wall built of impermeable clay intersecting the top of the natural clay layer beneath the site. Sediments in the Thruway Mall stormwater retention pond would be left undisturbed, allowing the natural process of biodegradation to reduce the levels of PCBs. Off-site soil and sediments from the drainage ditches and cemetery, which contain levels of PCBs in excess of the action levels, would be excavated. The excavated material containing more than 50 ppm PCBs would be characterized a hazardous waste in New York State and disposed in an approved off-site landfill. The excavated material containing less than 50 ppm would be disposed on Niagara Transformer property, within the containment area, and covered with a composite cap of synthetic geomembrane material and clean soil. Within the containment area, a trench drain would be installed to collect the groundwater "perched" above the natural clay layer. Long-term treatment of the collected groundwater would be provided by a facility built on site, using granulated activated carbon. Deed restrictions would be placed on the Niagara Transformer property to preclude future development which might disturb the containment area.

Containment is a fully demonstrated and generally reliable technology for isolating contaminated materials from the environment. This alternative would not, however, irreversibly treat or destroy the PCBs and other contaminants. Protection to the environment and public health would be provided for the design lifetime of the containment structures, future improvements or repairs to those structures could, however, be readily implemented. While the groundwater collection system should produce dewatered conditions within the containment area, there is evidence that the natural clay layer beneath the site may not be an effective barrier; PCBs were found in the groundwater beneath this layer. Total present worth cost estimates for alternatives 5a and 5b were $5.29 and $5.65 million respectively.

Alternative 6: On-site Containment and Off-site Land Disposal

This alternative is nearly identical to Alternative 5. Soils and sediments in the off-site areas which contain PCBs in excess of the remedial action levels would be excavated, including the sediments within the Thruway Mall stormwater retention pond. The excavated material containing less than 50 ppm PCBs would be disposed on Niagara Transformer property, contained within a slurry wall, groundwater recovery trench and composite cover. Excavated material containing more than 50 ppm PCBs would be disposed off site in an approved landfill along with the NAPL-contaminated soils excavated from the Niagara Transformer site. Total present worth cost estimates for alternatives 6a, 6b and 6c were $5.18, $5.34 and $5.24 million respectively.

Alternative 7: Stabilization/Solidification

Under this alternative, contaminated soils and sediments would be mixed with a cement-like binder and other additives, immobilizing the contaminants in a solidified mass. On-site soils would either be treated in-place or excavated, treated and backfilled. Contaminated soils and sediments excavated from the off-site ditches, cemetery and stormwater retention pond would be combined with the on-site soils, solidified and stored on site. NAPL-contaminated soils would be handled separately and solidified, before being sent off site to an approved landfill for disposal. If free flowing NAPL is found, containing more than 500 ppm PCBs, it would be collected and incinerated in an off-site facility. Groundwater and surface water, collected as part of the dewatering operation during excavation activities, would be carbon treated prior to disposal. Post remediation sampling of the surface water and groundwater would be conducted to assess the effectiveness of the remedy.

Stabilization/Solidification may reduce the mobility of PCBs and other contaminants but its effectiveness has not been fully demonstrated on waste material containing the level of organic contaminants found at this site. As the solidified mass ages, there is the potential for the significant level of contaminants found at the site to be released. Without any controls to isolate the solidified mass from the existing "perched" groundwater on site, this alternative may not be reliable in providing long-term protection to the environment or public health. Total present worth cost estimates for alternatives 7a, 7b and 7c were $5.78, $7.2 and $6.65 million respectively.

Alternative 8: No Further Action:

Although not included in the FS report, NY State and Federal guidelines require that the analysis of remedial alternatives include the "no action" alternative. For the Niagara Transformer site "no action" was interpreted as no further action; barriers had already been placed in the upper ditch to mitigate the release of PCB contaminated oil and the ditch surrounded by a fence. Under this alternative, long-term maintenance of the barriers and fence would be undertaken.

In the absence of further action, the baseline risk assessment found that the contamination found both on site and off site posed unacceptable risks to human health. The RI found that the groundwater beneath the site and surface water flowing from the site violated NYS water quality standards. The NYS DEC concluded that without further remedial action, the environment would likely continue to be adversely impacted.

The "no further action" alternative failed to satisfy the alternative selection threshold criteria. This alternative would not provide adequate protection to the public health or the environment, nor would it comply with NYS SCGs. While this alternative could not be selected as a remedy, it was used as a baseline in the comparative analysis of alternatives to follow.

Section VII: Summary of the Government's Position

A. Comparative Analysis of the Alternatives

Each alternative was evaluated by the remedy criteria and in turn the alternatives were compared to one another by the NYSDEC, balancing the trade offs with respect to those criteria.

Overall Protection of Human Health and the Environment

Alternative 2 would reduce the risk of human exposure to PCB contaminated soils and sediments through all routes of exposure, by removing the impacted soils and sediments and confining them within an off-site landfill. Removal of the soils and sediments is expected to remove the source of groundwater and surface water contamination evident on site. The mobility of the PCBs and other contaminants would be greatly reduced by the barriers and control features of the off-site, TSCA approved landfill facility, assuring protection of the environment.

Incineration or thermal desorption (Alternatives 1 and 3) offer perhaps a greater degree of protection in the long term, the risks to human health and the environment posed by the PCB contaminated soils and sediments would not merely be reduced but eliminated, the contaminants would be irreversibly destroyed. Bioremediation (Alternatives 4 and 5) might also eventually achieve the destruction of the PCBs, but the process is slow and the short-term risks to water resources downstream was considered unacceptable. In the short term, alternatives 6 and 7 (on-site consolidation and on-site stabilization/solidification) would offer levels of protection similar to that of the preferred alternative. However, the presence of "perched" groundwater so near the ground surface and the potential for the aging solidified mass to leach contamination makes these alternatives less desirable in the long term. Sampling of the groundwater beneath the native clay layer lying below the site suggests that this layer may not be an effective barrier to contaminant migration.

As noted earlier, the baseline risk assessment demonstrated that the "no further action" alternative would not be protective of human health or the environment.

Compliance with Applicable or Relevant and Appropriate New York State SCGs

The on-site action level of 10 ppm PCBs for soils was adopted by the NYSDEC through methods which estimate the potential for PCBs in the soil to leach into the groundwater at levels which would contravene groundwater standards. Thus, all the "b" alternatives described in the FS report are expected to attain the New York State Water Quality Standards for PCBs and other contaminants through the removal and/or containment of impacted soils. The "no further action" alternative would fail to comply with this SCG.

The off-site action level of 1 ppm PCBs for soils is consistent with Federal guidelines and based on a generic assessment of the risk to public health. The risk assessment conducted as part of this investigation indicated that this action level will be adequate to ensure protection of human health.

All of the alternatives considered are expected to comply with the action-specific SCGs. In every case where there is not strict compliance, there is adequate basis for a waiver.

Long-Term Effectiveness and Permanence

Alternatives 2, 6 and 7 which limit the mobility of PCBs through containment and treatment, afford less long-term effectiveness and permanence than Alternatives 1 and 3 which permanently destroy the contaminant. Biodegradation (combined with off-site land disposal and on-site containment in alternatives 4 and 5 respectively) was another method of destroying PCBs.

Alternative 2 is preferred over the on-site containment alternatives (5 and 6) because of the higher degree of certainty that the off-site containment barriers would be reliable. On site there is groundwater perched on top of a layer of clay, just a few feet below ground surface. This "perched" aquifer might compromise the integrity of the vertical slurry wall barriers to be constructed around the waste disposal area as part of Alternatives 5 and 6. There was also evidence of PCBs in the groundwater beneath the clay layer, which suggested that this clay layer may not be as effective in containing the contamination as the engineered, bottom liner of an off-site landfill.

Alternative 7 included no such barrier to separate the solidified mass from the perched groundwater. There is some uncertainty that the solidification/stabilization technology would effectively immobilize the high concentration of PCB found on site, and whether the treatment would chemically bind the PCBs to the solid mass or just encapsulate the contaminant. Contaminants might be expected to leach or be released more readily from encapsulation than if they were chemically bonded to the mass. Considering the potential for contaminants to leach from the aging solidified mass, Alternative 7 was determined to be little more effective and permanent than the on-site containment alternatives.

The barriers that had been installed in the upper ditch to mitigate the flow of PCB contaminated oil would not contain PCB dissolved in water or adsorbed to suspended particles of sediment. The "no further action" alternative would not be effective in the long term.

Reduction of Mobility, Toxicity or Volume of ContaminantsThrough Treatment

Alternatives 2 and 6 would reduce the mobility of the PCBs and other contaminants present by containing the contaminated material in a landfill, however, containment does not constitute treatment. Therefore, Alternatives 2, 6 and the "no further action" alternative, as well as the off-site land disposal and on-site containment portions of Alternatives l, 4,& 5 could not be evaluated under this criterion. Instead, this reduction in mobility was assessed under the criterion of Overall Protection of Human Health and the Environment.

The toxicity of PCBs would be reduced, irreversibly under Alternative 1 which includes the incineration of contaminated material. Alternative 3 would first reduce the volume of PCB contaminated material by vaporizing the contaminant from the excavated soils and sediments, and then reduce the toxicity of the collected PCB by incinerating this concentrated residue.

Under Alternative 7, the mobility of PCBs might be significantly reduced through the chemical bonding of the contaminant to the solidified mass.

Short-Term Effectiveness

During excavation activities there is the potential for contaminated dust to be generated. However, all the alternatives considered include reliable methods for suppressing dust and the evaluation of potential dust emissions to confirm that no unacceptable off-site exposures would occur. Development of a health and safety plan specifying the proper decontamination procedures and protective equipment to be used by remediation workers, was also part of each alternative. Excavation within the drainage ditches would require the temporary diversion of the surface water. Work on the ditches would be completed in sections, starting at the Niagara Transformer property and proceeding downstream, so as to minimize the disturbance and transport of contaminated sediments.

With several approved landfills available, off-site land disposal could be completed sooner than Alternative 6 which would require the construction of a containment facility on site. Alternative 7 would require extensive study, to determine if solidification/stabilization is, in fact, feasible for treating the high concentrations of PCBs in the soil at this site. Bioremediation, a principal element in Alternatives 4 and 5 would also require additional study, three years of monitoring, to determine if the process would actually work. Waiting periods for the few available thermal desorption treatment units (Alternative 3) and off-site incinerators (Alternative l) is expected to be lengthy.

The "no further action" alternative would only be partially effective in remediating the site and then only in the short term, as PCBs dissolved in water and adsorbed to floating sediments continue to pass through the ditch barriers.

Implementability

Land disposal is a fully demonstrated remedial technology. Alternative 2 would employ conventional earth moving equipment and methods, and permitted transporters to transfer the contaminated material off site to one of several TSCA approved landfills. Such landfills include reliable monitoring systems, adequate for monitoring the effectiveness of the containment.

Alternatives 1 and 3, which employ incineration and thermal desorption technologies might be difficult to implement; there are relatively few permitted incinerators and full scale thermal treatment units available; waiting periods could be lengthy.

Alternatives 4 and 5 include the remediation of sediments in the stormwater retention pond by the process of biodegradation. Biodegradation has not yet been proven to effectively reduce the concentration of the highly chlorinated type of PCBs present at this site. Even if it is successful in destroying PCBs, biodegradation is a slow process; the half-life of PCBs could be years long.

The reliability of on-site containment was considered less certain than the preferred off-site remedy. Unlike an off-site facility with its an engineered bottom liner, Alternative 6 would rely on the existing native clay layer beneath the site. There is some evidence that this layer of clay may not be an effective barrier; PCBs were found in the groundwater beneath this layer.

Alternative 7 might be effective in immobilizing PCBs and other contaminants but there is some concern about its long-term reliability; as it ages, there is the possibility that contaminants may leach or be released from the solidified mass.

The "no further action" alternative is in effect currently being implemented. Materials for maintaining the barriers and fences are readily available.

Cost

Alternative 2 provides overall protection to the public health and environment proportionate to its present worth cost of $8.65 million. Alternative 1 would afford a greater degree of protection through the destruction of the PCBs, but at a cost which was considered prohibitive ($49.5 million). Alternative 3 would also offer a greater degree of protection, but the cost ($17.3 million) is significantly more than Alternative 2.

Bioremediation of the stormwater retention pond would realize a savings as compared to Alternatives 1 and 3, but Alternative 4 ($8.62 million) was considered deficient in providing protection in the short-term. Alternatives 5, 6, 7 and the "no further action" alternative were also less expensive than the preferred remedy, but also less protective and reliable in the long-term.

Community Acceptance

A public meeting was held on August 26, 1993 to discuss the proposed remedial action plan and address the public's concerns. The public was encouraged to offer comments during the period extending from August 20 to September 29,1993. Comments received were addressed in a Responsiveness Summary, Appendix B of this document.

Clarifications of the proposed remedial action plan and elaboration of the RI/FS findings comprised most of the comments received. On September 7, 1993, the Cheektowaga Town Board adopted a resolution supporting the proposed remedial action plan. Based on these comments, it was concluded that the selected remedy is acceptable to the community.

B. Description of the Selected Remedy

Based on its evaluation of the alternatives presented in the Feasibility Study report, the DEC has selected alternative 2, the off-site land disposal of excavated soil and sediment, as the remedy for the Niagara Transformer site. Specifically, alternative 2b was so identified, employing action levels for off-site and on-site soils of 1 and 10 ppm PCBs respectively. Key elements of that alternative include:

- The DEC will discuss with Niagara Transformer the need for invoking institutional controls, such as deed notices, to restrict the future use of the Niagara Transformer property.

- Clearing vegetation from the site, drainage ditches and retention pond, removing and disposing of the asphalt pavement from the Niagara Transformer parking lot and driveway.

- Excavating on-site soils which contain more than 10 ppm PCBs for off-site disposal at an approved landfill. All excavations will be completed using conventional earth moving equipment and methods.

- Excavating off-site soils and sediments from the drainage ditches and retention pond which contain more than 1 ppm PCBs, for off-site disposal at an approved landfill. Wet soils will be stabilized with fly ash, cement or equivalent.

- Evaluation and control of potential fugitive dust emissions during soil and sediment excavations.

- Dewatering of the ditches and retention pond, accomplished with diversion structures, temporary piping and pumps. The ditch excavation will begin near the site and proceed downstream in sections.

- Hydraulic cleaning of the railroad culvert, which connects the upper and lower ditches. The culvert will have to be broken at several points along its length, to flush contaminated sediments and collect the material for off-site disposal.

- Treating contaminated water collected during excavated activities. A temporary water treatment facility will be built on site consisting of a filtration unit to remove solids and granulated activated carbon to remove the PCBs and other contaminants.

- Testing in the excavated areas to confirm that the remaining soil and sediment does not exceed the remedial action levels for PCBs.

- Transporting the excavated material to an approved landfill.

- Backfilling the excavated areas with clean fill, reseeding and planting shrubbery where needed.

- Establishing and implementing a post remediation monitoring program, to include periodic sampling of the groundwater (both the "perched" and deep aquifer), surface water and sediments.

To assure that the public health and environment have been adequately protected, the remedial action will be evaluated after implementation. This review will rely on the data gathered during the post remediation monitoring program. If this review indicates further action is required, the public and all interested parties will be afforded an opportunity to comment on the decision of the DEC before it takes or requires such action be taken.

APPENDIX A

Administrative Record
Niagara Transformer Corporation Site #915146

1. Interim Remedial Measure Work Plan, Woodward-Clyde Consultants, (WCC), November 1990.

2. Remedial Investigation Work Plan, WCC, February 1991.

3. Letter - February 25, 1991, WCC to New York State Department of Environmental Conservation (NYSDEC) - addendum to Remedial Investigation Work Plan.

4. Remedial Investigation, draft report, WCC, October 1991.

5. Letter - March 22, 1991, WCC to NYSDEC - Work Plan for Soil Sampling in Residential Area.

6. Remedial Investigation Report, WCC, October 1992.

7. Preliminary Feasibility Study Report, WCC, October 1992.

8. Letter - December 9, 1992, NYSDEC to Niagara Transformer - Comments on October 1992 Remedial Investigation and Preliminary Feasibility Study Reports.

9. Remedial Investigation Report, NCC, August 1993.

10. Feasibility Study Report, WCC, September 1993.

11. Proposed Remedial Action Plan, NYSDEC, August 1993.

APPENDIX B
Responsiveness Summary

NIAGARA TRANSFORMER CORPORATION
Site Number 915146

The following is a summary of responses to comments expressed by the public during a meeting held August 26, 1993 at the Cheektowaga Town Hall relative to the Proposed Remedial Action Plan (PRAP) for the Niagara Transformer site. One comment letter was received during the public comment period, which ran from August 20 to September 29, 1993.

Remedial Investigations of the site found contamination in soil, sediment, groundwater and surface water; the contaminant of primary concern being polychlorinated biphenyls (PCBs). Based on the results of these investigations, a Feasibility Study (FS) was prepared. Various clean-up technologies were combined to form several alternatives for remediating the site. These alternatives were then evaluated against eight criteria: overall protection of human health and the environment; compliance with NYS Standards, Criteria and Guidance (SCGs); reduction of toxicity, mobility or volume; short-term effectiveness; long-term effectiveness and permanence; implementability; cost; and community acceptance.

Based on the evaluation of the alternatives, a remedial action plan was selected consisting of: excavation of on-site soils and off-site sediments from the drainage system, disposal of the excavated material in an off-site landfill and long-term monitoring of groundwater, surface water and sediments once excavation has been completed.

Q.1 It was requested that the Town of Cheektowaga Conservation Advisory Council be copied on all future correspondence and documents regarding remediation of the Niagara Transformer site.

A.1 The chairman of the Conservation Advisory Council will be provided with the available records.

Q.2 Is there any risk of inhaling PCBs or PCB contaminated dust?

A.2 PCBs are relatively non-volatile, meaning they do not vaporize easily. The PCB contaminated sediments in off-site ditches are either submerged or moist throughout most of the year, and the contaminated soils on-site are either covered with pavement or dense vegetation; dust is negligible. The risk of inhaling PCBs is minimal. During the remediation, air monitoring will be performed and measures taken to ensure that dust is not created.

Q.3 Approximately 32,000 tons of soil and sediment is to be removed from the drainage ditches and the Niagara Transformer site. Will the same amount of backfill be used to return these areas to original grade?

A.3 Yes, the site and drainage ditches will be returned to their original grade or elevations. Imported backfill material will be tested prior to placement, to ensure that it is clean.

Q.4 Is permission needed from owners of property through which the ditches pass, the ditch itself or off-site areas such as the cemeteries, to excavate the contaminated material?

A.4 Property owners will be notified and access to these properties requested. However, the New York State Environmental Conservation Law authorizes the NYS Department of Environmental Conservation, or the Niagara Transformer Corporation, acting under the State's authority, to enter any areas near the site for the purpose of remediation.

Q.5 Is there any thought to treatment of the soil and sediment that remains after excavation has been completed?

A.5 As soil and sediment is removed, excavated areas will be sampled to confirm that cleanup goals have been met. The cleanup levels are designed to be protective of human health and the environment, so that after the excavation is complete, no further treatment should be necessary. However, long term monitoring of the site will be conducted to ensure the effectiveness of the remediation. If monitoring indicates that the cleanup goals are not being met, further remedial measures will be evaluated and implemented if need be.

Q.6 What type of precautions should Town of Cheektowaga employees take while maintaining the contaminated drainage ditches?

A.6 Currently, Niagara Transformer has assumed responsibility for routine maintenance of the ditches. Should the Town elect to resume these maintenance operations, the New York State

Department of Health advises that direct contact with contaminated sediments be limited through the use of gloves, boots, protective coveralls and splash-protective face shields. Normal personal hygiene practices should be adhered to.

Q.7 Are there documents or records of any continuing health concerns of Town employees who historically had maintained the drainage ditches?

A.7 Several Town employees had complained of health problems. They were advised to have their physicians contact the New York State Department of Health to determine if these health problems may be attributed to exposure from PCBs. The results of any medical exams or testing are, however, strictly confidential; any disclosures made by these individuals to the New York State Department of Health are also held confidential.

Q.8 In what manner will residents by kept advised of the hazards associated with accessible portions of the contaminated drainage ditches, prior to and during remediation?

A.8 The upper drainage ditches near the Niagara Transfomer site have been fenced and warning signs posted. In the lower ditches, the level of contamination is considerably less.

Only two locations were found in a remote part of the lower ditch where the level of contamination was elevated. Since the contamination was confined primarily to the ditch, the levels of contamination are generally low and the incidence of human exposure infrequent, the lower ditch has not been fenced. Through fact sheets and public meetings, residents have been advised to avoid walking in the ditches. Notices will be mailed to residents and Town employees reminding them to avoid these areas. If individuals should accidently come in contact with contaminated sediments, the New York State Department of Health continues to advise that washing with soap and water should be adequate. When the ditches are to be excavated, temporary fences will be erected to prevent public access to the work area and hazards inherent with any construction site employing heavy equipment.

Q.9 The drainage ditches receive a considerable amount of water during heavy rains. What happens to the PCBs in those ditches?

A.9 Shortly after PCB-contaminated oil was found seeping into the drainage ditch behind the Niagara Transformer site, barriers were constructed in this upper ditch to contain the seepage. The PCB oil, however, had already contaminated the ditch sediments, here and further downstream in the lower ditch. While the barriers halted the release of PCB oil, it is likely that stormwaters will continue to carry PCBs downstream, dissolved in the water and adsorbed to floating or suspended particles of sediment. Therefore, remediation of the drainage ditches, i.e. removal of the contaminated sediments; is required to protect the public health and the environment.

Q.10 Are there any risks to cemetery workers excavating along the southern part of the Dale Road cemeteries, near the contaminated ditches?

A.10 The levels of PCBs found in the cemetery soils near the ditch were considerably lower than what was found in the sediments within the ditch. The New York State Department of Health (NYS DOH) has advised that routine maintenance of the cemetery (e.g. mowing the grass) should not pose an undue risk to workers, nor will cemetery visitors be at risk. While it would appear that this part of the cemetery is full, and future burials considered unlikely, the NYS DOH will advise on what precautions workers should take when burials occur.

Q.11 What are the health hazards posed by PCBs? (One individual, familiar with the electrical transformer manufacturing industry, commented that he saw no evidence of workers, exposed to levels of PCBs typically higher than what has been found on site, ever contracting cancer).

A.11 The Toxicological Profile for Selected PCBs (Aroclor - 1260, 1254, 1248, 1242, 1232, 1221 and 1016) prepared by the U.S. Department of Health and Human Services (October 1991) indicates the following in regard to PCBs.

As with all chemical exposure, the nature and extent of health effects are related to the amount of chemical exposure. Information on effects is obtained from studies with animals and investigations of people who have been exposed to high levels in the workplace.

Human effects reported after exposures to high PCB levels in the workplace include skin, eye and respiratory tract irritation and sometimes headache, digestive disturbances and liver problems. There may be a link between a mother's increased exposure to PCBs and slight effects on her child's birthweight and behavior. Some PCBs caused cancer in laboratory animals exposed to high levels over their livetime. Whether PCBs cause cancer in humans is unknown. PCBs have also caused skin, liver, nervous system, immune system and reproductive disorders in animals.

Q.12 How did the PCBs get into the soils in that part of the cemetery opposite the Niagara Transformer plant?

A.12 The question was raised by a former Niagara Transformer employee who suggests that the contamination was the result of PCB vapors being discharged through Niagara Transformer roof vents from ovens used to dry oil soaked transformer cores. Earlier reports to the NYSDEC indicated that PCB waste oil was used to kill weeds along the fence separating the cemetery and Niagara Transformer property. It was assumed that the PCBs found in the cemetary, within several feet of the fence was inadvertently sprayed. The reported operation of drying ovens will be investigated further. Remediation of the cemetery soils will occur regardless of the results of that investigation.