Department of Environmental Conservation

Division of Hazardous Waste Remediation

Record of Decision

Chem-Trol Site
Town of Hamburg, Erie County
Site Number 9-15-015

March, 1996

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* MICHAEL D. ZAGATA, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Chem-Trol Inactive Hazardous Waste Site
Town of Hamburg, Erie County, New York
Site No. 9-15-015

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Chem-Trol 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 (increased future land use options over those provided by Alternatives 5 and 6. Alternatives 5, 6 and 7 will reduce contaminant mobility and volume. Of these alternatives, Alternative 7 offers the greatest amount of reduction, through the addition of a soil vapor extraction system. The costs associated with Alternatives 5, 6 and 7 are comparable. The estimated present worth cost to implement the preferred remedy (Alternative 7) is $ 10,474,676. The cost to construct the remedy is estimated to be $ 3,512,579 and the estimated average annual operation and maintenance cost for 30 years is $ 378,240.
40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Chem-Trol 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 B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Chem-Trol Site and the criteria identified for evaluation of alternatives, the NYSDEC has selected a remedy that includes excavation of soils and sediments from selected areas of the site, installation of a groundwater collection trench along the western edge of the site, improvement of the existing soil cover

over the former waste chemical processing area and installation of a soil vapor extraction system, also in the former waste chemical processing area. The components of the remedy are as follows:

* remove, for subsequent off-site treatment/disposal, the following contaminated materials:
  - the soils from a "hot spot" area, i.e. the general vicinity of the former chemical waste holding lagoons, and
  - the sediments from an area of the on-site tributary along the northern boundary of the former operations area,
* upgrade an existing soil cover that was placed by Chem-Trol/SCA Services in 1977 over the former chemical waste processing area, and extend this cover to the on-site seep,
* install and operate a soil vapor extraction and an appropriate treatment system in the eastern portion of the former chemical waste processing facility,
* install and operate a trench drain and an appropriate treatment system along the eastern bank of Smokes Creek,
* monitor the on-site sediments and groundwaters,
* provide access restrictions to any contaminated areas that remain on the site, and
* recommend deed restrictions for future site use.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy 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 preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/29/96
Date

Michael J. O'Toole, Jr., Director
Division of Hazardous Waste Remediation

TABLE OF CONTENTS

Tables

Appendix

SECTION 1: SITE LOCATION AND DESCRIPTION

The site consists of a 17 ½ acre parcel of open land, located at 4818 Lake Ave. in the Town of Hamburg, Erie County, NY. It is situated in an urban setting with industrial/commercial areas to the north and east, commercial development along Lake Avenue to the south, and residential areas to the west, across from the South Branch of Smokes Creek. It is listed in the NY State DEC Registry of Inactive Hazardous Waste Sites as Site No. 915015. Figure 1, an area map, shows the location of the site.

The site boundaries include:

North - Electro Abrasives Corp.;
East - Conrail (Formerly the Baltimore and Ohio Railroad), The Cheese Factory, Inc. (4856 Lake Ave.) and a residential property (4838 Lake Ave.);
South - Lake Ave.; and
West - South Branch of Smokes Creek.

In 1972, the alignment of the South Branch of Smokes Creek was shifted westward, and now runs in a straight channel along the western boundary of the property. Previously, the creek followed a meandering arc path across the western portion of the site. As shown in Figure 2, a floodplain exists between the former and present channels of the creek. Its elevation is approximately twenty feet lower than that of the rest of the site.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

In 1969, Chem-Trol Pollution Services purchased this property, and began operations as a waste chemical processing facility. These operations included chemical recovery, storage and neutralization. Wastes that were accepted at this facility for processing included the following: capacitors, insecticides, pesticides, oil sludges, paint sludges, pickle liquors, phenolic resins, spent solvents, and chemical processing wastewater. The wastes were typically transported to the site in 55 gallon drums or in liquid tanker trucks. At the site, these substances were staged in drums, lagoons (surface impoundments), or large (approximately 5,000 gallon) above ground storage tanks. The wastes were distilled or incinerated at the site. The former operations area, where this processing was done, is shown in Figure 2. As shown in this figure, the boundaries of the operations area are essentially an on-site Smokes Creek tributary to the north and the floodplain to the west.

A major fire occurred at the facility in June, 1972. Water from the fire fighting efforts was ponded in the floodplain, behind a temporary dike that had been placed along the eastern shoreline of the South Branch of Smokes Creek.

Earlier in 1972, operations at this site were terminated, and the associated chemical waste inventory and processing equipment were relocated to a new Chem-Trol Facility in Model City, NY. In October, 1973, Chem-Trol was acquired by SCA Services, Inc., and in 1984, SCA Services was acquired as a subsidiary of Waste Management, Inc.

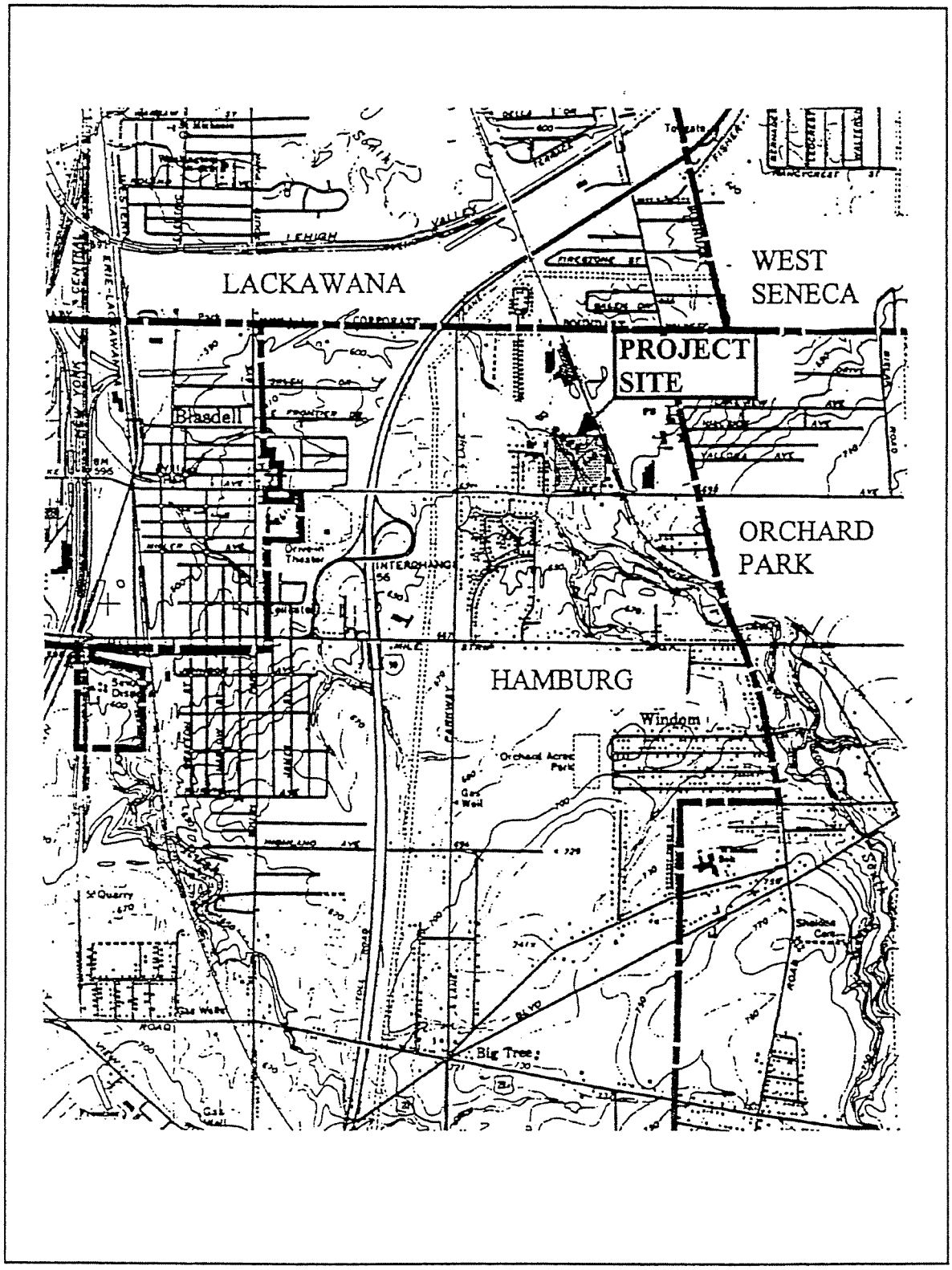

Figure 1: Area Map Showing Location of the Site

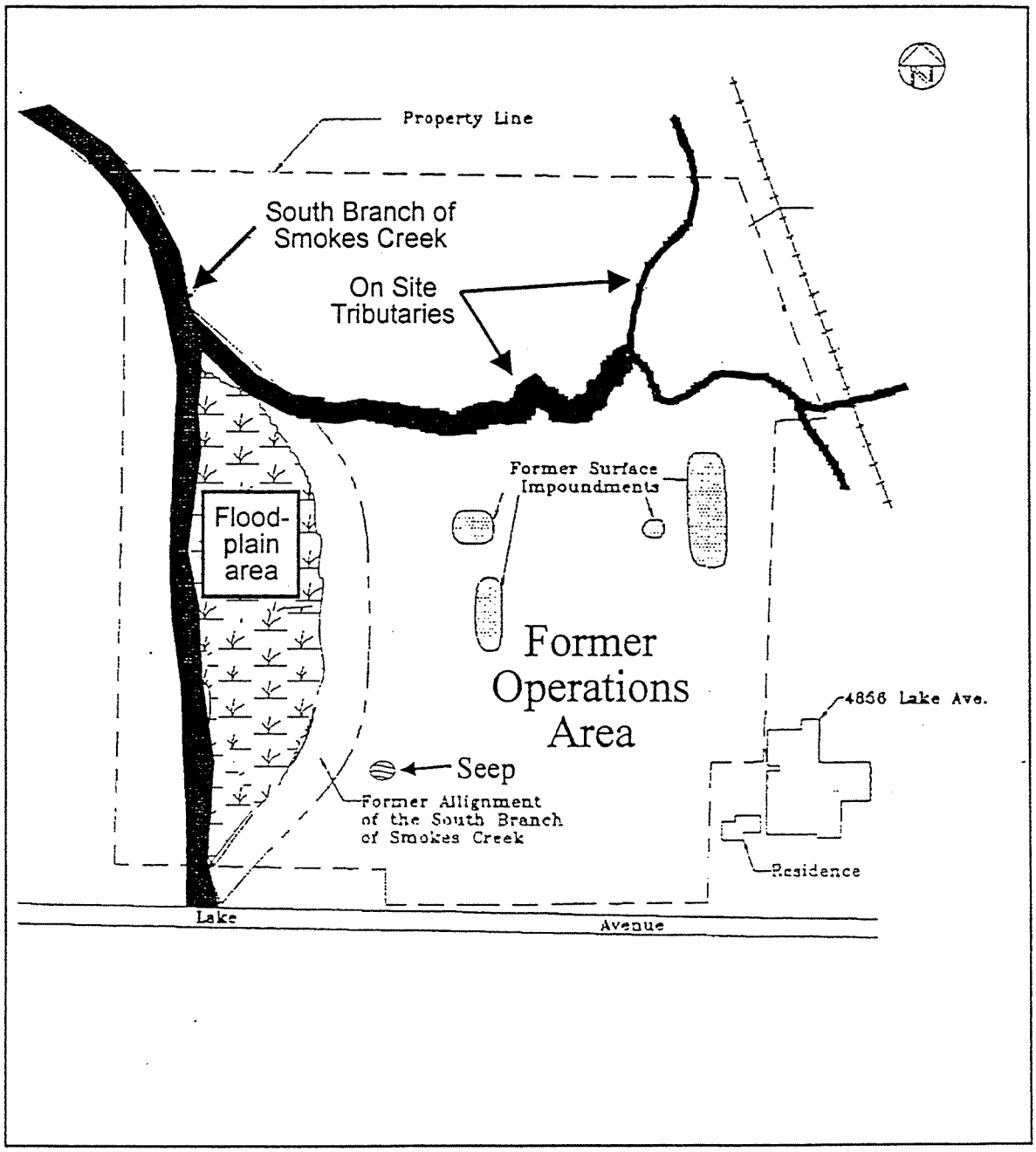

Figure 2: Details of Chem-Trol Operations Area

2.2: Remedial History

In 1977, Chem-Trol/SCA Services performed the following facility closure actions at the former operations area of the site:

* removal of approximately 95 cubic yards of contaminated soils,

* placement of a clean soil cover and

* seeding to establish a vegetative cover over the area.

The purpose of these excavation and backfill operations was to eliminate the immediate threats posed by the exposed chemical contamination on the land surface. Subsequent to the facility closure action, the following investigations and studies of this site were conducted:

June, 1988: Phase I Investigation;
April, 1991: Phase II Investigation;
November, 1994: Remedial Investigation (RI); and
March, 1995: Feasibility Study (FS).

The Phase I Investigation included a review of the documents, reports and investigations that had been developed up to that time. These documents included site analyses by the Erie County Department of Environment and Planning (1978, 1980 and 1984), NUS Corp. (1983) and NY State DEC (1981). The primary purpose of the Phase I Investigation was to identify what additional data was necessary to assign a Hazardous Ranking System Score to this site.

The Phase II Investigation included chemical analyses of soil samples from various areas of the site, measurements of air quality at various locations on the site, determination of the groundwater flow characteristics in the overburden soils and bedrock, and geophysical surveys to establish the soil characteristics and to determine the presence of any buried metallic objects, e.g. drums or tanks. As part of this investigation, six monitoring well clusters, consisting of a total of nine wells at various depths, were installed.

Given the results of the Phase II Investigation, a Classification of 2 was assigned to this site. This classification indicates that the site poses a significant threat to the public health or to the environment, and action (i.e. investigation and remediation) is required.

Synopses of the findings of the Remedial Investigation and the Feasibility Study are summarized in Sections 3 and 6 respectively of this PRAP.

SECTION 3: CURRENT STATUS

In response to the determination that the presence of hazardous wastes at this site presents a significant threat to the public health or to the environment, an RI and an FS were completed. Based on the results of the Phase I and Phase II Investigations, the specific threats to the public health or to the environment

associated with these hazardous wastes were determined in the RI. In turn, based on the findings of the RI, a remediation scheme was developed in the FS.

3.1: Summary of the Remedial Investigation

The RI began in October, 1992, and was completed in November, 1994. Investigation activities conducted as part of the RI included the following elements:

* review and evaluate the results of previous studies,
* determine groundwater flow characteristics,
* conduct an environmental sampling program,
* perform chemical analyses of samples of soil, sediment, surface water and groundwater,
* conduct a habitat impact assessment, and
* complete a qualitative health risk assessment.

To determine if media (i.e. soil, sediment, surface water and groundwater) were contaminated at levels of concern, the analytical data obtained from the RI were compared to Applicable Standards, Criteria, and Guidance (SCGs), presented in Section 7.2 of this PRAP. Groundwater, drinking water and surface water SCGs identified for the Chem-Trol site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For the evaluation and interpretation of the soil data, NYSDEC Soil Cleanup Guidelines for the Protection of Groundwater and site background conditions were used. For the sediment data, in addition to the Soil Cleanup Guidelines and background conditions, the NYSDEC Technical Guidance for Screening Contaminated Sediments were used.

Based upon comparison of the results of the RI to the SCGs and to potential public health and environmental exposure rates, it was determined that certain areas and media of the site are contaminated and require remediation. These areas and media are depicted in Figure 3, and include the following:

* contaminated soils, generally located in the former operations area,
* contaminated stream sediments in portions of the on-site tributary of Smokes Creek,
* contaminated soils and sediments from an on-site seep adjacent to and west of the operations area (See Figure 2),
* contaminated groundwater in the shallow overburden aquifer beneath the site, and
* contaminated groundwater in the deep bedrock aquifer beneath the site.

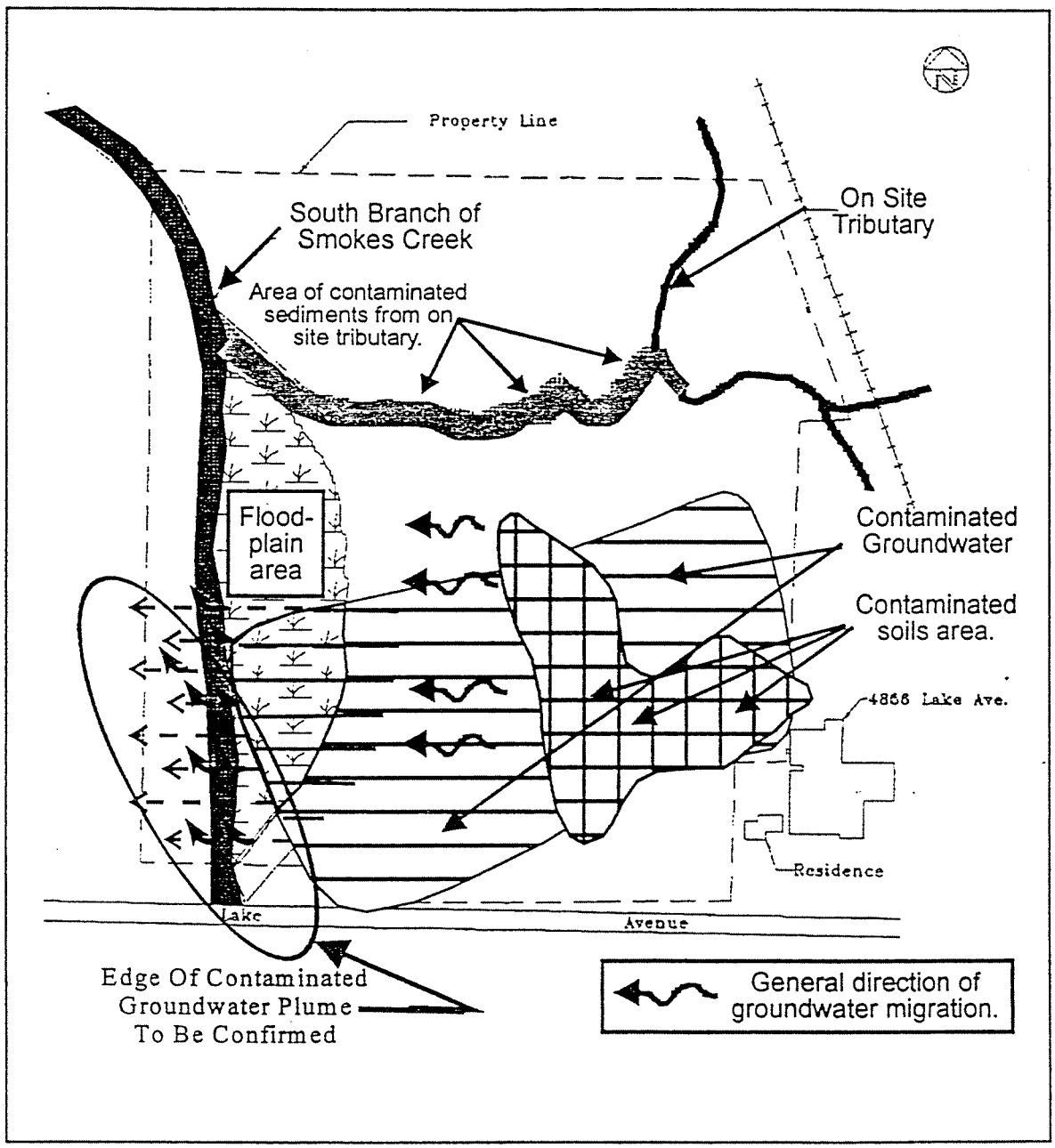

Figure 3: Details of Contaminated Areas

Summaries of the field sampling results for the various environmental media are discussed in the subsections that follow and summarized in Tables 1 through 4. The results in each of these tables are discussed in turn in each of these respective subsections. The data contained in the tables reflect only those chemicals which exceed NYS guidelines or standards. The complete data on which these summaries and tables are based are presented in the November 1994 RI Report.

Soils

Analyses of the soils at the site were conducted in both the April, 1991 Phase II Investigation as well as the November, 1994 Remedial Investigation. Based on results of the earlier Phase II Investigation, soil sampling efforts conducted during the RI focused generally on the former operations area and adjacent areas of the site.

As part of the RI, auger probes spaced on a fifty by fifty foot grid system at 75 locations throughout the operations area were done for in-field screening and confirmatory analytical sampling. Chemical laboratory analyses were conducted on soil samples collected from 25 of the auger probe locations for organic contaminants and 16 of the locations for metal contaminants. Table 1 lists those compounds for which NYSDEC Soil Cleanup Guidelines were exceeded at any of these sample locations. The complete results of these chemical analyses are given in the RI Report.

Previously, during the Phase II Investigation, significantly elevated levels of organic compounds, pesticides and PCBs were identified in the soils in the area of a former waste chemical holding lagoon (Sample SSI-2). The subsequent RI auger probe investigation revealed that samples 10 to 15 feet from SSI-2 were significantly less contaminated than at the SSI-2 location. Given this data, the area of Sample SSI-2 was identified as an isolated "hot spot", as shown in Figure 4.

Soil cleanup guidelines for chromium are 10 ppm (parts per million) or levels typically encountered in the soils found in the general vicinity of the site in question (background levels). The analyses that have been completed for the various investigations suggest that chromium in the majority of on-site soils are at area background levels of approximately 25 ppm. Additional investigation to confirm the background levels of chromium will be required during the design of the remediation components.

The analysis of soil conditions at the Chem-Trol site indicate that volatile organic compounds, PCBs and metals are present at levels exceeding NYSDEC Cleanup Guidelines. These contaminants are dispersed at various locations throughout the former operations area. The results of the Phase II and RI soil sampling and auger probe investigations provide the basis for establishment of the area of contaminated soils depicted in Figure 3.

Sediment

Sampling and analysis conducted during the RI revealed sediment contamination in four areas associated with the site. These areas are in the South Branch of Smokes Creek, the on-site tributary of Smokes Creek, the on-site seep and the floodplain situated between Smokes Creek and the former

Table 1: Summary of Soil Sampling Results

Compound	Range of Detections (ppm)	Guidelines (ppm)	** No. of Exceedances	** No. of Detections	Location SSI-2 (Hot Spot) (ppm)
Methylene Chloride	0.02 to 8.9	0.1	3	13	0.21
Chloroform	0.0004 to 34	0.3	2	10	ND
1,1,1-Trichloroethane	0.004 to 8.8	0.8	2	5	ND
Trichloroethene	0.002 to 8.7	1.4	4	13	3
Tetrachloroethene	0.001 to 35	1.4	1	7	ND
Xylene	0.001 to 18	1.2	2	15	18
Toluene	0.0005 to 3.1	1.5	1	14	1.2
Total Volatiles	0.0005 to 413.4	No Guidelines		22	58.21
Phenol	0.051 to 120	0.03	2	2	120
2-Methylphenol	0.43 to 14	0.1	2	2	14
4-Methylphenol	0.065 to 52	0.9	1	3	52
Hexachlorobenzene	0.084 to 21	0.41	5	10	21
Total Semi-Volatiles	0.051 to 431.26	No Guidelines		23	431.26
Benzo(a)Pyrene	0.25 to 3	0.061	4	4	ND
Total PCB's	0.056 to 1800	1	9	12	1800
Chromium	8.7 to 68.7	25*	9	16	65.2

* Approximate site background level for chromium is 25 ppm
** For all compounds listed except chromium, there are 25 sampling points; for chromium, there are 16

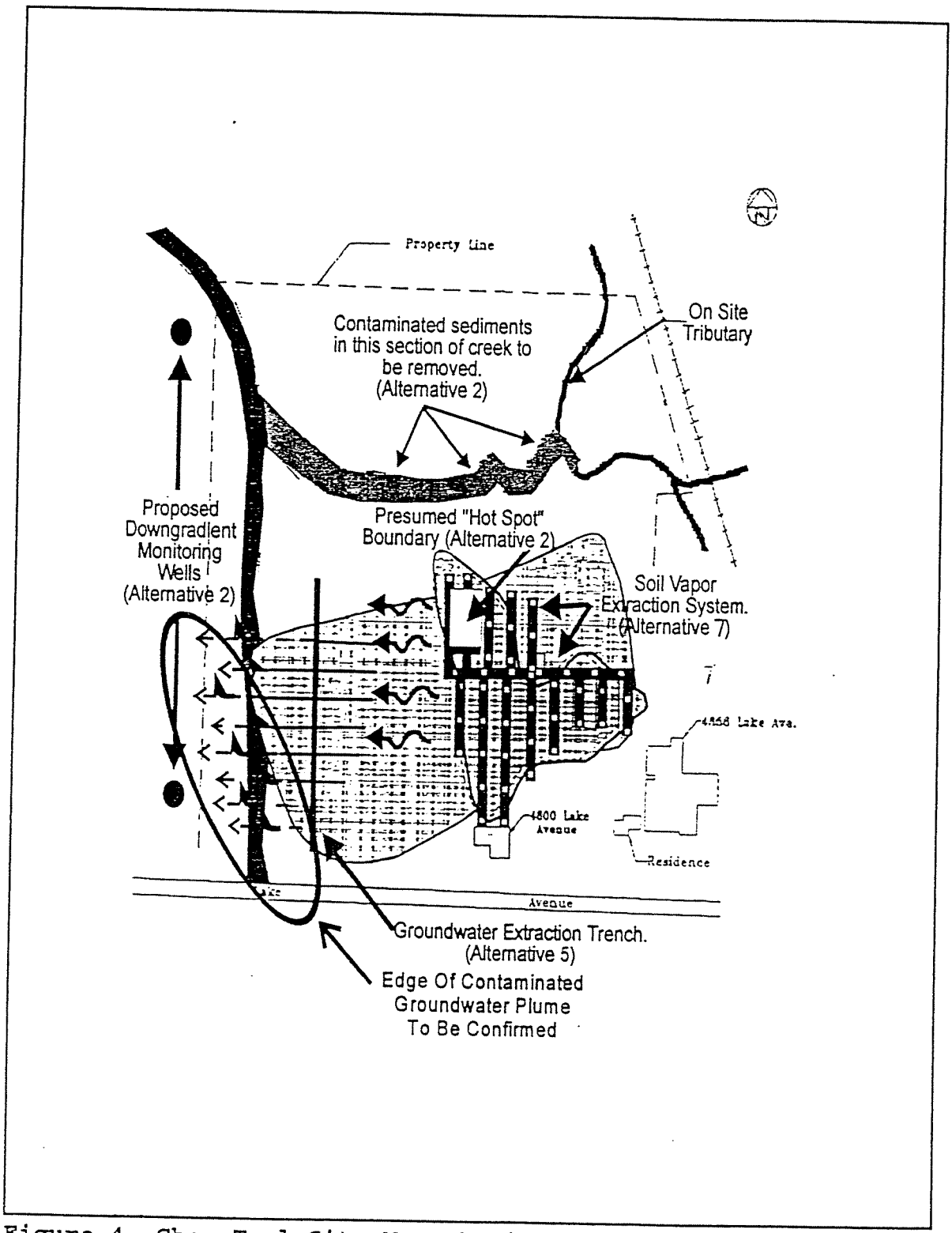

Figure 4: Chem-Trol Site Map Showing Selected Remediation Measures

operations area. Table 2 summarizes the results of sampling and investigation in these areas. Because it is a continuously flowing stream, the NYSDEC Guidance for Screening Contaminated Sediments is appropriate for determining the extent of contamination of samples from the South Branch of Smokes Creek. The Soil Cleanup Guidelines are utilized to determine the extent of contamination in the samples from on-site tributary, the on-site seep and the floodplain, due to the intermittent flow of the surface waters in these areas.

For the South Branch of Smokes Creek, the three sediment samples given in Table 2 consist of one sample upstream of the confluence with the on-site tributary, immediately west of the former operations area, and two samples downstream of the confluence. One of the samples downstream of the confluence shows chromium above the NYSDEC screening criteria for sediments. A fourth sample, collected in the South Branch of Smokes Creek immediately upstream of the Chem-Trol site, has a chromium level of 16.1 ppm.

The flow path of the on-site tributary runs from east to west across the site, and forms the northern boundary of the former operations area. As depicted in Figures 2 through 4, the tributary is formed by two upstream branches; the confluence of these branches is located in the northeast portion of the site. Three sediment samples for the on-site tributary system show chromium levels above the Soil Cleanup Guidelines. As also noted in Table 2, PCBs in excess of NYSDEC Cleanup Guidelines were found in the south branch sample and in one of the on-site tributary samples. Figures 3 and 4 depict the extent of the contaminated sediments in the on-site tributary.

The on-site seep, shown in Figure 2, was investigated during the RI. This seep is located on the embankment which separates the former operations area from the Smokes Creek floodplain to the west. As shown in Table 2, a sediment sample collected at the seep indicates the presence of chromium at 31.6 ppm.

In the Smokes Creek floodplain, four sediment samples collected during the RI indicate the presence of chemical contamination. In all four samples, semi-volatile organic compounds were present, ranging from 0.832 ppm to 2.53 ppm. PCBs were also identified in one of the four floodplain sediment samples at levels above NYSDEC Cleanup Guidelines.

As noted in the subsection on soils, the primary group of contaminants found in the former operations area are volatile organic compounds. Because the types of compounds identified in the floodplain are different from those found in the former operations area, it is suspected that they may have been contained in fill placed in the floodplain during the 1972 realignment of Smokes Creek and/or be the result of sedimentation from the fire fighting water diked in this area during the plant fire of June, 1972. The field testing required as part of the engineering design and of the construction of the proposed remediation components (See Sections 7 and 8 of this PRAP) should provide additional data on the specific extent of contamination in the floodplain area. This additional investigation will confirm the extent of any remediation required of this area.

Groundwater

The RI included evaluation of both the shallow overburden groundwater and the deeper bedrock aquifer underlying the site. The overburden groundwater is situated in the unconsolidated soil (sand, silt and clay) layer and is encountered at varying depths approximately 2 to 16 feet below the ground surface. The thickness of the overburden soil layer ranges from 4 to 25 feet. The deeper bedrock, where the

Table 2
Summary of Sediment Sampling Results

Compound	Range of Levels (ppm)	No. Samples w/Compound above Detection Level	No. Samples w/Compound Exceeding Goals	NY State Soil Cleanup Guidelines or Guidance for Sediments (ppm)
South Branch, Smokes Creek - 3 Downstream Sample Points				
Chromium	19.4 to 27.4	3	1	26
On-Site Tributary - 3 Downstream Sample Points (Soil/Sediment Sample)				
Total PCB's	ND to 1.7	2	1	1
Chromium	29.7 to 46.9	3	3	25*
South Branch, On-Site Tributary - 1 Downstream Sample Point (Soil/Sediment Sample)				
Total PCB's	2.8	1	1	1
On-Site Seep - 1 Sampling Point (Soil/Sediment Sample)				
Chromium	31.6	1	1	25*
Floodplain - 4 Sampling Points (Soil/Sediment Samples)				
Total Semi-Volatile Compounds	0.832 to 2.53	4	Not Applicable	No Guidelines
Total PCB's	ND to 3.7	3	1	1
Chromium	23.3 to 30.7	4	3	25*

* Approximate site background level for chromium in soils is 25 ppm

bedrock aquifer is located, is immediately below the overburden soils layer. The bedrock layer consists of a 25 to 30 foot thick layer of weathered and fractured shale, which is underlain by a more solid bedrock layer. Generally, it appears that most of the groundwater flow is through the overburden soil and weathered bedrock, and ultimately into the South Branch of Smokes Creek.

Six overburden groundwater monitoring wells were sampled as part of the RI. Chemical contamination exceeding NYS Groundwater Standards was identified for seven volatile organic chemical compounds, as shown in Table 3. Three of the six monitoring wells were found to be uncontaminated. Dense non-aqueous phase liquid (DNAPL) containing chlorotoluene was noted in one of the overburden monitoring wells, located in the west-central portion of the former operations area. The deep bedrock aquifer was evaluated utilizing nine groundwater monitoring wells. Six of these wells had one or more of the eleven volatile organic compounds listed in Table 4 at levels exceeding NYS Groundwater Standards.

Based on the groundwater investigation conducted during the RI, the contaminated groundwater plume as depicted on Figure 3 was mapped. The contaminant plume originates in the former operations area and extends westerly towards Smokes Creek. Smokes Creek appears to be the ultimate discharge location of the plume. The western edge of the plume has not been precisely delineated, and further investigation in this regard will be required during the remedial design phase of the project. Vertically, the lower portion of the overburden and upper portion of the bedrock groundwater were found to be the areas of contamination.

Hydrogeologic analysis conducted to date suggests that, based on the fracture patterns of the bedrock, a portion of the plume is flowing beneath Smokes Creek, then following the axis of the creek, traveling in a northward direction, and ultimately discharging into the creek downstream of the site.

Surface Water

Eleven samples of surface water were collected and analyzed during the RI. Eight samples were collected in Smokes Creek, and three in the on-site tributaries. Analytical data from these samples do not indicate that contaminants from the Chem-Trol site are impacting surface water quality in the immediate area.

3.2 Summary of Human Exposure Pathways:

An exposure pathway is the process by which an individual is exposed to a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media (e.g. soil or groundwater) and transport mechanisms; 3) the point of exposure; 4) the route of exposure (e.g. ingestion or inhalation); and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events or situations.

Table 3
Summary of Overburden (Shallow) Monitoring Well
Sampling Results

Compound	Range of Levels (ppb)	No. Wells** w/Compound above Detection Level	No. Wells** w/Compound Exceeding Standards	NY State GA Groundwater Standards (ppb)
Chloroethane	ND* to 200	2	2	5
1,1-Dichloroethane	ND* to 68	3	3	5
1,2 Dichloroeththene (Total)	ND* to 7	1	1	5
Chloroform	ND* to 260	2	1	7
1,1,1-Trichloroethane	ND* to 19	3	1	5
Trichloroethene	ND* to 970	3	2	5
Chlorotoluene	ND* to 130000	1	1	5 (Principal Organic Compound)
Total Volatile Organic Compounds	7 to 131657	6	Not Applicable	No Standard
Sodium	46000 to 206000	5	5	20000

* ND: Not Detected
** For Organic Compounds, 6 Wells were Sampled; for Metals, 5 Wells

Table 4
Summary of Bedrock (Deep) Monitoring Well
Sampling Results

Compound	Range of Levels (ppb)	No. Wells** w/Compound above Detection Level	No. Wells ** w/Compound Exceeding Standards	NY State GA Groundwater Standards (ppb)
Vinyl Chloride	ND* to 3	4	3	2
Chloroethane	ND* to 60	4	4	5
1,1-Dichloroethene	ND* to 270	4	3	5
1,1-Dichlorethane	ND* to 1000	6	4	5
1,2-Dichloroethene (Total)	ND* to 52	6	5	5
Chloroform	ND* to 130	3	1	7
1,1,1-Trichloroethane	ND* to 2800	4	4	5
Trichloroethene	ND* to 330	4	3	5
Benzene	ND* to 2	2	2	0.7
Toluene	ND* to 7	6	2	5
Chlorotoluenes	ND* to 4200	4	4	5 (Principal Organic Compound)
Total Volatile Organic Compounds	ND* to 5476	7	Not Applicable	No Standard
Sodium	ND* to 67800	5	5	20000

* ND: Not Detected
** For Organic Compounds, 9 Wells were Sampled; for Metals, 6 Wells

Potential contaminant exposure pathways in the following media by the routes of exposure indicated were determined to exist:

* soils and floodplain sediments (ingestion, dermal contact or inhalation),
* on-site surface water sediments (ingestion or dermal contact),
* soil gases containing vapors from organic chemicals (inhalation), and
* overburden and bedrock groundwaters (ingestion or dermal contact).

The contaminants in the soils in the former operations area were found below an upper protective layer of surface soils. This layer is the remnant of the facility closure action of 1977 (see Section 2.2). Generally, the upper protective soil layer is a minimum of 6 inches thick. In some portions of the operations area however, this protective soil layer does not exist. Whenever this protective surface is breached, e.g. by erosion or excavation, exposure to the lower contaminated soils is possible by ingestion, dermal contact or inhalation.

Because the only contaminants found in the surface water sediments are primarily semi-volatile and non-volatile chemicals, potential exposure is limited to ingestion and dermal contact. Exposure to the soil gases, which contain vapors from volatile organic chemicals, is possible by inhalation. Release of these vapors is possible in areas of inadequate protective soil layer, or if excavation of contaminated soils should occur. Generally, the volatile organic chemicals are found in the former operations area.

For the overburden groundwater, the greatest potential for exposure is by direct contact (dermal) with the seeps that may break out onto the surface soils, particularly in the low lying floodplain or on the embankment along the former operations area. The on-site seep in the southwest area of the site, discussed in the previous section, is an example of this potential problem.

Because the site is located in a highly developed area, with an associated public water supply system, it appears unlikely that a potable water supply well would be drilled in this vicinity. As such, the potential exposure to contaminated bedrock groundwaters through ingestion or dermal contact is small. However, the shallow depth to bedrock and the associated groundwater does present the possibility of exposure, if utility trenches or other such excavations that penetrate the contaminant plume are dug.

3.3 Summary of Environmental Exposure Pathways:

Potential pathways of environmental exposure for this site include direct contact by fish and wildlife with contaminated sediments and soils, and direct contact with sediments and soils impacted by contaminated groundwater seeps. For some areas of the on-site surface water sediments, levels of PCBs exceed the NY State DEC Cleanup Goals.

As discussed in Section 4.1, volatile organic chemicals were found in monitoring well samples at levels that exceed the NY State GA Groundwater Standards. These volatile organic chemicals have a moderate level of solubility and of soil sorption tendency. Such characteristics indicate that the chemicals may leach from the soils and bedrock and break out to the ground surface, as is demonstrated by the seep located along the western boundary of the former processing area. Given the predominance of fractured and weathered rock in the general area beneath the South Branch of Smokes Creek, it is expected that groundwater contaminants at the site flow towards the creek and then northward along its axis. Preliminary groundwater modeling, conducted as part of the RI, also predicts this type of flow. Typically, such flow patterns provide pathways for contaminants to enter the stream as groundwater

seepage. Through these groundwater pathways, potential chemical exposure of fish and wildlife to the subsurface contaminants on the site exists.

SECTION 4: ENFORCEMENT STATUS

The NYSDEC and SCA Services entered into a Consent Order on October 15, 1992, which obligates SCA Services to implement an RI and FS remedial program. Upon issuance of the Record of Decision, the NYSDEC will negotiate with SCA Services to implement the selected remedy under an Order on Consent.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remediation selection process given in 6NYCRR 375-1.10. These goals are established under the guideline of meeting all standards, criteria, and guidance (SCGs) and of protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site, through the proper application of scientific and engineering principles.

The remediation goals selected for this site are to:

- Reduce and, when feasible, remove chemical contamination in the soils, sediments and groundwater at the site,
- Eliminate the potential for direct human or animal contact with the contaminated soils, sediments and groundwaters at the site,
- Prevent migration of contaminants in the on-site soils into the groundwater,
- Prevent off-site migration of contaminated groundwater, and mitigate the impacts of contaminated groundwater to the environment, and
- Provide for attainment of SCGs for groundwater quality to the extent practicable.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Chem-Trol Site were identified, screened and evaluated in the Feasibility Study (FS). A total of ten of these potential remedial alternatives were evaluated for effectiveness and implementability. These alternatives are summarized in Table 5.

Alternative 1, the "No Further Action" Alternative, calls for no remediation measures beyond what has already been done, i.e. the facility closure action completed in 1977 (see Section 3.2). Following standard evaluation practices, this alternative is included.

Table 5 - Array of Potential
Remediation Alternatives

Alternative No. 1: Use No Additional Remediation Measures; Monitor On-site Groundwaters, Floodplain Sediments, and On-site Tributary Sediments		Measures to Address Contaminant Sources		
		Source Measure No. 1: Access/Use Restrictions, Monitor Floodplain Sediment, Remove Contaminated Soils from "Hot Spot" and Remove Contaminated Sediments from On-site Tributary	Source Measure No. 2: Source Measure No. 1 Plus Upgrade Existing Soil Cover	Source Measure No. 3: Source Measure No. 2 Plus Soil Vapor Extraction
Measures to Address Contaminant Migration	Migration Measure No. 1: Access/Use Restrictions and Monitor Downgradient Groundwater	Alternative No. 2	Alternative No. 3	Alternative No. 4
	Migration Measure No. 2: Migration Measure No. 1 Plus Trench Drain	Alternative No. 5	Alternative No. 6	Alternative No. 7
	Migration Measure No. 3: Migration Measure No. 1 Plus Pumping Wells	Alternative No. 8	Alternative No. 9	Alternative No. 10

The remaining nine alternatives include combinations of measures to address the sources of contamination on the site (Source Measures) and measures to control contaminant migration (Migration Measure). As shown in Table 5, for example, Alternative 2 consists of Source Measure No. 1 and Migration Measure No. 1; Alternative 9 consists of Source Measure No. 2 and Migration Measure No. 3. The sources of contamination consist of the contaminated site soils and sediments. Contaminant migration is the result of contaminants combining with the mobile groundwater underlying the site.

After screening the ten alternatives, Alternatives 1, 2, 5, 6 and 7 were considered for detailed analysis, as summarized in Section 6.1 and evaluated in Section 6.2. The Source Control and Migration Control Measures of Alternative 2 represent limited action remediation of this site. As such, this alternative is considered for detailed analysis. Alternatives 3 and 4 are not considered for detailed analysis, because neither of them provides for active Migration Control measures to address groundwater contamination. Migration Measure 2 calls for groundwater extraction with a trench drain, and No. 3 with a system of pumping wells. Given the presence of fractured bedrock at this site, it is believed that the trench drain is the more effective of the two systems in controlling contaminant migration in the groundwater. Thus, Alternatives 5, 6 and 7, which call for a trench drain, are considered for detailed analysis, but Alternatives 8, 9 and 10, which call for a system of pumping wells, are eliminated. Details of the remedial alternatives and their evaluations are presented in the March, 1995 Feasibility Study Report.

6.1: Description of Remedial Alternatives

The possible remedies identified in the FS are intended to address on-site soils, floodplain and on-site tributary sediments, and contaminated overburden and bedrock groundwaters. Most of the components of the alternative remediation measures discussed in this section are shown in Figures 4 (Page 10) and 5 (Page 21). The costs listed for each of the alternatives are present worth, capital, and operation and maintenance (O&M). Present worth is the sum of the following costs:

- capital costs, and
- the present worth of total annual O&M costs for 30 years, including interest and inflation projections.

Alternative 1: No Further Action

Present Worth:	*$ 1,268,026*
Capital Cost:	*$ 14,400*
Annual O&M:	*$ 63,120*
Approximate Time to Implement:	*6 Months*

The no further action alternative is evaluated as a statutory requirement and as a basis for comparison of alternatives. The evaluation of this alternative reflects the facility closure action completed in 1977. It requires only continued monitoring to evaluate the effectiveness of the 1977 closure. The monitoring program would address these elements:

* overburden and bedrock groundwaters, and
* the floodplain and on-site tributary sediments.

The capital cost for this alternative reflect the need for planning and engineering of a long term monitoring program.

This alterative is unacceptable, as the site would remain in its present condition, and human health and the environment would not be adequately protected.

Alternative 2: Monitoring Program of Alternative 1, Plus Monitor the Downgradient Groundwaters, Remove the Contaminated Soils from the Area of Former Waste Holding Lagoons and the Sediments from the On-site Tributary, and Provide Access/Use Restrictions

Present Worth:	*$ 2,730,044*
Capital Cost:	*$ 1,347,719*
Annual O&M:	*$ 69,600*
Approximate Time to Implement:	*6 Months to 1 Year*

This alternative includes additional monitoring of the bedrock groundwaters west of the South Branch of Smokes Creek. In the RI, chemical contamination, primarily volatile organic compounds, was noted in the bedrock groundwaters immediately west of the creek. Preliminary groundwater flow modeling conducted during the RI suggests that these groundwaters are flowing from the site to the west, then progressing northward along bedrock fractures beneath Smokes Creek. By natural recharge processes, it is expected that these groundwaters are entering the Smokes Creek surface waters downstream of the Chem-Trol site. The additional groundwater monitoring proposed would further delineate and confirm the direction of migration of these groundwaters. This effort would include the installation of additional monitoring wells, collection and analysis of data from these wells and presently existing wells, and detailed evaluation of groundwater flow characteristics and contaminant transport through such means as computer modeling.

This alternative also includes the following actions to address two on-site areas containing elevated levels of semi-volatile organic compounds and PCB's:

* removal of contaminated "hot spot" soils in the operations area, and;

* removal of contaminated sediments in the on-site tributary and its general area.

The operations area hot spot and contaminated on-site tributary sediments are discussed in Section 3.1 and depicted on Figure 4. The soils in the "hot spot" containing contaminants at levels above those generally found in the remainder of the operations area are to be removed. Based on the RI test results, it appears that approximately 280 cubic yards of soil in this operations area hot spot are at these elevated levels. As shown in Figures 3 and 4, approximately 450 cubic yards of sediments along 700 to 800 feet of the on-site tributary would be removed and the excavation backfilled with clean soils. The sediments with contaminants at levels above the Cleanup Guidelines, as noted in Table 2, would be removed. Thus, the width and depth of the final excavation depends on the extent of contamination encountered in the on-site tributary area. The contaminated soils and sediments removed by this alternative would be disposed off-site, in accordance with applicable rules and regulations.

Finally, this alternative calls for restricting access and use of the site, to reduce potential of exposure to site contaminants. Access control would be done by fencing the site. Restrictive covenants in the deed to the property would be used to control the use of the site. These covenants would prohibit or limit actions which might interfere with the remedial actions or increase the potential for release(s) of contaminants.

Alternative 5: Components of Alternative 2, Plus Trench Drain System

Present Worth:	*$ 9,429,960*
Capital Cost:	*$ 3,133,229*
Annual O&M:	*$ 317,040*
Approximate Time to Implement:	*2 Years*

In addition to the components of Alternative 2 described above, this alternative includes a groundwater collection trench to intercept and remove contaminated groundwaters flowing from the site. The trench would also collect contaminated groundwater found adjacent to and west of Smokes Creek, by inducing an eastward flow from this area. The trench, approximately 600 feet long, would be located west of the former operations area and near the east bank of Smokes Creek. The trench would be excavated into the weathered shale bedrock, in order to intercept contaminated groundwater flowing in this fractured rock zone and in the overlying overburden soils. In addition, relief wells would be installed in the trench bottom to induce upward flow of the groundwater from the lower strata. As noted in the Groundwater Subsection of Section 4.1, the proposed location of this trench is generally in the ultimate discharge area of the groundwater.

Contaminated groundwaters extracted by the collection trench would be treated as necessary. This treatment would be designed to meet all State and Federal pollution control requirements, and would consist of either on-site treatment with discharge to Smokes Creek, or discharge (with pretreatment as required) to the Erie County Sewer District No. 3 wastewater treatment plant. Cross section drawings showing the details of the groundwater extraction and treatment systems are given in Figures 5a and 5b.

Alternative 6: Components of Alternative 5, Plus Upgrade Existing Soil Cover

Present Worth:	*$ 9,837,880*
Capital Cost:	*$ 3,270,929*
Annual O&M:	*$ 335,040*
Approximate Time to Implement:	*2 ½ Years*

In addition to the components of Alternative 5 described above, this alternative calls for supplementing, repairing and extending the existing soil cover in the former operations area. This soil cover would prevent direct contact with any chemically contaminated soils that remain on the site. The cover would be extended to include the seepage area in the southwest quadrant of the site. Prior to placing the soil cover in this area, the source and/or the cause of the seep would be determined and then addressed in an appropriate manner to prevent recurrence. Possible measures include leachate absorption beds or relief drains.

The soil cover would also reduce the rate and quantity of precipitation percolating through the contaminated soils in the former operations area. In turn, this would reduce the amount of soil contaminants reaching the underlying groundwater.

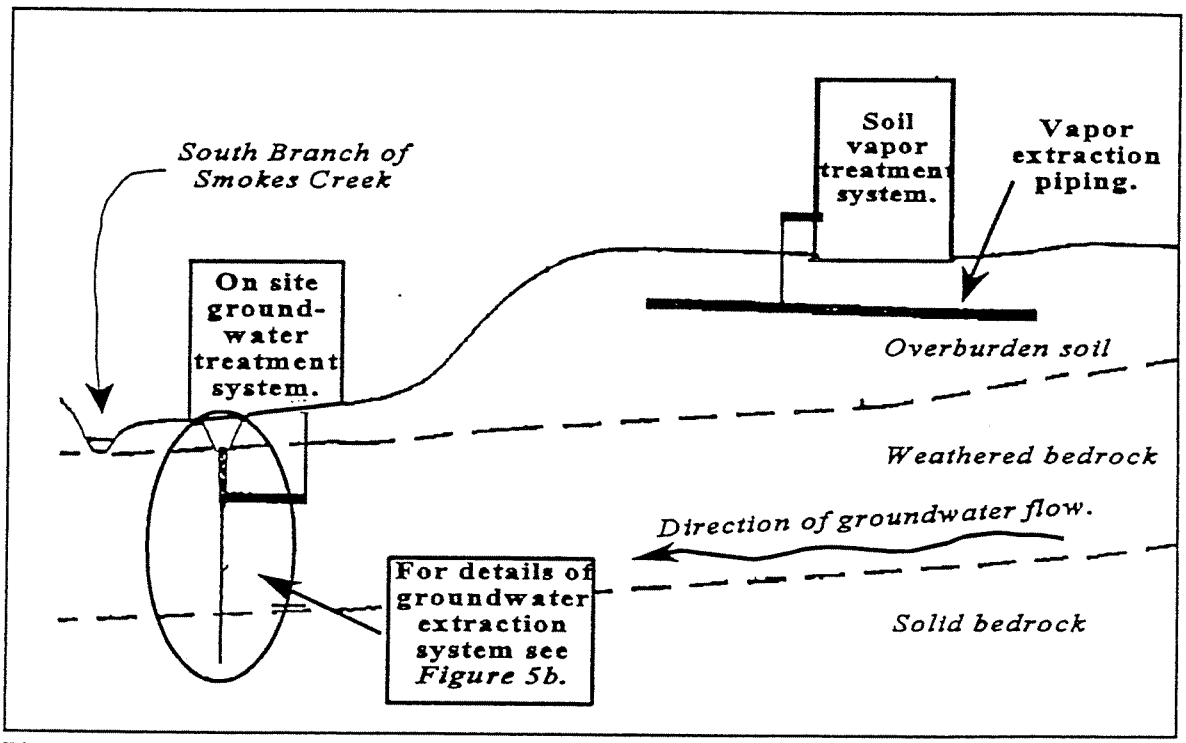

Figure 5a: Groundwater and Soil Vapor Extraction and Treatment Systems.
NOTE: Not to scale, vertical expanded over horizontal scale.

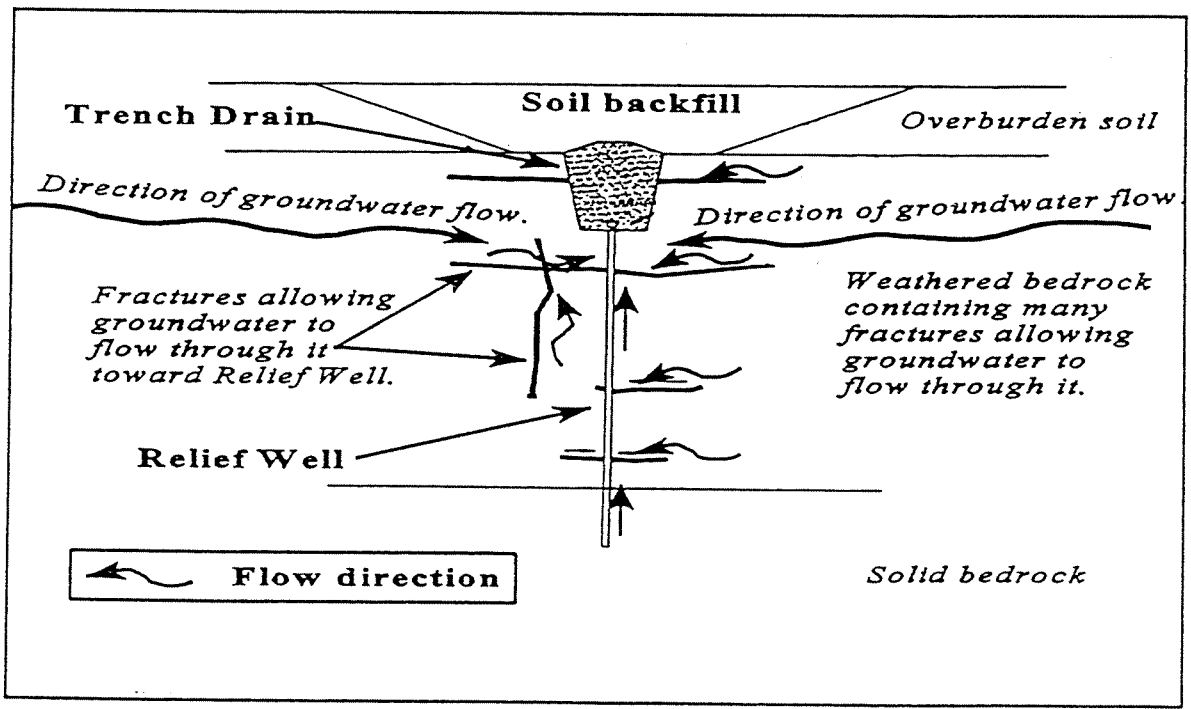

Figure 5b: Groundwater Extraction System Details.

Alternative 7: Components of Alternative 6, Plus Soil Vapor Extraction

Present Worth:	*$ 10,474,676*
Capital Cost:	*$ 3,512,579*
Annual O&M:	*$ 378,240*
Approximate Time to Implement:	*2 ½ Years*

In addition to the components of Alternative 6 described above, Alternative 7 includes a soil vapor extraction system to remove volatile organic chemical compounds from the soils in the former operations area, which have exhibited the highest levels of contamination on this site. The system would reduce or eliminate the primary source of groundwater contamination, thus reducing the contaminant loading on the trench drain system proposed in Alternative 5. The system would consist of a network of perforated pipes placed in trenches two to eight feet deep. These trenches would be backfilled with permeable materials, such as sand, gravel or slag. The pipe network would be connected to a vacuum system, to induce air flow from the contaminated soils. A treatment system for these induced soil vapors will be installed. It is presently estimated that the soil vapor extraction system will attain the cleanup goals in approximately five years. This system is shown in Figures 4 and 5a.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites, i.e. 6NYCRR Part 375. For each of these criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. Detailed discussions of these criteria and of the evaluations are contained in the Feasibility Study.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. Summary field sampling results for the RI are presented in Tables 1 through 4. These tables list those contaminants that were found in the soil, sediment and groundwater samples that exceed respectively the following: NY State Soil Cleanup Guidelines, NY State Guidance for Contaminated Sediments and the NY State GA Groundwater Standards and the Groundwater Standards for Principal Organic Compounds.

Because the remediation components address specific media, the degree of compliance with the various SCGs is increased as remediation measures are added.

Action and location specific SCGs are those criteria which must be met simply to conduct certain activities at a given site. These criteria include such requirements as compliance with OSHA safety regulations during construction activities and compliance with State and Federal regulations regarding activities in floodplains. All the alternatives evaluated in this section consist of measures that meet the applicable action and location specific SCGs.

Chemical specific SCGs address those standards, criteria and guidelines established for specific chemical compounds found in the various media of the site. For example, NYSDEC Groundwater Quality Standards and the Soil Cleanup Guidelines are chemical specific SCGs.

Alternative 1, the no further action alternative, would not meet chemical specific SCGs, as contaminated soils, sediment and groundwater found at the site would not be controlled or remediated.

Because it calls for removal of the contaminated on-site tributary sediment and "hot spot" soils, Alternative 2 would meet some of the applicable SCGs. However, this alternative does not provide for containment or remediation of contaminated groundwater exiting the site.

Through addition of a trench drain system to the Alternative 2 actions, Alternative 5 would terminate the off-site release of contaminated groundwater. Through natural attenuation and dispersement, it is anticipated that off-site groundwaters impacted by the site would ultimately meet applicable quality standards. Contaminated groundwaters remaining on site would not meet applicable chemical specific SCGs, as contaminated site soils in the former operations area would continue to serve as a contaminant source to groundwater.

As discussed in Section 3.1, dense non-aqueous phase liquid (DNAPL) contaminants were found under portions of the former operations area. Results of previous remediation programs for other sites indicate that DNAPLs are difficult to remediate. Although the trench drain might aid in DNAPL removal, complete elimination of this contaminant source would not be expected. As such, full compliance with chemical specific SCGs for on site groundwaters would not be achieved.

Alternative 6, which includes the remediation measures of Alternative 5 plus addition of a soil cover in the former operations area, would not significantly increase the degree of compliance with chemical specific SCGs. Some enhancement by this alternative would be anticipated through removal of the seep(s) adjacent to the floodplain. However contaminated soils in the former operations area would remain.

Of the alternatives evaluated, Alternative 7 would provide the greatest level of compliance with chemical specific SCGs, as it incorporates the actions of previous alternatives and adds a remedial element to address contaminated soils in the former operations area. The soil vapor extraction system proposed in this alternative would remove volatile organic chemical contamination found in these soils.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts at the site, in order to assess whether each alternative is protective.

Sections 4.2 and 4.3 describe the potential exposure pathways. The contaminated soils, contaminated on-site sediments, and contaminated overburden and bedrock groundwaters are identified as the potential exposure sources.

Alternative 1 does not provide protection to human health and the environment because no further remediation action is proposed.

Alternative 2 would provide for protection of human health from exposure to the on-site soils and sediments by remediation of the on-site tributary and the "hot spot" area, and by restricting access and use of the site. Similarly, the remedial actions proposed by this alternative would also remove a portion of the potential environmental exposure pathways. Remediation of on-site seeps and contaminated groundwater are not provided for in this alternative. As such, these potential exposure pathways would remain unchecked.

Alternative 5, through addition of the groundwater trench drain system, would eliminate the potential exposure to contaminated soils and sediments, plus the groundwater exposure pathways. This alternative would not provide complete elimination of exposure pathways, as the on-site seeps would not be addressed.

Alternative 6 would eliminate all potential exposure pathways identified. By addition of a soil cap in the former operations area, the on-site seeps would be controlled or eliminated. Although site access/use controls would in part address exposure to on-site soils, the soil cap would provide additional and more reliable protection from exposure to the soils and sediments by improving, expanding and enhancing the existing protective soil cover.

The addition of soil vapor extraction in Alternative 7 would address remediation of contaminated site soils. Generally, this would not increase the level of protection provided by Alternative 6, unless intrusion into these soils by such actions as unauthorized or unknown excavations into the former operations area were to occur.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. Short term effectiveness is evaluated in terms of the measurement(s) of the potential short-term adverse impacts of the remedial action upon the community, the site remediation workers, and the environment during the construction and implementation of the remedial measures. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

Alternative 1, which includes only monitoring, offers more short-term effectiveness than the other alternatives. Furthermore, any minimal short-term impacts of monitoring would last for approximately six months, whereas the short-term impacts of the remedial measures called for in the other alternatives would last for approximately one year.

The components of the remediation measures included in Alternatives 2, 5, 6 and 7 call for construction procedures such as excavation, pipe laying, and installation of pumps and equipment. These procedures would all give rise to the higher potential short-term impacts mentioned above. These impacts would be minimized by using conventional equipment and procedures, such as personnel protective gear, dust suppression procedures, and air quality monitoring. Thus, no significant short-term adverse impacts would be expected from the implementation of Alternatives 2, 5, 6 or 7.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the alternatives in reducing human health risks and in protecting the environment from degradation, after implementation of the response actions. If wastes or treated residuals remain on the site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternatives 1 and 2 would not provide adequate long term effectiveness, in that no remedial action would be provided by Alternative 1 and only partial action would be provided by Alternative 2.

Alternative 5 would provide long term permanence and effectiveness in health and environmental protection for off-site areas and in part for the on-site areas. Off-site contaminant migration through

groundwater transport would be permanently eliminated by long-term operation of the drain trench. Removal of contaminated on-site tributary sediments and "hot spot" soils would eliminate exposure risks associated with these areas. DNAPL residuals, seep sediments, and untreated contaminated soils would remain on site. Access controls through fencing would provide some degree of effectiveness in deterring site access and potential human exposure to contaminated seeps and soils. Over the long term however, unauthorized access and resulting potential exposure would be possible.

As with Alternative 5, Alternative 6 would provide effective long-term elimination of exposure risks for off-site areas. By the addition of the soil cap on site, this alternative also would eliminate or significantly reduce the potential for on-site exposure to contaminated soils and seeps in the former operations area and eliminate exposure to on-site tributary sediments and "hot spot" soils. Only future actions that breach the cap would result in reestablishment of associated exposure risks. Through use restrictions for the site, the potential for such occurrences is reduced. Contaminated soils and DNAPL residuals would remain at the site under this alternative.

Alternative 7 would offer the greatest degree of long-term effectiveness and permanence. Exposure potentials in off-site areas would be eliminated. Coupled with the on-site actions contained in Alternative 6, it is expected that soil vapor extraction proposed by Alternative 7 would effectively reduce organic chemical contamination in the former operations area to acceptable levels. This treatment would reduce the amount of contaminant reaching the groundwaters and contaminating them further. This in turn would shorten the time period necessary to operate the drain trench system to remediate site groundwaters. As it provides for permanent contaminant removal or reduction actions, Alternative 7 allows for significantly increased future site use options over those that would be possible with Alternatives 2, 5 or 6.

5. Reduction of Toxicity, Mobility and/or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility and/or volume of the wastes at the site.

Alternative 1 would not reduce the toxicity, mobility or volume of site contaminants because no further actions are proposed.

Through select soil and sediment removal and off-site disposal, Alternative 2 would provide some reduction in toxicity and volume. Mobility, particularly of off-site migration of contaminated groundwater, would not be addressed.

Alternative 5, which calls for extraction and treatment of contaminated groundwaters, would add significant reduction in contaminant off-site mobility. Toxicity and volume would be reduced through treatment of extracted groundwater.

Alternative 6 provides additional reduction of contaminant mobility in the former operations area and on-site seeps.

Alternative 7 provides the greatest degree of reduction. Toxicity and volume would be reduced through soil removal, groundwater extraction and treatment, and by soil vapor extraction. Soil cap improvements in the operations area and seeps and installation of the trench drain system provide for significant reduction of contaminant mobility.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. The technical aspects of implementability include the difficulties associated with the

construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. The administrative aspects considered include the availability of the necessary personnel and material and also such potential difficulties as obtaining specific operating approvals and access to the site for construction.

The remediation components called for in each of the alternatives include techniques that are commonly used and readily implementable. Alternative 1 consists of only monitoring, whereas Alternative 7 includes all the remediation components called for in all the alternatives. Thus, Alternative 1 is the most readily implementable alternative, and Alternative 7 is the least. However, while Alternative 1 is considered to have a high degree of implementability, the degree of implementability of Alternative 7 is reduced only slightly. The other alternatives, 2, 5 and 6, are also considered to have a degree of implementability similar to that of Alternative 7.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative, and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 6.

The total present worth cost for Alternative 2 increases over 100% above that of Alternative 1, to $ 2,730,044; most of this increase is for the capital cost. As noted in Section 7.1, the predominant operation for Alternative 2 is excavation and backfill. The present worth cost of Alternative 5 increases over 200% above that of Alternative 2. In this case, the increased operation and maintenance costs are proportionately higher than the increased capital cost. The proposal to add a major remedial element for groundwater pumping reflects these proportionately higher operation and maintenance costs. The increases of Alternative 6 over Alternative 5 and of Alternative 7 over Alternative 6 are comparatively small.

This final criterion which follows, Community Acceptance, is treated as a "modifying criterion", and is taken into account after evaluating those above. It is considered in further detail after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community about the conclusions and recommendations in the RI and FS Reports and in the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary", included as Appendix A, presents the public comments and correspondence received on the Proposed Remedial Action Plan and the Department's response to the concerns raised. Primarily, the response at the public meeting focused on the remediation procedures to be followed in the completion of this project.

SECTION 7: SUMMARY OF THE SELECTED ALTERNATIVE

Based upon the results of the RI and FS, and the evaluation presented in Section 7, the NYSDEC has selected Alternative 7 as the remedy for this site.

Alternatives 1 and 2 are not completely protective of public health and the environment, nor do they meet all the applicable SCGs for the site. Alternatives 5, 6 and 7 all provide comparable levels of protection. Alternative 7 offers the greatest degree of compliance with applicable SCGs, in that it addresses both the off-site contaminant releases and treatment of contaminated on-site soils. Alternative 7 is readily implementable, has similar short-term impacts to the other alternatives, and provides for the greatest degree of long-term effectiveness and permanence. In addition, it also provides for

Table 6 - Projected Costs of
Screened Alternatives

Alternative Number		Costs		
		Present Worth	Capital	Annual O & M
1	Cost of Alternative	$ 1,268,026	$ 14,400	$ 63,120
2	Cost Increment Alt. 2 over Alt. 1	$ 1,462,018 (115%)	$ 1,333,319 (925%)	$ 6,480 (10%)
	Cost of Alternative	$ 2,730,044	$ 1,347,719	$ 69,600
5	Cost Increment Alt. 5 over Alt. 2	$ 6,699,916 (245%)	$ 1,785,510 (132%)	$ 247,440 (355%)
	Cost of Alternative	$ 9,429,960	$ 3,133,229	$ 317,040
6	Cost Increment Alt. 6 over Alt. 5	$ 407,920 (4%)	$ 137,700 (4%)	$ 18,000 (6%)
	Cost of Alternative	$ 9,837,880	$ 3,270,929	$ 335,040
7	Cost Increment Alt. 7 over Alt. 6	$ 636,796 (6%)	$ 241,650 (7%)	$ 43,200 (12%)
	Cost of Alternative	$ 10,474,676	$ 3,512,579	$ 378,240

increased future land use options over those provided by Alternatives 5 and 6. Alternatives 5, 6 and 7 will reduce contaminant mobility and volume. Of these alternatives, Alternative 7 offers the greatest amount of reduction, through the addition of a soil vapor extraction system. The costs associated with Alternatives 5, 6 and 7 are comparable. The estimated present worth cost to implement the preferred remedy (Alternative 7) is $ 10,474,676. The cost to construct the remedy is estimated to be $ 3,512,579 and the estimated average annual operation and maintenance cost for 30 years is $ 378,240.

The elements of the selected remedy are the following:

1. A remedial design program to analyze the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI and FS would be resolved;

2. The selected remedy consists of these remediation measures:

   * remove, for subsequent off-site treatment/disposal, the following contaminated materials:

     - the soils from the "hot spot" area, i.e. the general vicinity of the former chemical waste holding lagoons, and

     - the sediments from an area of the on-site tributary in the northern portion of the site,

   * upgrade the existing soil cover in the area of the former chemical waste processing area, and extend this cover to the overburden groundwater seep in the southwestern quadrant of the site,

   * install and operate a soil vapor extraction and an appropriate treatment system in the eastern portion of the former chemical waste processing facility. The concentrations of the volatile organic compounds in this area will be monitored to assess the effectiveness of this portion of the remediation effort. When this monitoring indicates that the concentrations of the compounds have been reduced to the levels given in the Soil Cleanup Guidelines, or when no additional reduction in soil contaminants is noted, the need for any additional remediation action(s) will be assessed,

   * install and operate a trench drain along the eastern bank of Smokes Creek, to intercept the contaminated groundwaters which are migrating westward across the site, and also install appropriate groundwater treatment facilities. The concentrations of the contaminants in the groundwaters will be monitored until it is determined that the concentrations do not impose unacceptable risks to public health or to the environment, or until no additional improvement to the groundwater quality is noted. If the groundwater quality is acceptable, the monitoring program will be continued to ensure that these levels remain at these levels. If the monitoring program indicates that this system has not improved the groundwater quality to acceptable levels, alternative remediation measures will be instituted,

   * monitor the on-site sediments and groundwaters. This program will allow the effectiveness of the selected remedy to be monitored. This long term monitoring program will be a component of the operations and maintenance for the site and will be developed as part of the remedial design program, and

* provide access restrictions to any contaminated areas that remain on the site;

3. Deed restrictions will be used to reduce potential of exposure to site contaminants. These covenants would prohibit or limit actions which might interfere with the remedial actions or which might increase the potential for release(s) of contaminants.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- To make them available for review, a repository for documents pertaining to the site was established at the Blasdell Village Hall.

- A toll free number was established to answer questions regarding the NYSDEC remediation programs and the remediation activities at the site.

- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.

- A series of five Fact Sheets were published and distributed, beginning in the Summer of 1992.

- A Public Meeting was held on August 29, 1992 to inform the public about the Remedial Investigation that was to be conducted.

- A Notice and Fact Sheet was mailed out on February 25, 1996 to announce the Public Meeting, scheduled for March 13, 1996, to present the Proposed Remedial Action Plan (PRAP). In these documents, the public comment period for this PRAP form February 24 through March 25, 1996 was established.

- In March, 1996 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

Because no objections to the proposed remediation plan were raised in any of the comments and questions raised at the public meeting or during the public comment period for the PRAP, no significant changes to the remediation plan for this site are necessary. As applicable, the comments and questions will be utilized as input to the remediation design process.

Appendix A
Responsiveness Summary

Summary of the Selected Remediation Alternative

NYSDEC has selected a remedy for the Chem-Trol Inactive Hazardous Waste Site which consists of the following elements and components:

1. A remedial design program to analyze the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI and FS would be resolved;

2. The selected remedy consists of these remediation measures:

   * remove, for subsequent off-site treatment/disposal, the following contaminated materials:

     - the soils from the "hot spot" area, i.e. the general vicinity of the former chemical waste holding lagoons, and

     - the sediments from an area of the on-site tributary in the northern portion of the site,

   * upgrade the existing soil cover in the area of the former chemical waste processing area, and extend this cover to the overburden groundwater seep in the southwestern quadrant of the site,

   * install and operate a soil vapor extraction and an appropriate treatment system in the eastern portion of the former chemical waste processing facility. The concentrations of the volatile organic compounds in this area will be monitored to assess the effectiveness of this portion of the remediation effort. When this monitoring indicates that the concentrations of the compounds have been reduced to the levels given in the Soil Cleanup Guidelines, or when no additional reduction in soil contaminants is noted, the need for any additional remediation action(s) will be assessed,

   * install and operate a trench drain along the eastern bank of Smokes Creek, to intercept the contaminated groundwaters which are migrating westward across the site, and also install appropriate groundwater treatment facilities. The concentrations of the contaminants in the groundwaters will be monitored until it is determined that the concentrations do not impose unacceptable risks to public health or to the environment, or until no additional improvement to the groundwater quality is noted. If the groundwater quality is acceptable, the monitoring program will be continued to ensure that these levels remain at these levels. If the monitoring program indicates that this system has not improved the groundwater quality to acceptable levels, alternative remediation measures will be instituted,

   * monitor the on-site sediments and groundwaters. This program will allow the effectiveness of the selected remedy to be monitored. This long term monitoring program will be a component of the operations and maintenance for the site and will be developed as part of the remedial design program, and

* provide access restrictions to any contaminated areas that remain on the site;

3. Deed restrictions will be used to reduce potential of exposure to site contaminants. These covenants would prohibit or limit actions which might interfere with the remedial actions or which might increase the potential for release(s) of contaminants.

Questions and Issues Raised during the March 13, 1996 Public Meeting

The questions and issues raised at the Public Meeting, where the Proposed Remedial Action Plan (PRAP) was presented, are given below. They are grouped according to the topic discussed, and not necessarily in the order they were raised.

- Question 1
  a) Distillation was never done by Chem-Trol at this site; should this be corrected?
  b) Why go through all this, and not cover things like distillation in your reports?
  c) Are you aware that Chem-Trol used to dump in the creek?

  - Answer: The description of past operations at the Chem-Trol Facility are based on historical records and data generated during the investigations of the site. It is reasonable to assume that the chemical compounds found in the media during the Remedial Investigation of 1992 are the result of the various waste processing operations (e.g. incineration) conducted by Chem-Trol. Distillation, if it were conducted, would have yielded similar chemical residuals (i.e. still bottoms) in the soils and other media similar to those encountered in the Remedial Investigation. Likewise, any dumping of untreated chemical wastes into the South Branch of Smokes Creek or its tributaries would be reflected in the contaminated sediments encountered during the investigation. The studies and analyses conducted during the Remedial Investigation adequately delineate the nature of the contamination present at the site, regardless of past operations.

- Question 2
  a) Who is going to pay for this (project)?
  b) Who will pay the sewer (wastewater treatment) costs?
  c) Is there any money from any level of government going to Waste Management to help pay the cost of this project?
  d) Is anyone going after the old Chem-Trol for cost recovery?
- Statement: Don't spend our (public) money on this kind of thing, spend it on roads or schools.

  - Answer/Response: The entire costs for remediation of this site, including those for such operation and maintenance items as wastewater treatment, will be paid by the Responsible Parties, to include Waste Management, Inc. No public funds will be spent on this remediation project, nor are any responsible parties receiving any reimbursement from public funds for their remediation efforts. Because Waste Management, Inc. purchased the stock as well as the assets of Chem-Trol Pollution Services, Inc., they assumed all of Chem-Trol's liabilities. Under a consent order to be negotiated between NYSDEC and Waste Management, Inc., the Responsible Parties will also be required to reimburse The State for funds spent on such activities as on-site inspections by DEC personnel. Because no public

funds are to be spent on this project, there is no opportunity to divert funds to other public works such as roads or schools.

- Question 3: Why are you just doing the remediation now?

  - Answer: Study for this remedial project was begun in 1988, over 16 years after chemical waste processing operations were terminated at this site. The NYSDEC Inactive Hazardous Site Remediation Program did not begin until 1980, in response to the public awareness of and concern for the problems associated with inactive or abandoned landfills. Given the need for legal action, field investigation, and conceptual engineering design, the eight years required to develop the remdiation plan, from 1988 to 1996, is typical for sites such as this one.

- Question 4
  a) How clean will the collected (ground)water be after treatment?
  b) Will the sewage system pump station handle the increased flow from the collection system, especially during heavy rains?

  - Answer: Depending on whether it is to be discharged to the South Branch of Smokes Creek or dispatched off-site to a wastewater treatment plant, the collected leachate will be treated at the site to reduce the chemistry either to levels that meet NY State Surface Water Standards, or to levels that meet the pretreatment requirements of the treatment plant. If it is to be treated off-site, the waste transmission system will be designed so that the increased flow of leachate is within the capacity of the plant.

- Question 5
  a) Are there any monitoring wells in the northwest corner of the site?
  b) (If not) Why not?
  c) How will we find out if there is any contamination in the new north west well?
  d) How can you have the results from the new well before the end of the comment period?

  - Answer: During the Remedial Investigation, it was apparent that the predominant flow of groundwater leachate was west, toward the South Branch of Smokes Creek, rather than northwest. However, given the fact that contaminants were encountered in the deep bedrock well west of the creek at the northern end, a monitoring well will be installed in the northwest quadrant, as part of the remediation design phase. The extent of any contamination found in this area will be documented in the design reports prepared prior to the construction of the site remediation components. Data obtained from the samples from this well will be available for public review. This supplemental investigation is expected to be started later this year (1996).

- Question 6: Wouldn't it just be better to put a fence up on both sides of the site and save the money?

  - Answer: Access/use restrictions of the site, which would include fencing, are considered in the Feasibility Study as part of Alternative 2. However, this alternative does not address all

the contaminated media on this site, particularly groundwater. Thus, simply fencing the property does not provide a comprehensive remediation program.

- Question 7
  a) Has there been a schedule set for the design and construction?
  b) What are the long term goals of the project?
  c) How long will those (monitoring) wells be there?
  d) Is Waste Management going to use the site again?
  e) Are they going to build a plant?
  f) Do you plan on the site being green space, or will it be a field, or will it have some type of ground cover?

  - Answer: Generally, for the remainder of 1996, it is expected that the detailed design of the remediation components will be completed, and that the construction of the remediation components will be ready to commence in 1997. Operation and maintenance activities, which include monitoring of the media to ensure that the site remedy is performing as designed, will then be commenced and continued for the next thirty years. Thus, the monitoring wells will have to remain on the site for at least the next thirty years. Other than site remediation and the associated operation and maintenance program(s), NYSDEC understands that Waste Management, Inc. has no specific plans for any future use of this site.

- Question 8
  a) Who requested the deed restrictions?
  b) Who established the deed restrictions?

  - Answer: Deed restrictions will be used to reduce the potential of exposure to any on-site contaminants. These restrictions will prohibit or limit actions which might interfere with the remedial measures or which might increase the potential for release(s) of contaminants.

- Question 9: There is a cheese factory next to the site, how could that be allowed?

  - Presumably, the decision to allow The Cheese Factory to operate next to the site, at 4856 Lake Ave., was made by the local zoning board. However, the Remedial Investigation indicates that there was no migration of contaminants from the Chem-Trol Operations to The Cheese Factory property. The Remedial Investigation also reveals that any migration of chemicals, such as the groundwater leachate, is westward toward the South Branch of Smokes Creek, away from this property.

- Question 10: Are there any barrels buried on the site?

  - Answer: The subsurface geophysical surveys conducted as part of the April, 1991 Phase II Investigation and subsequent test pits dug as part of the Remedial Investigation indicate that there was no extensive burying of barrels at this site. During the Phase II initial site reconnaissance, remnants of steel drums were noted at two locations at the northern edge of the former Chem-Trol operations area.

- Question 11: When the trench and wells are constructed, what will happen to the excavated soil?

  - Answer: The extent of contamination of the excavation spoils from this remediation project will be determined, and the spoils handled and disposed in accordance with the applicable standards and regulations.

- Question 12: What portion of the site will be fenced?

  - Answer: During the remedial construction, it may be determined that fencing the site or a portion of it is necessary. Fencing will be placed in those areas where it is necessary to prevent physical contact with contaminated substances.

- Statement: It will be up to Waste Management to hire the consultants and contractors.
  Question 13
  a) Will they be qualified?
  b) Who will watch them to make sure the work is done right?
  c) Will the Town of Hamburg be checking too?

  - Answer: Similar to the investigations and Feasibility Study, Waste Management, Inc. will submit remediation design plans and an operation and maintenance program for NYSDEC review and approval. Other participating review agencies include the NY State Dept. of Health and Erie County Dept. Of Environment and Planning. The remedial designs, including construction plans and specifications, must be prepared by engineers/consultants licensed to practice Professional Engineering in New York State. In addition, licensed Professional Engineers with the NYSDEC will conduct the review and approval process. During construction of the site remedy, Waste Management, Inc. Will provide licensed Professional Engineer inspectors to ensure that the construction is performed properly, and to certify that the work is done in accordance with the approved plans and specifications. Also, qualified NYSDEC engineers and construction inspectors will frequently inspect the job site during construction, and maintain over-site of the long-term operation and maintenance activities. Presumably, inspections by the Town of Hamburg Officials will be conducted to address the applicable local codes, rules and regulations.

Questions and Comments Raised in March 20, 1996 Correspondence from Gerald M. Kapsiak, P.E., Town Engineer, Town of Hamburg, to NYSDEC

- Question: During the site remediation, what measures will be taken to ensure that contaminated materials are not released from the site to flow downstream along the South Branch of Smokes Creek?

  - Answer: Conventional construction measures, such as silt fences and temporary berms, should prove adequate to ensure that no contaminants escape from the site to the surrounding environment. These measures will be given in the remedial design specifications.

- Statement 1: Although media (soil and water) sampling was apparently confined to the Chem-Trol Property during the Remedial Investigation, as noted on Page 15 of the PRAP, "Hydrogeologic

analysis conducted to date suggests that.... a portion of the contaminant plume is flowing beneath (the South Branch of) Smokes Creek,....ultimately discharging into the creek downstream of the site. Note that the Town has a 7 acre playground located downstream of the site. In addition neighborhood residents present at the meeting expressed concerns over possible downwind airborne contamination from particulate matter generated by the incineration activities formerly conducted by Chem-Trol. Given these possibilities, it appears that an area larger than the Chem-Trol property should have been investigated.

- ♦ Response: During the Remedial Investigation, by contacting those individuals who suspected airborne contamination in the area, attempts were made to determine the extent of any off-site contamination. The one result of these attempts was information supplied to NYSDEC that enabled Waste Management to investigate the effect of the fire that occurred at the site in 1972. If any other inquiries on the effects on the surrounding area are received by NYSDEC, they will be investigated.

- ▸ Statement 2: Given the statement on Page 5 of the PRAP that "the site poses a significant threat to the public health and/or to the environment", it appears that suitable fencing should be installed immediately, and maintained at least until the remediation work is completed, i.e. the estimated 5 year cleanup period cited on Page 20 of the PRAP.

- ♦ Response: The significantly contaminated media at this site are in the soils located below the ground surface and in the groundwater beneath the site. Consequently, no routes of exposure to these media exist under the current site conditions. Sediments and the surface seep are contaminated at relatively low levels, which do not represent an immediate health concern. For these reasons, it is not necessary to install fencing at this time.

- ▸ Statement 3: In that the proposed Remedial Action Plan calls for buildings to house the groundwater and soil vapor treatment systems, please be informed that site plan review and approval by the Town Planning Board will be required. In addition, building permits must be obtained from the Town Building Inspector.

- ♦ As part of the remediation construction process, the Responsible Parties will obtain all necessary approvals and permits, including those cited in this statement.

Appendix B
Administrative Record

The documents listed below are the references used for the preparation of this Record of Decision.

Engineering-Science for NY State DEC, January, 1988: Phase I Investigation

Erie County Dept. of Environment and Planning, October 11, 1978: Smokes Creek Sediment Sampling near Abandoned Chem-Trol Site

Erie County Dept. Of Environment and Planning, April 8, 1981: Summary of Site Investigation

Erie County Dept. Of Environment and Planning, April 25, 1981: Summary of Site Investigation

Erie County Dept. Of Environment and Planning, December, 1984: Summary of Site Investigation

GZA of New York for Waste Management of North America, Inc., April, 1990: Geophysical Surveys

GZA of New York for Waste Management of North America, Inc, April, 1991: Phase II Investigations; 2 Volumes

GZA of New York for SCA Services, Inc., November, 1994: Remedial Investigation Report; 2 Volumes

Town of Hamburg, March 20, 1996: Correspondence, Kapsiak to Hyden, NYSDEC; Questions and Comments on the Proposed Remedial Action Plan

McMahon & Mann Consulting Engineers, P.C. for SCA Services, Inc., March, 1995: Feasibility Study

NUS Corporation, June 9, 1983: Potential Hazardous Waste Site Investigation; Site Reconnaissance

NUS Corporation, April 10, 1987: Potential Hazardous Waste Site Investigation; Magnetometer Survey

NUS Corp., November 30, 1989: Site Inspection Report

NY State DEC, March 27, 1981: Memorandum, Tygert to Beuchi; Summary of Site Reconnaissance

NY State DEC, April 27, 1981: Correspondence to SCA Chemical Services Inc.; Summary of Site Conditions

NY State DEC, December 23, 1981: Analyses of Soil and Water Samples

NY State DEC, February, 1996: Proposed Remedial Action Plan