ANDREW J. ENGLISH
Department of Environmental Conservation 72

Division of Environmental Remediation

Record of Decision
Chemical Sales Site
Operable Unit No. 1 (On-Site)
Town of Gates, Monroe County
Site Number 8-28-086

March 2000

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Chemical Sales Inactive Hazardous Waste Site
Town of Gates, Monroe County, New York
Site No. 8-28-086

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Chemical Sales class 2 inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law. The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Chemical Sales inactive hazardous waste site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing 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 significant threat to public health and the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Chemical Sales site and the criteria identified for evaluation of alternatives, the NYSDEC has selected Alternative No. 4 (Steam Stripping) to remove contaminants from the soil, bedrock, and groundwater. The components of the remedy are as follows:

- Installation of approximately 180 steam injection and vapor extraction wells (approximately 135 injection wells and 45 extraction wells), covering approximately 2 acres of the site and surrounding property; and
- Removal of all recovered hazardous wastes for off-site disposal or recycling.
- Removal of approximately 150 cubic yards of contaminated surface soils, including drainage ditch soils between the site and the barge canal.

- A long-term groundwater monitoring program.

- In the event that a potential threat from residual subsurface contamination remains after the steam stripping remedy has been completed, the Department would evaluate and, if necessary, implement additional remedial measures, including property use restrictions.

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.

3/31/2000
Date

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

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RECORD OF DECISION

Chemical Sales Site
Operable Unit No. 1 (On-Site)
Town of Gates, Monroe County
Site No. 8-28-086
March 2000

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at the Chemical Sales site, Operable Unit No. 1 (On-Site), a class 2 inactive hazardous waste disposal site. As more fully described in Sections 3 and 4 of this document, past handling practices have resulted in the disposal of a number of hazardous wastes, including chlorinated solvents and non-halogenated solvents, at the site, some of which were released or have migrated from the site to surrounding areas, including the drainage ditch east of the site and the water and sediments of the NYS Barge Canal. These disposal activities have resulted in the following significant threats to the public health and/or the environment:

- a significant threat to human health associated with the surface soils at the site. The surface and shallow subsurface soils are contaminated with a variety of solvents, including non-aqueous phase liquids (NAPLs) which are seeping through the ground surface;

- a significant environmental threat associated with the impacts of solvents on groundwater in the area. The shallow and deep groundwater are contaminated with solvents. Contaminated groundwater is present beneath the nearby residential area and is also migrating beneath the canal and into the City of Rochester.

- a significant environmental threat associated with the impacts of solvents to the NYS Barge Canal. The solvents are present in the site soil, bedrock, and groundwater and are migrating through overland flow, bedrock seeps, and groundwater into the Barge Canal.

In order to eliminate or mitigate the significant threats to the public health and/or the environment that the hazardous wastes disposed at the Chemical Sales site have caused, the following remedy was selected:

- Operation of a steam stripping system to recover contaminants from the groundwater, soil and bedrock, including:

- Installation of approximately 180 steam injection and extraction wells (approximately 135 injection wells and 45 extraction wells), covering approximately 2 acres of the site and surrounding property; and

- Removal of all recovered hazardous wastes for off-site disposal or recycling.

- Removal of approximately 150 cubic yards of contaminated surface soils, including drainage ditch soils between the site and the barge canal.

- A long-term groundwater monitoring program.

- In the event that a potential threat from residual subsurface contamination remains after the steam stripping remedy has been completed, the Department would evaluate and, if necessary, implement additional remedial measures, including property use restrictions.

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

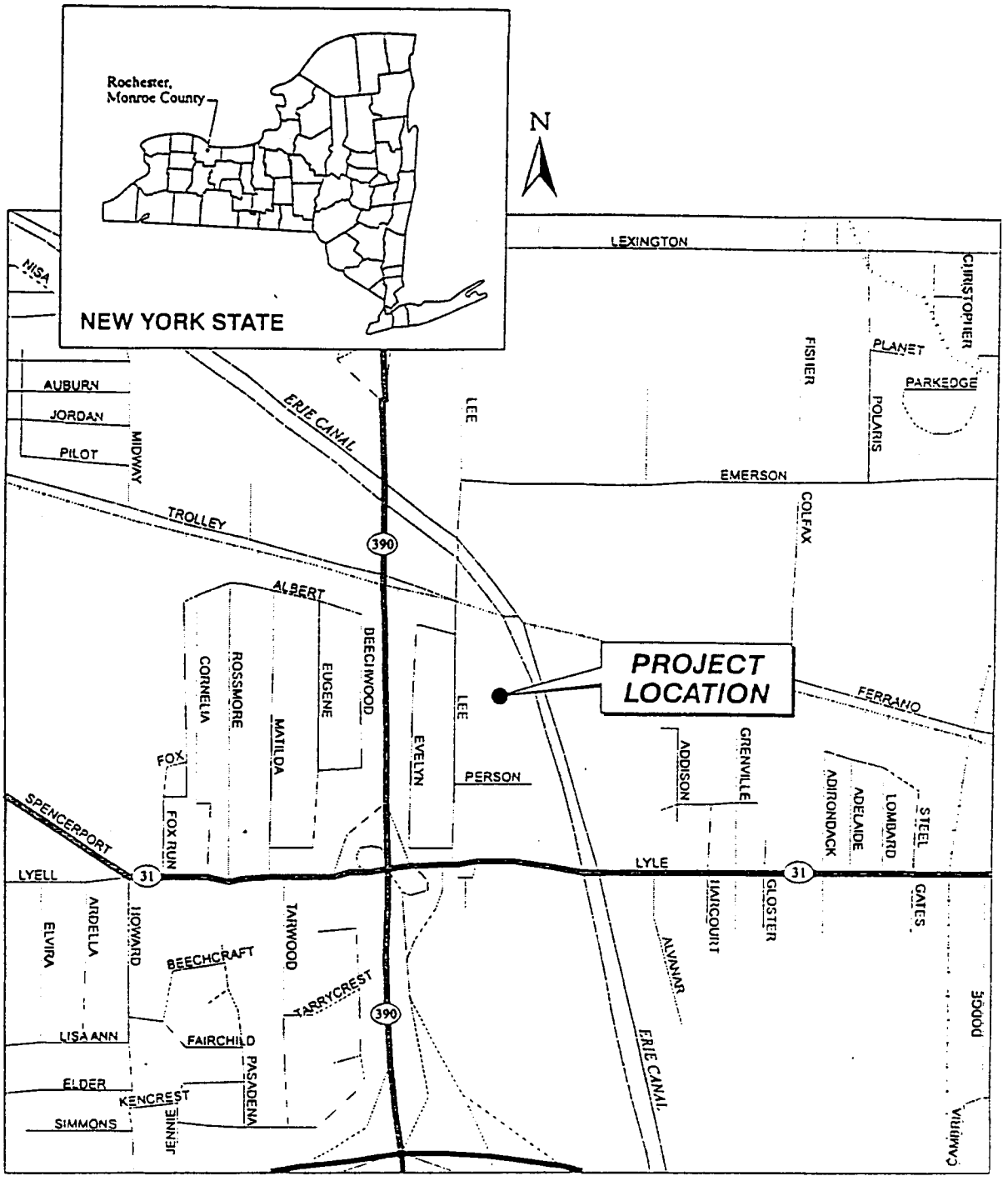
The Chemical Sales site (NYSDEC site number 8-28-086) is the location of a former chemicals business that conducted chemical storage, warehousing, transferring and sales of hazardous materials. The site is located on an approximately 0.85-acre parcel landlocked by a larger 6.6-acre parcel on Lee Road (Figures 1 and 2). The site is located in an urban area in the Town of Gates, at the western boundary of the City of Rochester. Residential, industrial, and commercial properties are located directly to the west and south of the site, along both Lee Road and Person Place. The New York State Barge Canal and bike path are located to the east and north of the site.

Operable Unit No. # 1, which is the subject of this ROD, is limited to the area west of the barge canal, consisting of the Chemical Sales property, the contaminated portions of the surrounding property, and the drainage ditch between the site and the canal. An Operable Unit represents a portion of the site remedy which for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable unit for this site is described in Section 3.2 below.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Chemical Sales site is the location of a former solvent repackaging company. The former site was operated from 1976 until approximately 1997. Assorted chemicals were purchased by the company in bulk and repackaged into smaller containers for resale. The site had one main



APPROXIMATE SCALE IN FEET

1000 0 1000

AG12817.355J7.01.061198.GCM

URS Greiner

CHEM SALES, INC.
SITE LOCATION MAP

FIGURE 1

35577.00\CAD\ 1=80 3/10/99-3 BJC

ERIE CANAL

APPROXIMATE EDGE OF WATER

36" CMP

BIKE PATH

24" CMP

10" CMP

N

GATE

10" CMP

CONC. PAD

CONC. PAD

MW-102

PEARSE PROPERTY

1 STORY BRICK BUILDING

LOADING DOCK

CHEM SALES PROPERTY

CONC. RAMP

OPEN METAL SHED

FORMER DRUMMING SHED

METAL BLDG.

AST

AST

CONC. PAD

CONC. PAD

EMPTY WAREHOUSE

TRAILER 3

TRAILER 2

ATKIN PROPERTY

MW-101

TRAILER 1

PZ-6

UP

℄ LEE STREET

UP

UP

HYD

UP

UP

UP

Residential Area

LEGEND:

- MW-101 — EXISTING MONITORING WELL
- —PL— PROPERTY LINE
- —E— UNDERGROUND ELECTRIC
- —G— UNDERGROUND GAS

80' 0 80'

SCALE: 1"= 80'

CC-5990

SITE PLAN

URS Greiner Consultants, Inc.

FIGURE 2

building, two smaller structures and numerous above ground storage tanks. Based on historical reports and company correspondence, solvents were the primary chemicals handled at the site. These included flammable and chlorinated solvents. The amount of materials handled is unclear but significant groundwater and soil contamination has been identified.

3.2: Remedial History

In 1989, as part of a real estate transaction, an environmental investigation was conducted on an adjacent property directly south of the Chemical Sales site. The investigation revealed groundwater was contaminated with organic chemicals, most likely originating from the Chemical Sales property, in concentrations above New York State groundwater standards.

In 1992, based on this and other information, NYSDEC added the Chemical Sales site to its list of Inactive Hazardous Waste Disposal Sites as a class 2 site. A classification of 2 means the site poses a significant threat to public health and/or the environment, and action is required. NYSDEC began negotiating a legal agreement with Chemcore Incorporated for Chemcore to perform an environmental investigation. However, in 1994, Chemcore filed for bankruptcy before an investigation could take place.

Because the responsible party (Chemcore) was not able to perform the investigation, the State conducted the Remedial Investigation and Feasibility Study using funds from the 1986 Environmental Quality Bond Act.

In January 2000, the NYSDEC administratively divided the site into two operable units. The first operable unit is the subject of this document and includes the area west of the barge canal, consisting of the Chemical Sales property, the contaminated portions of the surrounding property, the bedrock groundwater, and the drainage ditch between the site and the canal. Operable Unit #2 includes the off-site groundwater contamination beneath and east of the barge canal. Operable Unit #2 requires additional investigation before an off-site remedy can be proposed. The two operable units are distinctly separate, and the existence of Operable Unit #2 does not substantially alter the proposed remedial action for Operable Unit #1. However, a successful remediation of the on-site sources in Operable Unit #1 may reduce contamination in Operable Unit #2 in the future.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health and the environment posed by the presence of hazardous waste, the NYSDEC has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in three phases. The first phase was conducted between August and October 1998; the second phase between November 1998 and January 1999; and the third phase between August 1999 and January 2000. A report entitled Remedial Investigation Data Summary Report, January 2000 has been prepared which describes the field activities and findings of the first two phases of the RI in detail. An RI addendum will be released in April, detailing the third phase of RI field work, including a 3-D seismic reflection survey, a Fish and Wildlife Impact Analysis, and a 72-hour pump test.

The RI included the following activities:

- *A 3-D seismic geophysical survey to determine the location and bearing of major fracture zones in the bedrock.*
- *Installation of soil borings and monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.*
- *A soil gas survey to identify major source areas in the overburden soil.*
- *A pump test to determine the hydrologic characteristics of the bedrock aquifer.*
- *Surface and subsurface soil sampling to delineate the primary disposal areas.*
- *Surface water and sediment sampling in the barge canal to determine if the site is adversely impacting the canal.*
- *A Fish and Wildlife Impact Analysis (FWIA) to determine if fish and wildlife resources in the area of the site are being adversely impacted.*

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for the Chemical Sales site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site-specific background concentration levels can be considered for certain classes of contaminants. Guidance values for evaluating contamination in sediments are provided by the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) or parts per million (ppm). For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

The site is comprised of a thin soil cover, between 2 and 8 feet thick, of sandy and clayey silts. The soils are poorly drained and precipitation tends to collect and flow overland instead of percolating through the soil. Overland flow at the site collects into a drainage ditch at the east end of the site which drains to the New York State Barge Canal.

The barge canal is within 300 feet of the site and is cut into the underlying bedrock. Groundwater flow at the site is primarily east and north, toward, and in the deeper zones, beneath, the barge canal. Groundwater flow in the vicinity of Lee Road is primarily northward, with Lee Road and the residential neighborhood to the west representing the western extent of the deep groundwater plume. The permanent water table at the site is in the upper bedrock, approximately 10 to 15 feet below ground surface. Contamination has not been found in the shallow groundwater in the residential areas.

The bedrock at the site is the Lockport Dolomite formation. It is a hard, fractured dolomite, with groundwater flow dominated by fracture networks. Beneath the Lockport Dolomite lies the Rochester Shale formation. The Rochester Shale appears to be hydraulically separated from the Lockport Dolomite aquifer.

4.1.2: Nature of Contamination

The main source of contamination at this site is most likely the result of spills and leaks that occurred over a long period of time. Volatile organic contamination has been detected at the site at levels which traditionally indicate the presence of pure product. Most organic solvents are not highly soluble in water and form a separate phase when mixed with water (gasoline is a good example of this), commonly referred to as Non-Aqueous Phase Liquids, or NAPLs. However, NAPLs were only observed in the overburden soils and in several seeps on the face of the barge canal. No NAPLs were observed during drilling, groundwater sampling, or pumping. This is likely because of the large volume of cosolvents which were also disposed at the site. Cosolvents (alcohols, ethers, and ketones) are compounds that are miscible in both water and organic compounds. The result of mixing cosolvents and organic compounds with water is to increase the solubility of the otherwise insoluble organics. At the Chemical Sales site, the large quantities of cosolvents in the groundwater has likely greatly increased the solubility of the NAPLs, causing them to no longer exist as a separate phase in the groundwater, but as a water-cosolvent-VOC mixture that is highly mobile and not easily distinguished from water. An additional effect of cosolvents is they alter the physical properties of NAPLs, causing them to be much more mobile

and less likely to exist in collected pools or continuous sources. Any NAPLs that are not dissolved in the water-cosolvent mixture would be more mobile and dispersed throughout the bedrock. The combined effects of the cosolvent disposal at Chemical Sales have contributed to a bedrock contamination problem which is not easily characterized or simply described. For the purposes of this document however, the term NAPL, when referring to the saturated bedrock, includes not just the strict definition of non-aqueous liquids, but also the major source areas of aqueous cosolvent-VOC mixtures.

As described in the RI report, many soil, groundwater and sediment samples were collected at the site and analyzed to characterize the nature and extent of contamination. The main categories of contaminants which exceed their SCGs are chlorinated and non-halogenated volatile organic compounds (VOCs).

The organic contaminants of concern are: vinyl chloride; chloroethane; methylene chloride; acetone; 1,1-dichloroethene (1,1-DCE); 1,1-dichloroethane (1,1-DCA); 1,2-dichloroethene (1,2-DCE); 1,2-dichloroethane (1,2-DCA); methyl ethyl ketone (MEK); 1,1,1-trichloroethane (1,1,1-TCA); 1,2-dichloropropane; 2-hexanone; trichloroethene (TCE); tetrachloroethene (PCE); benzene; toluene; ethylbenzene; xylene; isopropanol; ethyl acetate; n-butanol, and 4-methyl 2-pentanone.

4.1.3: Extent of Contamination

Table 1 summarizes the concentrations of the contaminants of concern in soil, groundwater, surface water, and sediments and compares the data with the SCGs for the site. The following summarizes the media which were investigated and the findings of the investigation.

Soil

An area of LNAPL contamination was observed at the site in the vicinity of the small metal shed (Figure 2). Based on the site history, the solvents toluene, ethylbenzene, and xylene were regularly handled in this area. The residual soil contamination in this area is lighter than water and seeps out of the ground surface when heavy or prolonged rains saturate the area. This run-off, combined with other sources, leads directly into the drainage ditch at the site. As a result, the drainage ditch is visibly contaminated with NAPLs from the site. During heavy rain events, these contaminants are carried directly into the barge canal. The volume of contaminated soil in the drainage ditch is estimated to be less than 150 cubic yards.

Eight surface soil samples were taken from around the site. Elevated levels of the following volatile organic compounds (VOCs) were detected in the surface soils nearest the source areas: methylene chloride; 1,1-DCA; 1,2-DCE; 1,1,1-TCA; TCE; PCE; toluene; methanol; ethyl acetate; and n-butanol. Surface soils outside the primary source areas are not contaminated above NYSDEC TAGM 4046 criteria.

Subsurface soil contamination is also predominantly made up of volatile organic constituents. A total of 30 on-site subsurface soil samples were taken at different locations during the RI.

Elevated concentrations of the following contaminants have been found in on-site subsurface soil: vinyl chloride, chloroethane, methylene chloride, acetone, 1,1-DCE, 1,1-DCA, 1,2-DCE, MEK, 1,1,1-TCA, 2-hexanone, TCE, PCE, toluene, ethylbenzene, xylene, isopropanol, ethyl acetate, n-butanol, and 4-methyl 2-pentanone. NYSDEC TAGM 4046 limits total VOC contamination in soil to 10 parts-per-million (ppm) and includes more stringent numbers for individual compounds. Based on the soil samples obtained in the RI, approximately 3,500 cubic yards of contaminated soil exist on the site which exceed 10 ppm total VOCs. Adding the 150 cubic yards for the drainage ditch increases the total amount of impacted soils to approximately 3,650 cubic yards.

A map depicting the soil contamination is presented in Figure 3.

Surface Water and Sediments

A number of NAPL seeps were observed in the wall of the barge canal around the site. The seeps are discharging directly into the surface waters of the canal on a continuing basis.

Four surface water and sediment samples were collected from the on-site drainage ditch and the barge canal. Elevated levels of solvents were detected in all four water samples and two sediment samples, but none of the surface water samples exceeded water quality standards. Three compounds exceeded the NYSDEC guidance levels for screening contaminated sediments in one of the barge canal samples: vinyl chloride, 1,2-DCA, and benzene. These results indicate fish and wildlife are being exposed to contaminants from the site. However, these compounds do not bioaccumulate in fish and wildlife. The threat from these compounds is related to their continuing release from the site. By eliminating the sources of contamination at the site and cutting off the continued migration of chemicals into the canal, the existing contamination in the canal will quickly attenuate. Failure to stop the migration of contaminants into the canal will result in the continued exposure of fish and wildlife to the site contaminants.

Groundwater

The results of the groundwater samples taken from monitoring wells indicated the presence of a variety of solvents. Detected at levels exceeding NYS groundwater standards were: vinyl chloride, chloroethane, methylene chloride, acetone, 1,1-DCE, 1,1-DCA, 1,2-DCE, 1,2-DCA, MEK, 1,1,1-TCA, 1,2-dichloropropane, 2-hexanone, TCE, PCE, benzene, toluene, ethylbenzene, xylene, isopropanol, ethyl acetate, n-butanol, and 4-methyl 2-pentanone.

Groundwater flow at the site is directed radially to the north and east, primarily toward the NYS Barge Canal. The shallow groundwater along Lee Road is moving primarily north, beneath the residential neighborhood, but is not contaminated with site-related compounds. One monitoring well on the east (site) side of Lee Road is contaminated with site-related compounds. These compounds were not detected in the sump water of homes directly across the street.

Deep groundwater at the site eventually discharges to, and passes under, the canal. One deep monitoring well in the residential area is contaminated with site-related compounds. The

contamination is approximately 35 to 50 feet below the ground surface and does represent a human health threat at this time. The deep contamination in the residential area represents the edges of the groundwater plume, which is primarily moving north.

A map depicting the shallow bedrock groundwater contamination is presented in Figure 4.

4.2: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in the RI report.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Pathways which are known to or may exist at the site include:

- Inhalation: The compounds at the site are highly volatile and evaporate easily. Persons digging, excavating, or performing any intrusive activities at the site may be exposed to harmful vapors. However, merely walking around the site does not represent a significant threat of exposure to site-related chemicals through inhalation. VOCs can volatilize from contaminated groundwater. This raises the concern that contaminants could migrate into the basements of nearby homes. Since the level of total VOCs does not exceed 100 parts-per-billion (ppb) in the groundwater monitoring wells located in the residential area of Lee Road, and the depth to the contaminated aquifer is approximately 35 to 50 feet, inhalation of site-related contaminants via this pathway of exposure is not expected. During the RI, water samples were collected from basement sumps of some of the homes closest to the site. Contaminants related to the site were not detected in the sump samples.

- Direct contact: People entering the site may be exposed to contaminants in the surface soils. The areas of surface soil contamination are localized and would only present a risk to anyone trespassing on-site. It is possible for people using the nearby barge canal to come in contact with site-related contaminants in the surface water of the canal. However, the levels of contamination detected in the water of the canal during the RI do not represent a significant health risk when evaluating exposures through direct contact with contaminated surface water.

- Ingestion: Ingestion of contaminated soils is a potential exposure pathway for people entering the site. Children playing in the soil have the potential for ingesting small quantities of contaminated soil. Workers at the site have the potential for ingesting contaminated soils if they fail to wash their hands before eating. All potable water in the vicinity of the site is delivered through a public water supply system. Groundwater is not used for potable purposes.

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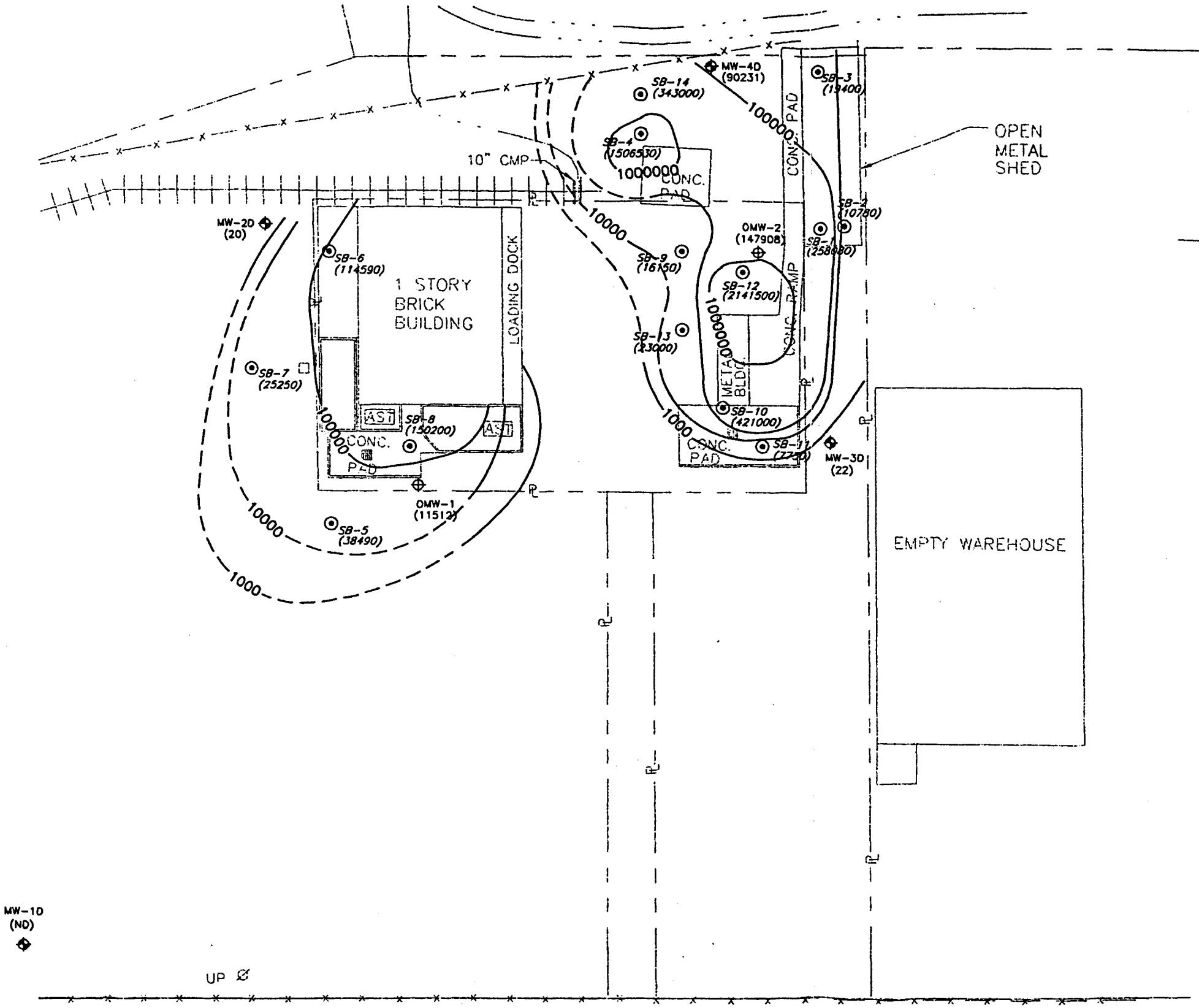

LEGEND:

—— – –℄ ——	PROPERTY LINE
⊙ SB-1 (258080)	GEOPROBE SOIL BORING LOCATION TOTAL VOC CONCENTRATION IN ug/kg
⊕ OMW-1	OVERBURDEN MONITORING WELL
⊕ MW-10	BEDROCK MONITORING WELL
—100000—	APPROXIMATE ISOCONCENTRATION CONTOUR IN ug/kg
ND	NOT DETECTED

60' 0 60'

SCALE: 1"= 60'

TOTAL VOCs IN SUBSURFACE SOIL SAMPLES

URS Greiner Consultants, Inc.

FIGURE 3

CC-6029

35577.00\CAD\ 1=150 3/11/99-3 HBB

N

ERIE CANAL

NEAR VERTICAL FRACTURE N62W

WATER ELEVATION 501± FEET

APPROXIMATE EDGE OF WATER

MW-7S (559)

MW-8S (4382)

MW-4S (4947)

MW-2S (146872)

MW-9S (325)

MW-5S (ND)

MW-3S (888)

MW-1S (83)

MW-6S (ND)

MW-10S (1)

MW-11S (46)

100000

10000

1000

100

WAREHOUSE BUILDING

1 STORY BRICK BUILDING

BUILDING

BEST WESTERN HOTEL

PARTY HOUSE, INC.

EMPTY WAREHOUSE

PERSON PLACE

℄ LYELL AVENUE

℄ LEE STREET

EVELYN STREET

EVELYN STREET

Residential Area

Residential Area

Residential Area

BRIDGE

TOP OF BANK

CONC. PAD

CONC. METAL SHED

GATE

LEGEND:

- BEDROCK MONITORING WELL (NYSDEC/URSG-1998)
- —100— APPROXIMATE ISOCONCENTRATION CONTOUR IN µg/l TOTAL VOCs
- (ND) NOT DETECTED

150' 0 150'

SCALE: 1"= 150'

TOTAL TCL VOCs IN SHALLOW BEDROCK – JANUARY 1999

URS Greiner Consultants, Inc.

FIGURE 4

CC-6036

4.3: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures and ecological risks which may be presented by the site. The Fish and Wildlife Impact Assessment conducted during the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources. The following pathways for environmental exposure and/or ecological risks have been identified:

The water and sediment of the barge canal are contaminated with low levels of VOCs from the site. Contaminants are entering the barge canal from the drainage ditch, through seeps in the wall of the canal, and from contaminated groundwater entering the canal. The surface water contamination does not exceed NYSDEC water quality standards. Three compounds (benzene, 1,2-DCA, and vinyl chloride) exceed the NYSDEC sediment screening guidance values in one isolated sediment sample. However, due to the large dilution effect of the canal, the impacted area is localized and relatively small. In addition, volatile compounds do not bioaccumulate in fish and wildlife and so are less of a threat to ecological resources in the canal. By eliminating the sources of contamination at the site and cutting off the continued migration of chemicals into the canal from the seeps, groundwater, and drainage ditch, the contamination in the canal should quickly attenuate.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Potential Responsible Parties (PRP) for the site, documented to date, include: Chemcore (the former Chemical Sales) and possibly 190 Lee Road, Inc.

Chemcore declined to implement the RI/FS at the site when requested by the NYSDEC. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the NYSDEC will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria and Guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- *Eliminate, to the extent practicable, off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria.*

- *Eliminate, to the extent practicable, exposures to volatile organic compounds in the surface soils.*

- *Eliminate, to the extent practicable, the migration of volatile organic compounds into the New York State Barge Canal.*

- *Eliminate, to the extent practicable, migration of LNAPL and DNAPL through removal and hydraulic management.*

- *Eliminate, to the extent practicable, exceedances of applicable environmental quality standards related to releases of contaminants to the waters of the state.*

- *Eliminate, to the extent practicable, the exposure of fish and wildlife to levels of volatile organic compounds above standards/guidance values.*

Table 1 lists the chemical-specific cleanup objectives for the different media.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Chemical Sales site were identified, screened and evaluated in the report entitled: Feasibility Study Report, Chemical Sales Site, January 2000.

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to construct the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated soils and groundwater at the site.

1. No Action

Present Worth:	*$ 140,169*
Capital Cost:	*$ 0*
Annual O&M:	*$ 9,125*
Time to Implement	*3 months*

The No Action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. A long-term (costs assume 30 years and a 5% annual rate of depreciation) groundwater monitoring program would be included in this alternative.

2. Ex-situ Soil Vapor Extraction with Groundwater Containment, Treatment, and Disposal

Present Worth:	*$ 2,070,214*
Capital Cost:	*$ 1,503,823*
Annual O&M:	*$ 36,872*
Time to Implement	*3 to 6 months*

This alternative includes the excavation of approximately 3,650 cubic yards of contaminated soil (including the drainage ditch) and placing it into an on-site pile. A soil vapor extraction system would be placed in the pile to vaporize and collect the volatile contaminants. An air treatment system would be installed to prevent unacceptable air emissions. Once remediation is complete, the soil would be replaced in its original locations at the site. A long-term groundwater collection and treatment system would also be installed. This system would include a number of pumping wells to collect the water for treatment. After treatment, the water would be discharged to either the barge canal or the sanitary sewer. In order to prevent future seeps in the canal and to ensure that groundwater from the site does not enter the canal over the long-term, a subsurface grout curtain would be installed to assist in the containment and pumping of groundwater. The vapor extraction treatment of the soils would take approximately 2 years to complete, while the groundwater extraction and treatment could continue for a number of decades.

3. In-situ Thermal Desorption with Groundwater Containment, Treatment, and Disposal

Present Worth:	*$ 2,782,920*
Capital Cost:	*$ 2,288,903*
Annual O&M:	*$ 32,161*
Time to Implement	*3 to 6 months*

This alternative includes the thermal treatment of contaminated site soils in place, including the drainage ditch. No excavation or transportation of soils would be necessary. Several thermal treatment options are available, with a thermal blanket technology being the preferred method. The treatment would proceed by heating the site soils in place, causing the volatile contaminants to evaporate. The resulting vapors would be collected and treated to prevent any adverse impacts to the atmosphere. A long-term groundwater collection and treatment system would also be installed under this alternative. This system would include a number of pumping wells to collect the water for treatment. After treatment, the water would be discharged to either the barge canal or the sanitary sewer. In order to prevent future seeps in the canal and to ensure that groundwater from the site does not enter the canal over the long-term, a subsurface grout curtain would be installed to assist in the containment and pumping of groundwater. The thermal treatment of the soils would take

approximately 6 months to complete, while the groundwater extraction and treatment could continue for a number of decades.

4. Steam Stripping of the Groundwater and Overburden Soils

Present Worth:	*$ 3,067,029*
Capital Cost:	*$ 2,926,860*
Annual O&M:	*$ 9,125*
Time to Implement	*6 months - 1 year*

This alternative includes the installation of approximately 180 steam injection and vacuum extraction wells across the site. The injection wells would be installed in hexagonal patterns, with an extraction well in the center of each array. A low-permeability membrane would be placed across the surface to enhance the vapor recovery system. Low pressure steam would be generated on-site and injected into the subsurface. The steam would volatilize the contaminants in both the soil and the bedrock, after which they would be collected by the vapor treatment system. In addition, the steam injection would remove contaminants from the unsaturated bedrock, greatly reducing future seeps in the canal. Because the site soils are primarily silty with low permeability, steam stripping may not completely remediate the surface soils to NYSDEC TAGM levels. Therefore, the NYSDEC would also evaluate the need for additional remedial measures and property use restrictions to control threats posed by any residual contamination left after the steam stripping was completed. This alternative would also include the excavation and off-site disposal of approximately 150 cubic yards of contaminated surface soil from the drainage ditch and other limited areas. The steam system would operate for approximately 12 months, after which a long-term groundwater monitoring program would be initiated. The recovered wastes will be condensed and shipped off-site for treatment or recycling. By removing the bulk of the contamination from the saturated and unsaturated bedrock, the migration of both seeps and contaminated groundwater will be greatly reduced, eliminating the need for a subsurface grout curtain to control groundwater flow.

5. Off-site Treatment and Disposal of Soils with Containment, Treatment, and Enhanced In-situ Bioremediation of Groundwater

Present Worth:	*$ 3,318,730*
Capital Cost:	*$ 2,609,555*
Annual O&M:	*$ 46,171*
Time to Implement	*6 months - 1 year*

This alternative includes the excavation, transportation, and off-site treatment and disposal of approximately 3,650 cubic yards of contaminated soil. Clean soils would be brought to the site to backfill the excavated areas. A long-term groundwater collection and treatment system would also be installed under this alternative. This system would include a number of pumping wells to collect the water for treatment via air stripping. However, unlike the other groundwater pump and treat alternatives, this alternative would include the reinjection of treated water into the site. The reinjected water would be amended with nutrients to facilitate the in-situ biological destruction of

the contaminants. In order to prevent future seeps in the canal and to ensure that groundwater from the site does not enter the canal over the long-term, a subsurface grout curtain would be installed to assist in the containment and pumping of groundwater. The excavation and removal of soils from the site would take approximately 6 to 12 months to complete. The enhanced biological groundwater treatment system, while expected to operate for less time than pump and treat alone, could still require 15 to 20 years for a sufficient reduction in contaminant concentrations to occur.

7.2 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 in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included 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.

The primary SCGs governing cleanup of the Chemical Sales site are NYSDEC TAGM 4046, "Determination of Soil Cleanup Objectives and Cleanup Levels;" and NYSDEC TOGS 1.1.1, "Ambient Water Quality Standards & Guidance Values." Other relevant SCGs are listed in the Feasibility Study.

Of the five alternatives presented, the No Action alternative would not treat the contaminated soil or groundwater and therefore would not comply with SCGs for the site. The remaining four alternatives would all treat the soil and groundwater to varying extents. The second and third alternatives, both involving groundwater pump and treat systems, would contain and treat groundwater that has already been contaminated, but would not efficiently remove the sources of contamination. They would partially meet groundwater SCGs by limiting the contamination to the site and preventing off-site migration. The two remaining alternatives both attempt to directly treat the contaminant sources in groundwater, greatly improving the chances that groundwater standards would be achieved in a reasonable amount of time.

The soil treatment technologies in the last four alternatives would comply with SCGs for the site by cleaning up the soils to levels compatible with TAGM 4046.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

In comparison with the Remedial Goals established in Section 6, the No Action alternative is not protective of human health and the environment. The remaining four alternatives do meet the

remedial goals with varying levels of effectiveness. Each of the four alternatives address the contaminated soils and control the migration of contaminated groundwater. They would also prevent or greatly reduce the migration of contaminants at the site into the barge canal and thus prevent significant exposures to nearby fish and wildlife resources.

Alternative 4 provides the best possibility of removing contaminant sources from the soil, groundwater, and bedrock and would be the most effective at preventing continuing releases to the waters of the state.

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. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

The No Action alternative presents no additional short-term impacts on the community. Alternatives 2 and 3 would require an atmospheric discharge of contaminants from the soil and groundwater treatment systems. These releases could be controlled with vapor treatment systems to prevent adverse impacts to the community. Alternatives 2 and 5 would both require the excavation of soil at the site. During excavation, fugitive emissions could impact the community. These emissions could be controlled with proper excavation and soil management techniques. In addition, alternative 5 would require a vapor treatment system for the groundwater treatment emissions. Alternatives 3 and 4 present no significant hazards from moving or excavating soils at the site. Alternative 4 would require a vapor treatment system to collect any contaminants that are recovered from the steam stripping operation. Because steam stripping can remove large quantities of contaminants from the subsurface very quickly, a large, well-designed vapor recovery system would be necessary. Steam stripping also presents the possibility that contaminants would be mobilized in the subsurface before they could be collected. This can be avoided through careful design, construction, and operation of the system. Alternatives 2 through 4 would all involve some form of heavy equipment or machinery operating at the site for periods of several months to two years, depending on the alternative. Adverse noise and traffic impacts to the community could be alleviated with noise-reducing equipment for the pumps and blowers as well as traffic control procedures.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-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.

The No Action alternative is not an effective long-term strategy for this site. Each of the remaining alternatives would adequately treat or remove the contaminated soils, eliminating the drainage ditch as a contaminant pathway to the canal. Alternatives 2 and 3 would both implement a pump and treat system for long-term groundwater treatment. Experience has shown that achieving clean-up goals

with this approach can be difficult and take a very long time. Alternative 4 would reduce or remove the soil, unsaturated bedrock, and groundwater sources in a relatively short time frame, however the surface soils may require additional treatment once the steam stripping is complete. Alternative 5 would effectively eliminate long-term risks from the soil, but would require many years of continued groundwater treatment. While alternatives 2, 3, and 5 would all require a long treatment time for the groundwater, the long-term risk to public health and the environment would still be reduced because of the active containment and treatment methods that would be in place.

Alternative 4 provides the best possibility of removing contaminants from the unsaturated bedrock. The other alternatives treat the soil and saturated bedrock, but fail to address the unsaturated bedrock beneath the soil. Contamination left in this zone would likely continue to act as a source of seeps in the canal and would be a continuing source of groundwater contamination in the long-term. The other alternatives rely on the construction and maintenance of a subsurface grout curtain to prevent migration, but only alternative 4 aggressively removes the contamination.

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

The No Action alternative provides no reduction in toxicity, mobility, or volume of the wastes at the site. Alternatives 2, 3, and 5 all significantly reduce the contaminants in the soil, and *control* the mobility and volume of contaminated groundwater at the site, but require a long time to significantly *reduce* the volume of wastes at the site. Alternative 4 would treat both the soil and groundwater in a short period of time, significantly *reducing* the mobility and volume of wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

The No Action alternative is easily implemented. Alternatives 2, 3, and 5 all include common technologies that are relatively easy to implement. Alternative 4 includes a relatively novel and innovative technology that would require more extensive design and monitoring to ensure its proper functioning. In addition, the steam stripping technology presented in Alternative 4 has not been demonstrated in fractured bedrock. This site would be among the first where steam stripping would be attempted in fractured bedrock. The Department believes the technology would be successful and that the limitations of implementing most technologies in fractured bedrock is primarily a site characterization problem and not a problem inherent in the technology. An extensive 3-D seismic imaging of the bedrock was conducted during the RI and would help in the design of all the proposed groundwater alternatives, especially Alternative 4.

Alternative 2 would require the use of a portion of the adjacent surrounding property to construct the SVE pile, which may pose an administrative difficulty in obtaining permission. Alternatives 2, 3, and 5 would also require a significant number of wells on the Chemical Sales and surrounding properties for a number of years, which may pose an additional administrative difficulty.

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 2.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. **Community Acceptance** - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised.

In general the public comments received were supportive of the selected remedy. Several comments were received, however, pertaining to the perceived safety of the steam injection system and whether there were any short-term risks associated with the remedy. Several additional comments were received pertaining to the effects the site and surrounding property have had on the community.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 4 as the remedy for this site. Alternative 4 includes the installation of approximately 180 steam injection and vacuum extraction wells across the site. A low-permeability membrane will be placed across the surface to enhance the vapor recovery system. Low pressure steam will be generated on-site and injected into the subsurface. The steam will volatilize the contaminants in both the bedrock and the soil, after which they will be collected by a vapor treatment system. This alternative will also include the excavation and off-site disposal of approximately 150 cubic yards of contaminated surface soil from the drainage ditch and other limited areas which may not be treated by the steam. The steam system will operate for approximately 12 months, after which a long-term groundwater monitoring program will be initiated. The recovered wastes will be condensed and shipped off-site for treatment or recycling.

The contamination at the Chemical Sales site is primarily VOCs from a former solvent repackaging operation. The contaminants are concentrated in the site soils, fractured bedrock, groundwater, and drainage ditch. These contaminants are migrating from the site into the barge canal via the contaminant seeps, groundwater, and overland flow during heavy rain. The concentrations detected in the soil and groundwater greatly exceed clean-up standards and criteria.

Alternative 4, Steam Stripping, is the best alternative for remediating the site. This selection is based on the evaluation of the five alternatives developed for this site. With the exception of the No Action alternative, each of the alternatives would comply with the threshold criteria of compliance with SCGs and protectiveness of human health and the environment. In addition, the four remaining alternatives are similar with respect to the balancing criteria. The major differences among the alternatives is that Alternative 4 is the only alternative that actively remediates the bedrock and

groundwater contamination in a reasonably short time frame, thus meeting the Remedial Goal of removing contaminant sources from the subsurface. The other three alternatives could require decades or longer to significantly reduce the toxicity, mobility, and volume of wastes in the groundwater. Alternative 4 poses some unique challenges in implementing this innovative technology in fractured bedrock. These challenges can be addressed by a careful design and by relying on the extensive site characterization that was conducted during the RI. Alternative 4 is neither the least nor the most expensive alternative. When cost is balanced with performance, Alternative 4 is the preferred alternative.

The estimated present worth cost to implement the remedy is $ 3,067,029. The cost to construct the remedy is estimated to be $ 2,926,860 and the estimated average annual operation and maintenance cost for 30 years is $ 9,125.

The elements of the proposed remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Installation of approximately 180 steam injection and extraction wells, covering approximately 2 acres of the site and adjacent property;

3. Installation of geomembrane across the surface of the site to enhance the steam and vapor recovery;

4. Construction of a temporary steam boiler and vapor condenser to generate steam and recover vapors at the site;

5. Operation of the steam stripping system to remove contaminants from the soil, groundwater, and bedrock;

6. Removal of all recovered liquid hazardous wastes for off-site disposal or recycling;

7. Removal of approximately 150 cubic yards of contaminated surface soils, including the drainage ditch between the site and the barge canal;

8. In the event that a potential threat from residual subsurface contamination remains after the steam stripping remedy has been completed, the Department would evaluate and, if necessary, implement additional remedial measures, including property use restrictions;

9. Since the remedy may result in some untreated hazardous waste remaining at the site, a long-term monitoring program will be instituted. The existing monitoring wells around the site and any nearby homes with basement sumps will be periodically sampled to determine if any significant amount of residual contamination remains at the site. This program will allow the effectiveness of the steam stripping to be monitored and will be a component of the operation and maintenance for the site.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation 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:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- Fact Sheets were mailed to all parties on the site mailing list in August 1998, July 1999, and February 2000.
- Public Meetings were held to discuss the site investigations on July 15, 1999 and the proposed remedy on March 15, 2000.
- In March 2000 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

Table 1
Nature and Extent of Contamination

MEDIUM	CATEGORY	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY of SAMPLES EXCEEDING-SCGs/Background-	SCG/ Bkgd. (ppb)
Groundwater	VOCs	Vinyl Chloride	ND to 7,900	14 of 28	2
		Chloroethane	ND to 23,000	8 of 28	5
		Methylene Chloride	ND to 13,000	8 of 28	5
		Acetone	ND to 18,000	6 of 28	50
		1,1-Dichloroethene	ND to 2,000	6 of 28	5
		1,1-Dichloroethane	ND to 32,000	18 of 28	5
		1,2-Dichloroethene	ND to 160,000	16 of 28	5
		1,2-Dichloroethane	ND to 2,300	5 of 28	0.6
		Methyl Ethyl Ketone	ND to 1,300	6 of 28	50
		1,1,1-Trichloroethane	ND to 150,000	11 of 28	5
		Trichloroethene	ND to 24,000	8 of 28	5
		Benzene	ND to 820	18 of 28	1
		Tetrachloroethene	ND to 2,600	6 of 28	5
		Toluene	ND to 25,000	16 of 28	5
		Ethylbenzene	ND to 2,800	7 of 28	5
		Xylene	ND to 12,000	15 of 28	5

Groundwater	Non-halogenated Volatile Organic Compounds (SVOCs)	Methanol	ND to 13,000	4 of 28	**
		Isopropanol	ND to 31,000	12 of 28	**
		Ethanol	ND to 1,100	4 of 28	**
		n-Propanol	ND to 1,500	9 of 28	**
		t-Butyl Alcohol	ND to 370	4 of 28	**
		Methyl Ethyl Ketone	ND to 14,000	8 of 28	50
		Isobutanol	ND to 150,000	11 of 28	**
		Ethyl Acetate	ND to 6,500,000	15 of 28	**
		n-Butanol	ND to 1,200	8 of 28	**
		4-Methyl-2-Pentanone	ND to 18,000	11 of 28	**
Subsurface Soils	VOCs	Vinyl Chloride	ND to 5,100	1 of 20	200
		Chloroethane	ND to 1,900	1 of 20	1,900
		Methylene Chloride	ND to 5,100	2 of 20	100
		Acetone	ND to 12,000	6 of 20	200
		1,1-Dichloroethene	ND to 1,100	1 of 20	400
		1,1-Dichloroethane	ND to 8,800	7 of 20	200
		1,2-Dichloroethene	ND to 83,000	11 of 20	300
		Methyl Ethyl Ketone	ND to 960	2 of 20	300
		1,1,1-Trichloroethane	ND to 85,000	7 of 20	800
		Trichloroethene	ND to 180,000	7 of 19	700
		Tetrachloroethene	ND to 900,000	4 of 19	1,400
		Toluene	ND to 990,000	9 of 18	1,500
		Ethylbenzene	ND to 130,000	5 of 20	5,500
		Xylene	ND to 760,000	10 of 18	1,200

Subsurface Soil	Non-Halogenated VOCs	Isopropanol	ND to 100,000	5 of 19	**
		Methyl Ethyl Ketone	ND to 640	2 of 19	300
		Ethyl Acetate	ND to 48,000	8 of 19	**
		n-Butanol	ND to 38,000	4 of 17	**
		4-Methyl-2-Pentanone	ND to 4,900	3 of 16	**
Surface Soil	VOCs	1,2-Dichloroethene	ND to 120,000	2 of 8	300
		1,1,1-Trichloroethane	ND to 5,100	1 of 8	800
		Trichloroethene	ND to 15,000	1 of 8	700
		Tetrachloroethene	ND to 150,000	1 of 8	1,400
	Non-halogenated VOCs	Methanol	ND to 830	2 of 8	**
		Ethyl Acetate	ND to 1,300	2 of 8	**
		n-Butanol	ND to 730	1 of 8	**
Surface Water	VOCs	Vinyl Chloride	ND to 87	2 of 4	**
		1,1-Dichloroethane	ND to 390	4 of 4	**
		1,2-Dichloroethene	ND to 3,400	4 of 4	**
		1,1,1-Trichloroethane	ND to 160	3 of 4	**
		Ethyl Acetate	ND to 1,100	1 of 4	**
Sediments	VOCs	Vinyl Chloride	ND to 18*	1 of 4	0.07*
		1,2-Dichloroethane	ND to 1.8*	1 of 4	0.7*
		Benzene	ND to 5*	1 of 4	0.6*
		1,2-Dichloroethene	ND to 4.7*	2 of 4	**
		Chloroethane	ND to 19*	1 of 4	**
		Acetone	ND to 6.2*	2 of 4	**
		1,1-Dichloroethane	ND to 336*	1 of 4	**
		Methylene Chloride	ND to 19*	1 of 4	**

* Values presented in units of ug contaminant/g organic carbon.

** These compounds do not have a published standard or guidance value. The listed number of exceedences reflects the number of samples where these compounds were detected at any concentration.

ND Not Detected

Table 2
Remedial Alternative Costs

Remedial Alternative		Capital Cost	Annual O&M	Total Present Worth
1.	No Action	$0	$9,125	$140,169
2.	Ex-situ Soil Vapor Extraction with Groundwater Containment, Treatment, and Disposal	$1,503,823	$36,872	$2,070,214
3.	In-situ Thermal Desorption with Groundwater Containment, Treatment, and Disposal	$2,288,903	$32,161	$2,782,920
4.	Steam Stripping of the Groundwater and Overburden Soils	$2,926,860	$9,125	$3,067,029
5.	Offsite Treatment and Disposal of Soils with Containment, Treatment, and Enhanced In-situ Bioremediation of Groundwater	$2,609,555	$46,171	$3,318,730

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Chemical Sales
Proposed Remedial Action Plan
Gates (T), Monroe County
Site No. 8-28-086

The Proposed Remedial Action Plan (PRAP) for the Chemical Sales site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 18, 2000. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and sediment at the Chemical Sales Site. The preferred remedy is: Operation of a steam stripping system to recover contaminants from the groundwater, soil and bedrock.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on March 15, 2000 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from the New York State Canal Corporation and from Lee Road, Inc. The public comment period for the PRAP ended on March 22, 2000.

This Responsiveness Summary responds to all questions and comments raised at the March 15, 2000 public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses, organized by topic:

Part A: Comments Concerning the Steam Stripping Remedy

Comment A-1: How will you keep the steam from causing contamination to flow toward the homes on Lee Road? I don't believe you can control where the steam will go.

Response A-1: During steam injection, the steam will not travel very far outside its injection area. Outside its primary injection area, the steam will encounter the ambient (background) groundwater, which has a temperature of about 50°F. Upon mixing with the groundwater, the steam will condense back into liquid water, greatly limiting its mobility. It is for this very reason that so many (approximately 135) steam injection wells will be needed and will be spaced approximately 30 feet apart.

Within the injection area, the steam and liquids can be easily controlled through the use of vacuum extraction technology and pumps. The groundwater, pure contaminants, evaporated contaminants and the steam will be collected by the extraction wells. By alternating the steam injection wells with extraction wells, the escaping vapors can be captured and treated before they enter the environment. To help ensure the system effectively collects the vapors, DEC will also place a membrane (plastic) over the ground to enhance the vacuum collection.

In addition to vacuum extraction of the vapors, the groundwater will also be aggressively pumped during the remediation to capture any of the liquid solvents that are dislodged or mobilized by the steam.

Comment A-2: Your diagram shows steam going straight down into the ground. What makes you think steam will go toward the extraction wells and not out in all directions from the injection point?

Response A-2: The injected steam will move in all directions. However, the location of the wells will be designed so that the extraction wells will pull in steam from different directions. The design will encompass the entire source area (area of highest contamination) with injection and extraction wells. The system will be designed to ensure that all steam injection will focus the mobilized contaminants toward the recovery wells.

Comment A-3: So there's more than one extraction well?

Response A-3: Yes. The system will likely consist of approximately 135 steam injection wells and 45 extraction wells. More steam wells than recovery wells are necessary due to the problems with condensation of the steam as described in Response A-1.

Comment A-4: The EPA has gone to soil washing and has stopped using steam injection because it is not an effective technology and you don't get full recovery of the contamination. Why didn't you consider soil washing?

Response A-4: The removal of liquid wastes from deep in the bedrock is a very difficult remediation to attempt. Unfortunately, no technology currently exists that will completely clean up a site like the Chemical Sales site. However, steam injection has the ability to remove large, significant quantities of the solvents from the subsurface in a short period of time. The alternative method of remediating a site like this is to initiate a long-term groundwater pumping operation. Experience and history have shown that these "pump-and-treat" remedies can be inefficient at removing contaminants from the subsurface, and may take decades or longer before groundwater standards are met. The EPA has not stopped using steam injection. In fact, at a recent seminar, the EPA encouraged the use of thermal enhancements for solvent contaminated sites, including the uses of steam, electrical heating, radio frequency heating, and others.

Soil washing was not evaluated at this site for two reasons. First, the majority of contamination at the Chemical Sales site is deep in the fractured bedrock. Soil washing only addresses the soils at a site, it can not clean-up the bedrock. Second, soil washing generally requires excavation of

the soils for treatment in an on-site unit. The hazards of excavating and moving soils around the site would pose a short-term risk to the community of fugitive air emissions.

Comment A-5: Is steam injection cheaper than soil washing? Is that why steam injection was selected?

Response A-5: As described in response A-4, the majority of the contamination is in the bedrock and not in soil. Therefore, soil washing is not appropriate for this site. Cost is not a factor in selecting between steam stripping and soil washing.

Comment A-6: Can you give a start date for the cleanup?

Response A-6: The DEC will attempt to begin the design of the remedy as soon as possible. The design may take between 9 and 12 months to complete. Construction would likely begin 3 to 6 months after the design is completed.

Comment A-7: I am angry at the Town for not monitoring this site long before this (contamination) happened. I am not pleased with what I'm hearing. I'm not confident steam injection will work. I am angry this was kept under a lid until now. I feel like we're being experimented on.

Response A-7: The DEC is confident that steam injection is the best alternative to remediate this site. The use of steam injection, while novel and new to New York, is not an experimental technology.

Comment A-8: I don't believe the steam injection technique will work because it's all shallow rock there.

Response A-8: The depth to bedrock poses no significant difficulty in implementing the steam injection technology.

Comment A-9: How often will the air be tested during the cleanup? How many air monitoring stations will be used?

Response A-9: There will be continuous air monitoring during the work. The number of monitors will be determined during design.

Comment A-10: What would happen if you did nothing? Would the site clean itself? If houses aren't being damaged, why bother cleaning it up? Could you just tell the Town of Gates that they can't use the property?

Response A-10: While some degradation of the contamination is naturally occurring at the site, the rate of degradation is relatively slow. Left uncontrolled, the site would possibly take decades to naturally clean itself. Leaving the site "as-is" is not an appropriate option. Contaminated groundwater and seeps are migrating from the site and into the Barge Canal. The site must be

cleaned up in order to be protective of human health and the environment and in order to comply with all applicable laws and regulations.

Comment A-11: I feel a little more comfortable letting sleeping dogs lie instead of trying to do this cleanup.

Response A-11: As mentioned in Response A-10, leaving the site "as-is" is not an acceptable option. The site must be cleaned up in order to be protective of human health and the environment and in order to comply with all applicable laws and regulations.

Comment A-12: Regarding the steam stripping cleanup, will there be a pilot project first or will you go full-scale right away?

Response A-12: A pilot test would be extremely expensive to conduct relative to the cost of the entire project. Therefore, the entire system will be installed, but brought up to speed over a few weeks or months. During the start-up period, the specific operating parameters can be optimized. The steam stripping may be completed in "zones" rather than all at once.

Comment A-13: Will you use the Atkins right-of-way to get in and out of the site during cleanup, or could you go in and out of the site from somewhere over toward Lyell Avenue? Could you use the bike path?

Response A-13: DEC will consider residents' concerns about access and traffic during the design of the cleanup. Currently, there are no other vehicle access points to the site other than Lee Road.

Comment A-14: During the cleanup, what will be the hours of operation? How much noise will there be?

Response A-14: The hours of operation during construction should be limited to normal daytime working hours. There will be no weekend or evening construction work. Any noise will be limited to drill rigs and trucks on the site installing the wells. There will probably be as much noise as you have heard in the past during investigation activities at the site.

Comment A-15: What size holes will you drill for the injection and extraction wells?

Response A-15: Six-inch to eight-inch holes will be used for the wells.

Comment A-16: You are spending $3,000,000 to clean up the site. Are there other alternatives such as purchasing and capping the area and using it as a park, or some other option so that the community can use the site? Can we look at this option?

Response A-16: Because the majority of contaminant migration is occurring beneath the surface, in the groundwater and fractured bedrock, capping of the site is not sufficiently protective of human health and the environment. While capping may prevent direct contact with

the contaminated soil, it will not prevent the subsurface contaminants from migrating toward the Barge Canal. There are several legal issues to resolve regarding the use of the site after remediation has been completed. Alternative uses of the property after remediation must be discussed with the property owner.

Comment A-17: Will there be any injection wells located off-site? Will some of the remedy go off-site?

Response A-17: This project is targeting the core area of the site where the highest concentration of contamination exists, essentially a 2-acre portion in the middle of the site. Some of the work being done in the drainage ditch will be off of the property. The State may see a need for putting some limited injection wells immediately off-site to the east and south during design.

Comment A-18: Is it possible you will have to go onto the Pearse property to do some injection? If so, would there be an access agreement?

Response A-18: It is possible some wells may need to be installed on the Pearse property. The State would pursue an access agreement in that case.

Part B: Comments Concerning Public Health Impacts

Comment B-1: I'm home all day, and I like to be outside. What will this project do to my health? Won't some of the contamination get into the air? I don't feel confident in your plan.

Response B-1:. The Department believes this project will not result in an increased exposure for the community. The Department strongly favors this technology, in part, specifically for its safety within the community. A community health and safety plan (CHASP) will be implemented during the remediation of this site to prevent off-site migration of contamination in concentrations that may represent a health concern. The CHASP will include continuous air monitoring during remediation of the site.

Comment B-2: Are you going to do any air testing during the cleanup? Could there be any exposures through the air for people who could be working on the Pearse property during the cleanup?

Response B-2: There will be a community air monitoring plan. As stated above, the DEC believes that, with the implementation of engineering controls, operation of the steam injection system will not result in a significant off-site migration of site contaminants. Please see Responses A-9 and B-1 for more detail.

Comment B-3: Could we be exposed to chemicals during the cleanup? What if we are, could this become a Love Canal?

Response B-3: Please see Responses A-1, A-9, B-1, and B-2.

Comment B-4: I represent someone who's thinking about buying the Pearse property. He might have to dig to put in a truck dock about 130 feet from the Chem Sales property line. Would that be a concern? Would encountering groundwater in that area be a concern?

Response B-4: The soil contamination is limited to the areas immediately surrounding the former Chemical Sales buildings. There is no reason to believe that the soil on the south side of the Pearse building is contaminated from the site. As discussed with more detail in Response D-1, the contaminated groundwater is in the bedrock. Groundwater associated with the overburden soils is mainly due to precipitation and should not be contaminated.

Comment B-5: Why doesn't the Town or the State buy the houses in that area? You could probably buy all seven houses for less money than the cleanup.

Response B-5: The residential properties are not contaminated from the site. Purchasing those properties is not necessary from a health perspective, nor would doing so clean-up the contamination present on the site.

Comment B-6: If my client were to buy the Pearse property and dig the truck dock or other structures, should that activity be monitored?

Response B-6: While the likelihood of encountering contaminated soil is low, it would be prudent to sample and monitor the excavation.

Part C: Comments Concerning the Remedial Process

Comment C-1: What happens if the State Superfund runs out of money, or the State starts the cleanup and goes over cost estimates? Who will pay for the cleanup then? Will the taxpayers in Gates? Could you start this cleanup and then run out of money and have to stop?

Response C-1: Once a contract is awarded to pay for the clean-up, the money for that contract is set aside and dedicated to the project. If the project is funded by the State Superfund, any money allocated to the project will continue to be available during the lifetime of the project. If costs exceed the project's estimates, the Town of Gates would not have to make up any difference. All costs for a state-funded clean-up will be borne by the State. The Governor and Legislature are working to prevent the State Superfund from running out of money.

Comment C-2: Is the State now committed to doing some type of cleanup? Who makes the final decision? Do residents get to vote on this?

Response C-2: There is no process for residents to "vote" on this, but all comments are given careful consideration. Taking no action is not an option at this site, because the State is required

to make sure conditions at these sites are protective of human health and the environment. The State makes the final decision as given in this Record of Decision.

Comment C-3: According to the newspaper, this is the last meeting with residents. Is that true?

Response C-3: There will be no more meetings before the Record of Decision is issued. Additional meetings will be held after the off-site investigation and before construction to keep the community informed of the status of the site.

Comment C-4: Why couldn't the Town of Gates have let neighboring property owners know about this problem when it was discovered? Who lets property owners know? I wouldn't have bought my house if I knew.

Response C-4: When a site is first listed on the Registry of Inactive Hazardous Waste Disposal Sites, a legal notice is sent to all adjacent property owners. Widespread notification, fact sheets, and public meetings are not usually pursued at that time because the State usually has limited information to give the public other than the fact that a site has been identified and listed. Not until the investigations have been completed can the State provide complete information about the types and extent of contamination and their environmental or human health implications.

Comment C-5: If this was a regular site and someone started to build on it, and contamination was found, you'd stop the building activity. To stop Atkins, who do we have to go to? Why can he keep using his property?

Response C-5: The current use of the surrounding property does not interfere with the ongoing investigations and remediation. The DEC can not keep people from the lawful use of their property. To the extent that operations on the surrounding property may interfere with the remedy, the state will work with the owner to coordinate uses of the property. Only if operations on that property violate solid waste regulations or local health and zoning codes can the government (Town, County, or State) interfere.

Comment C-6: Why isn't Atkins paying for this?

Response C-6: At this time the DEC attorneys are evaluating who, other than Chemcore, might be a Potentially Responsible Party (PRP). If the state determines parties other than Chemcore are partially liable for the contamination, then the law requires the DEC to seek payment from them.

General Comments Concerning the Site

Comment D-1: What about the drainage ditches on Lee Road? I saw some guys cleaning out drainage ditches yesterday on the east (site) side of Lee Road. Could anything get in the sewers from them cleaning the drainage ditches?

Response D-1: No. The contaminated soils associated with the site are all located around the abandoned buildings. No significant soil contamination has been observed within approximately

200 feet of Lee Road. In addition, the groundwater associated with the overburden soils is perched due to the silty and clayey nature of the soils, causing them to be poorly drained and retain precipitation. Water or moisture present in the soil along Lee Road does not come from the contaminated areas; it is primarily residual saturation from rain and snow.

Comment D-2: How far and how fast is the groundwater contamination moving toward homes on Lee Road?

Response D-2: The groundwater is moving primarily in a northeast direction. The groundwater along Lee Road is on the fringe of the groundwater contamination plume. One monitoring well pair (a deep and a shallow well in the same location) along Lee Road and one deep well on the residential (west) side of Lee Road have shown site-related contaminants. As the Department of Health stated at the public meeting, levels of contamination in these wells are sufficiently low so as not to represent a concern for vapor migration into nearby basements. We believe the groundwater contaminant plume (area of contamination) is stable; it is not growing or expanding into new areas.

Comment D-3: You said the well on the site side of Lee Road (MW-1) contained groundwater with low levels of contaminants, but the well on the corner of Evelyn Street (MW-11) was clean. Why didn't you put a well right on the corner of Lee and Evelyn to see what conditions are between those two wells? I own property right there and I want to know if my property is contaminated.

Response D-3: The Department does not believe that another monitoring well in that area is necessary. As stated earlier, the two wells in question already define the approximate extent of contamination at the site. The Department of Health has indicated that the concentrations detected in MW-1 along Lee Road are sufficiently low so as not to represent a concern for vapor migration into nearby basements. Adding another well in this area would only confirm what is already known about the groundwater.

Comment D-4: We can't sell our homes. Lee Road is the slum of Gates. The Town says the Atkins property is not their problem. We are concerned about the health of area children.

Response D-4: The DEC is aware of the residents' concern for property values and the area children's health. The DEC believes that remediating the site with steam injection has the best promise of quickly and significantly improving the contaminated property.

Comment D-5: This remedy will cost $3,000,000. If the State is willing to spend that much to clean this up, hopefully the Town will do what it can to get rid of what's across Lee Road from us (i.e., the Atkins property) and clean it up and make it a decent street.

Response D-5: Although the DEC has no authority to enforce local zoning ordinances or other local codes, this comment will be passed along to the Town.

Comment D-6: You mentioned the goal is to keep people away from the contaminated area. However, the back gates to the property are always open.

Response D-6: The DEC has been working with the owner of the surrounding property to ensure that the fence is maintained and secured. Additional efforts will be made to ensure that access to the property is restricted to authorized personnel only.

Comment D-7: At the last meeting you said you would put warning signs up on the site. Why aren't they up?

Response D-7: The goal of any signs or fencing is to prevent people from entering a potentially risky area. Signs have been posted at the site. They read, "Chemical Sales Hazardous Waste Site." At the last meeting, the community was divided over how to best post signs and/or fence the property. Some residents desired explicit warning signs along Lee Road, while others, concerned about property values, desired less intrusive signs. Based on the differing opinions within the community and the concerns of the surrounding property owner, an orange construction fence was erected to surround the contaminated portions of the site. Unobtrusive signs identifying the site were posted along the orange fence. It would be difficult for anyone to currently enter the site, cross the posted orange fence, and not know they were entering a hazardous waste site. No measures will prevent people from gaining access to the site if they are determined to do it. The DEC and DOH are satisfied that the current fencing and signs are sufficient to inform people of where the contaminated areas are.

Comment D-8: Chem Sales moved from the corner of Jay and Dodge Streets before it went to Lee Road. Is that location contaminated too?

Response D-8: The DEC has no information regarding that location. After a review of available documents, if it appears that property may be contaminated, the DEC may conduct a preliminary investigation to determine if hazardous wastes are present and present a significant threat to the environment or human health.

Comment D-9: How did Chem Sales contaminate the site? Did they dump chemicals on the ground?

Response D-9: The contamination most likely resulted from operating procedures that included spilled drums, leaky containers, spills during repackaging, and possibly dumping of old or unusable materials.

Comment D-10: There were other chemical companies at that location before Chem Sales. Did you look into the activities of prior site owners?

Response D-10: Based on the DEC's knowledge of the site, the previous chemical operations involved the handling of compressed gases. Because the compounds were gases and not liquids or solids, no residual contamination is expected from any releases that may have occurred.

Comment D-11: Will the buildings on the site be removed?

Response D-11: The DEC does not intend to remove the buildings. The main building may be an excellent location for the instrumentation and hardware necessary for the steam stripping remedy.

Comment D-12: Will the trailers be removed?

Response D-12: The trailers associated with the Chemical Sales property may be removed if they interfere with the steam system. The majority of abandoned vehicles and trailers on the property are not part of the Chemical Sales site, but are part of the business operations of the surrounding property. Those trailers may be moved if they interfere with the steam system, but will not be removed.

Comment D-13: What about the oil spill on the Atkins property?

Response D-13: Some of the soils on the surrounding property are stained from what appears to be hydraulic fluid or motor oil. The types and quantities of these materials are a less significant threat to the groundwater than the hazardous compounds from the Chemical Sales site. Any contamination related to the oil spills should be cleaned up by the steam system along with the Chemical Sales contamination.

Comment D-14: Did you look into the Virginia Chemical Corporation, which used to be located there? Did you look for fertilizers during the investigation? When the fertilizer company was there, they used to dump fertilizers they didn't like, such as nitrates.

Response D-14: Fertilizers such as nitrates and phosphates are considered "conventional pollutants." They are usually benign in small quantities, but can present an environmental hazard in large quantities. Those compounds are generally short-lived and decompose or dissolve readily in water. Contaminants of this type are not expected to present any significant environmental impacts after being dumped many years ago. During the site investigation, a wide variety of analyses were performed on the soil and groundwater at the site. The only compounds that were detected at significant levels were the solvents from Chemical Sales.

Comment D-15: For those of us considering selling our property, we need help. Is there any type of documentation DEC can give us that we can present to financial institutions saying that residential property near the site is clear of contaminants and safe? Can we get a summary that financial institutions would accept to help show that the homes are O.K.?

Response D-15: DEC doesn't provide this type of documentation. The Record of Decision and this Responsiveness Summary could be given to a lending institution.

Comment D-16: This is an opportunity for the Town to work with the State to clean the site up.

Response D-16: The DEC encourages all parties, including the town and nearby residents, to participate in the remedial process.

Comment D-17: For all these years, the site has been in an unprotected state, and DEC knew about it. So your statement that the site must be cleaned up to protect human health and the environment is flawed.

Response D-17: The Chemical Sales site is a "Class 2" site, meaning that it poses a significant threat to human health or the environment. The surface soil at the site is contaminated with a variety of solvents. Non-aqueous phase liquids (NAPLs) were observed seeping from the surface soils and flowing overland into the site drainage ditch, which then drains into the Barge Canal. Several seeps of NAPLs were also observed in the wall of the Barge Canal. The groundwater contamination from solvent disposal has also resulted in a groundwater plume that is both entering the canal and flowing beneath it into the City of Rochester. While the DEC and DOH believe the site does not pose an *immediate* or *imminent* danger to the residential area on Lee Road, the site still presents a significant threat and must be cleaned-up in accordance with the Environmental Conservation Law (ECL).

Comment D-18: This problem was discovered in 1989 through a study on the Pearse property. The study indicated groundwater was moving mostly south. Can you explain the discrepancy between this and your finding that the groundwater is moving primarily to the north and east?

Response D-18: The 1989 study was a limited study based on only three groundwater wells. The wells screened a large vertical interval, which makes estimating groundwater flow direction more difficult. The current finding that the groundwater is moving northeast is based on numerous rounds of measurements from a much larger number of wells. There is a small southerly component of groundwater flow around the Pearse property, but that gradient quickly changes to the east and discharges to the barge canal.

Comment D-19: Have any air samples been taken at the site?

Response D-19: There was air monitoring during all intrusive activities of the Remedial Investigation. The only release of chemical vapors occurred when workers were digging into contaminated soil areas. At those times, air monitoring did not detect contamination outside the immediate excavation area.

Comment D-20: There are trucks going in and out of the site on the Atkins property now. Are the trucks going over areas of surface soil contamination?

Response D-20: No. The areas of contaminated surface soil are contained within the orange construction fence.

Comment D-21: The Pearse property study indicated there were dry wells and underground tanks on the Pearse property. Have you eliminated those as sources of contamination? Have you found anything to indicate those were sources?

Response D-21: The State has not found anything to indicate those are sources of contamination.

Comment D-22: At the last meeting, we were surprised no one from the Town was there. Could someone from the town speak to the residents? My taxes are going up, but I can't sell my house.

Response D-22: This comment will be referred to the Town.

Comment D-23: What is the future for this site after it is cleaned up? Who will own it?

Response D-23: The bankruptcy trustee currently controls the property. The Trustee has not indicated their long-term plans to the State. If the site is sold, the State will seek to recover costs in accordance with applicable law and procedures.

Comment D-24: Is there anything else that would be appropriate for a potential purchaser of the Pearse property to do to respond to this situation, or should we just let you do what you have to do? There's nothing for us to do if we purchased the property?

Response D-24: The steam stripping remedy will be designed to address all of the contamination from the Chemical Sales site. The clean-up will not be limited to arbitrary property boundaries. The State does not encourage any third party to attempt a clean-up without the necessary training and expertise to do so.

Comment D-25: Did Pearse sue Chemcore? Is that why Chemcore went bankrupt?

Response D-25: That question should be asked of the Chemcore bankruptcy trustee.

Comment D-26: As a property owner, I would like to thank DEC and DOH for your work.

Response D-26: You are welcome.

A letter dated March 21, 2000 was received from the New York Canal Corporation which included the following comments:

Comment W-1: Will DEC conduct additional sampling of canal sediments adjacent to the site and downstream of the site to determine the nature and extent of the contamination that has migrated from the site onto Canal Corporation property? Is DEC planning on removing these contaminants that migrated from the site onto canal lands?

Response W-1: The DEC does not intend to conduct additional sampling of the canal sediments. Based on the existing data, it appears that the extent of sediment contamination in the canal is limited. The only sample that exceeded the sediment guidance values was collected immediately below an observed NAPL seep. The DEC does not intend to remove the canal sediments or to treat them. The DEC does intend, however, to excavate and remove the contaminated soils from

the drainage ditch. Once the migration pathway of contaminants from the site into the canal is broken, the existing contamination in the canal and sediments should quickly attenuate.

Comment W-2: The PRAP states that three contaminants found in the canal sediments do not "bioaccumulate in fish the way that PCBs do." Does this imply that the sediment contamination levels found that are above the NYSDEC guidance are not a concern? Is there a concern by the NYSDEC that fish caught in this area should not be eaten? Will additional work such as a study of the fish in the area be undertaken?

Response W-2: The New York Stare Department of Health (NYSDOH) applies a general fish advisory for all New York State fresh waters and certain waters at the mouth of the Hudson River to eat no more than one (half pound) meal per week. The NYSDOH issues specific, more restrictive advisories when fish have elevated contaminant levels. The NYSDOH has not issued a specific health advisory for the Barge Canal in this area. As stated in Response W-1, the DEC believes the sediment contamination in the canal is limited. In addition, the surface water in the canal does not exceed water quality standards. Based on this information, there is no need for fish studies at this site.

Comment W-3: Will 100% of the volatilized contaminants be collected in the vapor recovery system? Is it possible that the volatilized compounds will travel along the fractured rock surfaces and increase discharges to the canal or other properties? What design features will be implemented to prevent the potential for this occurrence?

Response W-3: Please see Responses A-1, A-9, B-1, and B-2. The DEC will ensure an effective vapor recovery system is designed as part of the selected remedy.

A letter dated March 21, 2000 was received from David Freeman on behalf of Lee Road, Inc. (Lee) which is summarized in the following comments:

Comment W-4: Lee is not convinced that the remedy presented in the PRAP is the most cost-effective solution, nor does it appear that the potential health impacts on area residents and workers, or on Lee's operations, have been adequately considered in the PRAP's analysis of the alternatives. Lee questions the proposal to incur huge costs to aggressively treat groundwater at this time. Remediation of the bedrock aquifer should be considered only if future studies show that downgradient receptors are being impacted.

Response W-4: The remedy selection process established in 6 NYCRR 375-1.10 requires that costs be considered in the selection process. However, cost-effectiveness is not the only criterion that must be considered. Cost-effectiveness must be weighed against other criteria such as: protectiveness of public health and the environment, compliance with standards, criteria, and guidance, and long-term effectiveness. When evaluated using all the selection criteria, the DEC believes that the selected remedy is the most appropriate for this site. In, addition, please see Responses A-4, A-7, A-10, and D-17.

Comment W-5: Lee is also constrained to note its disappointment with DEC's response, at the public hearing, when a speaker inquired about Lee's potential liability for cleanup. DEC's response, as reported to us, was that "DEC is reviewing this issue." We see no basis for Lee's liability, and any attempt by DEC to pursue Lee for such costs would be completely unwarranted and will be strongly resisted.

Response W-5: The definition of "Responsible Party" is found in 6 NYCRR 375-1.3(u). The definition includes past and current owners and operators of the site or any portion thereof. Because the site encompasses portions of the surrounding Lee Road, Inc. property and Lee Road, Inc. leased a portion of the site to Chemical Sales, Inc., the DEC reserves the right to consider Lee Road, Inc. a Potentially Responsible Party.

APPENDIX B

Administrative Record

Administrative Record File Index
Chemical Sales
Operable Unit No. 1 (On-Site)
Site ID No. 8-28-086
Town of Gates, Monroe County
ROD Signed: March 2000

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1. **File Index**

Reports

2. **Record of Decision**, prepared by the NYSDEC, dated March 200.

3. **Proposed Remedial Action Plan**, prepared by the NYSDEC, dated February 2000.

4. **Feasibility Study**, prepared by the NYSDEC, dated February 2000.

5. **Remedial Investigation Data Summary Report,** prepared by URS Greiner, dated January 2000.

7. **Citizen Participation Plan**; prepared by the NYSDEC, dated July 1998.

8. **Remedial Investigation/ Feasibility Study Project Management Work Plan** , prepared by URS Greiner, dated July 1998.

Fact Sheets

9. Fact Sheet, Proposed Remedial Action Plan, prepared by the NYSDEC, February 2000.

10. Fact Sheet, prepared by the NYSDEC, July 1999.

11. Fact sheet, prepared by the NYSDEC, August 1998.

Correspondence

12. Letter, from G. Anders Carlson, Director, Bureau of Environmental Exposure Investigation, NYSDOH to Michael O'Toole, Director, Div. of Environmental Remediation, Re: Record of Decision for the Chemical Sales Site, dated March 30, 2000.

13. Letter, from John Dergosits, New York State Canal Corporation, to Joseph Moloughney, NYSDEC, Re: Proposed Remedial Action Plan - Chemical Sales, dated March 21, 2000.

14. Letter, from David Freeman, Battle Fowler, LLP, to Joseph Moloughney, NYSDEC, Re: Chemical Sales, Site No. 8-28-086, dated March 21, 2000.

15. Letter, from G. Anders Carlson, Director, Bureau of Environmental Exposure Investigation, NYSDOH to Michael O'Toole, Director, Div. of Environmental Remediation, Re: Proposed Remedial Action Plan for the Chemical Sales Site, dated February 14, 2000.