Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Mr. C's Dry Cleaners Site
East Aurora (V), Erie County
Site Number 9-15-157

March 1997

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

DECLARATION STATEMENT - RECORD OF DECISION

Mr. C's Dry Cleaners Inactive Hazardous Waste Site
East Aurora (V), Erie County, New York
Site No. 9-15-157

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Mr. C's Dry Cleaners inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Mr. C's Dry Cleaners Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

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

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Mr. C's Dry Cleaners Site and the criteria identified for evaluation of alternatives the NYSDEC has selected In-situ Treatment of Groundwater with System Expansion to Remediate Source Area Soil. The components of the remedy are as follows:

1. Installation of up to 8 in-situ air stripping wells along the axis of the source plume, associated piping necessary to convey the VOC vapors drawn from the wells to the carbon treatment location, and the installation of one additional in-situ well adjacent to the Mr. C's building to remove the suspected source material. The conceptual plan for this system is shown on Figure 4 of the ROD.

2. The stripping wells and air treatment system would be operated, maintained and monitored. The system would remain in operation until the identified exposure pathways have been eliminated and the contamination in the source plume have been reduced to levels consistent with groundwater outside the source plume.

3. Continued operation and maintenance of the indoor air filters, including periodic monitoring.

4. Continued monitoring of residential irrigation wells.

5. A monitoring program would be instituted to allow the effectiveness of the selected remedy to be monitored and would be a component of the operation and maintenance for the site.

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.

3/27/97
Date

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

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RECORD OF DECISION

Mr. C's Dry Cleaners Site
Village of East Aurora, Erie County, New York
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SECTION 1: SITE LOCATION AND DESCRIPTION

The Mr. C's Dry Cleaners Site, is located at 586 Main Street in the Village of East Aurora, New York (see Figures 1 and 2). The half acre property includes a one floor building on a concrete slab foundation and an adjacent paved parking lot. Mr. C's Dry Cleaners, Inc., has operated the dry cleaning business at the site since 1974. The surrounding area is a mix of light commercial, municipal, and residential development. All properties are served with public water from the Erie County Water Authority. The site is situated over highly conductive saturated sand and gravel glacial outwash deposits approximately 16 to 21 feet thick.

The site is also adjacent to Agway Energy Product, the location of a petroleum spill discovered in 1987. The groundwater contamination caused by this spill has commingled with the contamination from the Mr. C's Dry Cleaners site in the area immediately to the west and northwest of the site.

Other petroleum spill sites are also present in the area, one at the Delia Automobile dealership, which was identified during this investigation and is currently undergoing a separate investigation under the NYSDEC Oil Spills program. A 1987 petroleum spill at the Cumberland Farms gas station located 900 feet west of Mr. C's was also identified, however, there are no impacts to the Mr. C's study area from this site.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

The existing building used by Mr. C's Dry Cleaners is believed to have been built around 1927, has been used as a dry cleaner since prior to 1970. It has been operated as Mr. C's since 1974. Environmental investigations began in October 1991 when chemical odors were detected in the basement of the First Presbyterian Church, which is located diagonally across Main Street from Mr. C's.

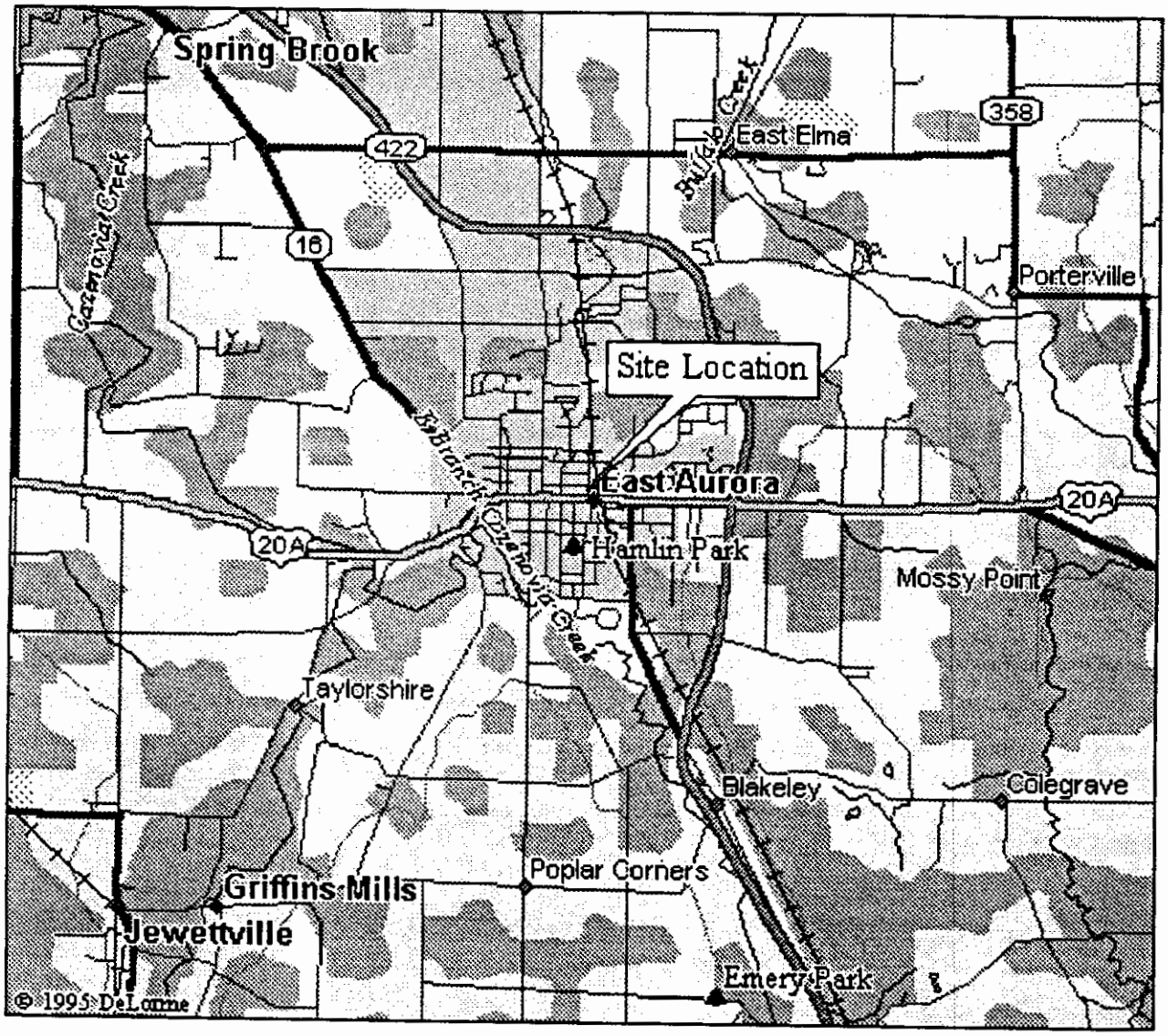

Spring Brook
422
16
Cazenovia Creek
Buffalo Creek
East Elma
358
Porterville
Site Location
East Aurora
20A
20A
Hamlin Park
Mossy Point
Cazenovia Creek
Taylorshire
Blakeley
Colegrave
Poplar Corners
Griffins Mills
Jewettville
Emery Park
© 1995 DeLorme

Figure 1

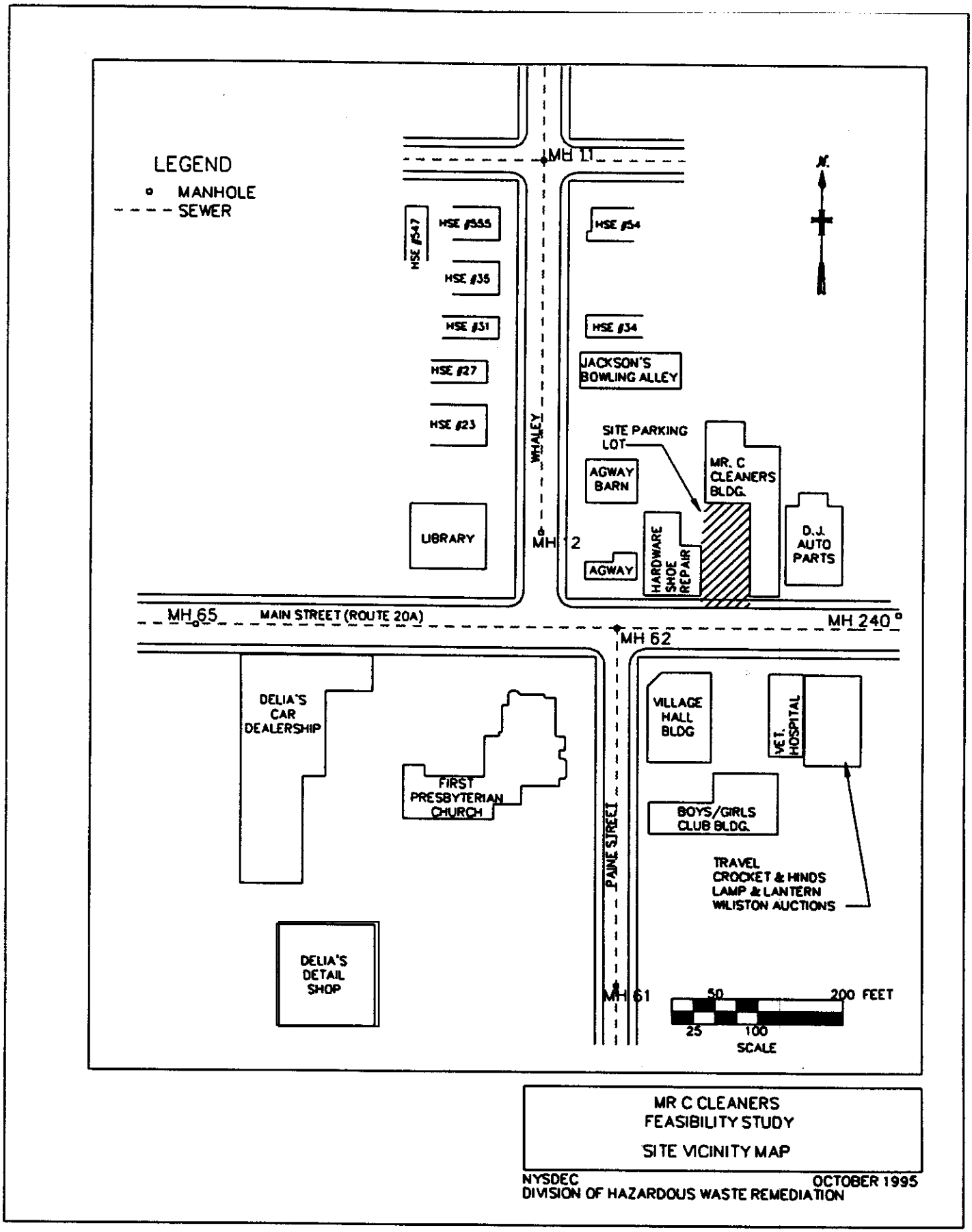

LEGEND
MANHOLE
SEWER
MH 11
HSE #547
HSE #555
HSE #54
HSE #35
HSE #31
HSE #34
HSE #27
JACKSON'S BOWLING ALLEY
HSE #23
WHALEY
SITE PARKING LOT
AGWAY BARN
MR. C CLEANERS BLDG.
LIBRARY
MH 2
D.J. AUTO PARTS
AGWAY
HARDWARE SHOE REPAIR
MH 65
MAIN STREET (ROUTE 20A)
MH 240
MH 62
DELIA'S CAR DEALERSHIP
VILLAGE HALL BLDG
VET. HOSPITAL
FIRST PRESBYTERIAN CHURCH
PAINE STREET
BOYS/GIRLS CLUB BLDG.
TRAVEL
CROCKET & HINDS
LAMP & LANTERN
WILISTON AUCTIONS
DELIA'S DETAIL SHOP
MH 61
50
200 FEET
25
100
SCALE
MR C CLEANERS
FEASIBILITY STUDY
SITE VICINITY MAP
NYSDEC
DIVISION OF HAZARDOUS WASTE REMEDIATION
OCTOBER 1995

Figure 2

Dry cleaning operations at Mr. C's use a cleaning solvent comprised of predominantly tetrachloroethene also known as perchloroethene (PCE). All dry cleaning wastes have been disposed of through a commercial waste disposal firm since 1985. Prior to 1985, it is reported that sludge and filters were placed into a dumpster located behind the hardware store building and collected by the Village of East Aurora.

Wastes generated during dry cleaning that contain residual solvent include cartridge filters used to remove solids from used cleaning solvent, sludge residue from the distillation of used cleaning solvent, and wastewater generated during the distillation of used solvent.

Potential mechanisms of release of PCE include possible past practices of disposing of wastes in sewers or on the grounds, leaks from the dumpster where sludge and filters were disposed, and various incidental discharge from the dry cleaning process including the possibility of spillage of solvents during the changeover of equipment. Solvents disposed of into the sewers may have leaked into the soils due the age and reported poor condition of the sewers in this section of East Aurora.

2.2: Remedial History

Oct. 1991: Odors were detected in the basement of the First Presbyterian Church. After preliminary investigations by members of the Church, the NYSDEC was notified and the incident was assigned Spill No. 9109437. Indoor air sampling conducted by the State confirmed PCE contamination within the basement area of the church. Based on this sampling, a ventilation system was installed which reduced the air contaminant levels to well below the NYSDOH guidance value for PCE in residential indoor air.

Jan. - Mar. 1992: Sanitary sewer sampling was conducted by the DEC during three separate sampling events. The highest levels of PCE contamination were detected immediately down stream of the service lateral for the Mr. C's building, indicating Mr. C's as the likely source of the contamination.

Apr. - July 1992: Environmental site assessment performed including a soil gas survey and the installation of six monitoring wells for groundwater samples. Groundwater contamination was confirmed to be migrating from the Mr. C's property into the residential area to the west.

Nov. 1993 - June 1995: Phased Remedial Investigation to determine the full nature and extent of contamination and to identify completed exposure pathways for both the environment and human health.

June 1996: As part of the on-going periodic indoor air sampling conducted by the NYSDOH, basement air samples were collected from four homes along Whaley Avenue.

Sept. 1996: Results from the June sampling were received and indicated two of the homes contained levels approaching or slightly above the NYSDOH guidance value for PCE in residential indoor air of 100 mg/m^3. NYSDOH recommends action to address indoor air in the homes on Whaley Avenue. A decision was made to install indoor air cleaners at two impacted homes as an Interim Remedial Measure (IRM).

Nov. 1996: Feasibility Study completed.

Jan 1997: Portable indoor air cleaners equipped with carbon filters are to be installed in the basements of two homes along Whaley Avenue to address indoor air contamination.

SECTION 3: CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant threat to human health and the environment, the NYSDEC has recently completed a Remedial Investigation/Feasibility Study (RI/FS).

3.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from past activities at Mr. C's Dry Cleaners.

The RI was conducted in two phases. Phase I was performed during November 1993 to June 1994. Phase II was performed during December 1994 to June 1995. A final report entitled Remedial Investigation Report - Mr. C's Dry Cleaners Superfund Site dated June 1995 has been prepared. This report describes in detail the field activities and the findings of the RI.

Additional information on the hydrogeologic properties at the site were necessary, therefore aquifer pumping tests were recommended. The pump tests were conducted during August and September, 1995. The field activities and results of the pumping tests are provided in detail in the report entitled Remedial Investigation Report Addendum A: Aquifer Testing Report - Mr. C's Dry Cleaners Superfund Site.

The Phase I RI included the following activities:

- Review of past studies and other available information.
- Quantitative soil gas survey to estimate extent of groundwater contamination.
- Selection of monitoring well locations based on results of the soil gas survey.
- Drilling and soil sampling at four deep exploratory soil borings.
- Shallow soil sampling at two locations near the suspected source area.
- Waste water and sediment sampling from sanitary sewers.

- Indoor air sampling at select locations
- Drilling, installation, and development of 12 monitoring wells.
- In situ hydraulic conductivity testing of 25 monitoring wells
- Monitoring of groundwater levels and survey of well locations and elevations.
- Groundwater sampling from 25 monitoring wells.

The Phase II RI included the following activities:

- Collection of 31 groundwater samples from specific depths using a Hydropunch® sampler and immediate on site analysis.
- Drilling, installation, and development of 6 monitoring wells based on the results of the Hydropunch® sampling.
- In situ hydraulic conductivity testing of the 6 monitoring wells.
- Monitoring of groundwater levels and survey of new monitoring wells.
- Groundwater sampling.
- Indoor air sampling at select locations.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Mr. C's Dry Cleaners site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. NYSDEC TAGM 4046 soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil. NYSDOH guidance value for PCE in residential indoor air was used to assess the risks posed by indoor air impacts resulting from contaminated groundwater.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media 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) and parts per million (ppm). For comparison purposes, SCGs are given for each media where applicable.

3.1.1 Nature of Contamination:

As described in the RI Report, soil gas, soil, groundwater and waste water samples were collected at the Site to characterize the nature and extent of contamination. The primary contaminants of concern, and those which first brought the site to the attention of the NYSDEC are volatile organic compounds (VOC). Specifically, the compound perchloroethene (PCE), also known as tetrachloroethene, has consistently been detected in all media sampled at the site. PCE naturally degrades to trichloroethylene (TCE), 1,2 Dichloroethene (1,2 DCE), 1,1 Dichloroethene (1,1 DCE), and vinyl chloride, all of which have also been detected in samples collected at the site.

VOC contamination associated with petroleum products has also been found at specific locations near the site, namely in the vicinity of the Agway property to the northwest and near the Delia car dealership. Compounds detected include benzene, toluene, ethylbenzene, and xylene. In both cases, the contamination can be attributed to known petroleum spills at the named properties. There are areas where both the compounds from the dry cleaning operation and those from the petroleum spills have mixed to create a complex groundwater contamination plume.

3.1.2 Extent of Contamination

Table 1 summarizes the extent of contamination for the contaminants of concern in the groundwater, soil and waste water from the sewers and compares the data with the proposed remedial action levels (SCGs) for the Site. The following are the media which were investigated and a summary of the findings of the investigation.

Soil

A soil gas investigation was performed immediately adjacent to the Mr. C's Dry Cleaners in the parking area, designed to identify source areas of highly contaminated soil. Results indicated that PCE concentrations were below levels that would suggest such a source, except in the area of the sewer lateral and at one location on the west side of the parking area adjacent to the shoe repair building. Therefore, soil samples were collected only at those two locations. These samples were collected to determine if a source of PCE remained above the water table. Such a source typically migrates directly downward until it reaches the water table, then is partially dissolved and moves with the regional groundwater flow. Therefore any PCE or break down product contamination found in areas other than the source would be the result of contaminant migration within the groundwater, so wide spread soil sampling was not warranted for this project.

Two soil samples were collected at the first location adjacent to the sewer lateral from soil boring SB-1 at depths of 6-8' and 8-10' below ground surface. The highest concentration of PCE was

detected at 6-8' at 48,000 ppb indicating that past leakage from the sewer lateral is the likely source of the contamination. The 8-10' sample contained 6400 ppb of PCE.

The sample analyzed from SB-2 (west side of parking area) was from 8-10' below ground surface and contained 12,000 ppb of PCE. Because the groundwater table is near 10 feet and rises and falls throughout the seasons, the concentrations of PCE in unsaturated soil are likely contaminating the soil from PCE dissolved in the groundwater as explained above.

The levels of PCE identified in the soil are well above the TAGM 4046 level for the protection of groundwater, which is 1400 ppb.

Groundwater

Groundwater exists within the glacial outwash sand and gravel deposits and within the lacustrine fine sands and silt. These two units are hydrogeologically connected yet exhibit distinctly different hydraulic properties. This groundwater is also known as the water table aquifer. It is free to rise and fall seasonally as it directly receives the portion of precipitation that infiltrates into the soil. Flow directions are relatively simple to determine through measurement of the water table in monitoring wells. Flow direction is from areas of higher water table to areas of lower water table. The outwash sand and gravel is highly variable within the study area and generally highly productive for groundwater with an average hydraulic conductivity of 8.6×10^{-3} cm/sec. This unit is encountered at approximately 10' below ground surface with a saturated thickness of 16-21'. Although residents are served with municipal water for domestic use, there are several wells in the area used for outdoor use, such as gardens and lawns, that draw water from this aquifer. Groundwater flow velocity within the outwash aquifer has been calculated to be .29-.39 ft/day.

The next deeper unit, the lacustrine fine sand and silt unit, is more uniform than the outwash unit above and is less productive for groundwater with an average hydraulic conductivity of 2.8×10^{-4} cm/sec. This unit is directly beneath the outwash unit at a depth of approximately 30 feet below ground surface and with a saturated thickness of 11-14'. Due to the lower hydraulic conductivity and lower hydraulic gradient, groundwater velocity within this unit is only .007 ft/day.

During the RI, 63 groundwater samples were collected from 40 locations across the study area and analyzed for VOCs. Three of the samples were analyzed for the complete Target Compound List (TCL) to determine if contamination other than VOCs existed in the groundwater. No other compounds of concern were identified except those associated with petroleum in the oil spill areas described above. Significant concentrations of PCE or PCE break down products were identified throughout the saturated portion of the outwash unit. PCE concentrations are generally in the 100 to 500 ppb range in the upper outwash, and at much higher concentrations at the base of the outwash, up to 8,200 ppb. Although the outwash and lacustrine units are hydraulically connected, contamination is primarily within the outwash unit, with the high concentrations extending all the

way to the base of the outwash aquifer. PCE was only detected in 3 of 8 groundwater samples collected from the lacustrine unit at much lower concentrations, ranging from 11 ppb to 460 ppb.

The groundwater contamination plume has been defined as extending from the Mr. C's Dry Cleaners building to the west in two distinct branches in the upper portion of the outwash aquifer. The primary direction is to the northwest extending across the Agway property between the vacant Energy Products building and the current Agway store. The plume crosses under Whaley Avenue, behind the Town of Aurora Public Library, continuing approximately another 300 to 400 feet to the northwest. This branch of the plume is considered the source plume, and it will be referred to as such throughout the remainder of this document. It is generally defined as the area containing greater that 1000 ppb of PCE in the groundwater. As the plume moves further from the source area, the highest concentrations of PCE are found deeper in the outwash unit, which is explained by the fact that PCE is heavier than water and tends to slowly sink in an aquifer.

The second branch of the plume extends from the source area to the southwest to slightly beyond the First Presbyterian Church. Concentrations of PCE and breakdown products in the groundwater were generally in the 100 to 300 ppb range, significantly lower than found in the source plume described above. The extent of these plumes is shown on Figure 3. Unlike the source plume described above, the contaminants within this plume are found only in the upper portion of the outwash aquifer.

Waste Water/Sanitary Sewer

Since the suspected path for PCE to have been distributed into the environment was through the sanitary sewer system, samples of the waste water were collected to determine if any residual PCE remained in the sewers, or if any current sources existed. Trace levels of PCE, less than 5 ppb, were detected in the waste water. These extremely low levels indicate that PCE likely did not remain in the sewer, and there is no current source. Other VOCs, including acetone, benzene, xylene, toluene, and chloroform were detected throughout the section of sewer system sampled. However, the low levels detected of these VOC could reasonably be expected given the commercial setting of the area, and therefore are not considered associated with the site.

There were no sediments that could be sampled for analysis in the sewers.

3.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

Based on the fact that the source plume extends under Whaley Avenue and elevated levels of PCE were found in soil gas samples collected in the Whaley Avenue area, four homes were sampled to identify any impacts to indoor air.

Table 1
Nature and Extent of Contamination

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE	FREQUENCY OF EXCEEDING SCGs	SCG (ppb)
Groundwater	Volatile Organic Compounds (VOCs)	Tetrachlorothene	1 to 8200	30/47	5
		Trichloroethene	1 to 280	16/47	5
		1,2 Dichloroethene (T)	1 to 82	18/47	5
		1,1 Dichloroethene	2 to 19	2/47	5
		Vinyl Chloride	6 to 240	3/47	2
		1,1,1 Trichloroethane	4 to 14	2/47	5
		Methylene Chloride	11 to 120	4/47	5
		Benzene	1 to 3200	14/47	5
		Toluene	2 to 740	6/47	5
		Ethylbenzene	3 to 430	5/47	5
		Xylene	6 to 1900	5/47	5
Soil		Tetrachloroethene	6400 to 48,000	3/3	1400

The need for an IRM was identified in September 1996 by the NYSDOH based upon elevated concentration of PCE in indoor air from two of the four houses sampled on Whaley Avenue. After consideration of the available options, it was decided to provide indoor air filtration units at the two impacted homes. These homes have been impacted by PCE vapors volatilizing from the water table into the basements at concentration levels above the NYSDOH guidance of 100 mg/m^3, creating a human exposure pathway due to contaminated indoor air. Portable room air cleaners equipped with carbon filtration systems have been installed in the basements to remove the PCE, as well as any other VOCs such as the potential PCE break down products, from the air in the basement. Since the basement is the point of entry for the contaminated air, these units will be effective at eliminating the exposure pathway throughout the homes.

Periodic monitoring of the indoor air will continue. The air cleaners will remain in place until the proposed remedy has reduced the groundwater contaminant levels to the point that impacts to indoor air no longer occur. Several rounds of confirmatory indoor air sampling will be conducted prior to any decision to remove the air cleaners.

3.3 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 exposures can be found in Section 6 of the RI Report and summarized in Section 1.3.6 of the Feasibility Study (FS).

An exposure pathway is how an individual may come into 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 Completed pathways which are known to or may exist at the site include the incidental ingestion or dermal contact of groundwater or the inhalation of vapor phase chemicals from the groundwater. There is also the potential for utility/construction workers be exposed either though incidental ingestion or dermal contact with contaminated soils, as well as the potential for anyone to be exposed to vapor phase chemicals volatilizing from contaminated soil. Table 2 provides a summary of the pathways considered complete for the site.

The groundwater in the area is classified by the NYSDEC as GA (best usage, drinking water), although not currently used as such. While all residents in the area are served with municipal water from the Erie County Water Authority as a source of potable water, several residents in the area currently use water from this aquifer for outdoor activities such as gardening or washing automobiles. Low level contamination has been found in some of these wells and the property owners have been advised by the NYSDOH regarding appropriate precautions.

TABLE 2

MR. C CLEANERS SUPERFUND SITE
EXPOSURE PATHWAY ANALYSIS

IDENTIFICATION OF PATHWAYS CONSIDERED COMPLETE

Exposure Medium/ Exposure Route	Site Occupants and Visitors	Utility Workers/ Construction Workers	Off-Site Population[1]
Groundwater:			
Incidental Ingestion	-	A	C, L
Dermal Contact	-	A	C, L
Inhalation of Vapor Phase Chemicals	A	A	C, L
Subsurface Soil:			
Incidental Ingestion	-	A	-
Dermal Contact	-	A	-
Inhalation of Vapor Phase Chemicals	A	A	C, L

Notes:

A = *Exposure to adults only*

C = *Exposure in children may be significantly greater than in adults*

L = *Lifetime Exposure*

(1) *Indicates adjacent commercial occupants, adjacent visitors and off-site residents.*

\- = *Exposure in this population via this route is not likely to occur.*

Another potential route of exposure exists for site or utility workers who may be exposed during excavation or subsurface maintenance activities in the area of the Mr. C's building, via inhalation of vapors or airborne particulates while working in the area.

3.4 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The RI and previous investigations did not identify any environmental exposure pathways for the environmental resources in close proximity to the site. The nearest surface water body is Tannery Brook located approximately 1/4 mile north of the site. Tannery Brook receives the surface water drainage from the study area, eventually discharging into Cazenovia Creek to the southwest, which in turn discharges to Lake Erie approximately 12.5 miles west of the site. Cazenovia Creek is located approximately 1 mile south of the site. Based on the results of the RI, groundwater is the only potential ecological exposure pathway associated with the site. The defined groundwater contaminant plume indicates that contamination is not reaching either surface water body and therefore there are no impacts to Tannery Brook or Cazenovia Creek from the site have been identified at this time.

SECTION 4: ENFORCEMENT STATUS

The Potential Responsible Party (PRP) for the site, documented to date, include: Mr C's Cleaners, currently owned by Mr. John Crawford.

The PRP was unable 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. The PRP is subject to legal actions by the State for recovery of all response costs the State has incurred. If an agreement cannot be reached with the PRPs, the NYSDEC will evaluate the site for further action under the State Superfund

.

SECTION 5: 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 should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Mitigate human health risk by reducing the potential for inhalation of vapors in on-site and off-site basements.
- Mitigate the source area of the contaminant plume to prevent further migration of the chlorinated volatile organic compounds and reduce volatilization into adjacent basements.
- Achieve NYSDEC groundwater quality standards to the extent practical.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should 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 Mr. C's Dry Cleaners Site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled "Feasibility Study Report - Mr. C's Dry Cleaners Site", November 1996.

The Risk Assessment determined that potential and current exposures routes to contaminants associated with the site are directly attributable to the distribution of contaminated groundwater or the suspected source located under the building and sewer lateral. Therefore, during the development of the RAOs, it was determined that the RAOs would be achieved through remediation of the groundwater and the suspected source.

Two scenarios for the mitigation of groundwater contamination were identified that would meet the RAOs. Scenario 1 would actively remediate that portion of the groundwater contamination plume that exhibits the highest concentration of PCE (i.e., the source plume), generally concentrations greater than 1,000 ppb, while PCE concentrations less than 1,000 ppb would disperse and degrade naturally by actively eliminating further contributions of contaminants from the source area.

Scenario 2 would actively remediate PCE contaminated groundwater in the source plume area as well as the portion of the plume with concentrations less than 1,000 ppb. Groundwater remedial actions would be located to address all areas that have currently been identified as having completed exposure pathways, or where exposure had been identified in the past. This Scenario includes the source plume, the Presbyterian Church, Jackson's Bowling Alley, Whaley Avenue residences, and Fillmore Avenue irrigation wells.

It was assumed that a groundwater extraction and treatment system would be implemented for either scenario to serve as a comparison. Both scenarios were evaluated using the seven criteria

described below in section 7.3 Evaluation of Remedial Alternatives. When the two scenarios were compared, it was determined that Scenario 2 would result in only a 9% increase in VOC mass removal rates while at the same time increasing the potential for exposure during construction, significant increase in costs for construction and operation, and reduction in storm sewer capacity. Scenario 1, remediation of the source plume, will fulfill the requirements of the RAOs with significantly less disturbance to the neighborhood and at a much lower cost. It is also a concern that the additional wells outside of the source plume under Scenario 2 could draw contaminated groundwater from the source plume to areas, resulting in further distribution of contamination rather than the desired removal. Therefore only Scenario 1 was carried through the remainder of the FS.

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to implement 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.

6.1: Description of Alternatives

It should be noted that a presumptive remedy approach to developing the remedial alternatives below has been part of the ongoing process since the end of the first phase of the RI. At that point in the project, it was recognized that a groundwater treatment remedy would be necessary to address the contamination at the site, with the possibility of needing to address the source if it could be identified. Sufficient evidence was collected that suggests a source of PCE does exist above the groundwater table beneath the Mr. C's Dry Cleaners building that requires remediation. Due to the moderately dense residential/light commercial setting of the site and surrounding area, and due to the nature and extent of contamination within a highly conductive hydrogeologic setting, most of the remedial alternatives typically evaluated for such a site could logically be eliminated from the screening process without a formal evaluation. The elimination of such alternatives are generally based on a high degree of difficulty to implement, from a construction or public safety standpoint, significant negative impacts to the community or environment, or simply due to excessive costs when other options are available that will accomplish the same goal.

Excavation of contaminated soil from beneath the Mr. C's Dry Cleaners building had been considered an effective alternative to remove the suspected source. However, this would involve partial demolition and temporary shut down of the Mr. C's Dry Cleaners business and high levels of chemical vapors from the volatilization of PCE could occur during excavation, requiring engineering controls to protect the community. Since other viable alternatives, as described below, were available to address this problem without significant impacts to the business and community, excavation was not considered in the FS.

The remedial alternatives described below are intended to address the presence of contaminated soils acting as a source of groundwater contamination beneath the building and the contaminated groundwater at the site.

All remedial alternatives below, except the no action, will also effectively remediate the petroleum compounds in areas where the two contaminant plumes have mixed.

Alternative 1: No Further Action

Present Worth:	$ 241,500
Capital Cost:	$ 0
Annual O&M:	$ 19,700

This alternative recognizes remediation of the site conducted under a previously completed IRMs. Only continued monitoring is necessary to evaluate the effectiveness of the remediation completed under the IRM. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: In-situ Treatment of Groundwater with Replacement of Sewer Lateral

Present Worth:	$ 1,244,000[1]
Capital Cost:	$ 489,600
Annual O&M:	$ 106,500
Time to Implement:	6-12 months

1 This present worth reflects only 10 years operation based on past performance of in-situ treatment systems.

This alternative would involve the installation of up to 8 in-situ air stripping wells along the axis of the source plume. The wells would be installed to the base of the outwash unit with spacing designed to create an overlap of the zones of influence, based on pump test data. The contaminants would be removed by passing large volumes of air through the water within the well, causing an aggressive aeration This would create an air stripping system within the well, forcing VOCs from the water into a vapor phase, much in the same manner as a typical air stripper. The large volume of air would create circulation of the groundwater from the aquifer into the well. A separate screen in the vadose zone (above the water table) would be incorporated in the design of the well to allow the rising water to discharge back into the soil just above the water table and ultimately back into the aquifer. An inward hydraulic gradient to the well would be created during this process, thereby capturing and treating the water out to a pre-defined distance from the well. . The VOCs would be removed in vapor phase under a vacuum applied to the top of the well, then sent to a vapor phase activated carbon filter where they are adsorbed and trapped on the carbon. The spent carbon would be sent off site for regeneration where the VOCs are ultimately destroyed.

Activated carbon was selected for its effectiveness, reliability, low maintenance, and availability as treatment for VOCs. However it is not as effective for vinyl chloride as it is for all the other VOCs found at the site. VC is a break down product of PCE in certain areas of the source plume, and is expected to be at relatively low concentrations and decrease with time. It was determined in the FS that the size of the carbon system (amount of carbon) required to address all VOCs at the site would be of sufficient size to effectively remove VC as well. This will be further evaluated during the remedial design and closely monitored during the actual operation of the remedial system. If at any time, it is determined that the activated carbon would not or is not effectively addressing the VC, the alternative treatment of Advanced Oxidation Process (AOP) can easily be retrofitted into the remedy.

The second component of this alternative would involve the replacement of the existing sewer lateral that connects the Mr. C's Dry Cleaners building to the sanitary sewer line under Main Street. As described earlier in this document, it is believed the majority of contamination entered the environment through fractures in this sewer lateral. The suspected source would remain contained in place under the building slab for this alternative.

Alternative 3: In-situ Treatment of Groundwater with System Expansion to Remediate Source Area Soil

Present Worth:	$1,251,675[1]
Capital Cost:	$ 485,425
Annual O&M:	$ 108,265
Time to Implement:	6-12 months

1 This present worth reflects only 10 years operation based on past performance of in-situ treatment systems.

This alternative would be the same as Alternative 2 for addressing the groundwater source plume. It would also, however, include an expansion of the in-situ treatment system with the addition of another air stripping well adjacent to the source area under the building. Depending on the specific technology selected to accomplish the in-situ air stripping, the suspected source under the building would be removed by one of two processes. One process would involve routing the discharge water from the well to under the Mr. C's Dry Cleaners building to flush the PCE contaminated soil, mobilizing the PCE down to water table and where it would be immediately collected back into the air stripping well, where the same process described above would remove the contamination. The other process would utilize soil vapor extraction, accomplished by the vacuum in the vadose (unsaturated) zone created by the extraction well. Because PCE is a volatile compound, it is readily removed from sandy soils using an applied vacuum. Under this alternative, the suspected source beneath the building would be treated.

Alternative 4: Groundwater Extraction with Air Stripping/AOP and Replacement of Sewer Lateral

Present Worth:	$ 1,612,000
Capital Cost:	$ 843,400
Annual O&M:	$ 139,200
Time to Implement:	12-18 months

This alternative would include the installation of up to nine (9) conventional groundwater extraction wells located along the axis of the source plume. Groundwater would be pumped at a combined rate of approximately 100 gallons per minute to a single air stripper to be located on the Mr. C's Dry Cleaners property. The air stripper would be of sufficient size to treat contaminated groundwater to acceptable discharge limits for surface water since the treated water will be discharged to the Whaley Avenue storm sewer, which empties into Tannery Brook. Air stripping would force the VOCs from the water into vapor phase. The vapors would be collected and treated using a system known as Advanced Oxidation Process (AOP). This system uses ultraviolet (UV) light and hydrogen peroxide to oxidize organic contaminants down to non-toxic compounds.
The sewer lateral replacement component of this alternative would be the same as described for Alternative 2.

Alternative 5: Groundwater Extraction with Air Stripping/AOP with One In-situ Treatment Well for Source Area Soils

Present Worth:	$ 1,619,675
Capital Cost:	$ 839,225
Annual O&M:	$ 140,965
Time to Implement:	12 months

This alternative would be a combination of the groundwater extraction system described in Alternative 4 and the single in-situ air stripping well adjacent to the source area to remediate contaminated soil as described in Alternative 3, except that the air discharge could be directed to the AOP unit for treatment.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR 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 contained in the Feasibility Study.

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

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The SCGs of concern in this instance are the contravention of the groundwater standard (6NYCCR700-705) and the NYSDEC TAGM 4046, Soil Cleanup Guidance for the protection of groundwater, and the NYSDOH guidance value for PCE in residential indoor air.

All alternatives except alternative 1, No Action, would significantly reduce contaminant levels in groundwater, and would be expected to achieve groundwater standards over time as the source is removed and the remaining contaminants attenuate. However, a waiver of the groundwater standards in the impacted would be necessary until such attenuation has occurred. Alternatives 3 and 5 would comply with the groundwater standard and the soil cleanup guidance both on and off site by removing the source of contamination from the environment as well as removing the contaminated groundwater that is impacting public health. Alternatives 2 and 4 would only comply with the groundwater standard by removing the contaminated groundwater on and off site, however the suspected source would remain under the Mr. C's Dry Cleaners building indefinitely.

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

All alternatives except no action would be protective of public health. However, if at some time in the future the Mr. C's Dry Cleaners building were to be demolished and new construction occur on the site, exposure to the PCE left under the building with alternatives 2 and 4 would pose a threat. Alternatives 3 and 5 would be most protective since they would provide treatment of the groundwater and provide for removal of the PCE from under the building.

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.

All alternatives except no action would result in some increased risks due to the installation of wells in highly contaminated groundwater, which could result in vapor emissions during drilling. These alternatives also include buried piping for the conveyance of water or air to the corresponding treatment area. The in-situ treatment wells for alternative 2 and 3 also require shallow excavation at each location to create an infiltration gallery, therefore there is more potential vapor emissions. All these potential risks to the community and workers are routinely easily addressed with proper precautions.

Alternatives 2 and 3 are predicted to remediate groundwater in approximately 10 years. Alternatives 3 and 5 are predicted to remediate groundwater in approximately 30 years.

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.

Alternative 1 would not be effective in the long term. Alternative 3 and 5 would result in the greatest degree of long term effectiveness and permanence since the source and the groundwater contamination would be removed from the site. It is estimated that alternative 3 would accomplish this in approximately one third of the time that alternative 5 would take. Alternative 2 and 4 would also provide a high degree of long term effectiveness by removing the contaminated groundwater, but would not eliminate the suspected source material under the building. The suspected source material under the building would continue to impact groundwater as seasonal fluctuations in the water table rise to contact the PCE. Alternatives 2 and 3 would remediate the groundwater plume in the shortest time based on past performance of the in-situ treatment.

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

Alternative 1 would not reduce the TMV of the waste present at the site. Alternative 3 and 5 would be the most effective at attaining all three since contamination in the suspected source material and groundwater would be collected and removed from the site media. Alternatives 2 and 4 would be effective at attaining all three for contaminated groundwater, however they would not address the toxicity, mobility or volume of the suspected source area under the building.

6. Implementability. The technical and administrative feasibility of implementing each alternative are 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 material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc..

Alternative 1, would not require any action, therefore, this is not a concern. Alternative 4 would result in the greatest degree of disruption to the site and the existing business and require a significant degree of coordination and administrative oversight to implement. Alternative 5 would result in a slightly less degree of difficulty, both largely due to water handling requirements for collection, treatment and discharge to surface water of up to 100 gallons per minute. A monitoring plan would be necessary to ensure the effluent criteria continued to be met. Alternative 4 has the added complication of installing the new sewer lateral, including the actual construction and

obtaining easements to cross private property to connect to the Whaley Avenue sewer main. Alternatives 2 and 4 are considerably less complicated since the only waste stream to handle is contaminated air from the in-situ air stripping wells. Those wells would be connected with piping to one treatment location, and there would be no water to treat and discharge. Alternative 2 would be slightly more difficult, again due to the installation of the new sewer lateral. Therefore, of the proposed remedial alternatives, Alternative 3 is the most implementable remedy.

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 3.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon 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 are evaluated. A " Responsiveness Summary" will be prepared that describes public comments received and how the Department will address the concerns raised. If the final remedy selected differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, and public comment, the NYSDEC has selected **Alternative 3: In-situ Treatment of Groundwater with System Expansion to Remediate Source Area Soil** as the remedy for this site.

This selection is based upon the evaluation of the five alternatives developed for the site. Alternative 3 would be protective of human health and attain the RAOs through the removal of PCE from the suspected source area and the restoration of the aquifer on and off site. Operation of the room air cleaners as an IRM would no longer be necessary once the aquifer is restored to levels that will no longer impact indoor air. This alternative would also be protective of the environment by eliminating any future migration of the groundwater contamination plume toward Tannery Brook or Cazenovia Creek. Alternative 3 would be effective in the short term presenting potential risk only during the installation of the wells, which can easily be addressed with the proper precautions. This alternative would provide a high degree of long term effectiveness and permanence with regard to human exposure and would also be most effective in addressing the environmental contamination by removing the source and treating the groundwater plume. No implementation problems would be expected for this alternative. Implementation of this

alternative would result in reclassification of this site, on the New York State Registry of Inactive Hazardous Waste Disposal Sites, to a Class 4, indicating that the site had been properly closed and only continued monitoring would be required. Upon completion of the groundwater treatment with no further impacts to indoor air contamination, the site would be evaluated for delisting from the Registry.

The estimated present worth cost to implement the remedy would be $1,251,675.00. The cost to construct the remedy is estimated to be $485,425 and the estimated average annual operation and maintenance cost, including monitoring, is estimated to be $108,265/year over the next ten years.

The elements of the selected remedy would be:

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 would be resolved.

2. Installation of up to 8 in-situ air stripping wells along the axis of the source plume, associated piping necessary to convey the VOC vapors drawn from the wells to the carbon treatment location, and the installation of one additional in-situ well adjacent to the Mr. C's building to remove the suspected source material. The conceptual plan for this system is shown on Figure 4.

3. The stripping wells and air treatment system would be operated, maintained and monitored. The system would remain in operation until the identified exposure pathways have been eliminated and the contamination in the source plume have been reduced to levels consistent with groundwater outside the source plume.

4. Continued operation and maintenance of the indoor air filters, including periodic monitoring.

5. Continued monitoring of residential irrigation wells.

6. A monitoring program would be instituted to allow the effectiveness of the selected remedy to be monitored and would be a component of the operation and maintenance for the site.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

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

- 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 Sheet was sent to the mailing list in November 1993 announcing the scheduling of a public meeting to discuss the planned Remedial Investigation for the site.

- Public meeting held on November 18, 1993 to present the RI Work Plan and to answer citizen's questions regarding the project.

- Fact Sheet was sent to the mailing list in October 1994 announcing the scheduling of a public availability session to discuss the findings of the first phase of the RI.

- Public availability session held on October 20, 1994 to present and discuss the findings of the first phase RI.

- Fact Sheet was sent to the mailing list in July 1995 informing the public of recent findings in the second phase RI and to announce the need for additional field activities for the completion of the second phase RI.

- Fact Sheet was sent to the mailing list in September 1995 announcing the findings of the second phase RI and the scheduling of a public availability session to be held in October 1995

- Public availability session held on October 5, 1995 to discuss the findings of the second phase RI and to inform public of the upcoming FS to be conducted at the site.

- In addition to the CP correspondence and events listed above , the NYSDOH has sent letters to residents informing them of monitoring data generated from samples collected on their property as it became available. If their property had been impacted by contaminants from the site, they were advised accordingly with regard to appropriate precautions.

- A Fact Sheet was sent to the mailing list in January 1997 announcing the availability of the PRAP and to schedule a public meeting to discuss the PRAP.

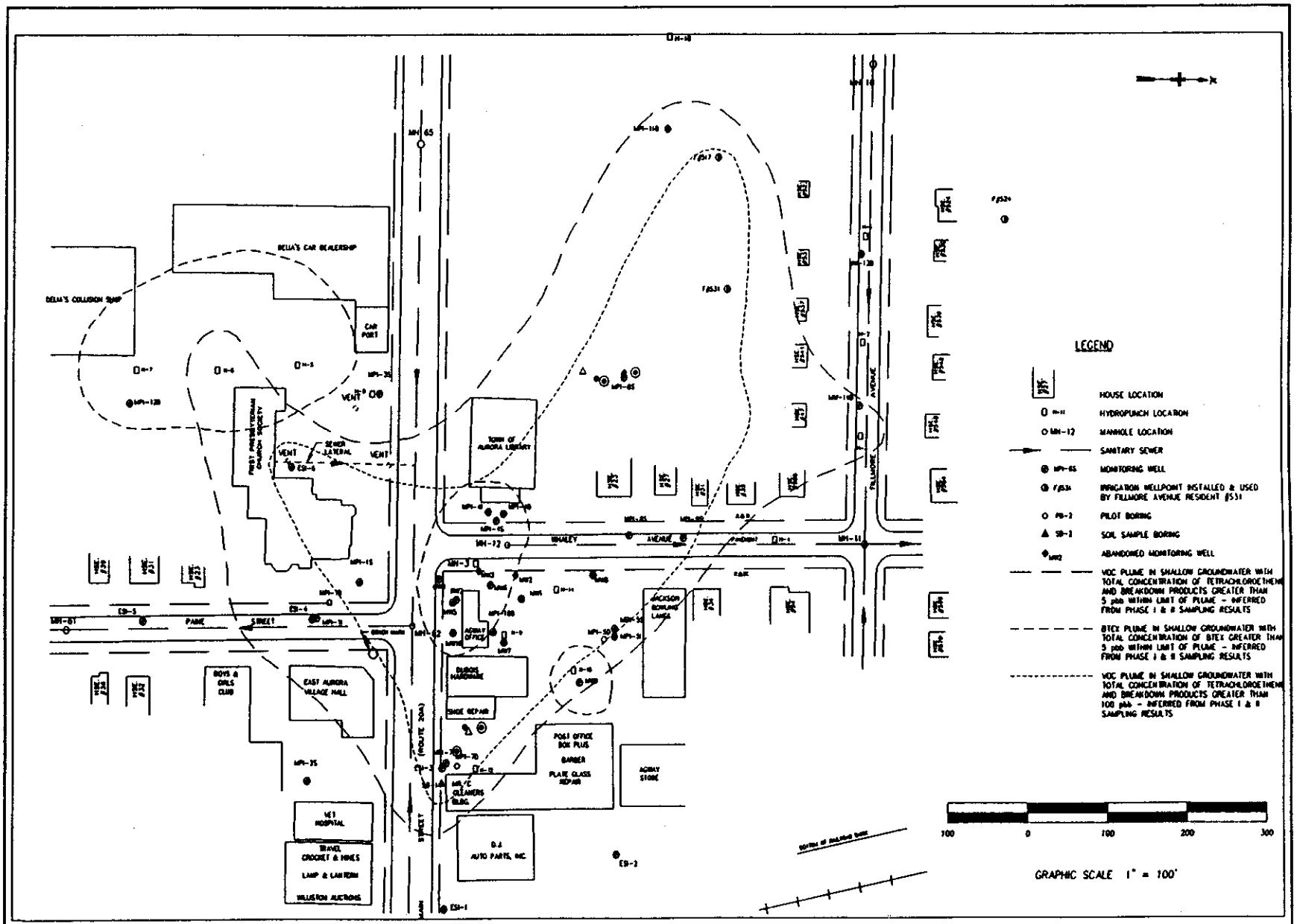
- A public meeting was held on February 11, 1997 to present the PRAP and discuss and answer questions regarding the proposed remedy and the RI/FS.

- A Responsiveness Summary was prepared and made available to the public to address the comments receive during the public comment period for the PRAP

Table 3
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
Alternative 1: No Further Action	$0	$19,700	$241,500
Alternative 2: In-situ Treatment of Groundwater with Replacement of Sewer Lateral	$489,600	$106,500 (10 years)	$1,244,000
Alternative 3: In-situ Treatment of Groundwater with System Expansion to Remediate Source Area Soil	$485,425	$108,265 (10 years)	$1,251,675
Alternative 4: Groundwater Extraction with Air Stripping/AOP and Replacement of Sewer Lateral	$843,400	$139,200	$1,612,000
Alternative 5: Groundwater Extraction with Air Stripping/AOP with One In-situ Treatment Well for Source Area Soils	$839,225	$140,965	$1,619,675

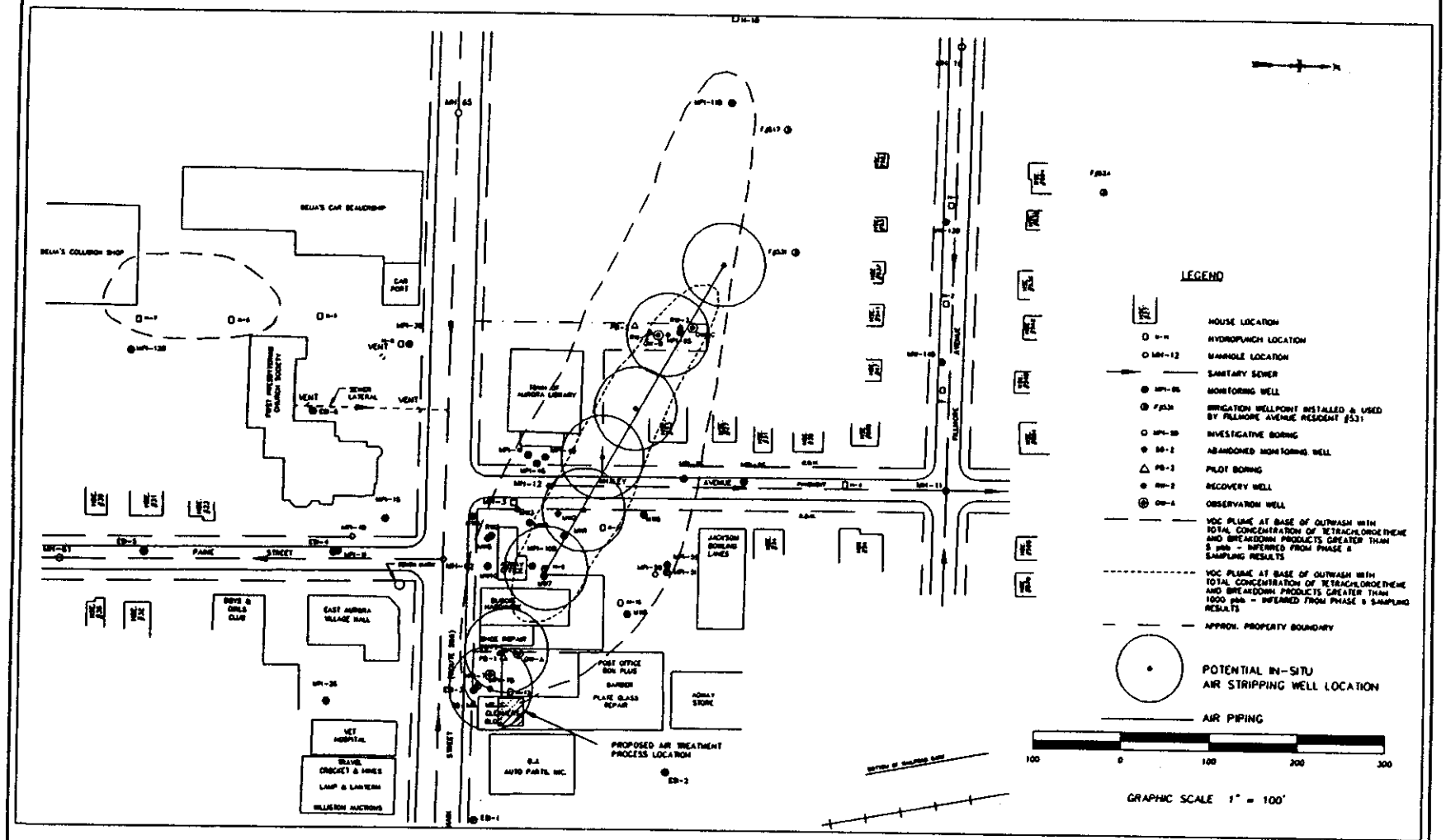
Annual O&M reflects a 30 year period unless otherwise indicated.



MR. C CLEANERS
FEASIBILITY STUDY
SHALLOW TETRACHLOROETHENE
AND BTEX PLUMES

NYSDEC NOVEMBER 1996
DIVISION OF HAZARDOUS WASTE REMEDIATION

Figure 3



MR. C CLEANERS
FEASIBILITY STUDY
SOURCE PLUME CONTROL
USING IN-SITU AIR STRIPPING TECHNOLOGY

NYSDEC NOVEMBER 1996
DIVISION OF HAZARDOUS WASTE REMEDIATION

Appendix A

RESPONSIVENESS SUMMARY

Mr. C's Dry Cleaners Site
Proposed Remedial Action Plan
East Aurora (V), Erie County
Site No. 9-15-157

The Proposed Remedial Action Plan (PRAP) for the Mr. C's Dry Cleaners Site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on January 31, 1996. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and sediment at the Mr. C's Dry Cleaners Site. The preferred remedy is groundwater treatment using in-situ air stripping technology combined with source removal through flushing or soil vapor extraction.

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 Tuesday, February 11, 1997 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. No written comments were received during the public comment period for the PRAP which closed on March 6, 1997.

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

COMMENT 1: What is the volume, how much is in the ground?

RESPONSE 1: It is unlikely that we will ever know exactly how much perchloroethene (PCE) has been released into the ground. A general estimate might be five to ten gallons. It is important to note that the selected remedy will remove the PCE from the source area and there is no further discharge of PCE to the ground due to the installation of new dry cleaning equipment.

COMMENT 2: What happens when you stir everything up, will you be drawing it back toward the church?

RESPONSE 2: The remedy will address the area referred to as the source plume, which extends from the Mr. C's building northwest to behind the Town of Aurora Public Library. Extraction wells which will be positioned along this plume will have areas of influence of approximately 100 feet in diameter. This will not influence the area around the church and therefore is not expected to draw any contaminated groundwater toward the church.

COMMENT 3: We would like to use the church rooms, how often will you be monitoring the rooms and for how long?

RESPONSE 3: The indoor air quality in the church as been tested numerous times since the problem was discovered. As early as 1991 the tetrachloroethene concentration was below the NYSDOH air quality guideline of 100 ug/m3. Recent sampling data in 1994, 1995 and 1996 indicate that the concentrations of tetrachloroethene were at or near what could be expected (background) for indoor air. Church officials were informed in writing of our findings and were advised that the rooms in the church basement could be used. DOH/DEC plan to sample the church twice a year after the remediation program begins. How long the indoor air quality monitoring program continues will depend on the analysis of the progress of the remediation effort.

COMMENT 4: How much air and at what pressure will the air be in the wells?

RESPONSE 4: The volume and pressure of the air used in the wells will depend on the specific process selected. Generally, a relatively high volume of air is injected at low pressures to create aggressive bubbling of the water within the well. One of the technologies being considered for in-situ air stripping actually uses a vacuum rather than pressurized air.

COMMENT 5: How noisy will the treatment unit be?

RESPONSE 5: The exact treatment unit has not yet been selected, however noise suppression will be a consideration. The unit will be housed either in the Mr. C's building or shed to be constructed on the property. In either case, enough insulation will be placed along the walls so that the system should not be heard unless standing immediately adjacent to the building.

COMMENT 6: The groundwater under the plume is it a stream or a pool of water?

RESPONSE 6: The contamination is dissolved within the groundwater known as the plume. Groundwater exists beneath the site within the pore spaces between the

grains of sand and gravel. In this setting, there are no actual pools or streams, just saturated soil. The groundwater moves very slowly around the grains of soil as a whole, carrying with it any contaminants that have been dissolved at the same slow pace..

COMMENT 7: How much has the contamination decreased in the plume since it has been identified?

RESPONSE 7: Based on numerous sampling events, the contamination levels appear to be stable. This will most likely be the case until the remedy is in place actively removing the contaminant.

COMMENT 8: The PRAP says discharge occurred 4 or 5 years ago, I thought it had happened in the 1970's?

RESPONSE 8: Two separate mechanisms of release are believed to have occurred. One is that filters from the dry cleaning machines had been disposed of in a dumpster in the parking area over extended periods of time, which may have resulted in PCE leaking from them onto the ground. This may have occurred at anytime since the property has been used as a dry cleaning facility, back to the late 1960's or early 1970's. The other mechanism believed to have occurred involves discharge of a concentrated volume of PCE to the sewer which leaked under the building in the early 1990's during an equipment change over.

Both of these mechanisms are theories that are supported by the data collected during the RI.

COMMENT 9: Can you tell us what the side affects are from each of these contaminants?

RESPONSE 9: The primary contaminant at this site is tetrachloroethene. Tetrachloroethene (also called tetrachloroethylene or perchloroethylene) is a colorless man-made liquid used as a solvent for dry cleaning fabrics, for removing grease from metal, and as an intermediate (building block) in the manufacture of the chemicals . It is found in some consumer products such as paint and spot removers, water repellents, silicone lubricants, adhesives and wood cleaners.

Tetrachloroethene causes cancer in laboratory animals exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in people who are exposed to lower levels over long periods of time. Whether or not

tetrachloroethene causes cancer in humans is unknown. People exposed to large amounts of this chemical in the workplace or from hobbies have had nervous system damage. Exposure to high concentrations of tetrachloroethene has also caused liver and kidney damage in laboratory animals. For further information on this chemical or any other chemical you can call Mr. Cameron O'Connor of the New York State Department of Health at 847-4502.

COMMENT 10: Is there a way for me to find out what the risk of exposure is to me?

RESPONSE 10: See response 9.

COMMENT 11: Some of the homes still show contamination, is there a way to tell what levels the people living there were exposed to in the past?

RESPONSE 11: Recent (1996) indoor air sampling data indicate that the basement air quality in one home contained a concentration of tetrachloroethene that equaled the New York State Department of Health air quality guideline of 100 mg/m3. The sampling data for samples taken in the upstairs living area was below this guideline. In another home the air quality in a basement was below the indoor air guideline; however, it was high enough to indicate an adverse impact. There is no way that we can determine what levels may have occurred in the past.

COMMENT 12: Who is the Doctor those people should contact?

RESPONSE 12: You or your physician can call or write to Mr. Cameron O'Connor, New York State Department of Health, 584 Delaware Ave., Buffalo, New York 14202, (847-4502). Mr. O'Connor will forward any information to the appropriate person within New York State Department of Health that can assist you.

COMMENT 13: What kind of measurements will you use to see if the remediation is working?

RESPONSE 13: Several measurements will be made as part of the operation and maintenance of the remedial system. First, additional monitoring wells will be installed near the extraction wells for the direct measurement of the area of influence. These measurements will either be groundwater elevations or dissolved oxygen within the groundwater, depending on the system. Secondly, groundwater samples will be collected periodically to determine contaminant level trends, which should be decreasing over time if the

remedy is working. In the event that such a decreasing trend is not occurring, additional remedial measures will be incorporated. Thirdly, indoor air monitoring will continue to determine contaminant level trends, which should also be decreasing as the groundwater contamination decreases.

COMMENT 14: Has this remedy been used any place else in New York State? Are you familiar with other sites where this kind of remediation is in operation in other States?

RESPONSE 14: A similar remedy has not yet been implemented elsewhere in the state for groundwater contaminated with hazardous waste, however it has been selected at another site and is scheduled for implementation. This technology has also been used in the Oil Spills program. Data generated by the USEPA and the vendors that have developed the technology indicate that the remedy will be effective in this specific geologic and contaminant condition. Variations have been used at numerous sites across the country and Europe.

COMMENT 15: Is the evaluation of the success of the remediation based solely on the monitoring wells?

RESPONSE 15: The success of the remediation is based on its effectiveness in achieving the Remedial Action Objectives (RAOs). As described above (Response 13), this will be monitored through groundwater and indoor air sampling on a periodic basis.

COMMENT 16: Is there a better than 50/50 probability that the remediation will work?

RESPONSE 16: The Feasibility Study is conducted to evaluate several remedial alternatives to address the contamination at the site. An alternative is selected based on the seven criteria listed in the PRAP, which collectively favor the alternative that will be most effective for achieving the RAOs. While there is no way to actually place odds on whether or not the remedy will work, it is fully expected that the selected remedy will be effective. The selected alternative contains an extensive monitoring program to continually track the effectiveness of the remedy. If for some unforeseen circumstance it is not performing as expected, then additional alternatives or enhancements will be implemented to make certain the RAOs are achieved. While this is a new technology, having limited operating installations, based on the research performed it appears to be a very good match for this site and therefore we feel there is a high probability for success. If the NYSDEC were not confident in the remedial alternative's ability to succeed, it would

not have been selected.

COMMENT 17: When do you anticipate starting work?

RESPONSE 17: Assuming the Record of Decision (ROD) is signed by the end of March as currently planned, a realistic estimate of when construction could be expected to begin would be late Spring or Summer of 1998.

COMMENT 18: Who put in the air cleaners in the homes?

RESPONSE 18: The air cleaner units were provided by the NYSDEC DER as an IRM in response to the identified presence of contaminants above action levels.

COMMENT 19: We put in an air treatment system ourselves, can I recover my cost?

RESPONSE 19: If a cost or other damage has resulted from the contamination attributable to the site, the impacted party can pursue the responsible party(ies) for restitution. The State has no mechanism for reimbursement of costs incurred by a party impacted by the site.

COMMENT 20: When you mention Site owner funded, who are you talking about as the site owner?

RESPONSE 20: The current owner of Mr. C's Dry Cleaners

COMMENT 21: Could the contamination have happened years ago?

RESPONSE 21: Yes, it may never be known for certain the exact mechanism or timing of the release. (Also see response 8 above).

COMMENT 22: If there was a release before the changeover, could there have been a container removed, or some in ground storage in a tank that leaked?

RESPONSE 22: Soil gas sampling was conducted in the parking area to investigate the possibility of such an underground storage or discharge tank. The data indicated that no such tank is or apparently ever was present.

COMMENT 23: Is there going to any long term health monitoring?

RESPONSE 23: At this time no long term health monitoring or health studies are planned.

COMMENT 24:. The classification states "threat to the public health", don't they consider this a health risk?

RESPONSE 24: The Class 2 classification for this is based on the potential threat to public health if the problem was not remediated and subsurface conditions were allowed to remain as they exist. There could be the potential for further impact to the indoor air quality in residential areas if no remedial action were undertaken.

COMMENT 25: You keep talking about drinking water but I haven't heard anything about air contamination?

RESPONSE 25: The indoor air contamination originates from the contaminated groundwater. The references to groundwater in this discussion were made to simplify the explanation regarding the origin and extent of indoor air contamination.

COMMENT 26: The one home on Whaley only had the upstairs tested, not the basement?

RESPONSE 26: Homes on Whaley Avenue were first sampled in the basements in all cases. Based on the results of that sampling, it was determined by the DOH that indoor air be sampled again at one of the homes, both from the basement and the upstairs living area.

COMMENT 27: Who makes the final decision on what will be done?

RESPONSE 27: The final decision on this remedy will be made in the Record of Decision or ROD, which is a document signed by the Director of the Division of Environmental Remediation. The PRAP which was presented at the public meeting and has been available to the public for review is essentially a draft of the ROD.

COMMENT 28: What is the probability of the local residents having to shoulder some of the cost?

RESPONSE 28: The local residents will not be required to assume the cost of this remedy. If there is not a viable PRP to fund the implementation of the selected remedy, the State will design and construct it utilizing funding provided by the 1986 Environmental Quality Bond Act, or as it is commonly known, the State Superfund.

COMMENT 29:. If there should be a second blower, would the noise be a factor in the decision?

RESPONSE 29: Yes, the same as described in response 5.

COMMENT 30:. How big are the manholes?

RESPONSE 30: Depending on the vendor selected, the manholes could be between one to two feet in diameter.

COMMENT 31: Will trees have to be cut down to install the wells?

RESPONSE 31: It is possible some small trees or brush will need to be cleared to get the necessary equipment in place to drill the wells. However there is enough flexibility for the exact placement of the wells so that the actual taking of mature trees will be unlikely. The State will work with property owners to avoid any inconvenience, including cutting of trees, to the extent possible

COMMENT 32:. The Fact Sheet states milligrams, shouldn't it be micrograms for the level of highest level of contamination identified in the source plume.

RESPONSE 32: Yes, that was a typographical error. The correct units of concentration should be micrograms per liter (ug/l) in this case and as presented in the PRAP and the RI/FS reports for the site, which are available in the document repositories.

COMMENT 33:. Do you have any additional information about the remedial technology you could give me so that I could make intelligent comments about the remediation?

RESPONSE 33: The Feasibility Study presents a significant level of detail with regard to the selection process and description of the remedy. The PRAP is essentially a summary of the Feasibility Study. This is the best place to seek additional information.

However, please realize the primary input that the DEC/DOH hopes to receive from the public in this process relates to their concerns regarding impacts to the neighborhood or their lifestyles when the remedy is implemented.

COMMENT 34: Why does it take so long to remediate a site?

RESPONSE 34: From a technical standpoint, this type of remedy relies in part on the natural circulation of groundwater, which as described above, is a very slow process. Once the system is in place, it is expected to take approximately 10 years to remediate the site. From an administrative standpoint, there is a significant amount of work to be done before the actual implementation of the remedy. This includes a range of tasks from resolution of legal issues to performing the engineering design of the remedial system, all of which could take one to two years.

COMMENT 35:. If the contamination has moved this far in five years, how much further will it migrate in the additional two years before the remedy is in operation?

RESPONSE 35: Groundwater monitoring indicates the plume has generally reached equilibrium. Measurements indicate that groundwater flow slows significantly in the area to the northwest of the Library, the same area defined as the end of the source plume. It is anticipated the plume will not migrate significantly beyond its current position, however additional monitoring will be conducted during the design to determine this is the case. Modifications will be incorporated in the design as necessary if the plume has migrated .

COMMENT 36:. With regard to other ways to address this problem, can we assume that there are no chemical additives that will fix the problem; or, can you pump water into the plume to dilute it?

RESPONSE 36: This contaminant plume is relatively simple to remove and permanently remediate the impacted area. That is always the preferred method of remediation whenever possible. There are number of alternatives commercially available that involve introducing various additives to reduce or eliminate contaminants from the soil and groundwater, however the high degree of control necessary to achieve effectiveness would not be possible in this Village setting. Attempting to dilute the contamination is not typically an option for a groundwater plume problem.

COMMENT 37: Will other homes have their indoor air treated?

RESPONSE 37: Based on the indoor air sampling conducted to date, no other homes require treatment. If in the future other homes are identified as impacted, then an

air filter can easily be installed.

COMMENT 38:. Will all the remedial equipment, piping and wells be underground?

RESPONSE 38: The wells, piping, and electric wires will be buried under ground similar to any other utility. The treatment unit and blower/vacuum system will be contained either within the Mr. C's building or a shed constructed on the Mr. C's property.

COMMENT 39:. What about the electricity?

RESPONSE 39: See response 38.

COMMENT 40: Could you call these wells a giant aquarium bubbler?

RESPONSE 40: Similar on a much larger and more complex scale.

COMMENT 41:. With this extraction system, will the contamination continue to spread?

RESPONSE 41: The primary objective for treating the source plume is to prevent any further migration of contaminants through alteration of the groundwater flow direction and by actual removal of the contaminants. The significantly lower concentrations of contamination outside the source plume will then disperse naturally with no further loadings from the source plume.

COMMENT 42: Is any of this contamination from Agway?

RESPONSE 42: Yes. There are a number of petroleum related compounds that have combined with the PCE plume in the area of the Agway property. It does not appear that these petroleum based compounds have migrated significantly beyond Whaley Avenue. The contamination attributable to Agway will also be effectively addressed with the selected remedy.

COMMENT 43:. Did the contaminants from Agway reach Whaley Ave.?

RESPONSE 43: See response 42 above.

COMMENT 44: Will there be any restrictions on building or construction for the neighborhood?

RESPONSE 44: There are no environmental or health based restrictions anticipated. However, there may be some restrictions based on the location of the extraction wells

and associated buried utilities.

Appendix B

Administrative Record

The following documents constitute the Administrative Record for the Mr. C's Dry Cleaners Site Record of Decision.

June 1995	Remedial Investigation Report, Malcolm Pirnie, Inc.
May 1996	Remedial Investigation Report Addendum A: Aquifer Testing Report, Malcolm Pirnie, Inc.
November 1996	Feasibility Study Report, Malcolm Pirnie, Inc.
January 1997	Proposed Remedial Action Plan
March 1997	Responsiveness Summary for Remedial Investigation/Feasibility Study and Proposed Remedial Action Plan (Appendix A of ROD)