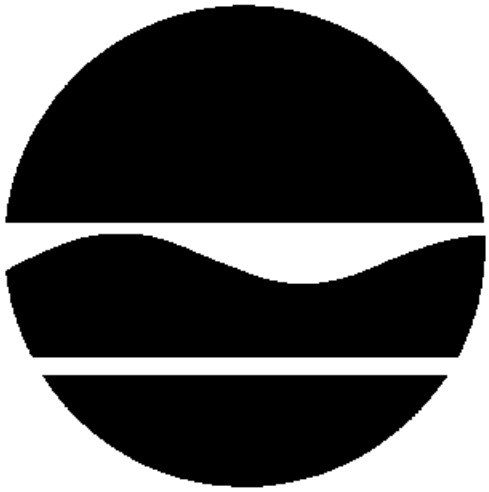
PROPOSED REMEDIAL ACTION PLAN
Frederick Property
Environmental Restoration Project
Village of Manchester, Ontario County, New York
Site No. B-00131-8

February 2004



Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

A 1996 Clean Water/Clean Air Bond Act
Environmental Restoration Project

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Frederick Property Environmental Restoration Project. The presence of hazardous substances has created threats to human health and/or the environment that are addressed by this proposed remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration (Brownfields) Program, the state provides grants to municipalities to reimburse eligible costs for site investigation and remediation activities. Once remediated the property can then be reused.

As more fully described in Sections 3 and 5 of this document, past automotive fueling operations and vehicle service have resulted in the disposal of hazardous substances, including volatile organic compounds (VOCs). These hazardous substances have contaminated the soil and groundwater at the site, and have resulted in:

- a threat to human health associated with potential exposure to contaminated subsurface soils and groundwater, as well as potential inhalation of contaminated indoor air in any future buildings at the site; and

- an environmental threat associated with the impacts of contaminants to subsurface soils and groundwater.

To eliminate or mitigate these threats, the NYSDEC proposes the following remedy to allow for restricted future use (including residential, recreational, commercial, or industrial) of the site:

- Building demolition, including removal of a floor drainage system and subsurface hydraulic lift units, as well as an evaluation of surrounding soil conditions;

- Removal of a dry well area behind the building and evaluation of surrounding/underlying soil conditions;

- Removal of soils contaminated at levels above SCGs to prevent further groundwater contamination;

- An operation, maintenance, and monitoring program to track natural attenuation of

contaminants in groundwater following source soil removal; and

- Institutional controls to restrict groundwater usage and prevent vapor intrusion into any future buildings at the site.

The proposed remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the September 2003 "Site Investigation/Remedial Alternatives Report (SI/RAR)", the December 19, 2003 Addendum letter to the SI/RAR, and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

- Village of Manchester
  8 Clifton Street
  Manchester, NY 14504
  (585) 289-4340
  Hours: M-F 9:00 AM - 4:30 PM
  Contact: Angela D'Arduini, Village Clerk-Treasurer

- NYSDEC - Region 8 Office
  6274 East Avon - Lima Road
  Avon, New York 14414
  (585) 226-2466
  Hours: M-F 8:30 AM - 4:45 PM
  Contact: Gregory B MacLean, P.E., Project Manager (585) 226-5356

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from February 12, 2004 through March 28, 2004 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for February 26, 2004 at the Village of Manchester Boardroom beginning at 6:30 PM.

At the meeting, the results of the SI/RAR will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. MacLean at the above address through March 28, 2004.

The NYSDEC may modify the preferred alternative or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the NYSDEC's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Frederick Property is located at 147 State Street in a mixed residential and light industrial area of the Village of Manchester, Ontario County (see Figure 1). State Street is accessible from State Routes 96 and 21, which intersect about 1 mile northeast of the site. The New York State Thruway is located just north of this intersection. The nearest

surface water body, Padleford Brook, is located approximately one mile south of the site.

The site is approximately one-half acre in size and contains one building having a footprint of approximately 1,200 square feet, which was formerly used as an automobile service station. The building is currently in poor condition and unsafe to occupy.

The surrounding properties to the north, east, and west are generally residential, with the exception of an automobile service shop and junk yard located to the northwest of the site across State Street. Spancrete, a pre-cast concrete manufacturing facility, is located to the south of the site beyond a former railroad right-of-way.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The site was operated as a gasoline filling station and automobile repair facility from approximately 1930 until the 1960s. Subsequent to the station's closing, the Village of Manchester obtained ownership of the property and has used it for general storage purposes since.

There are no records or reports of spills during the site's operation. However, past leakage from underground petroleum storage tanks and piping systems/filling areas is evident. Other potential sources of contamination identified at the site include a floor drainage system and associated dry well area behind the building and subsurface vehicle lift units in the building. The dry well area consists of an underground drainage pipe that discharges to an area of large stone fill material for the purpose of liquid waste disposal from the floor drainage system.

3.2: Remedial History

There have been no known environmental investigations or remedial actions to address hazardous substance disposal at the site prior to the site investigation discussed in this PRAP.

SECTION 4: ENFORCEMENT STATUS

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

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. The Village of Manchester will assist the state in its efforts by providing all information to the state which identifies PRPs. The Village will also not enter into any agreement regarding response costs without the approval of the NYSDEC.

SECTION 5: SITE CONTAMINATION

The Village of Manchester has recently completed a site investigation (SI) to determine the nature and extent of any contamination by hazardous substances at this environmental restoration site.

5.1: Summary of the Site Investigation

The purpose of the SI was to define the nature and extent of any contamination resulting from previous activities at the site. The SI was conducted between October 2000 and November 2003**.** The field activities and findings of the investigation are described in the SI/RAR report.

The following activities were conducted during the SI:

- Research of historical information;
- A geophysical survey to determine possible underground tank locations;
- Collection of 17 confirmatory soil samples following the removal of six underground storage tanks (USTs) and surrounding contaminated soils;
- Collection of five surface soil samples to identify potential exposure concerns.

- Excavation of two test pits for a visual and analytical evaluation of subsurface soils near the former pump island;

- Installation of 11 soil borings and 10 monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions;

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

Based on the SI 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 SI report.

5.1.1: Site Geology and Hydrogeology

Soils identified at the site during this investigation consist of a 6 to 12 inch layer of topsoil or gravel fill overlying glacial till. The glacial till primarily consists of sandy silt with some clay and traces of gravel. A thin (generally less than one foot), discontinuous sand layer was observed in the majority of soil borings between depths of 3 and 6.5 feet below grade. Carbonate bedrock was encountered at 8.5 to 11.5 feet below grade.

Groundwater was generally encountered within 3 to 7 feet below the ground surface. Groundwater generally flows in a southerly direction at the northern end of the site and more of an easterly direction in the southern portion of the site (see Figure 2). There is also a downward component to groundwater flow at the site; from the overburden soils toward the more permeable upper bedrock horizon.

There is public water serving the area; therefore, groundwater is not being utilized for drinking water purposes. However, the Spancrete facility to the south of the site is an industrial user of groundwater and its use may influence the groundwater flow direction at the site.

5.1.2: Nature of Contamination

As described in the SI report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs).

The VOCs of concern include both petroleum-related compounds (e.g., benzene, toluene, ethylbenzene, xylenes) and chlorinated solvent-related compounds (e.g. tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2- DCE)). These compounds vary in their toxicity, with benzene, PCE, and TCE being more toxic. They volatilize readily into air but dissolve only slightly in groundwater.

The petroleum contamination is the result of past fueling operations at the site. Whereas, the chlorinated solvent compounds appear to be migrating onto the site through groundwater from an, as yet unidentified, off-site source. With regard to the chlorinated compounds, the initial release probably consisted of PCE and the remaining chlorinated compounds (TCE and cis-1,2-DCE) are likely present as degradation products.

The only SVOC of potential concern is 4-methylphenol, which is likely petroleum-related. This compound is a cresol and is found in crude oil. It is generally not considered as toxic as the VOCs discussed above. The remaining SVOC listed in Table 1, bis(2-ethylhexyl)phthalate, is most likely

a sampling artifact related to the plastic tubing used to collect the samples.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

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

Table 1 summarizes the degree of contamination for the contaminants of concern in soil and groundwater and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Surface Soil

A total of five surface soil samples were collected from zero to two inches below grade at various locations at the site and analyzed for VOCs, SVOCs, PCBs, and metals. Samples locations are shown on Figure 3 (SS-101 through SS-105). No contaminants were identified at levels above SCGs in surface soils. Metals were detected within the expected range of naturally occurring background soils for the area.

Subsurface Soil

A total of 30 subsurface soil samples were collected for this project and analyzed for VOCs, SVOCs, PCBs, and metals. Of these samples, 17 were collected from the tank pits following removal of the USTs and associated contaminated soil (see Section 5.2), 2 were collected from test pits excavated in the vicinity of the former pump island (designated TP-101 and TP-102 on Figure 3), and 11 were collected from soil borings installed at various locations on the site (designated GP-101 through GP-111 on Figure 3).

Only two of the 30 soil sample locations contained VOC compounds at levels above SCGs. These locations were the northern sample from the east wall of the on-site gasoline tank pit and the nearby test pit location TP-101 (see Figure 3). Both samples were collected at depths of approximately 6 feet below grade. The VOCs detected at levels above SCGs are 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, and xylenes, which are all petroleum related. The magnitude of the exceedances is up to 17 times the SCG value (xylenes at 20 ppm vs SCG of 1.2 ppm).

SVOC and PCB compounds were not detected in subsurface soils at levels above SCGs. Metals were detected within the expected range of naturally occurring background soils for the area.

Groundwater

A total of 10 groundwater monitoring wells were installed at the site (see Figure 2). These include 7 wells installed in overburden soils (designated MW-1 through MW-7) and 3 wells installed in the upper bedrock (designated RW-1 through RW-3). The screened intervals are generally in the range of 2 to 10 feet below grade for the overburden wells and 14 to 19 feet below grade for the bedrock wells. Two rounds of groundwater samples were collected from each of these wells and analyzed for VOCs, SVOCs, PCBs, and metals. The first round was collected in May 2002 and the second round was collected in October 2002.

Groundwater samples collected from three of the wells (RW-1, RW-2, and RW-3) contained VOCs at levels above SCGs. The first round of samples detected only petroleum-related VOCs (RW-2 only) at levels above SCGs. In the second round, no petroleum-related VOCs were detected at levels above SCGs, while chlorinated solvent compounds were detected at levels above SCGs in each of the bedrock wells. The magnitude of the exceedances was up to 62 times the SCG for petroleum-related compounds (1,2,4-trimethylbenzene at 310 ppb vs. SCG of 5 ppb) and 12 times the SCG for chlorinated solvent-related compounds (tetrachlorethene at 59 ppb vs. SCG of 5 ppb). Contaminant concentrations in groundwater that exceed SCGs are shown on Figure 4.

The chlorinated solvent-related VOCs were only detected in the bedrock monitoring wells and appear to be migrating onto the site from an unknown off-site source. This determination is based on the facts that these compounds were not detected in on-site soils and their concentrations in groundwater are greatest in the most upgradient well at the site (RW-1). The same chlorinated compounds have also been detected in the former municipal water supply well located approximately one-half mile west of the site. This water supply well is no longer in use and the source of the contamination has not yet been identified.

The petroleum-related VOCs were only detected in the first round samples from bedrock monitoring well RW-2. The MW-2/RW-2 well cluster is located just downgradient of the area of petroleum-contaminated soils identified at the site. The reason these compounds were detected in bedrock monitoring well RW-2 and not in the adjacent overburden monitoring well MW-2 may be due to the installation of MW-2 within the fill soils used to backfill the former tank pit. Another factor may be the downward component to the groundwater flow at the site, from the less permeable overburden toward the more permeable upper bedrock horizon.

The reduction in the petroleum-related VOCs in RW-2 from the first round to the second round of sampling is likely attributable to seasonal variation in the groundwater table. Groundwater elevations were generally 4 to 6 feet below grade in May 2002 and 6 to 9 feet below grade in October 2002. This indicates that groundwater flow through contaminated subsurface soils (and downward movement to the bedrock horizon) was likely occurring to a greater extent during the first round than the second round. This reduction may also be attributed to a general decline in petroleum concentrations in groundwater at the site since the removal of the on-site underground storage tanks and associated contaminated soil (November 2000, see Section 5.2). However, additional groundwater data collected during periods of higher groundwater elevation (generally the spring time) would be needed for confirmation of this decline.

The second round groundwater samples collected from two of the wells (MW-6 and RW-3) contained the SVOC 4-methylphenol at levels above the SCG. The magnitude of this exceedance was up to 10 times the SCG (51 ppb vs SCG of 5 ppb). The only other SVOC detected at levels above SCGs was bis(2-ethylhexyl)phthalate, which is most likely a sampling artifact related to the plastic tubing used to collect the samples.

PCB compounds were not detected in groundwater samples. The only metal compounds detected in groundwater at levels above SCGs were iron, magnesium, manganese, and sodium. These are indicative of naturally occurring levels in groundwater and are not considered site contaminants.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the SI/RAR. The Village of Manchester removed a total of six underground storage tanks (USTs) from the site and adjacent property as IRMs during this project. The former tank locations are shown on Figure 3.

In November 2000, two gasoline USTs and one waste oil UST were removed from the site. The gasoline tanks had capacities of 3,000 and 4,000 gallons and the waste oil tank had a capacity of 500 gallons.

Approximately 280 tons of obviously contaminated soil surrounding the gasoline tanks were removed and transported offsite to a permitted waste disposal facility. Six confirmatory soil samples were collected from the sidewalls of the gasoline tank pit and analyzed for VOCs, SVOCs, PCBs, and metals. Because contaminated soils were removed to the top of the bedrock surface, no confirmatory soil samples were collected from the bottom of this tank pit. As discussed in Section 5.1.3 and shown on Figure 3, only the confirmatory sample from the north end of the east tank pit wall contained contaminants at levels above SCGs.

No contaminated soils were evident following removal of the waste oil tank. Two confirmatory soil samples were collected from this tank pit and analyzed for VOCs, SVOCs, PCBs, and metals. One sample was collected from the bottom of the tank pit and the second was composited from each of the four sidewalls. No compounds were identified in these soil samples at levels above SCGs.

In September 2001, three 500-gallon gasoline USTs that were identified on the adjacent property were removed. The former use of these tanks was evidently associated with fueling operations at the Frederick Property.

Approximately 14 tons of obviously contaminated soil surrounding the off-site gasoline tanks were removed and transported to a permitted waste disposal facility. The soil contamination detected at this location appeared to be from historic overfills/spillage and there was no evidence of leakage from these three tanks. Nine confirmatory soil samples were collected from the sidewalls and bottom of the off-site gasoline tank pit excavation and analyzed for VOCs, SVOCs, and total lead. None of the confirmatory samples from the off-site tank pit contained contaminants at levels above SCGs.

5.3: 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 discussion of human exposure pathways can be found in Section 6 of the SI report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.
The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

There are no completed pathways which are known to exist either on-site or off-site at this time. Public water serves the area; therefore, ingestion of contaminated groundwater is unlikely. Potential pathways of exposure to site contaminants which may occur during future excavation/construction activities or may affect occupants of any future buildings at the site include:

- Direct contact or incidental ingestion of contaminated soils;
- Inhalation of contaminated dust generated during construction activities;
- Direct contact or ingestion of contaminated groundwater; and
- Inhalation of VOCs from contaminated soil and groundwater migration into indoor air.

It is expected that this property will be developed for reuse; therefore, remediation and/or institutional controls will be required to mitigate the potential future exposure pathways.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

There are no significant environmental resources (i.e., creeks/streams, wetlands, habitats, etc.) located at or adjacent to the Frederick Property site. Based on the absence of any significant contamination in the downgradient wells at the site (MW-4, MW-6, and MW-7), off-site migration of site-related contaminants through groundwater to environmental receptors is not presently of concern. No pathways for environmental exposure or ecological risks have been identified. However, site contaminants have adversely impacted the groundwater resource at the site.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS AND THE PROPOSED USE OF THE SITE

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles.

The Village of Manchester has not yet proposed a specific future use for the Frederick Property. Future uses may include restricted residential, recreational, commercial, or industrial development.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to VOCs and SVOCs in soils and groundwater;
- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and
- the release of contaminants from subsurface soils and groundwater into indoor air through soil vapor.

Further, the remediation goals for the site include attaining, to the extent practicable, SCGs for soil and groundwater.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, and comply with other statutory requirements. A preliminary evaluation of remedial alternatives for the Frederick Property Site is presented in Section 7 of the SI/RAR, which is available at the document repositories identified in Section 1.

Given the relatively limited extent of contaminated soils and groundwater related to former site activities, an engineering judgement was made to eliminate certain long-term (i.e. bioremediation) and/or high capital cost (i.e. soil stripping) alternatives at the outset as impractical.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of five years was used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after five years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following three potential remedies were considered to address the contaminated soils and groundwater at the site.

Alternative 1: No Further Action

The No Further Action (NFA) alternative recognizes remediation of the site conducted under previously completed IRMs. It is evaluated as a

procedural requirement and as a basis for comparison. To evaluate the effectiveness of the remediation completed under the IRM, only continued monitoring would be necessary. A five-year groundwater monitoring program is assumed.

This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Present Worth:	$43,500
Capital Cost:	$0
Annual O&M:	$10,000
Time to Implement	not applicable

Alternative 2: Institutional Controls

This alternative is similar to the NFA alternative, in that no additional remediation would take place; however, institutional controls (ICs) would be used to provide additional protection to public health. The following items would be included:

- An operation, maintenance, and monitoring (OM&M) program, including a five-year groundwater monitoring program; and

- Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (b) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; and (c) identify any use restrictions (property development and groundwater use).

- The property owner would provide an annual certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department, which would certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation an maintenance or soil management plan.

- An environmental easement would be utilized to: (a) require compliance with the approved site management plan, (b) limit the use and development of the property to commercial or industrial uses only; (c) restrict use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH; and, (d) require the property owner to complete and submit to the NYSDEC the annual certification described above.

Present Worth:	$56,000
Capital Cost:	$12,500
Annual O&M:	$10,000

Alternative 3: Removal Action

The Removal Action (RA) alternative would be implemented to remove any remaining sources of contamination at the site, which would also allow petroleum contamination in groundwater to improve over time. The following items would be included:

- Building demolition to access potentially contaminated areas beneath the building associated with the hydraulic lift units and floor drainage system. These areas have not been adequately characterized due to safety concerns associated with the dilapidated building.

- Closure of the dry well area. This would consist of excavation and removal of the large stone fill used to construct the system and characterization of surrounding/underlying soils.

- Excavation and off-site disposal of soils with contamination remaining above SCGs. This would include the known contaminated soils in the vicinity of the former tanks/pump island, as well as any contaminated soils that may be identified

beneath the building and/or in the vicinity of the dry well area. It is assumed that up to 500 tons of contaminated soil may be removed.

- An operation, maintenance, and monitoring (OM&M) program, including a five-year groundwater monitoring program; and

- Institutional controls to restrict groundwater usage at the site and prevent vapor intrusion into any future buildings on the property. The ICs would be similar to those described under Alternative 2, except that property use restrictions and the soil management aspect of the site management plan would not be required assuming contaminated soils are adequately removed to levels below SCGs.

The time to design and implement this remedy is expected to be 6 to 12 months. The remediation goals should be readily met upon completion of the removal action. Only the long-term monitoring plan would be necessary for confirmation of its effectiveness. ICs would be implemented to ensure protection of public health related to any contaminants remaining in groundwater.

Present Worth:	$122,000
Capital Cost:	$78,500
Annual O&M:	$10,000

7.2: Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York State. For each criterion, a brief description is provided, followed by an evaluation of the alternatives against that criterion. The rationale for the remedy appears in Section 8.

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

1. 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.

The NFA alternative would not be protective of human health or the environment since it would not achieve remediation goals described in Section 6.

The IC alternative would be protective of human health by preventing potential exposure pathways. However, there would not be an immediate benefit to the environment in that existing contaminants would remain in place at the site.

The RA alternative would be protective of human health and the environment by removing the source of petroleum contamination and limiting any potential exposures to residual contaminants in groundwater.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs) . Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the NYSDEC has determined to be applicable on a case-specific basis. The most significant SCGs identified for this site are 6NYCRR Part 703 Water Quality Regulations, NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1., and NYSDEC TAGM 4046. The documents identify groundwater standards and guidelines and soil cleanup objectives which are protective of human health and the environment.

The NFA alternative would not meet this criterion in that soils and groundwater would remain at the property at levels above SCGs.

Although the IC alternative would not achieve SCGs for soils or groundwater, it would provide a mechanism to prevent human exposure to the contaminants.

The RA alternative would provide for the removal of soils containing contaminants at levels above SCGs. By removing the source of contamination on the property, this alternative would also allow for natural attenuation of groundwater to achieve

groundwater SCGs for petroleum compounds over time. The chlorinated compounds in groundwater at the site are the result of an unknown off-site source and would not be directly addressed by this remedy. However, the use of ICs would prevent human exposure to these contaminants on the property. Note that a remedy capable of meeting groundwater SCGs for the chlorinated compounds at the site would be ineffective as it would not address the off-site source of this contamination.

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 remediation goals is also estimated and compared against the other alternatives.

The NFA and IC alternatives would not have any short term impacts to the community or on-site workers since no active remediation would take place.

The RA alternative would have some potential short term impacts to the community or on-site workers during the implementation phase. The handling of contaminated soils may present potential short-term exposures to on-site workers and others in the vicinity of the work activities. Proven, reliable, and effective mitigative measures would be utilized to address short-term effects. These measures may include temporary fence installation, dust suppression controls during excavations, and implementation of a site-specific health and safety plan. The remediation goals for soil would be attained in the short term, while groundwater quality related to the petroleum contamination would be expected to improve over the longer term.

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 engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

The NFA alternative would not be effective in the long term at minimizing the risks to human health or the environment, since those risks would continue to be unacceptable.

The IC alternative would effectively minimize threats to public health over the long term, but would not directly address risks to the environment.

The RA alternative would provide for the permanent removal of petroleum contaminated soils from the site. Petroleum contaminated groundwater would be expected to improve over the long term. The chlorinated compounds related to an unidentified off-site source would likely persist until the source is identified and cleaned up. ICs would be implemented to prevent human exposure to the contaminants that may remain in groundwater at the site.

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 NFA and IC alternatives would not reduce the toxicity, mobility, or volume of the wastes at the site.

The RA alternative would permanently remove the entire volume of the wastes in soil at the site at levels above SCGs. Petroleum contamination in groundwater is expected to decrease in the long term following removal of the source soils.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. 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, institutional controls, and so forth.

The NFA alternative would be the easiest to implement since no active remedial measures would be taken.

The IC alternative would also be relatively easy to implement. However, some administrative challenges may exist in regard to obtaining the environmental easement on the property and ensuring that it remains protective of human health.

The RA alternative is technically and administratively feasible and can be readily implemented at the site. As with the IC alternative, there may be some administrative challenges associated with that aspect of this remedy. However, the ICs associated with this alternative would be substantially less cumbersome to the municipality than the IC alternative, in that property use restrictions and a soil management plan would not be required.

7. Cost-Effectivness. Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

The NFA alternative would be the least expensive to implement since there would be minimal cost associated with implementation of the long term monitoring

The IC alternative would be somewhat more expensive than the NFA alternative in that costs associated with implementing the ICs are factored in.

The RA alternative would be the most expensive of the three alternatives. However, there would be a substantial benefit to the environment and there would be no property use restrictions or soil management plan that the municipality would have to comply with. These benefits may ultimately make this alternative less costly in the long term in that it may improve the marketability of the property.

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 PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the NYSDEC will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The NYSDEC is proposing the Removal Action alternative as the remedy for this site. The elements of this remedy are described at the end of this section.

The proposed remedy is based on the results of the SI and the evaluation of alternatives presented in Section 7.2. The RA alternative is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It would achieve the remediation goals for the site by removing the soils that create the most significant threat to public health and the environment, greatly reducing the source of petroleum contamination to groundwater, and creating the conditions needed to restore groundwater quality to the extent practicable.

The IC alternative would also comply with the threshold selection criteria but to a lesser degree and with lower certainty. The NFA alternative does not comply with the threshold criteria and, therefore, was eliminated from further consideration.

Because both the IC and RA alternatives satisfy the threshold criteria to at least some degree, the five balancing criteria are also evaluated in selecting a final remedy for the site.

While there would be more potential short term impacts associated with the RA alternative than the IC alternative, these impacts can be easily controlled as discussed in Section 7.2. The time needed to achieve the remediation goals would be shortest for the RA alternative.

Achieving long-term effectiveness is best accomplished by excavation and removal of the contaminated overburden soils. The RA alternative is favorable because it would result in the removal of all contaminated soil at the site at levels above SCGs. The RA alternative would also eliminate the need for property use restrictions and for a soil management plan.

The RA alternative would provide for the complete removal of the volume of waste in on-site soils at levels above SCGs. The IC alternative would not provide any reduction in the toxicity, mobility, or volume of the wastes.

Both the IC and RA alternatives are readily implementable. However, administrative challenges associated with the property use limitations and soil management plan aspects of the IC alternative would not exist for the RA alternative.

Although the cost of the IC alternative is less, the RA alternative is favorable because it is a permanent remedy that will eliminate the continuing source of groundwater contamination at the site.

The estimated present worth cost to implement the remedy is $122,000. The cost to construct the remedy is estimated to be $78,500 and the estimated average annual operation, maintenance, and monitoring costs for 5 years is $10,000.

The elements of the proposed remedy are as follows:

1. A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. Building demolition to access potentially contaminated areas beneath the building associated with the hydraulic lift units and floor drainage system. These areas were not adequately characterized during the investigation due to safety concerns associated with the dilapidated building.

3. Closure of the dry well area. This would consist of excavation and removal of the large stone fill used to construct the system and characterization of surrounding/underlying soils.

4. Excavation and off-site disposal of soils with contamination remaining above SCGs. This would include the known contaminated soils in the vicinity of the former tanks/pump island, as well as any contaminated soils that may be identified beneath the building and/or in the vicinity of the dry well area. This action would eliminate source areas resulting in a significant reduction of petroleum-related impacts to groundwater.

5. Since the preferred remedy would not immediately meet groundwater standards, a monitoring program would be instituted for a minimum of five years. Key monitoring points would include the upgradient wells at the site (MW-1/RW-1), wells in the vicinity of the former tanks (MW-2/RW-2 and MW-3/RW-3), and the wells downgradient of the building (MW-5) and dry well area (MW-6). This program would allow the effectiveness of the selected remedy to be monitored and would be a component of the operation, maintenance, and monitoring for the site. The monitoring program would be evaluated after five years to determine whether further monitoring is necessary.

6. Development of a site management plan to: (a) evaluate the potential for vapor intrusion for any buildings developed on the site,

including provisions for mitigation of any impacts identified; and (b) identify any use restrictions (e.g., groundwater).

7. The property owner would provide an annual certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department, which would certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or site management plan.

8. Imposition of an institutional control in form of an environmental easement that would: (a) require compliance with the approved site management plan; (b) restrict use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH; and (c) require the property owner to complete and submit to the NYSDEC an annual certification.

TABLE 1
Nature and Extent of Contamination
November 2000 - October 2002

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	1,3,5-Trimethylbenzene	ND[c] to 6.4	3.3	1 of 35
	1,2,4-Trimethylbenzene	ND to 20	10	1 of 35
	Xylenes	ND to 20	1.2	2 of 35

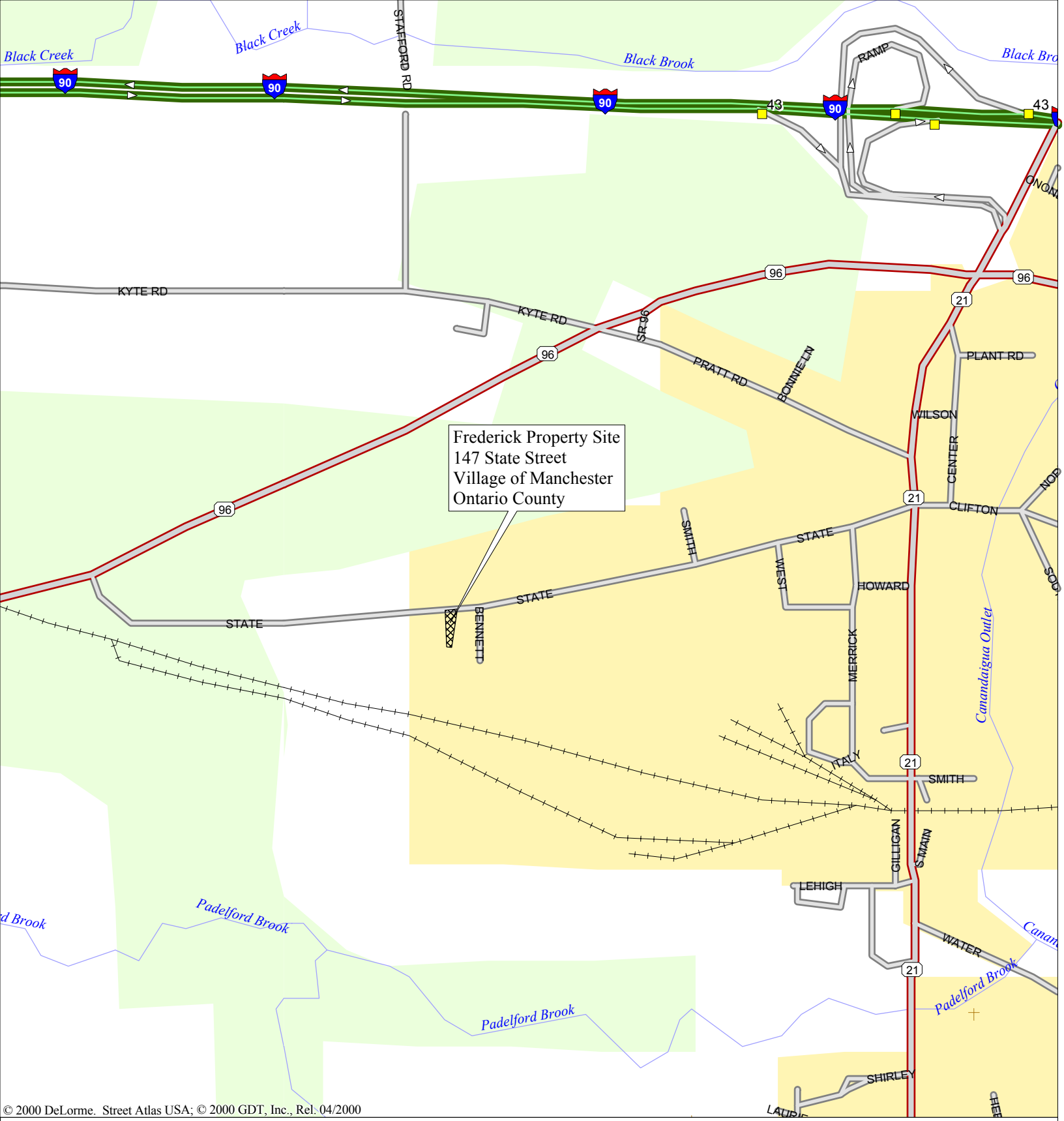
GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND to 29	1	2[d] of 22
	cis-1,2-Dichloroethene	ND to 14	5	4[d] of 22
	Ethylbenzene	ND to 120	5	2[d] of 22
	Isopropyl Benzene	ND to 22	5	2[d] of 22
	p-Isopropyltoluene	ND to 5.2	5	1 of 22
	Napthalene	ND to 80	10	2[d] of 22
	n-Propylbenzene	ND to 44	5	2[d] of 22
	Tetrachloroethene	ND to 59	5	4[d] of 22
	Toluene	ND to 12	5	2[d] of 22
	Trichloroethene	ND to 14	5	3[d] of 22
	1,3,5-Trimethylbenzene	ND to 43	5	2[d] of 22
	1,2,4-Trimethylbenzene	ND to 310	5	2[d] of 22
	Xylenes	ND to 296	5	2[d] of 22
Semivolatile Organic Compounds (SVOCs)	Bis(2-Ethylhexyl)Phthalate	ND to 260	50	4[d] of 22
	4-Methylphenol	ND to 51	5	2 of 22

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

[b] SCG = standards, criteria, and guidance values; {list SCGs for each medium}
[c] ND - indicates the contaminant was not detected at or above the method detection limit achieved by the laboratory.
[d] This compound was detected in samples collected from one or more monitoring wells and in a duplicate sample collected from one of these wells that was sent "blind" to the laboratory. Results from the duplicate sample are used when greater than the associated sample.

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Further Action	$0	$10,000	$43,500
Institutional Controls	$12,500	$10,000	$56,000
Removal Action	$78,500	$10,000	$122,000



Mag 15.00
Fri Dec 19 09:52 2003
Scale 1:12,500 (at center)
1000 Feet
200 Meters

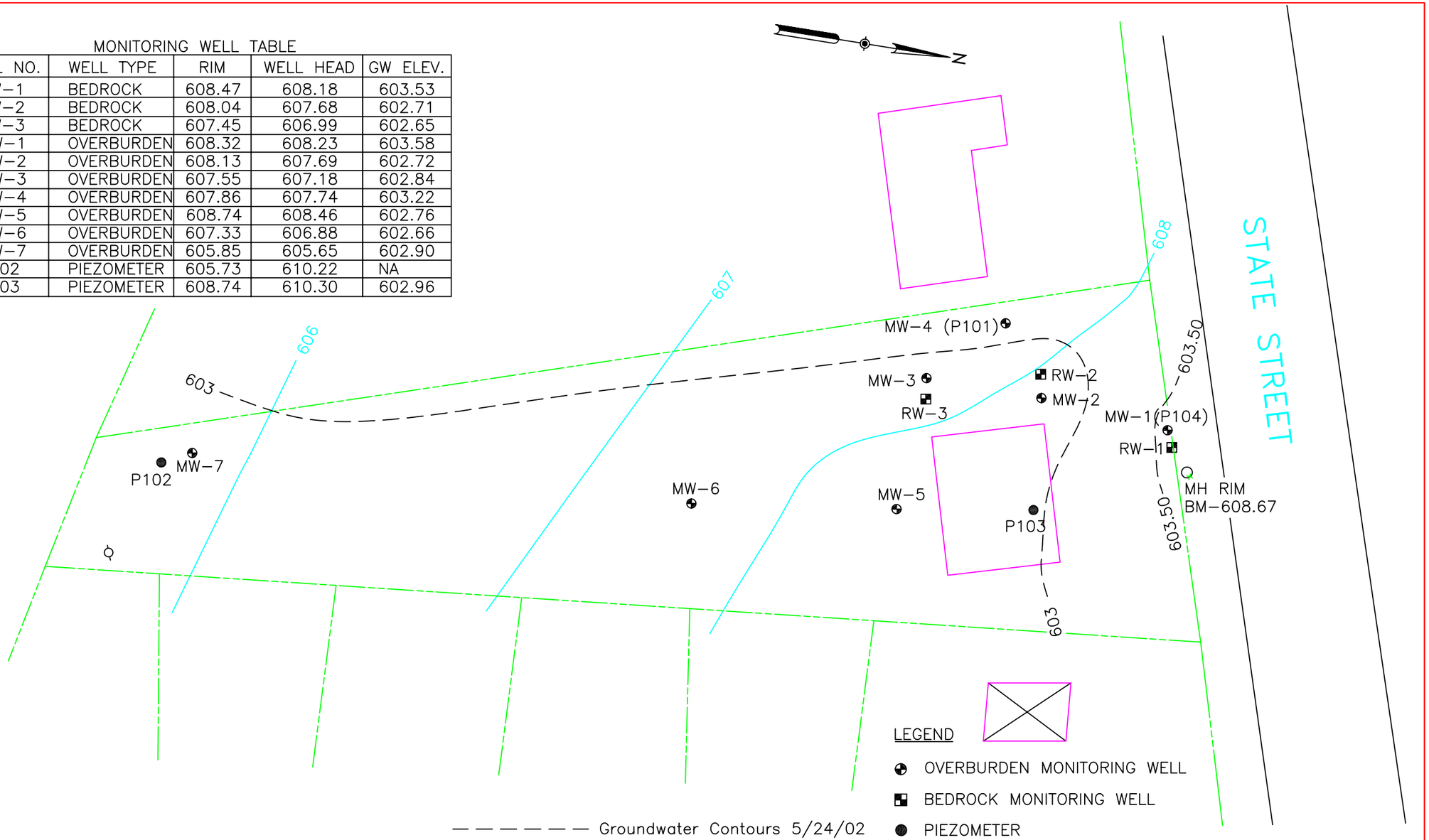
- Local Road
- State Route
- Toll Highway
- Exit
- Railroad
- Cemetery
- Population Center
- Woodland
- River/Canal

N

FIGURE 1 - SITE LOCATION MAP

MONITORING WELL TABLE

WELL NO.	WELL TYPE	RIM	WELL HEAD	GW ELEV.
RW-1	BEDROCK	608.47	608.18	603.53
RW-2	BEDROCK	608.04	607.68	602.71
RW-3	BEDROCK	607.45	606.99	602.65
MW-1	OVERBURDEN	608.32	608.23	603.58
MW-2	OVERBURDEN	608.13	607.69	602.72
MW-3	OVERBURDEN	607.55	607.18	602.84
MW-4	OVERBURDEN	607.86	607.74	603.22
MW-5	OVERBURDEN	608.74	608.46	602.76
MW-6	OVERBURDEN	607.33	606.88	602.66
MW-7	OVERBURDEN	605.85	605.65	602.90
P102	PIEZOMETER	605.73	610.22	NA
P103	PIEZOMETER	608.74	610.30	602.96



NOTE:
ELEVATIONS BASED ON USGS ELEVATION OF 609.00 AT THE INTERSECTION OF THE CENTERLINES OF BENNETT AVE. AND STATE STREET.

BASEMAP PREPARED BY SNIEDZE ASSOCIATES
CONSULTING ENGINEERS, CANANDAIGUA, NY

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FREDERICK PROPERTY
VILLAGE OF MANCHESTER, ONTARIO COUNTY
SITE NO. B-00131-8

ENVIRONMENTAL RESTORATION

PROPOSED REMEDIAL ACTION PLAN
FIGURE 2 – GROUNDWATER ELEVATIONS

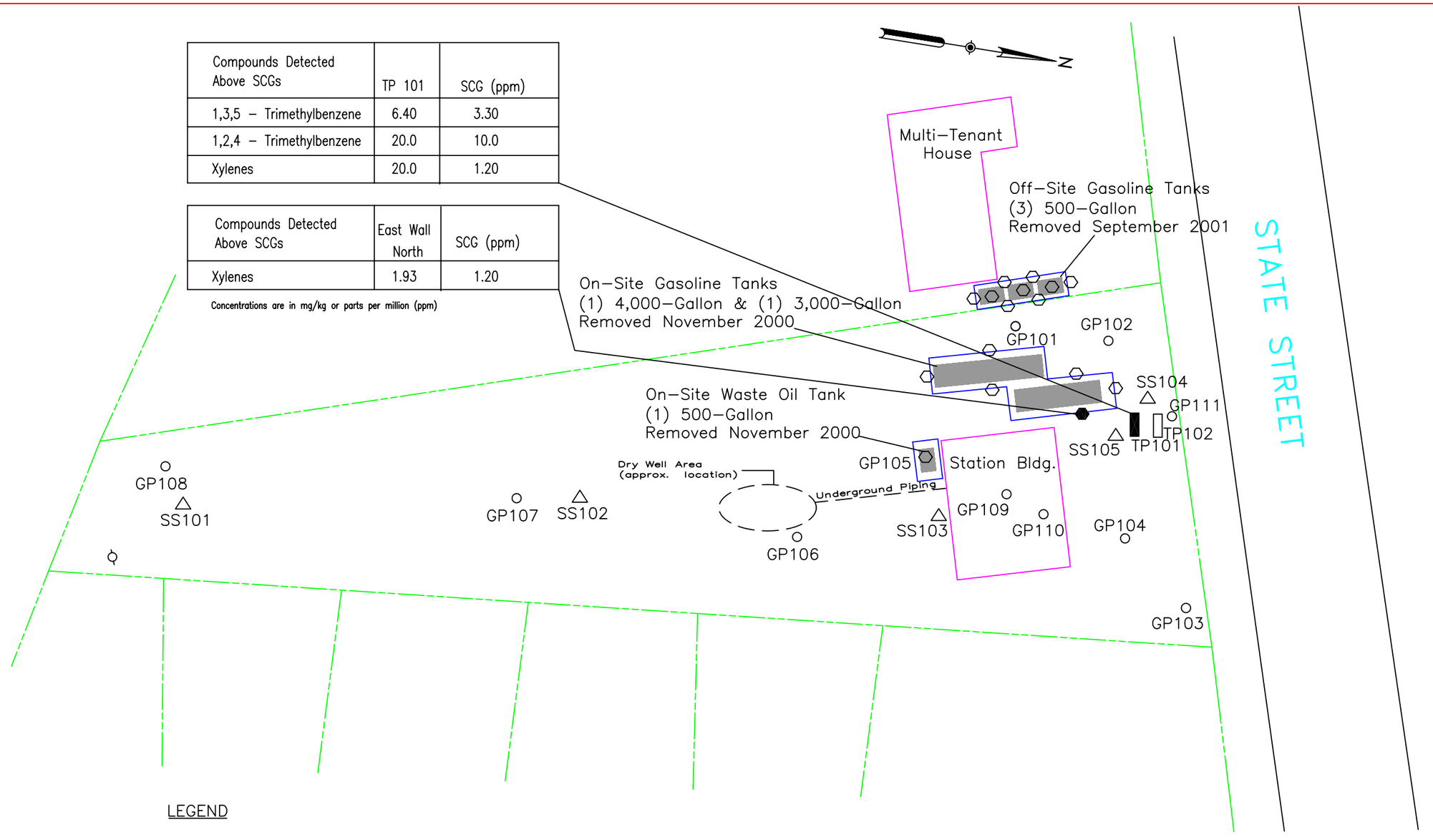
SCALE: 1"=30'

JANUARY 2004

Compounds Detected Above SCGs	TP 101	SCG (ppm)
1,3,5 – Trimethylbenzene	6.40	3.30
1,2,4 – Trimethylbenzene	20.0	10.0
Xylenes	20.0	1.20

Compounds Detected Above SCGs	East Wall North	SCG (ppm)
Xylenes	1.93	1.20

Concentrations are in mg/kg or parts per million (ppm)



LEGEND

- ○ GEOPROBE SOIL BORING
- △ SURFACE SOIL SAMPLE
- ▭ TEST PIT
- ⬡ TANK PIT SOIL SAMPLE
- ▬ CONTAMINANT CONCENTRATION ABOVE SCG VALUES

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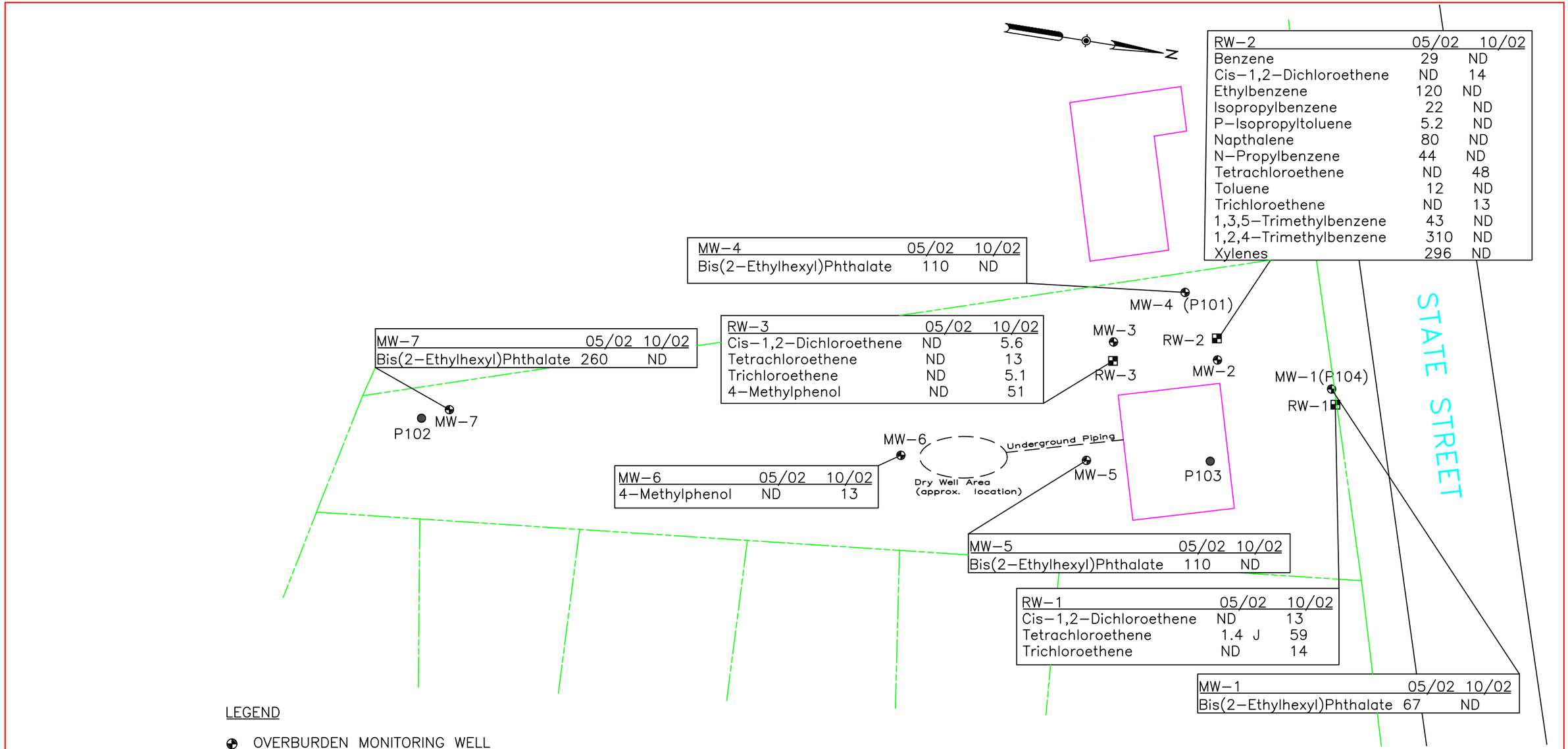
ENVIRONMENTAL RESTORATION

PROPOSED REMEDIAL ACTION PLAN
FIGURE 3 – SOIL SAMPLING RESULTS ABOVE SCGs

SCALE: 1"=30'

JANUARY 2004



LEGEND

- OVERBURDEN MONITORING WELL
- BEDROCK MONITORING WELL
- PIEZOMETER

All concentrations are in ug/L or parts per billion (ppb)

ND = non detect

J = detected below the Quantition Limit

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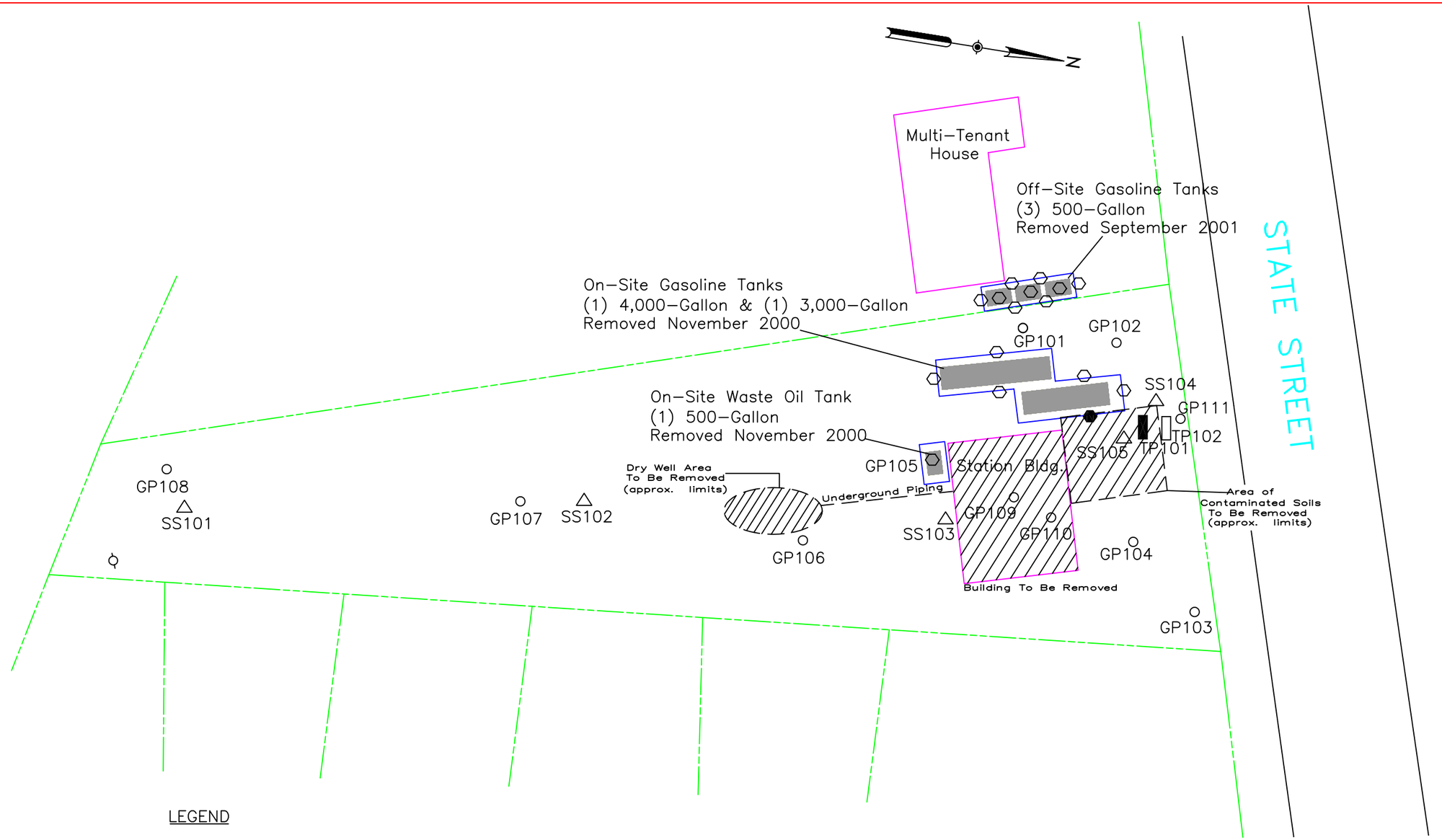
SITE NO. B-00131-8

ENVIRONMENTAL RESTORATION

PROPOSED REMEDIAL ACTION PLAN
FIGURE 4 - GROUNDWATER SAMPLING RESULTS ABOVE SCGs

SCALE: 1"=30'

JANUARY 2004



LEGEND

- ○ GEOPROBE SOIL BORING
- △ SURFACE SOIL SAMPLE
- ▭ TEST PIT
- ⬡ TANK PIT SOIL SAMPLE
- ▬ CONTAMINANT CONCENTRATION ABOVE SCG VALUES

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ENVIRONMENTAL RESTORATION

PROPOSED REMEDIAL ACTION PLAN

FIGURE 5 – SITE REMEDIATION PLAN

SCALE: 1"=30'

JANUARY 2004