NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
PRAP/ROD ROUTING SLIP

TO: Sal Ervolina, Assistant Division Director
FROM: The attached is submitted for your approval by:

NAME	INITIAL	DATE
Project Manager: Mike Mclean	M.M.	10-24-08
Section Chief/RHWRE: Russell Huyck		10/27/08
Bureau Director: Chittibabu Vasudevan		11/7/08

DATE: 10/24/2008

RE: **Site Name** Former Gas Station, Main & Salmon **Site Code** E517006
City Fort Covington **County** Franklin

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BUREAU OF EASTERN REMEDIAL ACTION
S12944

☑ **PRAP**
- ☐ Draft PRAP
- ☑ Clean copy of the PRAP
- ☐ Redline/Strikeout version of the PRAP
- ☑ Copies of edits to PRAP (Sal's/Dale's)
- ☐ Site Briefing Report
- ☐ NYSDOH concurrence letter 11/5/8
- ☐ USEPA concurrence letter
- ☐ OGC Referral
  - ☐ Attached
  - ☐ Not Required: Explain:
- ☐ Project Reviews (IGP-13) (if waived, explain why)
  - ☐ Scoping RI date: _____
  - ☐ Scoping FS date: _____

PRAP Release Approvals

Ass't Div Director: _____
Sal Ervolina 11/25/08

Division Director: _____
Dale Desnoyers 12/11/08

☐ **ROD**
- ☐ Draft ROD
- ☐ Signature-ready copy of the ROD
- ☐ Redline/Strikeout version of the ROD
- ☐ Copies of edits to ROD (Sal's/Dale's)
- ☐ Site Briefing Report
- ☐ NYSDOH concurrence letter
- ☐ USEPA concurrence letter

ROD Signoff

Ass't Div Director: _____
Sal Ervolina

☐ **BRIEFING**
Date:_____ **Time:**_____ **Room:**_____

c: Dale Desnoyers
Other reviewers who are invited to Briefing

PROPOSED REMEDIAL ACTION PLAN

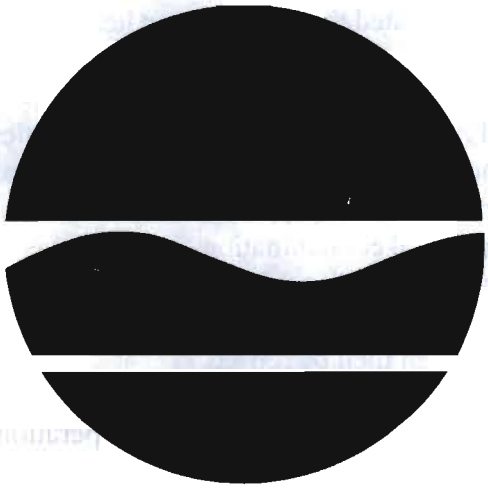
Former Gas Station, Main & Salmon

Environmental Restoration Project

Fort Covington, Franklin County, New York

Site No. E517006

December 2008



Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

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

PROPOSED REMEDIAL ACTION PLAN

Former Gas Station, Main & Salmon
Fort Covington, Franklin County, New York
Site No. E517006
August 2008 Draft

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Former Gas Station, Main & Salmon. 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 Program, the state provides grants to municipalities to reimburse up to 90 percent of 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, operations of an automotive repair/gasoline service/filling station has resulted in the disposal of hazardous substances, including volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), These hazardous substances have contaminated the soil, groundwater, and soil vapor at the site, and have resulted in:

- A threat to human health associated with current and/or potential exposure to soil contaminated with VOCs and SVOCs. Exposure pathways include direct contact, ingestion, and inhalation (dusts).

- an environmental threat associated with the current and potential impacts of VOC and SVOC contaminants in the soil and groundwater, and the potential continued migration of these materials in the groundwater.

To eliminate or mitigate these threats, the Department proposes excavation and proper disposal of soils with contaminant concentrations above Standards, Criteria, and Guidance (SCG).

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 to 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 Department will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The Department 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 November 2007 Site Investigation (SI) Report and the June 2008 Remedial Alternatives Report (RAR), and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

Town of Fort Covington
Town Hall, Main Street
Fort Covington, New York 12937
Contact: Tammy Francis, Town Clerk
Telephone: 518-358-4629
Hours: Monday 9:00 am to 1:00 pm
Tuesday 5:00 pm to 8:00 pm
Thursday 9:00 am to 1:00 pm
Saturday 9:00 am to 1:00 pm

NYSDEC-Region 5 Office
P.O. Box 296, 1115 NYS Route 86
Ray Brook, New York 12977
Contact: Michael P. McLean, P.E.
Telephone: (518) 897-1242
Hours: M-F 8:00 am-4:00 pm

The Department seeks input from the community on all PRAPs. A public comment period has been set from {dates} to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for {date} at the {location} beginning at {time}.

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. McLean at the above address through {date comment period ends}.

The Department may modify the proposed remedy 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 Department's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Site is located in the Village of Fort Covington, Franklin County and is currently a vacant lot comprising approximately an eighth of an acre. The Site is partially vegetated with grass and weeds, with remaining surface areas covered by sand, gravel, and broken asphalt/concrete. The topography in the vicinity of the Site is generally flat but grades gently down to the east-southeast toward the Salmon River. The bank of the Salmon River is located less than 100 feet from the southeastern corner of the Site.

The Site is bounded on the north by Chateaugay Street (State Route 37), beyond which is a commercial property (motorcycle/auto detailing) and residential properties. Immediately east of the Site is an abandoned residential property consisting of a two-story dwelling and surround, beyond which is a Town-owned memorial park. South of the Site is a vacant open/green space owned by the Town. The Site is bounded on the west by Salmon Street, beyond which is Rainbow Park, a Town-owned recreation area. The Town intends to develop the Site as open/green space for use by Town residents. An abandoned residential property is located immediately east of the Site. The Town is in the process of purchasing the property and will convert to open/green space following acquisition. Upon completion, the open/green space comprising the Site will be contiguous with open/green space to its east, south and west. Refer to Figure 1-Site Location Map.

Surficial geology at the site is defined as lacustrine (lake) silt and clay deposits. Multiple soil borings and monitoring wells have been installed and allow a comprehensive assessment of the unconsolidated subsurface materials. The subsurface materials consist of two to five feet of sand at the surface overlying five to ten plus feet of silt and clay. The silt and clay overlies a sand and gravel unit, the depth of which was not determined. Bedrock is estimated to be 30 to 50 feet below ground surface. Groundwater generally flows toward the east and in the direction of the Salmon River. Refer to Figure 2-Site Plan.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Site is a former automotive service/filling station located on the southeast corner of the intersection of Main and Salmon Streets in the Town. The Site was owned by the Malone Oil Company prior to 2003 when it was acquired by the Town. The Town acquired the Site with the sole purpose of cleaning it up and turning it into open/green-space for use by the Town residents.

Limited information concerning Site operational history is available. The site was registered as a NYS Petroleum Bulk Storage (PBS) facility in April of 1988 with two underground tanks reported as installed in October of 1986 and being in service. The PBS number for the facility is 5-436720.

In November of 2004 two leaking drums were present behind the former gasoline station. Due to the condition of the drums, the Department contracted Op-Tech Environmental under the Spill Response Program to over pack, sample, and dispose of the drums. The two underground tanks were removed in 2006 by the Town of Fort Covington under the ERP Program.

3.2: Remedial History

No other previous site investigations were reported to exist for the site.

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.

Historical information indicates that the vicinity of the Site was already well developed prior to the early 1940s. The date when the Site was developed as a service station is not known with certainty; however, Town residents have indicated that the site was operated as a service station in the 1950s. The PRPs for the site, documented to date, include: Mr. Max Ellis, who purchased the property in March of 1969; Malone Oil Company, who purchased the site in December 1977 and operated/leased the Site as a service station until 2003 when Franklin County acquired the parcel in foreclosure.

The Town of Fort Covington will assist the state in their efforts by providing all information to the state which identifies PRPs. The Town will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 5: SITE CONTAMINATION

The Town of Fort Covington has recently completed a site investigation/remedial alternatives report (SI/RAR) 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 site investigation (SI) was to define the nature and extent of any contamination resulting from previous activities at the site. The SI was conducted between September, 2004 and June, 2008. The field activities and findings of the investigation are described in the SI report.

A summary of the activities conducted during the SI include: geophysical survey to identify subsurface utilities or other cultural interferences including underground storage tanks (USTs), buried drums, demolished structures, etc; advancement of 23 on-site soil borings and eight off-site soil borings; excavation of four test pits; cleaning, excavation, and removal of one 2,000-gallon steel UST and one 1,000-gallon steel UST; installation and development of six on-site monitoring wells and three off-site monitoring wells; hydraulic (slug) testing at two on-site monitoring well locations; collection of sediment samples from the Salmon River; installation of two soil vapor sampling points along the eastern margin of the Site; and laboratory analysis of soil, sediment, water, and soil vapor samples for various parameters including VOCs, SVOCs, pesticides, PCBs, and metals.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil, groundwater, sediments, and soil vapor 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 the Department's June 1998 "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.
- Soil SCGs are based on the NYSDEC 6 NYCRR Part 375-6 Environmental Remediation Programs effective December 14, 2006.

- Concentrations of VOCs in air were evaluated using the air guidelines provided in the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October, 2006.

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 in Section 5.1.2. More complete information can be found in the SI report.

5.1.2: Nature and Extent of Contamination

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

As described in the SI report, many soil, groundwater, air, and sediment 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), semivolatile organic compounds (SVOCs), pesticides, and inorganics (metals). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for waste, soil, and sediment. Soil gas samples are reported in parts per billion by volume (ppbv).

Table 1 summarizes the degree of contamination for the contaminants of concern in surface soil, subsurface soil, groundwater, and soil gas 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.

Waste Materials

Various wastes were identified at the site. In November, 2004, two leaking drums were present behind the former gasoline station. Due to the condition of the drums, the Department contracted Op-Tech Environmental under the Spill Response Program to over pack, sample, and dispose of the drums. The drums were subsequently disposed of as hazardous due to high levels of acetone in the drums. Waste disposed of during the investigation included one 55 gallon drum of hydraulic oil from the station hydraulic lifts, and 3,000 gallons of gasoline and water mix from the former underground gasoline storage tanks.

Surface Soil

Surface soil at the site is defined as soil less than two inches below the vegetative cover. Analytes identified above unrestricted use SCOs included five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene) at SB-3 and SB-16; one pesticide (4,4'-DDT) at SB-10 and SB-16, and four metals (chromium, lead, mercury, and zinc) at four locations on site (SB-3, SB-9, SB-11, and UST Surface) and at SB-16 off site. The low level contaminants encountered at SB-16, which is an off-site boring, is not considered a result of site activities, as clean soil and groundwater exist between the location and the site. Despite the exceedences, off-site detected concentrations are such that further investigation and remediation is not warranted. Further, asphalt shingles in the immediate area of SB-16 may be the source of the contaminants. Surface soil contamination identified on-site will be addressed in the remedy selection process. As the proposed use for the site is a public park and the site adjoins a public park, restricted residential SCOs were utilized for comparison in the SIR, RAR, and site figures. Refer to Figure 3, Surface Soil Sample Analytical Data Exceeding NYSDEC Restricted Residential SCOs.

Subsurface Soil

Subsurface soil at the site is defined as soil greater than two inches below the ground surface. Analytes identified above unrestricted use SCOs included ten VOCs (benzene, n-butylbenzene, ethylbenzene, MTBE, n-propylbenzene, sec-butylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylene), seven SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene), two pesticides (4,4'-DDE and 4,4-DDT) and six metals (cadmium, chromium, lead, mercury, nickel, and zinc) located at various locations both on-site and off-site. The VOC and SVOC subsurface soil contamination at the site is located predominantly in the former gasoline tank and pump island areas. The metals, pesticides, and SVOC contamination encountered off-site are not considered a result of site activities, as clean soil and groundwater samples exist between locations and usage of these contaminants were not identified at the site. Despite the off-site exceedences, detected concentrations are such that further investigation and remediation is not warranted. **Further, asphalt shingles are locate**d in the immediate area of SB-16 and may be the source of the SVOC contaminants identified here. On-site subsurface soil contamination identified during the SI/RAR will be addressed in the remedy selection process. As the proposed use for the site is a public park and the site adjoins a public park, restricted residential SCOs were utilized for comparison in the SIR, RAR, and site figures. Refer to Figure 4, Subsurface Soil Sample Analytical Data Exceeding NYSDEC Restricted Residential SCOs.

Groundwater

Two sets of groundwater samples were collected from on-site monitoring wells in October of 2006 and January of 2007. Contaminants identified on-site in the area of the former gasoline tanks and pump island included ten VOCs (benzene, ethylbenzene, isopropylbenzene, methyl tertiary butyl ether, n-propylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, m,p-xylene, and o-xylene), one SVOC (naphthalene), and two metals (chromium and lead). One set of groundwater samples was collected from off-site monitoring wells in June of 2007; no contaminants were detected above SCGs off-site. On-site groundwater contamination identified during the SI/RAR will be addressed in the remedy selection process. Refer to Figure 5, Groundwater Sample Analytical Data Exceeding NYSDEC SCGS.

Surface Water

No surface water is located at the site. The Salmon River is located approximately 100 feet to the southwest of the site. Since clean groundwater monitoring wells exist between the river and the site, no surface water samples were collected from the Salmon River during the SI.

Sediments

As a result of a separate dam removal study being conducted by the Town, sediment SVOC contamination was identified a few hundred feet down gradient of the site in the Salmon River in 2003. Due to the reported contamination, eight sediment samples were collected up gradient and down gradient to the site in October of 2006 and June of 2007. Low level SVOC, metals, and pesticide contamination was identified upstream, gradient, and downstream of the site. The locations and concentrations support that the site is not the source of the sediment contamination and no remedial alternatives need to be evaluated for the sediment.

Soil Vapor/Sub-Slab Vapor/Air

The SI included the evaluation of soil gas samples collected from two locations near the eastern site margin along a vacant, dilapidated residence. The Town intends to purchase the property and convert it to a Town park. The results of the soil gas investigation identified detectable concentrations of multiple VOCs including petroleum-related compounds (toluene, ethylbenzene, xylenes), compounds commonly used in paints or as dry-cleaning or plastic solvents (tetrachloroethene, 2-butanine) and other compounds (tert-butyl Alcohol, propene, pentane, acetone,

hexane, 2-butanone, heptane, octane, 2-hexanone, 4-ethyltoluene, and 1,2,4-trimethylbenzene). The full extent of contaminants in soil vapors at the Site is not known, but is not considered a significant concern based on the current and proposed use of the area as open green space/town park. Further soil vapor investigation will be conducted following site remediation to assess vapor intrusion concerns in areas where potential receptors may exist, if any. Soil vapor identified during the SI/RAR will be addressed in the remedy selection process. Refer to Figure 6-Soil Gas Sample Analytical Detections.

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. IRMs at the site included the demolition and proper disposal of the former service station structures, the proper closure and disposal of one 1,000 gallon and one 2,000 gallon underground storage tanks, and the disposal of one 55 gallon drum of hydraulic oil from the former garage hydraulic lift system.

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 more detailed discussion of the human exposure pathways can be found in Section 1.6 of the Remedial Alternatives 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.

Access to the site is not restricted therefore site workers or trespassers can be exposed to contaminated soils. The proposed remedy will remove this potential. Exposures to contaminated groundwater via drinking water are not expected because public water serves the area. The potential for soil vapor will be evaluated after remediation.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of 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.

Gasoline contamination is limited to on-site soil and groundwater around the immediate area of the former underground storage tanks and pump island. Additionally, the site is in a residential area in the Village of Fort

Covington, the likelihood of wildlife being impacted is low and sediment contamination in the Salmon River located close to the site is not related to prior site activities.

Site contamination has also impacted the on-site shallow groundwater aquifer in the immediate area of the former underground storage tanks and pump island. The shallow aquifer is not utilized for consumption, and the area is serviced by a public water supply. No private wells are known to exist in the immediate area of the site.

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

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. 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 proposed future use for the Site would be restricted residential, a Town park. The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposure of persons at or around the site to VOCs and SVOCs in soils and groundwater at the site, and;
- the further release of VOCs and SVOCs contaminants from soil into groundwater that may create exceedences of groundwater quality standards.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards, and;
- removal of all contaminated soils above SCGs consistent with restricted residential usage. Restricted residential usage allows for the site to be re-used as a community park.

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. Potential remedial alternatives for the Former Martin's Gulf were identified, screened and evaluated in the RA report which is available at the document repositories established for the site.

A summary of the remedial alternatives that were considered for this site is 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 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

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

Alternative 1: No Action

Present Worth:	$76,862
Capital Cost:	$0
Annual Costs:	
(Years 1-5):	$5,000
(Years 5-30):	$5,000

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It would require periodic monitoring of on-site and off-site monitoring wells, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Soil Barrier To Contact For Contaminated Areas With Institutional Controls

Present Worth:	$149,649
Capital Cost:	$53,571
Annual Costs:	
(Years 1-5):	$6,250
(Years 5-30):	$6,250

This alternative would place a protective soil barrier over the area of gasoline contamination at the site. Contaminated soils at the site would be covered with at least two feet of soil cover, significantly raising the site grade. Top soil and grass would be placed on top of the soil cover. The grassed soil cover would require periodic maintenance (O&M). Since this alternative would leave contaminated soil on site, institutional controls in the form of environmental easements would be required to notify future owners and/or developers of the restricted use of the property.

Optional Protective cover possibilities for Alternative 2 would be: concrete sidewalks, asphalt/concrete parking lots, building footprints, or other acceptable strategies that provide a barrier to contact with the contaminated soils. Any excavated contaminated soil, needing to be removed to implement an acceptable alternative protective cover, would be properly disposed of according to NYSDEC regulations.

Groundwater sampling of on-site and off-site monitoring wells on a periodic basis would occur to monitor residual contaminants, including volatiles and semivolatiles. Environmental easements on groundwater usage and future use and development are included with this alternative. Refer to Figure 7-Soil Barrier to Contact.

Alternative 3: Excavation and Off-Site Disposal

Present Worth:	$219,275
Capital Cost:	$200,680
Annual Costs:	
(Years 1):	$18,595
(Years 2-30):	$0

This alternative involves the excavation and off-site disposal of soils exceeding restricted residential SCGs. Soils would be excavated and properly disposed of according to NYSDEC regulations. The anticipated extent of excavation is depicted in Figure 8, Excavation and Off-Site Disposal, measures approximately 45 feet by 50 feet by

8 feet deep, and is estimated as approximately 1000 tons of material. This amount may increase or decrease based on field screening results, presence of subsurface obstructions, and the depth to groundwater. Because groundwater may be encountered during excavation, temporary dewatering measures may be necessary to allow excavation of soils 5 feet or more below grade.

Confirmatory post excavation soil samples would be collected from the excavation area to document compliance with SCGs. In the event that impacted soils can not be feasibly excavated, due to contamination extending beyond the Site margins (i.e., below Main or Salmon Streets), or because of excessive groundwater infiltration into the excavation, in-situ treatment will be evaluated. This event will require a site monitoring plan. Environmental easements limiting future groundwater usage and controlling site development are included with this alternative. Additionally, since this alternative may leave contaminated soil above SCGs on site, institutional controls in the form of environmental easements may be required to notify future owners and/or developers of the restricted use of the property.

Clean soil would be used to backfill the excavation to within approximately 1 foot of the ground surface and clean top soil would be used to fill the remainder of the excavation so that the area could be seeded for grass or landscaping.

The time to design and implement the remedy would be a matter of a few months. It is expected that a four sets of quarterly groundwater samples will be required for one year after following completion of the remedial excavation to document groundwater quality following source removal.

Alternative 4: Phytoremediation

Present Worth:	$167,126
Capital Cost:	$103,120
Annual Costs:	
(Years 1-5):	$6,000
(Years 5-30):	$6,000

Phytoremediation has been evaluated as a potentially applicable remedial alternative based on several site-specific conditions including: saturated soils at a depth of approximately 7 to 8 feet below grade; vegetated and undeveloped ground cover at the Site; the ability of poplar and/or willow trees to grow in the area; and shallow soil impacted with limited VOCs and SVOCs.

Hybrid poplar and willow trees planted with appropriate plant species and grasses (e.g., alfalfa and switch grass) have been demonstrated to work in combination as an integrated system that can effectively remediate shallow soil and groundwater impacted with petroleum hydrocarbons. The remedial effects of a phytoremediation system derive from multiple physical, chemical, and biological processes.

A phytoremediation system planted in the impacted area is expected to control the potential down gradient migration of dissolved-phase hydrocarbons, protecting down gradient surface water bodies (i.e., the Salmon River) and supporting continued attenuation in groundwater and soil impacts that may be present below Salmon and Chateaugay Streets. This represents a self-sustaining remediation system that would continue to control and reduce shallow soil and groundwater impact into the future.

The implementation of this alternative at the site would involve planting 12-14 foot tall hybrid poplar and willow trees in a series of trenches (approximately 6-8 feet deep) excavated in proximity to the saturated soil zone. Two cubic feet of organic compost would be added per lineal foot of trench. Trees would be planted approximately every 9-feet on center to adequately cover that area of impact. Appropriate plant species and grasses (e.g., alfalfa and switch grass) would be selected in consultation with a specialty vendor to fill in beneath the tree canopy and to promote biodegradation in the shallow soil.

Operation and maintenance activities would be conducted for the first three growing seasons and would consist of 1) regular inspections and observations of the phytoremediation system and 2) placement of deer wrap around the trees to protect them until they are established. Based on the current groundwater conditions at the Site, an irrigation system would not be necessary. Due to the location of the Site proximal to the Salmon River, a simple irrigation system could be installed if groundwater conditions changed or if deemed necessary after the phytoremediation system was installed.

An Environmental Easement would be required to prevent the use of groundwater at the Site, prevent the disturbance of phytoremediation system trees and grasses, and prevent uncontrolled excavation which might disturb or expose contaminated soils and increase the potential for human exposures.

The rate of remediation depends on a number of site-specific variables including depth to water, concentration of COC, soil types, type and size of tree at planting, installation technique, amendments, agronomy and availability of water. The effectiveness of this alternative also depends on the climate and growing season in the site location. For the purposes of this RAR, it is anticipated that remediation would be achieved in ten years. It is anticipated that annual groundwater sampling would be required during the first nine years of phytoremediation and that quarterly groundwater sampling would be necessary the tenth year to document improvements to groundwater quality for site closure. It is assumed that soil sampling would also be necessary prior to closure to document the attainment of soil SCOs/SCGs. Environmental easements on groundwater usage and future use and development are included with this alternative. Refer to Figure 9-Phytoremediation.

It is noted that the effectiveness of this alternative may be very limited by climate and the limited growing season in northern New York. Because the frost free growing season is typically between the middle of May and the end of September, the phytoremediation system would be nearly dormant for more than half of each year. Additionally, the Town proposes using the location for open space in an expanded Town park.

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 environmental restoration projects in New York A detailed discussion of the evaluation criteria and comparative analysis is included in the RA report.

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.

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 Department has determined to be applicable on a case-specific basis.

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

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

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.

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.

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.

7. Cost-Effectiveness. Capital costs and annual 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.

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 SI/RAR reports and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department 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 Department is proposing Alternative 3-Excavation and Off-site Disposal 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 the RA.

Alternative 3 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 all contaminated soils above restricted residential SCGs preventing any threat to public health and the environment. It would greatly reduce any contamination in the groundwater, and it would create the conditions needed to restore groundwater quality to the extent practicable. Alternatives 4 would also comply with the threshold selection criteria but to a lesser degree and with much lower certainty and over a much longer period of time.

Alternative 1 would involve no further investigation or reduction of contaminants, no barrier to contact, and would incur an expense of periodic monitoring of on-site and off-site groundwater wells. Site usage would be severely restricted.

Alternative 2 also would involve no further investigation or reduction of contaminants, but would provide a barrier to contact. Significant VOC and SVOC contamination has been identified on the site and may be a continuing source of groundwater contamination.

Alternative 4 would eventually reduce the source of contamination in the soil and groundwater. However, it would not allow use of the property as a town park for at least a decade.

Alternatives 2-4 would all have short-term impacts which can be easily controlled. The time needed to achieve the remediation goals would be longest for Alternative 4 and very similar for Alternatives 2 and 3.

Achieving long-term effectiveness would best be accomplished by excavation and removal of the contaminated overburden soils (Alternative 3). Alternative 3 is favorable because it will result in removal of the source of groundwater contamination and all soil above restricted residential SCGs to the extent practical.

Alternative 3 is favorable in that it will be readily implementable. Alternatives 1 and 2 would also be achievable. The implementability of Alternative 4 would be much more complex and uncertain.

Alternative 3 will reduce the volume of waste on-site, addressing the entire area of soil contamination. Approximately 1,000 tons of material would be removed with Alternative 3. Contaminated soils would remain in the saturated and unsaturated zones with Alternative 1, 2, and 4.

As an alternative to excavation and off site disposal, groundwater treatment for petroleum contamination was evaluated but not proposed due to significant clay and tight soils impeding such an Alternative. Additionally, groundwater treatment would occur over a period of years, and would be maintenance and sampling intensive.

The cost of the alternatives varies significantly. Barrier to contact (Alternative 2) and Phytoremedation (Alternative 4) would be less expensive than excavation (Alternative 3). Alternative 3 is very favorable because it is a remedy that would eliminate the source of groundwater contamination at the site from the petroleum contaminated areas in the shortest time and most cost effective manner.

The estimated present worth cost to implement the remedy is $ 219,275. The cost to construct the remedy is estimated to be $ 200,680 and the estimated average annual costs of $5,000 for an estimated 10 years for comparison purposes.

The elements of the proposed remedy are as follows:

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

2. Excavation and proper disposal of 1,000 tons of VOC and SVOC contaminated soils from the former tank and pump island area. The excavated area will be backfilled with clean fill and covered with a minimum of one foot of acceptable material such as topsoil and grass or six inches of acceptable impervious material such as asphalt or concrete. Clean backfill and soil must meet the Division of Environmental Remediation's Part 375 criteria for backfill or local site background.

3. The need for soil vapor samples(s) and groundwater restrictions will be reevaluated during the remediation phase, once the excavation and remediation is completed at the Site. Should vapor intrusion remain a concern post remediation, continued evaluation of the potential for vapor intrusion for off site building(s) or any building(s) developed on the site, including provisions for mitigation of any impacts identified will be required.

4. Imposition of an institutional control in the form of an environmental easement that would require (a) limiting the use and development of the property to restricted residential use, which would also permit commercial or industrial uses consistent with local zoning; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; and (d) the property owner to complete and submit to the Department a periodic certification of institutional controls.

5. The property owner would provide a periodic certification of institutional controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal would: (a) contain certification that the institutional controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that 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 the site management plan unless otherwise approved by the Department.

The proposed future use of the site is restricted residential.

TABLE 1
Nature and Extent of Contamination
April 2006-June 2007

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND to 1.6	1	1 of 10
	Benzo(a)pyrene	ND to 1.5	1	1 of 10
	Benzo(b)fluoranthene	ND to 1.9	1	2 of 10
	Chrysene	ND to 1.6	1	1 of 10
	Indeno(1,2,3-cd)pyrene	ND to .87	0.5	3 of 10
Pesticides	4,4'-DDT	ND to .014	.0033	2 of 10
Inorganic Compounds	Chromium	ND to 31	30	1 of 10
	Lead	ND to 251	63	4 of 10
	Mercury	ND to .22	.18	1 of 10
	Zinc	ND to 288	109	3 of 10

TABLE 1
Nature and Extent of Contamination (Continued)

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND to 53.5	.06	10 of 31
	n-Butylbenzene	ND to 32.1	12	5 of 31
	Ethylbenzene	ND to 158	1	13 of 31
	MTBE	ND to 22.7	.93	1 of 31
	n-propylbenzene	ND to 71.2	3.9	9 of 31
	sec-Butylbenzene	ND to 11.9	11	1 of 31
	Toluene	ND to 532	.7	11 of 31
	1,2,4-Trimethylbenzene	ND to 805	3.6	12 of 31
	1,3,5-Trimethylbenzene	ND to 299	8.4	11 of 31
	Xylene (total)	ND to 957	.26	14 of 31
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND to 11	1	1 of 31
	Benzo(a)pyrene	ND to 7.8	1	1 of 31
	Benzo(b)fluoranthene	ND to 11	1	1 of 31
	Chrysene	ND to 9.2	1	1 of 31
	Dibenzo(a,h)anthracene	ND to 1.8	.33	1 of 31
	Indeno(1,2,3-cd)pyrene	ND to 1.8	0.5	1 of 31
	Naphthalene	ND to 124	12	3 of 31
PCB/Pesticides	4,4'-DDE	ND to .0052	.0033	2 of 15
	4,4-DDT	ND to .052	.0033	3 of 15
Inorganic Compounds	Cadmium	ND to 4.2	2.5	1 of 20
	Chromium	ND to 74.4	30	11 of 20
	Lead	ND to 480	63	5 of 20
	Mercury	ND to .898	.18	1 of 20
	Nickel	ND to 49.5	30	8 of 20
	Zinc	ND to 140	109	10 of 20

TABLE 1
Nature and Extent of Contamination (Continued)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[d] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND[c] to 4,120	1	6 of 16
	Ethylbenzene	ND to 1,040	5	6 of 16
	Isopropylbenzene	ND to 28.3	5	5 of 16
	Methyl Tertiary Butyl Ether	ND to 643	10	6 of 16
	n-Propylbenzene	ND to 84.7	5	5 of 16
	Toluene	ND to 11,700	5	6 of 16
	1,2,4-Trimethylbenzene	ND to 1,320	5	6 of 16
	1,3,5-Trimethylbenzene	ND to 344	5	6 of 16
	m,p-Xylene	ND to 6,380	5	6 of 16
	o-Xylene	ND to 3,090	5	6 of 16
Semivolatile Organic Compounds (SVOCs)	Naphthalene	ND to 194	10	6 of 16
Inorganic Compounds	Chromium	ND to 98.1	50	3 of 16
	Lead	ND to 59.1	25	3 of 16

TABLE 1
Nature and Extent of Contamination (Continued)

SOIL VAPOR	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[e] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	tert-Butyl Alcohol	9.7 to 11	NA	NA
	Propene	290 to 400	NA	NA
	Pentane	27 to 33	NA	NA
	Acetone	1,200 to 1,500	NA	NA
	Hexane	43 to 48	NA	NA
	2-Butanone (MEK)	10,000	NA	NA
	Heptane	28	NA	NA
	Toluene	9.4 to 12	NA	NA
	Octane	74 to 75	NA	NA
	Tetrachloroethene	25 to 140	NA	NA
	2-Hexanone	930 to 1,100	NA	NA
	Ethylbenzene	10	NA	NA
	m/p-Xylene	27 to 32	NA	NA
	o-Xylene	10 to 11	NA	NA
	4-Ethyltoluene	12 to 13	NA	NA
	1,2,4-Trimethylbenzene	12 to 15	NA	NA

[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;
ug/m^3 = micrograms per cubic meter;

[b] SCG = standards, criteria, and guidance values for unrestricted use

[c] ND = no contaminants detected above the method detection limit

[d] SCG = standards, criteria, and guidance values based on June 1998 Ambient Water Quality Standards

[e] SCG = standards, criteria, and guidance values based on 2006 Soil Vapor Intrusion Guidance

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	$0	$5,000	$76,862
Soil Barrier to Contact	$53,571	$6,250	$149,649
Excavation and Off-Site Disposal	$200,680	$18,595 (2 yrs)	$219,275
Phytoremediation	$103,120	$6,000	$167,126

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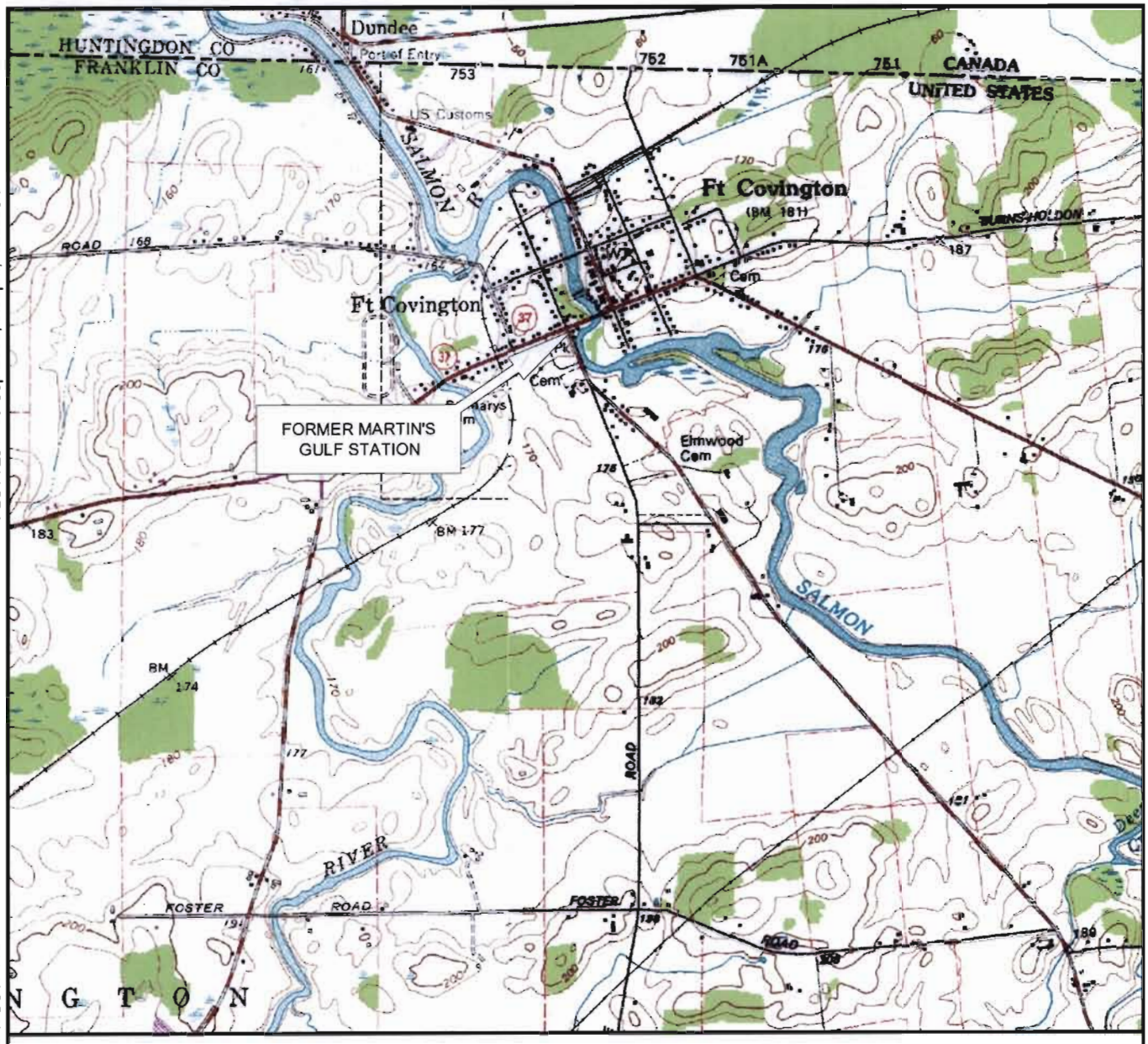
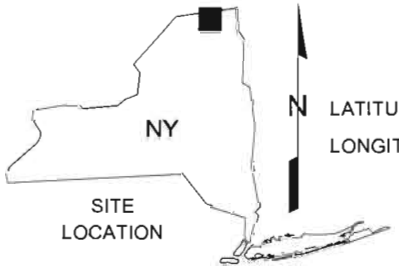


LEGEND

- APPROXIMATE LOCATION OF MUNICIPAL WATER SUPPLY WELLS

SCALE IN FEET

0 2,000 4,000



LATITUDE: 44° 59' 17" N

LONGITUDE: 74° 29' 48" W

REFERENCES:

1. USGS 7.5' TOPOGRAPHIC MAPS "BOMBAY, NY-QUE QUADRANGLE, PHOTOREVISED 1993" AND "FORT COVINGTON, NY-QUE QUADRANGLE, PHOTOREVISED 1987" PROVIDED BY MAPTECH INC.
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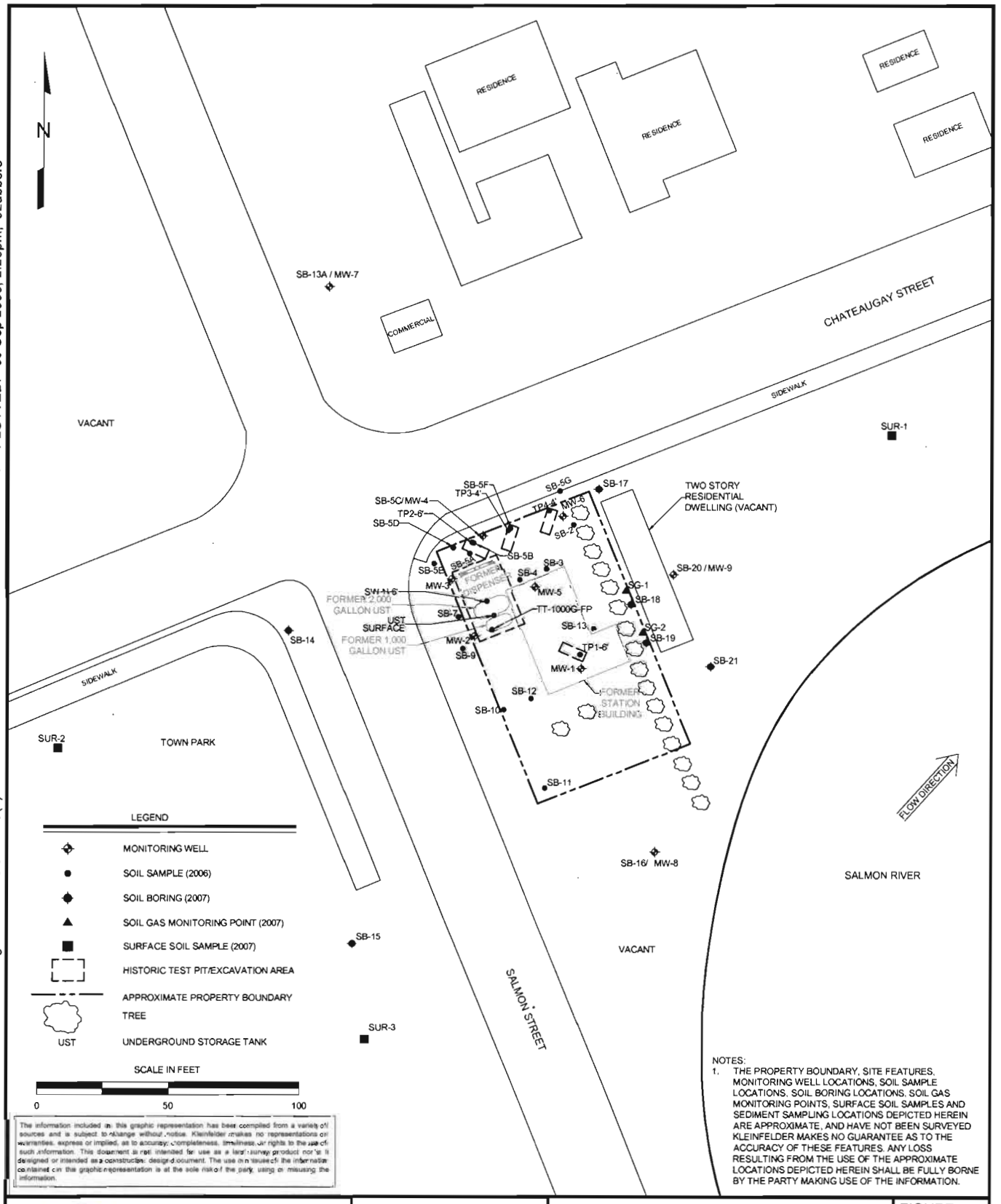
SITE LOCATION MAP

FORMER MARTIN'S GULF STATION
CHATEAUGAY AND SALMON STREET
FORT COVINGTON, NEW YORK

FIGURE

1



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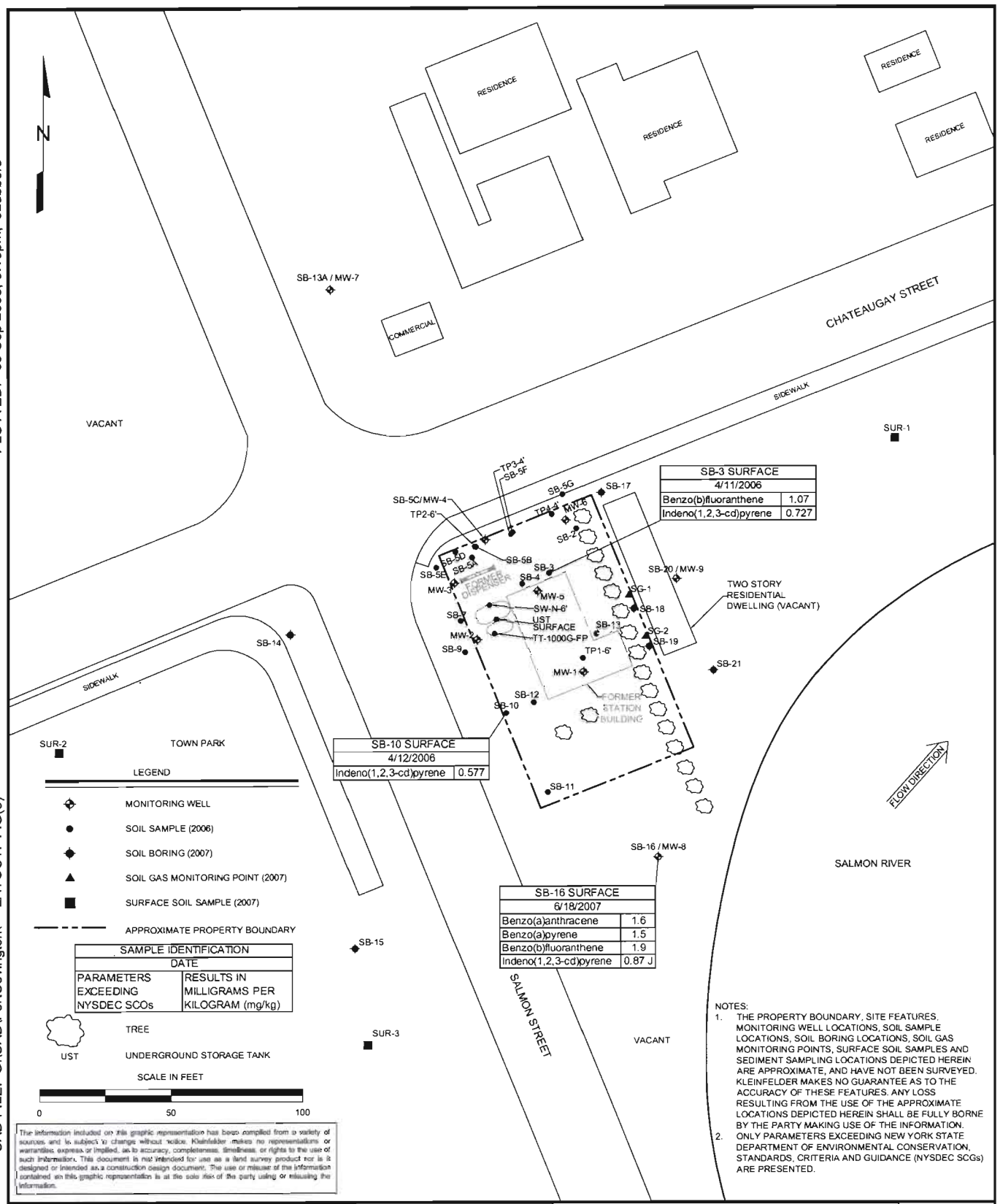
SITE PLAN

FORMER MARTIN'S GULF STATION
CHATEAUGAY AND SALMON STREET
FORT COVINGTON, NEW YORK

FIGURE
2



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SURFACE SOIL SAMPLE ANALYTICAL DATA EXCEEDING NYSDEC SCGs

FORMER MARTIN'S GULF STATION
CHATEAUGAY AND SALMON STREET
FORT COVINGTON, NEW YORK

FIGURE
3

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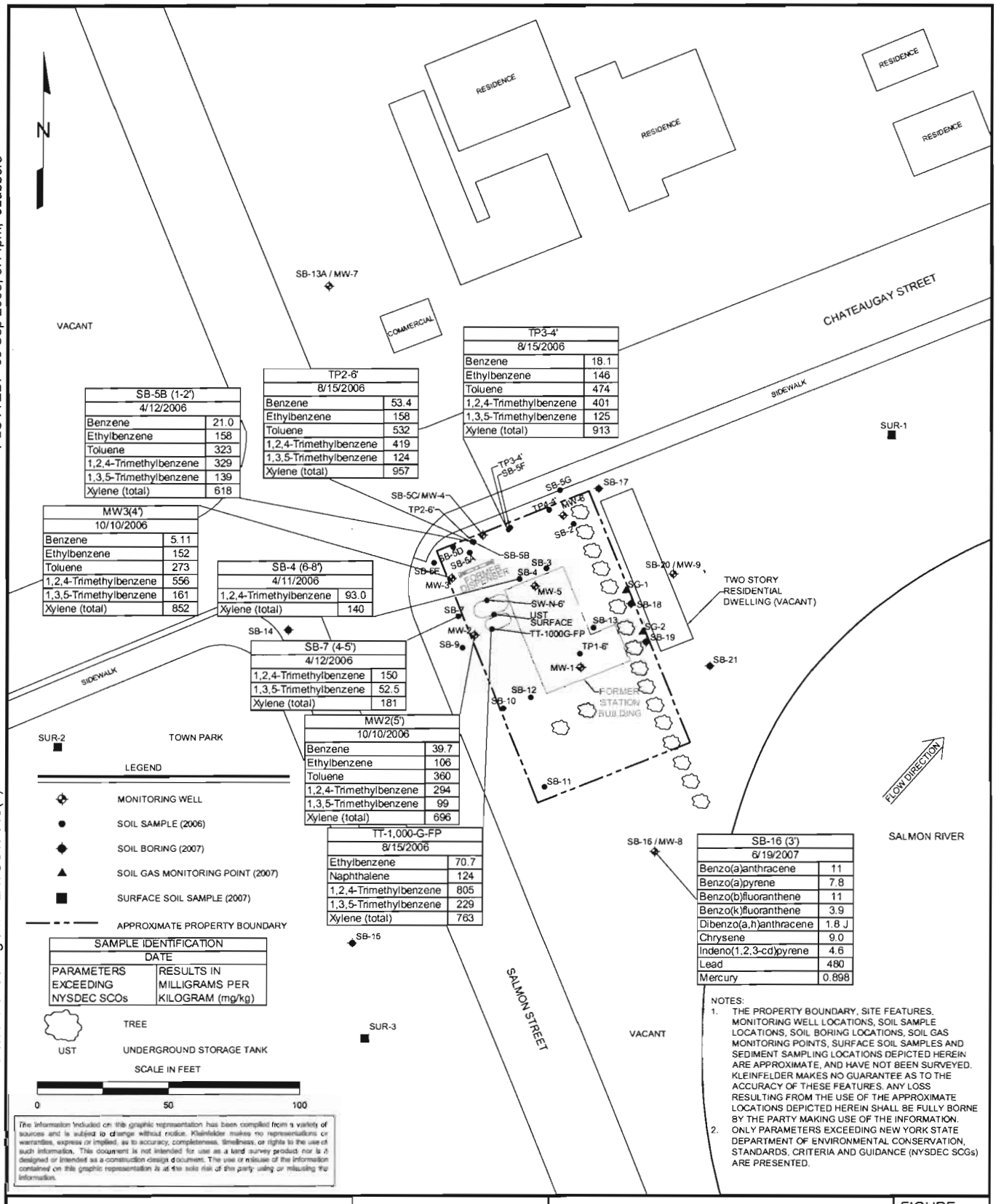

NOTES:
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SUBSURFACE SOIL SAMPLE ANALYTICAL DATA EXCEEDING NYSDEC SCGs

FORMER MARTIN'S GULF STATION
CHATEAUGAY AND SALMON STREET
FORT COVINGTON, NEW YORK

FIGURE
4

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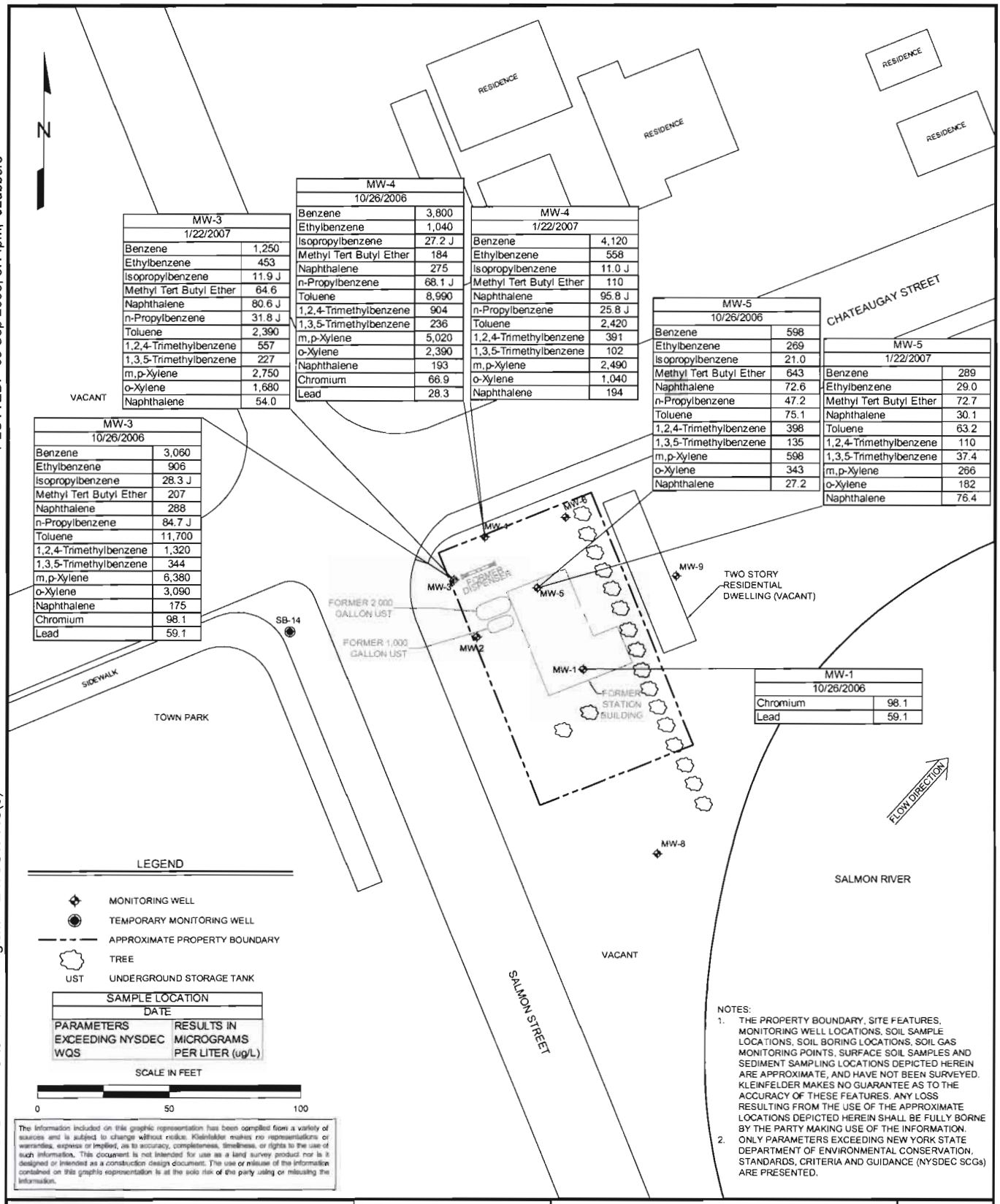

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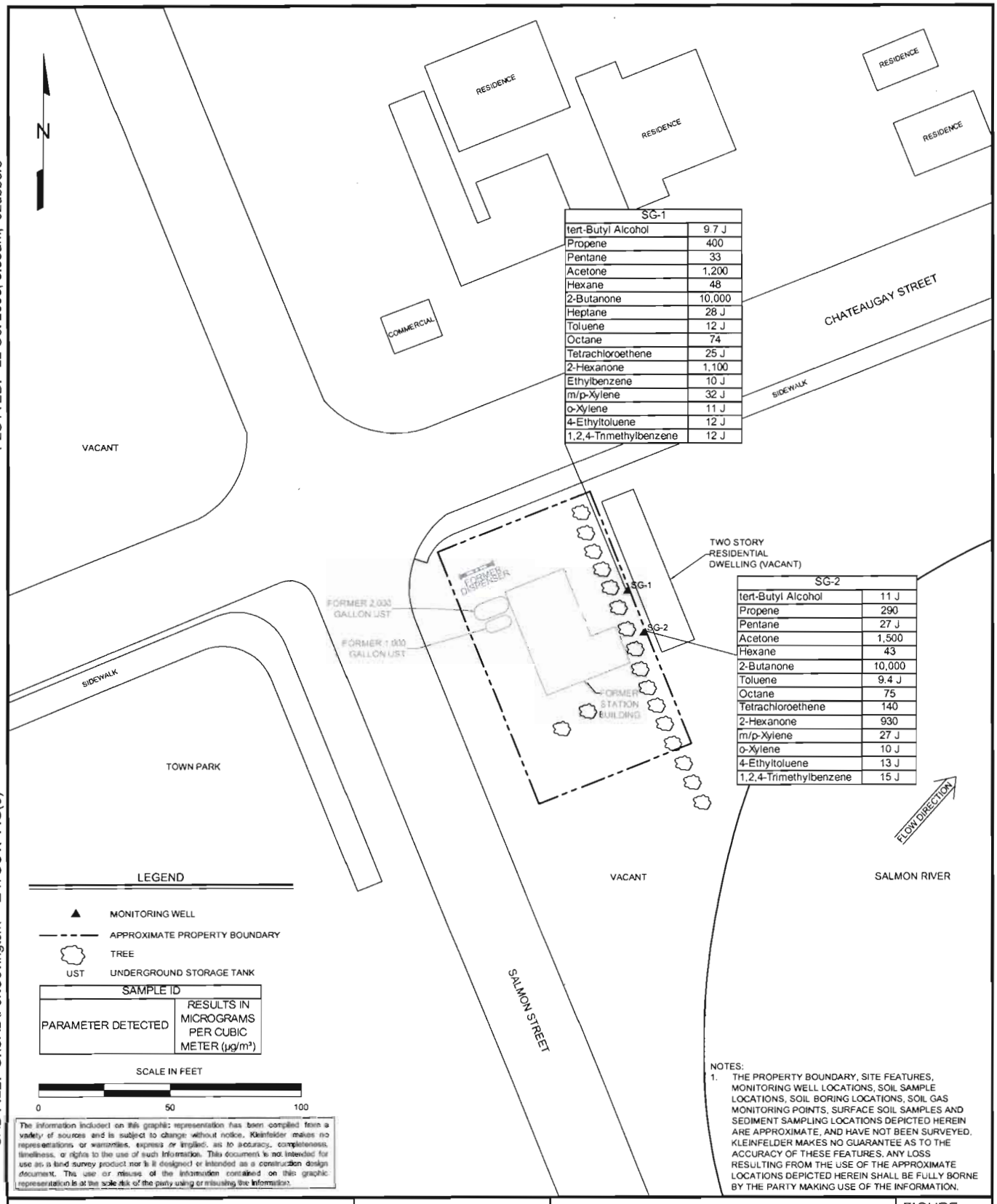
GROUNDWATER SAMPLE ANALYTICAL DATA EXCEEDING NYSDEC SCGs

FORMER MARTIN'S GULF STATION
CHATEAUGAY AND SALMON STREET
FORT COVINGTON, NEW YORK

FIGURE
5



SG-1	
tert-Butyl Alcohol	9.7 J
Propene	400
Pentane	33
Acetone	1,200
Hexane	48
2-Butanone	10,000
Heptane	28 J
Toluene	12 J
Octane	74
Tetrachloroethene	25 J
2-Hexanone	1,100
Ethylbenzene	10 J
m/p-Xylene	32 J
o-Xylene	11 J
4-Ethyltoluene	12 J
1,2,4-Trimethylbenzene	12 J

SG-2	
tert-Butyl Alcohol	11 J
Propene	290
Pentane	27 J
Acetone	1,500
Hexane	43
2-Butanone	10,000
Toluene	9.4 J
Octane	75
Tetrachloroethene	140
2-Hexanone	930
m/p-Xylene	27 J
o-Xylene	10 J
4-Ethyltoluene	13 J
1,2,4-Trimethylbenzene	15 J

NOTES:
1. THE PROPERTY BOUNDARY, SITE FEATURES, MONITORING WELL LOCATIONS, SOIL SAMPLE LOCATIONS, SOIL BORING LOCATIONS, SOIL GAS MONITORING POINTS, SURFACE SOIL SAMPLES AND SEDIMENT SAMPLING LOCATIONS DEPICTED HEREIN ARE APPROXIMATE, AND HAVE NOT BEEN SURVEYED. KLEINFELDER MAKES NO GUARANTEE AS TO THE ACCURACY OF THESE FEATURES. ANY LOSS RESULTING FROM THE USE OF THE APPROXIMATE LOCATIONS DEPICTED HEREIN SHALL BE FULLY BORNE BY THE PARTY MAKING USE OF THE INFORMATION.

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SOIL GAS SAMPLE ANALYTICAL DETECTIONS

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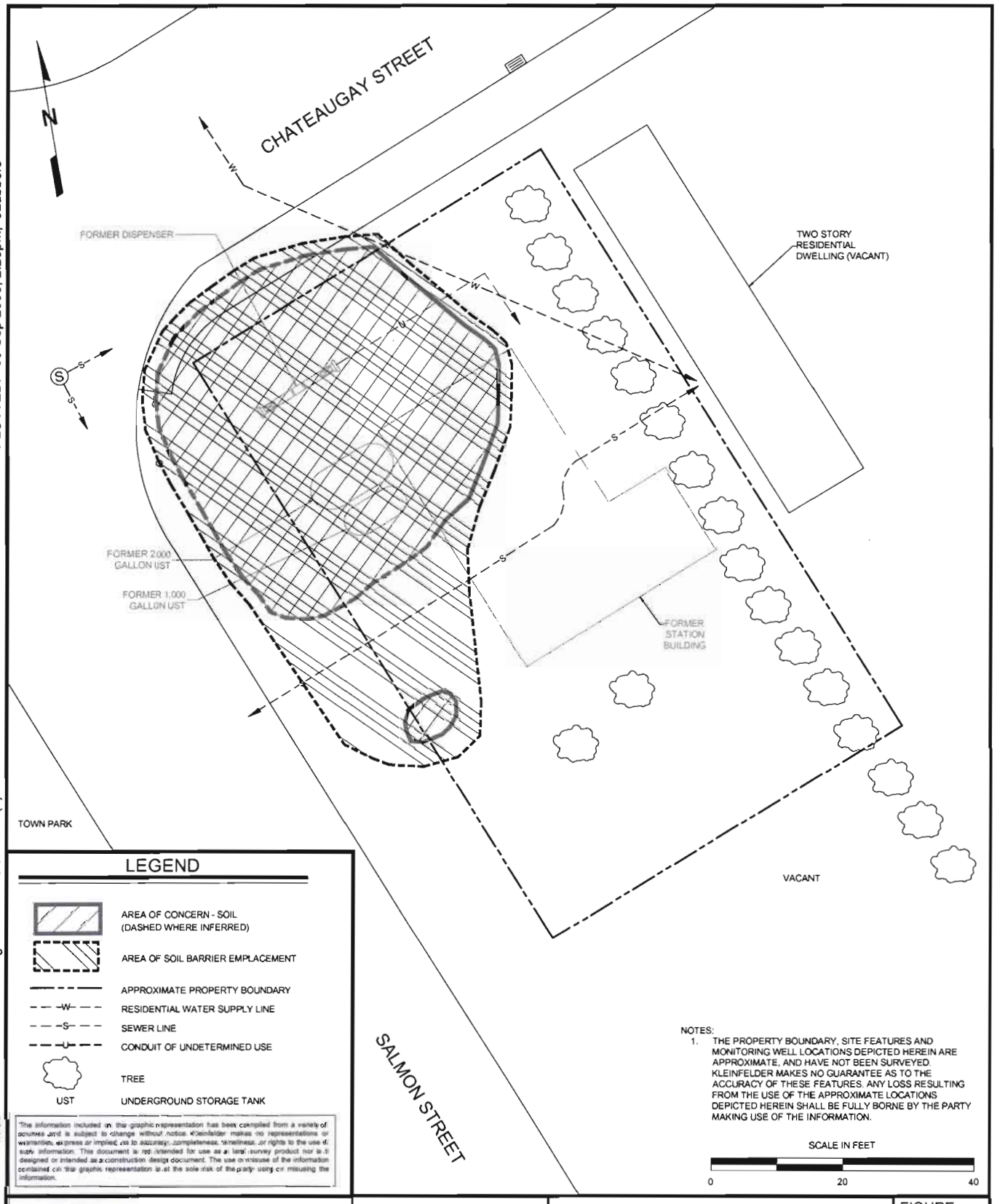
FIGURE
6



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ALTERNATIVE No. 2
SOIL BARRIER TO CONTACT

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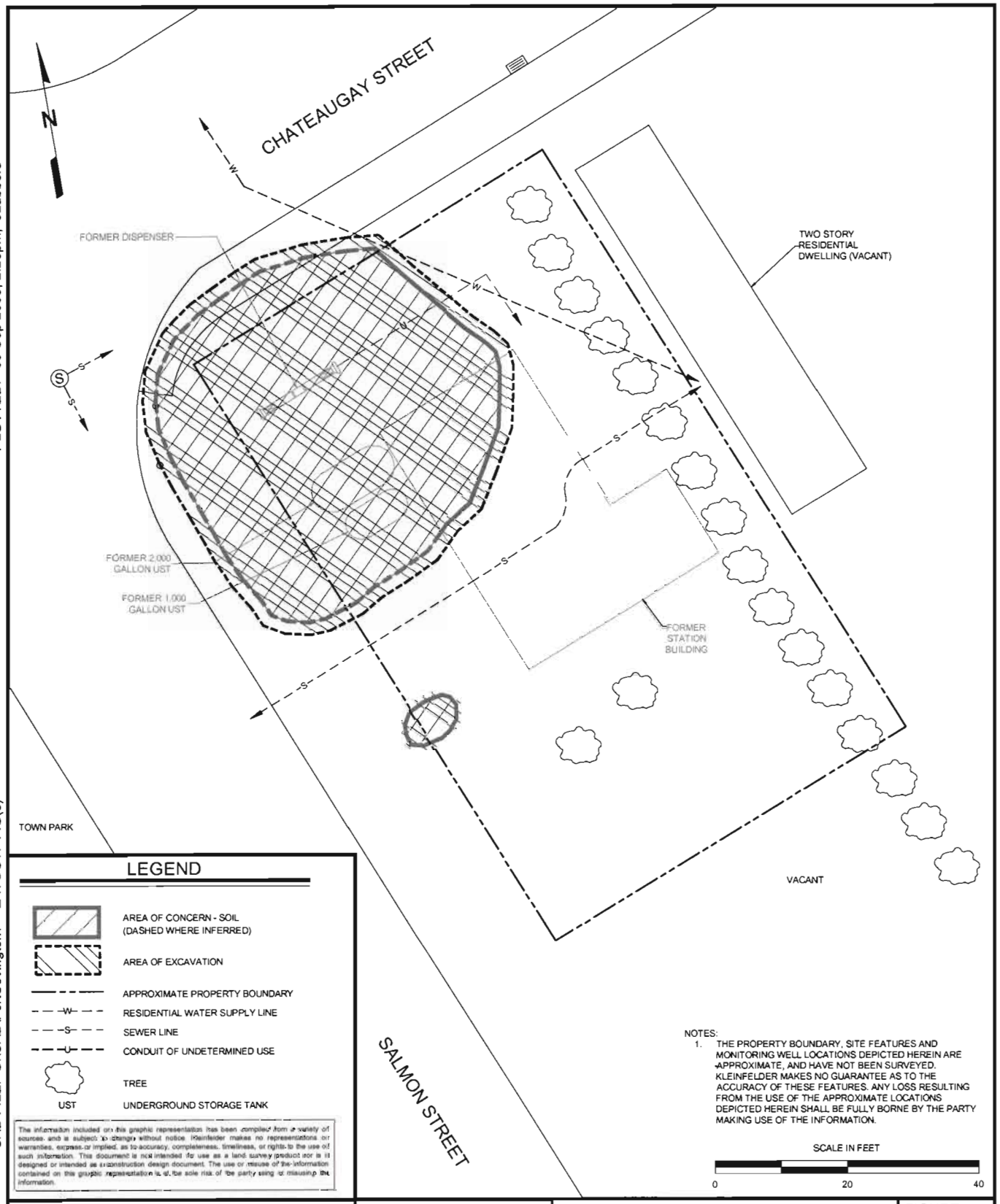
FORT COVINGTON, NEW YORK

FIGURE
7



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ALTERNATIVE No. 3
EXCAVATION AND OFF-SITE DISPOSAL

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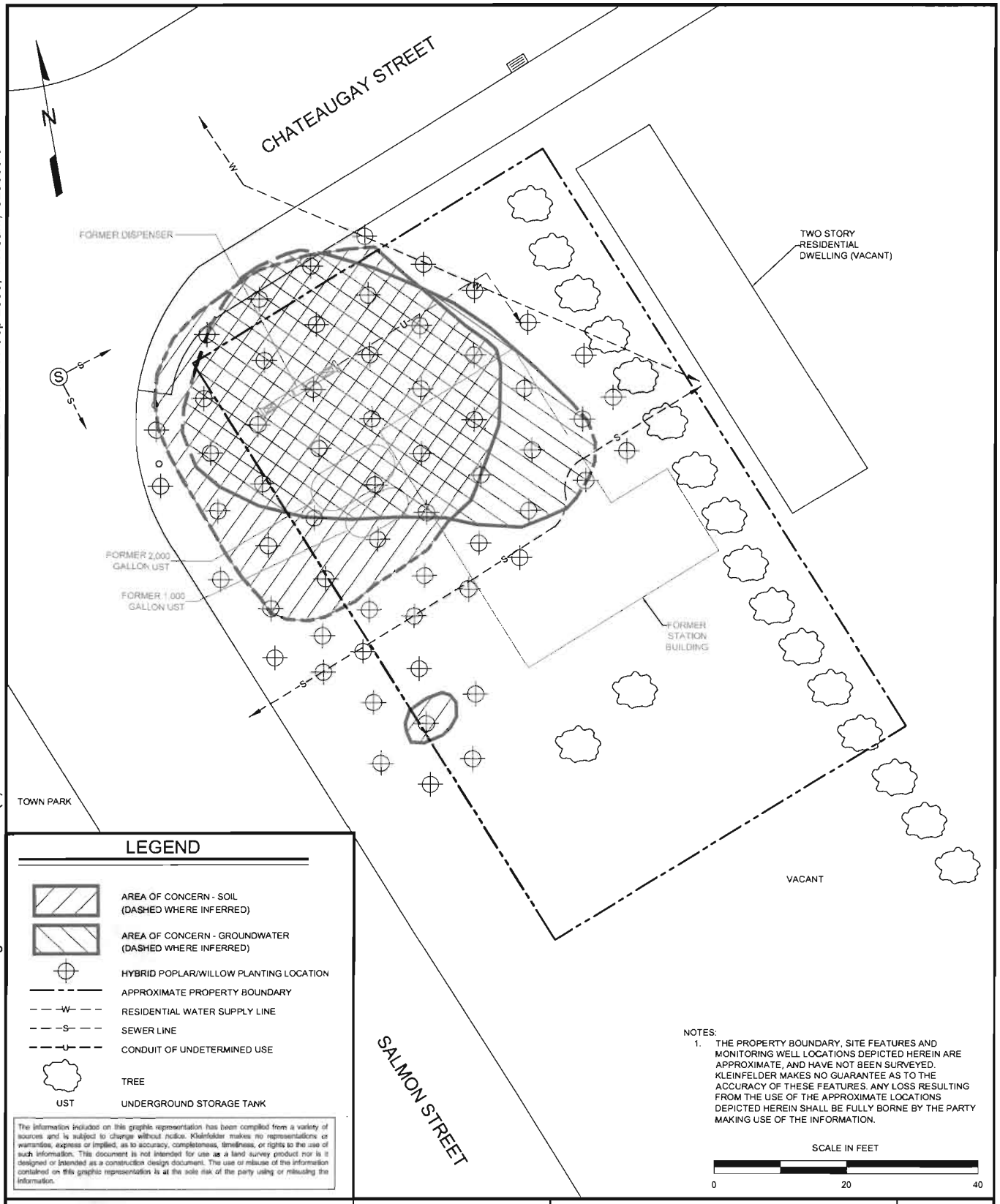
FORT COVINGTON, NEW YORK

FIGURE
8



LEGEND

- AREA OF CONCERN - SOIL (DASHED WHERE INFERRED)
- AREA OF CONCERN - GROUNDWATER (DASHED WHERE INFERRED)
- HYBRID POPLAR/WILLOW PLANTING LOCATION
- APPROXIMATE PROPERTY BOUNDARY
- W — RESIDENTIAL WATER SUPPLY LINE
- S — SEWER LINE
- U — CONDUIT OF UNDETERMINED USE
- TREE
- UST — UNDERGROUND STORAGE TANK

NOTES:
1. THE PROPERTY BOUNDARY, SITE FEATURES AND MONITORING WELL LOCATIONS DEPICTED HEREIN ARE APPROXIMATE, AND HAVE NOT BEEN SURVEYED. KLEINFELDER MAKES NO GUARANTEE AS TO THE ACCURACY OF THESE FEATURES. ANY LOSS RESULTING FROM THE USE OF THE APPROXIMATE LOCATIONS DEPICTED HEREIN SHALL BE FULLY BORNE BY THE PARTY MAKING USE OF THE INFORMATION.

SCALE IN FEET
0 20 40

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ALTERNATIVE No. 4
PHYTOREMEDIATION

FORMER MARTIN'S GULF STATION
CHATEAUGAY AND SALMON STREET
FORT COVINGTON, NEW YORK

FIGURE
9

PLOTTED: 11 Sep 2008, 11:46am, JLubbers
CAD FILE: G:\CAD\FortCovington\ LAYOUT: FIG(9)
NEWBURGH, NY