Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Chemical Leaman Tank Lines Site
Operable Unit Nos. 1, 2 and 3
City of Tonawanda, Erie County, New York
Site Number 9-15-014

March 2006

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* DENISE M. SHEEHAN, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Chemical Leaman Tank Lines Inactive Hazardous Waste Disposal Site
Operable Unit Nos. 1, 2 and 3
City of Tonawanda, Erie County, New York
Site No. 9-15-014

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit Nos. 1, 2 and 3 of the Chemical Leaman Tank Lines site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for Operable Unit Nos. 1, 2 and 3 of the Chemical Leaman Tank Lines inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

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

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Chemical Leaman Tank Lines site and the criteria identified for evaluation of alternatives, the NYSDEC has selected In-Situ Chemical Treatment with Monitored Natural Attenuation for Operable Unit 1, and Excavation with Offsite Disposal and Monitored Natural Attenuation for Operable Units 2 and 3. The components of the remedy are as follows:

1. Operable Unit 1:

- A remedial design program that includes a pilot-scale study to determine the efficacy of this remedy and to obtain data to design a full-scale system; and

- Injection of a chemical reagent into contaminated soils and groundwater to reduce the volume and toxicity of the contaminants present.

2. **Operable Units 2 & 3:**

- A remedial design program to delineate the extent of contaminated soil requiring removal;

- Excavation of contaminated soils, with the excavated materials disposed of at an offsite, permitted landfill; and

- Following excavation, the areas would be backfilled with 'clean' offsite borrow material and graded to promote drainage.

In addition to the above, the following elements are applicable to all three operable units:

- Development of a site management plan to address residual contamination, evaluate the potential for vapor intrusion in site buildings, identify any use restrictions, and implement a groundwater monitoring program;

- Imposition of an environmental easement; and

- Periodic certification of the institutional and engineering controls.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

MAR 3 1 2006

Date

Dale A. Desnoyers, Director
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RECORD OF DECISION

Chemical Leaman Tank Lines Inactive Hazardous Waste Disposal Site
Operable Unit Nos. 1, 2 and 3
City of Tonawanda, Erie County, New York
Site No. 9-15-014
March 2006

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Chemical Leaman Tank Lines Site. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, leakage from three, unlined settling lagoons and spills during facility operations have resulted in the presence of hazardous wastes, primarily volatile organic compounds (VOCs), on this property. These wastes have contaminated the soils and groundwater at the site, and have resulted in:

- A significant threat to human health associated with potential exposure to contaminated soil and groundwater; and

- A significant environmental threat associated with the impacts of contaminants to site groundwater and potentially Ellicott Creek.

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy:

Operable Unit 1 - In-Situ Chemical Treatment with Monitored Natural Attenuation

- A remedial design program that includes a pilot-scale study to determine the efficacy of this remedy and to obtain data to design a full-scale system; and

- Injection of a chemical oxidant into contaminated soils and groundwater to reduce the volume and toxicity of the contaminants present.

Operable Units 2 & 3 - Excavation with Offsite Disposal and Monitored Natural Attenuation

- A remedial design program to delineate the extent of contaminated soil requiring removal;

- Excavation of contaminated soils, with the excavated materials disposed of at an offsite, permitted landfill; and

- Following excavation, the areas would be backfilled with 'clean' offsite borrow material and graded to promote drainage.

An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

In addition to the above, the following elements are applicable to all three operable units:

- Development of a site management plan to address residual soil contamination, evaluate the potential for vapor intrusion in site buildings, identify any future use restrictions, and implementation of a groundwater monitoring program;

- Imposition of an environmental easement to restrict groundwater use and ensure compliance with an approved site management plan; and

- Periodic certification of the institutional and engineering controls.

The selected 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.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Chemical Leaman Tank Lines Site is located at 470 Fillmore Avenue, on the southwest corner of the intersection of Fillmore and Wales Avenues, in the City of Tonawanda, Erie County, New York (Figure 1). The site, approximately 16 acres in size, is zoned light industrial/commercial. The site is bordered by Fillmore Avenue to the north, Wales Avenue to the east, Ellicott Creek to the south, and an open field and Route 425 to the west (Figure 2).

The Chemical Leaman Tank Lines Site has been subdivided into three Operable Units (OUs), all of which are the subject of this PRAP. The operable units at the Chemical Leaman Tank Lines Site are summarized as follows:

- OU1 - Former Lagoon Area: This operable unit consists of contaminated soil and groundwater in the former settling lagoon area (Figure 2);

- OU2 - Area North of the Former Wastewater Treatment Plant: This operable unit consists of contaminated soil and groundwater in the area north of the former wastewater treatment plant (Figure 2); and

- OU3 - Eastern Area: This operable unit consists of contaminated soil and groundwater in the eastern portion of the site along Wales Avenue (Figure 2).

These operable units are the only areas of the site where contamination has been identified.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Prior to 1959, the site was undeveloped and was owned by a succession of parties including railroad companies, real estate companies and private parties. In 1959 Chemical Leaman Tank Lines (Chemical Leaman) purchased the property. Chemical Leaman was a common carrier transporting bulk chemicals by tank truck. By 1963 Chemical Leaman had constructed several buildings and made other improvements at the facility, and began operating the site as a tank truck terminal. Chemical Leaman's operations at the facility included tank truck dispatching, maintenance, and cleaning.

Chemical Leaman's operations at the facility continued until 2001, when the truck dispatching, maintenance and cleaning activities ceased, and the onsite wastewater treatment facility was decommissioned. The site is presently owned by Chemical Leaman, but unused and unoccupied.

The following subsections provide descriptions of the disposal practices at the Chemical Leaman facility as they relate to specific operable units.

OU1: Former Lagoon Area

From 1963 to 1978, wastewater (rinse water, dilute chemical residues and expended steam condensate) from the tank truck cleaning operations was discharged to three unlined surface settling lagoons in the central portion of the site (Figure 2) for treatment (aeration and settling). Discharge from the lagoons went to the Tonawanda Wastewater Treatment Plant via the sanitary sewer system. In 1978 discharge to the three settling lagoons was limited to nonpriority pollutant wastewaters, with wastewaters containing heavy metals and priority pollutants collected separately in two 1,000-gallon storage tanks. This practice continued until July 1987 when a new wastewater treatment facility was constructed at the site. The historical use of these lagoons resulted in the contamination of soil and groundwater at this operable unit.

OU2: Area North of the Former Wastewater Treatment Plant

Although the exact source of contamination at this operable unit is unknown, the pattern of contamination suggests the possibility of one or more surface spills in the past. These releases resulted in the contamination of soil and groundwater at this operable unit.

OU3: Eastern Area

Although the exact source of contamination at this operable unit is unknown, the linear pattern of contamination suggests spillage from a tank truck with its valve open as it drove in this area. This release resulted in the contamination of soil and groundwater at this operable unit.

3.2: Remedial History

In August 1981, four wells were installed at the site (B-01 through B-04; Figure 3). Well (B-1) was located upgradient of the three settling lagoons, with the remaining three wells located downgradient between the lagoons and Ellicott Creek.

From 1981 through 1985, the four onsite wells were sampled on numerous occasions by Chemical Leaman. In some wells, the concentration of phenols and a number of metals were found to exceed the NYSDEC groundwater standards.

In 1984, the NYSDEC first listed the site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a is a temporary classification assigned to a site that has inadequate and/or insufficient data for inclusion in any of the other classifications.

In January 1986, a NYSDEC consultant prepared a Phase I Investigation report for the Chemical Leaman Tank Lines Site. The Phase I investigation focused on potential groundwater contamination from the three settling lagoons, and recommended further investigation as part of a Phase II investigation.

In May 1987, a United States Environmental Protection Agency (USEPA) consultant collected four groundwater samples from the existing wells, two surface water and sediment samples from Ellicott Creek, one sample from an onsite sewer, two surface soil samples, and three sediment samples from the settling lagoons. These samples documented contamination in site groundwater, site surface soil and sediment from the lagoons.

During the summer and fall of 1988, Chemical Leaman excavated the three lagoons to a depth of 14 to 16 feet. Approximately 4,000 cubic yards of stabilized sludge and underlying soil were sent offsite for disposal. Substrate samples were collected and analyzed as the excavations progressed. Following the completion of excavation activities, the three lagoons were backfilled to grade with clean soils.

In August 1989, Chemical Leaman sampled the four onsite wells. Several volatile organic compounds (VOCs) were detected at concentrations significantly above the NYSDEC groundwater standards. As a result, Chemical Leaman installed two additional wells at the site in 1991: well B-05 on the east (presumed upgradient) side of the site adjacent to Wales Avenue and well B-06 on the west (presumed downgradient) side of the site in an open field southwest of the former settling lagoons (Figure 3). The analytical results indicated that the highest level of groundwater contamination at the site occurred in new well B-05. Well B-06 did not contain any contaminants.

A Preliminary Site Assessment (PSA) was completed in 1994 by the NYSDEC. During the PSA, five of the six wells were sampled (well B-05, located in an active parking area, could not be located). The analytical results indicated that wells B-01 and B-03 continued to be contaminated with VOCs at concentrations that exceeded the NYSDEC groundwater standards.

In 1996, based upon the PSA groundwater results, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

SECTION 4: ENFORCEMENT STATUS

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

The NYSDEC and Chemical Leaman Tank Lines entered into a Consent Order on June 21, 1999. The Order obligates the responsible party to implement an RI/FS remedial program. After the remedy is selected, the NYSDEC will approach the PRP to implement the selected remedy under an Order on Consent.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted in four phases between August 2000 and July 2004. The field activities and findings of the investigation are described in the RI and Supplemental RI reports.

The following activities were conducted during the RI:

- Installation of 20 soil borings in the Former Lagoon Area (OU1) to determine the vertical and lateral extent of the lagoons and for the collection of soil samples for chemical analysis;

- Completion of 13 geoprobe borings in the Former Lagoon Area (OU1) to further delineate soil contamination west of the northernmost settling lagoon;

- Completion of 48 geoprobe borings and four temporary micro-wells in the Area North of the Former Wastewater Treatment Plant (OU2) to determine the areal extent of soil and groundwater contamination in this area;

- Completion of 49 geoprobe borings and five temporary micro-wells in the Eastern Area (OU3) to determine the areal extent of soil and groundwater contamination in this area;

- Completion of four geoprobe borings near the diesel pump island to determine the areal extent, if any, of diesel-related contamination in this area;

- Installation of five monitoring wells (B-05R and B-07 thru B-10; Figure 3) to enhance the existing monitoring well network;

- Sampling of ten new and existing monitoring wells to determine the extent of groundwater contamination;

- Collection of six surface soil samples, two from within each lagoon, for chemical analysis;

- Collection of eight rounds of water level measurements from site monitoring wells to determine groundwater flow patterns.

- Completion of in-situ hydraulic conductivity tests on the five existing and two new wells;

During the Supplemental RI the following activities were completed:

- Completion of five geoprobe borings in the Eastern Area (OU3) to further delineate the areal extent of soil contamination in this area, and to facilitate the installation of micro-wells (B-11 thru B-15; Figure 3);

- Installation of two temporary well points (TP-01 and TP-02; Figure 3) in the Former Lagoon Area (OU1) for the purpose of measuring groundwater levels;

- Collection of 15 rounds of water level measurements from site monitoring wells, micro-wells and temporary well points to further evaluate groundwater mounding at the site;

- Sampling of 15 new and existing monitoring wells and micro-wells to determine the extent of groundwater contamination; and

- Sampling of four catch basins and the outfall of the storm sewer where it discharges to Ellicott Creek to determine if contaminated groundwater at the site is migrating to the creek through the offsite sewer system.

To determine whether the soil and groundwater contains 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 RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI report.

5.1.1: <u>Site Geology and Hydrogeology</u>

At the Chemical Leaman Tank Lines Site three distinct geologic units were encountered. These units, in order of increasing depth, are as follows:

- Fill consisting primarily of crushed stone, gravel, silty sand and clay, brick fragments, coal, concrete pieces and slag. The thickness of this unit generally ranges from 2 to 4 feet, but is much greater in the former settling lagoons, ranging from 10 to 13 feet;

- Alluvial sediments consisting primarily of brown to dark gray, fine-grained, sand containing some silt and clay. In the northern portion of the site this unit extends to a depth of 28 feet below ground surface (bgs). It becomes shallower across the site in a southerly direction, extending to depths of 21 to 24 feet bgs in the Former Lagoon Area, and 16 to 18 feet bgs in the southern portion of the site near Ellicott Creek;

- Glaciolacustrine sediments consisting primarily of reddish brown silty clay. This unit has a very low permeability (meaning that groundwater cannot easily move through it). Although this deposit was not fully penetrated during the RI, previous investigations at the site indicate that this unit is approximately 14 feet thick. During the RI, this deposit was encountered at depth ranging from 16.0 to 28.0 feet bgs.

Bedrock was not encountered at the site during the RI or any of the previous investigations, but is thought to be the Camillus Shale Formation of the Salina Group.

Groundwater underlying the Chemical Leaman Tank Lines Site is encountered primarily within the alluvial sand deposit. During most of the year (summer, fall and winter months), groundwater flow within this deposit is southerly across the site toward Ellicott Creek (Figure 3). During the spring months, however, this flow pattern in altered by a groundwater mound that occurs (Figure 4). Although the location of this mound varies somewhat during this period, it is generally centered in the vicinity of the former lagoons. The low permeability of the glaciolacustrine silty clay prevents the downward movement of contaminated groundwater into deeper water bearing zones (e.g., the Camillus Shale Formation).

5.1.2: <u>Nature of Contamination</u>

As described in the RI 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), semivolatile organic compounds (SVOCs), pesticides and inorganics (metals).

The primary VOC contaminants of concern include benzene, chlorobenzene, dichlorobenzene, dichloroethene, tetrachloroethene, toluene, trichlorobenzene, trichloroethene, vinyl chloride and xylenes.

The primary SVOC contaminants of concern include dibenzo(a,h)anthracene, benzo(a)anthracene, benzo(a)pyrene, chrysene and phenol. Except for phenol, these contaminants belong to a class of SVOCs known as polycyclic aromatic hydrocarbons (PAHs).

The primary pesticide of concern is 4,4'-DDT.

The primary inorganic contaminants of concern include antimony, chromium, lead and zinc.

5.1.3: <u>Extent of Contamination</u>

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 surface soil, subsurface 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.

<u>Surface Soil</u>

Surface soil samples were only collected from Operable Unit 1 during the RI (Figure 5), and reveal that these soils are contaminated with SVOCs and inorganic compounds (Table 1). The SVOCs detected consisted primarily of polycyclic aromatic hydrocarbons (PAHs). Of these compounds, benzo(a)anthracene, benzo(a)pyrene, chrysene and dibenzo(a,h)anthracene were detected at concentrations that most frequently exceeded the TAGM 4046 soil cleanup objectives (Table 1).

PAHs are a group of over 100 different chemicals that are common in the environment. Sources of PAHs include incomplete combustion of coal, oil, gasoline, garbage, wood, automobiles and incinerators. Because the site is located in an industrialized portion of the City of Tonawanda, the presence of PAHs in the surface soil is not surprising.

Metals were also detected in the surface soil samples collected from Operable Unit 1. Of these compounds, chromium and zinc were detected at concentrations that most frequently exceeded the TAGM 4046 soil cleanup objectives (Table 1).

Subsurface Soil

Numerous subsurface soil samples were collected during the RI (Figure 5), and reveal that these soils are contaminated with organic and inorganic compounds (Table 1). A brief summary of this contamination follows. For clarity, this discussion is presented by operable unit.

The primary contaminants of concern in subsurface soils at Operable Unit 1 are VOCs and inorganic compounds, although three SVOCs were detected at concentrations that slightly exceeded the TAGM 4046 soil cleanup objectives (Table 1). Of the VOCs detected, the concentrations of benzene, chlorobenzene, tetrachloroethene, toluene, trichlorobenzene and trichloroethene most frequently exceeded the TAGM 4046 soil cleanup objectives (Table 1). Chromium and zinc were the inorganic compounds that were detected most frequently at concentrations that exceeded the TAGM 4046 soil cleanup objectives (Table 1).

The primary contaminants of concern in subsurface soils at Operable Unit 2 are VOCs and inorganic compounds, although several SVOCs were detected at concentrations that slightly exceeded the TAGM 4046 soil cleanup objectives (Table 1). Of the VOCs detected, the concentrations of dichloroethene and trichloroethene most frequently exceeded the TAGM 4046 soil cleanup objectives (Table 1). Chromium and zinc were the inorganic compounds that were detected most frequently at concentrations that exceeded the TAGM 4046 soil cleanup objectives (Table 1).

The primary contaminants of concern in subsurface soils at Operable Unit 3 are VOCs and inorganic compounds, although several SVOCs were detected at concentrations that slightly exceeded the TAGM 4046 soil cleanup objectives (Table 1). Of the VOCs detected, the concentrations of chlorobenzene, dichlorobenzene and trichlorobenzene most frequently exceeded the TAGM 4046 soil cleanup objectives (Table 1). Once again, the concentrations of chromium and zinc most frequently exceeded the TAGM 4046 soil cleanup objectives (Table 1).

A summary of the subsurface soil samples that exceeded the TAGM 4046 soil cleanup objectives for individual VOCs is presented as Figure 6. This figures indicates that significant subsurface soil contamination is present at all three operable units of the Chemical Leaman Tank Lines Site.

Groundwater

Numerous groundwater samples were collected from on-site monitoring wells (Figure 3) during the RI, and reveal that site groundwater is contaminated with organic and inorganic compounds (Table 1). A brief summary of this contamination follows. For clarity, this discussion is presented by operable unit.

The primary contaminants of concern in groundwater at Operable Unit 1 are VOCs, although one SVOC, one pesticide and two inorganic compounds were detected at concentrations that exceeded ambient water quality standards (Table 1). Of the VOCs detected, the concentrations of benzene, chlorobenzene and vinyl chloride most frequently exceeded the ambient water quality standards (Table 1). The other contaminants that exceed ambient water quality standards were methylphenol, DDT, antimony and lead (Table 1).

The primary contaminants of concern in groundwater at Operable Unit 2 are VOCs, although three SVOCs, one pesticide and two inorganic compounds were detected at concentrations that exceeded ambient water quality standards (Table 1). Of the VOCs detected, the concentrations of benzene and chlorobenzene most frequently exceeded the ambient water quality standards (Table 1). The other contaminants that exceed ambient water quality standards were methylphenol, phenol, DDT, antimony and lead (Table 1).

The primary contaminants of concern in groundwater at Operable Unit 3 are VOCs and SVOCs, although one inorganic compound was detected at concentrations that exceeded ambient water quality standards (Table 1). Of the VOCs detected, the concentrations of benzene, chlorobenzene, dichlorobenzene, dichloroethene, ethylbenzene, trichlorobenzene, trichloroethene and vinyl chloride most frequently exceeded the ambient water quality standards (Table 1). Of the SVOCs detected, the concentrations of methylphenol and phenol most frequently exceeded the ambient water quality standards. Lead was the only inorganic contaminant of concern that exceeded the ambient water quality standards (Table 1).

The nature and extent of shallow VOC groundwater contamination is shown on Figure 7. This figure indicates that contamination is greatest at the source of contamination (i.e., the former lagoons, eastern area) and decreases significantly downgradient of these areas. Figure 7 also indicates that concentrations in wells near Ellicott Creek (B-02 thru B-04, and B-08 thru B-10) meet or slightly exceed the ambient groundwater quality standards. These data suggest, therefore, that contaminants from the Chemical Leaman Tank Lines Site are not currently impacting Ellicott Creek to a significant degree.

5.2: <u>Interim Remedial Measures</u>

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 RI/FS. There were no IRMs performed at this site during the RI/FS.

5.3: <u>Summary of Human Exposure Pathways</u>:

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 5.2 of the RI 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.

At this site, limited contamination typical of industrialized areas (PAHs) exists in the surface soils of Operable Unit 1, while higher levels of contamination (VOCs, SVOCs, and metals) are found in subsurface soils and groundwater at all three Operable Units. For a complete exposure pathway to occur, persons would have to come into contact with the contaminated soil or groundwater. Exposure to these media could occur through subsurface excavation activities at the site. Currently, the only potential pathways of exposure are for workers involved in excavations in these areas, or who may enter adjacent or any on-site utilities and structures. These potential pathways are:

- Dermal (skin) contact with contaminated subsurface soils and groundwater; and

- Inhalation of volatile organic compounds.

The site is located in an industrial area and is currently vacant, although neighboring businesses use the property for parking. All Operable Units are covered either with grass or gravel. The area is served by public water. Completed pathways may occur in the future for utility workers or site workers during subsurface construction activities and routine work. The potential for vapor intrusion into future on-site structures will be eliminated by completion of the remedy.

5.4: <u>Summary of Environmental Impacts</u>

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.

Site contamination has impacted shallow groundwater underlying the Chemical Leaman Tank Lines Site, which discharges to Ellicott Creek to the south. Contaminant concentrations decrease rapidly with distance from the former lagoons and eastern area, and meet or slightly exceed the ambient groundwater quality standards in downgradient wells closest to Ellicott Creek. Since contaminants from the site are not currently impacting the creek to a significant degree, a viable exposure pathway to fish and wildlife in the creek does not exist.

SECTION 6: <u>SUMMARY OF THE REMEDIATION GOALS</u>

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 waste disposed at the site through the proper application of scientific and engineering principles.

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

- Exposures of persons at or around the site to organic and inorganic compounds in soil, groundwater and soil vapor;
- Environmental exposures of flora or fauna to organic and inorganic compounds in soil and groundwater; and
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards.

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

- Ambient groundwater quality standards; and
- TAGM 4046 soil cleanup objectives.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Chemical Leaman Tank Lines Site were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

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 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: *$0*
Capital Cost: *$0*
Annual OM&M: (Years 1-30): *$0*

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. This alternative would be applicable to all three operable units.

Alternative 2: Institutional Controls

Present Worth: *$10,000*
Capital Cost: *$10,000*
Annual OM&M (Years 1-30): *$0*

This alternative would consist of institutional controls to prevent potential future exposures to persons at the site by direct contact with contaminated soil and groundwater, or the inhalation of organic vapors associated with contaminated groundwater. This would be accomplished by the preparation and enactment of an enforceable environmental easement prohibiting future residential development of the site, use of site groundwater, and require a site management plan to regulate other activities that might potentially result in exposure through excavation or disturbance of contaminated soil and groundwater. This alternative would be applicable to all three operable units, and could be implemented within several months. At present, the owner has no plans to redevelop and/or sell the site.

Alternative 3: Monitored Natural Attenuation

Present Worth: *$171,000*
Capital Cost: *$20,000*
Annual OM&M (Years 1-3): *$16,700*
Annual OM&M (Years 4-30): *$8,300*

Monitored Natural Attenuation (MNA) would rely on natural attenuation processes such as biodegradation, dispersion, dilution, sorption, volatilization, etc. to reduce the mass, toxicity, mobility, volume, or concentration of contaminants within site soil and groundwater. Data collected during the Remedial Investigation indicated that natural attenuation is presently occurring at the site (i.e., significant reduction in onsite concentrations of contaminants) and that site conditions would be conducive to the various natural attenuation processes. This alternative would rely on long-term groundwater monitoring to verify the effectiveness and progress of the natural attenuation process, and to provide a warning if site conditions change. This monitoring program would include groundwater analysis for VOCs and select natural attenuation parameters such as dissolved oxygen, pH, conductivity, and oxidation-reduction potential. In addition, this alternative would include the institutional controls discussed under Alternative 2. This alternative would be applicable to all three operable units.

Alternative 4: Capping and Monitored Natural Attenuation

Present Worth: *$343,000*
Capital Cost: *$192,000*
Annual OM&M (Years 1-3): *$16,700*
Annual OM&M (Years 4-30): *$8,300*

This alternative would include the construction of a low-permeability cap with demarcation layer over the former lagoons of OU1 and the placement of one foot of compacted stone with demarcation layer over the areas of contaminated soil at OU2 and OU3. These activities could be completed in 3 to 6 months. The low-permeability cap at OU1 would minimize the infiltration of precipitation into the backfill materials in the former lagoons to reduce or eliminate the seasonal groundwater mounding that presently occurs. The stone covers at OU2 and OU3 would prevent direct contact with contaminated soils. In addition, this alternative would include the institutional controls discussed under Alternative 2 and the ongoing monitored natural attenuation process discussed under Alternative 3. Long-term groundwater monitoring would provide data to verify the effectiveness and progress of the natural attenuation process, and to document that the low-permeability cap has reduced or eliminated the seasonal groundwater mounding. This monitoring program would include water level measurements from site monitoring wells and groundwater analysis for VOCs and select natural attenuation parameters such as dissolved oxygen, pH, conductivity, and oxidation-reduction potential. This alternative would be applicable to all three operable units.

Alternative 5: Excavation with Offsite Disposal and Monitored Natural Attenuation

Present Worth: *$724,600*
Capital Cost: *$574,000*
Annual OM&M (Years 1-3): *$16,700*
Annual OM&M (Years 4-30): *$8,300*

This alternative would include the excavation of contaminated soils, with the excavated materials disposed of at an offsite, permitted landfill. These activities could be completed in 3 to 6 months. Dust and vapor control measures would be implemented during excavation to protect on-site and nearby workers. Following excavation, the areas would be backfilled with 'clean' offsite borrow material and graded to promote drainage. In addition, this alternative would include the institutional controls discussed under Alternative 2 and the ongoing monitored natural attenuation process discussed under Alternative 3. Long-term groundwater monitoring would provide data on the effectiveness of soil removal on overall site conditions, and to verify the effectiveness and progress of the natural attenuation process. This monitoring program would include groundwater analysis for VOCs and select natural attenuation parameters such as dissolved oxygen, pH, conductivity, and oxidation-reduction potential. This alternative would be applicable to Operable Units 2 and 3.

Alternative 6: In-Situ Chemical Treatment with Monitored Natural Attenuation

Present Worth:	*$1,147,600*
Capital Cost:	*$996,000*
Annual OM&M (Years 1-3):	*$16,700*
Annual OM&M (Years 4-30):	*$8,300*

This alternative would involve the injection of a chemical reagent into contaminated soils and groundwater to reduce the volume and toxicity of the contaminants present. The remaining groundwater contamination would be allowed to attenuate naturally as discussed under Alternative 3. A pilot-scale study of this alternative would be required to determine the efficacy of this remedy and to obtain data to design a full-scale system. It is anticipated that the pilot- and full-scale applications could be completed within 2 years. Long-term groundwater monitoring would provide data to determine the success of the oxidizing agent in reducing contaminant concentrations, and to verify the effectiveness and progress of the natural attenuation process. This monitoring program would include groundwater analysis for VOCs and select natural attenuation parameters such as dissolved oxygen, pH, conductivity, and oxidation-reduction potential. In addition, this alternative would include the institutional controls discussed under Alternative 2. This alternative would be only applicable to Operable Unit 1.

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. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS 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 NYSDEC 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 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 1.

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 have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised. The only comments received during the public comment period came from the PRP, who objected to the remedy proposed for Operable Unit 1 by letter dated March 23, 2006.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected the following alternatives as the remedy for this site. The elements of this remedy are described at the end of this section.

- Operable Unit 1 - In-Situ Chemical Treatment with Monitored Natural Attenuation;
- Operable Unit 2 - Excavation with Offsite Disposal and Monitored Natural Attenuation; and
- Operable Unit 3 - Excavation with Offsite Disposal and Monitored Natural Attenuation.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

OU1: Former Lagoon Area

Alternative 6 (In-Situ Chemical Treatment with Monitored Natural Attenuation) was selected for OU1 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 will achieve the remediation goals for the site by reducing the toxicity and volume of the contaminants present through the injection of a chemical reagent. The remaining groundwater contamination will be allowed to attenuate naturally. Long-term groundwater monitoring will provide data to determine the success of the chemical reagent in reducing contaminant concentrations, and to verify the effectiveness and progress of the natural attenuation process. In addition, the implementation of institutional controls will prevent potential future exposures to persons at the site by direct contact with contaminated soil and groundwater, or the inhalation of organic vapors associated with contaminated groundwater. Alternatives 3 (Monitored Natural Attenuation) and 4 (Capping and Monitored Natural Attenuation) will also comply with the threshold selection criteria but will take a longer time to achieve SCGs as the source area will not be actively addressed under either alternative.

Under Alternatives 1 (No Action) and 2 (Institutional Controls) the site will remain in its current state. There will be no access controls (e.g., chain-link fencing) to prevent trespassing on the site, which could result in direct contact exposures to contaminated soil. As these alternatives do not satisfy the "threshold criteria" (they will not be protective of human health and the environment, and will not achieve compliance with SCGs), they will not be considered for implementation at Operable Unit 1 of the Chemical Leaman Tank Lines Site.

Because Alternatives 3, 4 and 6 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for this operable unit.

Since Alternative 3 involves no active remedial measures, there will be no short-term impacts to the community, environment or remediation workers associated with its implementation. It will not provide a short-term remedy for any of the existing or potential human/ecological exposures to contaminated media, and will not affect the existing exceedances of SCGs in the short-term. Alternative 4 will not involve any intrusive activities; therefore, there will be no short-term impacts to the community, environment or remediation workers associated with its implementation. It will be effective in the short term in preventing direct contact with near-surface contaminated soils and in minimizing groundwater mounding. In the short-term, however, this alternative will do nothing to reduce the toxicity or volume of contaminated soils and the existing SCG exceedances. Under Alternative 6, the injection of a chemical reagent into soils and groundwater will not be expected to pose any significant short-term risks to the community, environment or onsite workers as all of the contaminated soils and/or groundwater will be left in place. Potential risks associated with contamination being brought to the surface by the drilling/injection equipment will be minimal and will be controlled by implementation of a health and safety plan and proper decontamination procedures.

Alternative 3 will provide no active remediation of onsite contamination. This contamination, however, will be reduced over time as a result of natural attenuation processes. The risk remaining after implementation of the remedy will be gradually reduced as the contaminants degrade. Additionally, the monitoring results will provide warning if significant changes occur. The long-term effectiveness and permanence of Alternative 4 will be very good if routine maintenance of the low-permeability cap were conducted. The cap will prevent direct contact with contaminated soils and minimize groundwater mounding at the site. Soil and groundwater contamination will be reduced over time as a result of natural attenuation processes. Under Alternative 6, the injection of a chemical reagent into soils and groundwater will have the potential to be effective in the long-term and permanent. The remaining contamination will be reduced over time as a result of natural attenuation processes. The time frame required to achieve the remedial action objectives will be substantially quicker than achieved under Alternatives 3 or 4.

Although Alternative 3 will provide no active remediation, contaminants in soils and groundwater will be reduced gradually over time as a result of natural attenuation processes. Alternative 3 will provide a means of monitoring the progress of the contaminant degradation and will provide a warning if any significant changes occur. Alternative 4 also will provide no active remediation of site contamination. The low-permeability cap will reduce the mobility of the OU1 contaminants by minimizing the infiltration of precipitation into the backfill materials in the former lagoons. This cap will also reduce or eliminate the seasonal groundwater mound. This alternative, however, will do nothing more than Alternative 3 in reducing the toxicity and/or volume of contaminated soils and groundwater. In-situ chemical treatment of soils and groundwater associated with Alternative 6 will significantly reduce the toxicity, mobility and volume of the most highly contaminated soil and groundwater at the site.

Alternative 3, 4 and 6 will be easily implemented. There will be ample availability and capacity of remedial contractors and equipment to construct the low-permeability cap of Alternative 4 and inject the chemical reagent of Alternative 6. In addition, the chemical reagent and injection equipment/methods necessary for the implementation of Alternative 6 are proven and reliable, and agency coordination and approvals will not be an issue. For all three alternatives there will be ample availability and capacity of environmental consultants and laboratories to collect the groundwater samples, perform the required analyses and evaluate the data.

Table 2 shows the estimated present worth cost to implement the proposed remedies for OU1. The costs of these alternatives vary significantly. In addition to the costs of Alternative 3, Alternative 4 will have the added capital cost associated with the construction of the low-permeability cap, and Alternative 6 will have the added capital cost associated with the purchase and injection of the chemical reagent.

The estimated present worth cost to implement the chemical oxidation with monitored natural attenuation remedy is $1,147,600. The cost to construct the remedy is estimated to be $996,000 and the average annual operation, maintenance, and monitoring costs is estimated to be $16,700 for years 1 thru 3 and $8,300 for years 4 thru 30.

OU2: Area North of the Former Wastewater Treatment Plant & OU3: Eastern Area

Alternative 5 (Excavation with Offsite Disposal and Monitored Natural Attenuation) was selected for OU2 and OU3 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 will achieve the remediation goals for the site by removing the soils that create the most significant threat to public health and the environment, and will greatly reduce the source of contamination to groundwater. The remaining groundwater contamination will be allowed to attenuate naturally. Long-term groundwater monitoring will provide data on the effectiveness of the soil removal on overall site conditions, and to verify the effectiveness and progress of the natural attenuation process. In addition, the implementation of institutional controls will prevent potential future exposures to persons at the site by direct contact with the remaining contaminated soil and groundwater, or the inhalation of organic vapors associated with contaminated groundwater. Alternatives 3 (Monitored Natural Attenuation) and 4 (Capping and Monitored Natural Attenuation) will also comply with the threshold selection criteria but will take a longer time to achieve SCGs as the source area will not be actively addressed under either alternative. Alternative 6 will not apply to these operable units.

Under Alternatives 1 (No Action) and 2 (Institutional Controls) the site will remain in its current state. There will be no access controls (e.g., chain-link fencing) to prevent trespassing on the site, which could result in direct contact exposures to contaminated soil. As these alternatives do not satisfy the "threshold criteria" (they will not be protective of human health and the environment, and will not achieve compliance with SCGs), they will not be considered for implementation at Operable Units 2 and 3 of the Chemical Leaman Tank Lines Site.

Because Alternatives 3, 4 and 5 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for this operable unit.

Since Alternative 3 will not involve any active remedial measures, there will be no short-term impacts to the community, environment or remediation workers associated with its implementation. It will not provide a short-term remedy for any of the existing or potential human/ecological exposures to contaminated media, and will not affect the existing exceedances of SCGs in the short-term. Since Alternative 4 will not involve any intrusive activities, there will be no short-term impacts to the community, environment or remediation workers associated with its implementation. It will be effective in the short term in preventing direct contact with near-surface contaminated soils and in minimizing groundwater mounding. In the short-term, however, this alternative will do nothing to reduce the toxicity or volume of contaminated soils and the existing SCG exceedances. Since Alternative 5 will involve the excavation of contaminated soils, there will be potential worker risk during remediation. These risks, however, will be manageable through the implementation of a health and safety plan. In addition, this alternative will involve the transportation of contaminated soils using local roads. Because the site is located in an industrial park, and there will be direct access to major transportation routes without having to go through residential areas, these risks will be minimal. In any case, the potential risks to the community associated with this activity could be controlled through the use of standard transport safety practices during hauling. The duration of the transport activities also will be relatively short. The objectives for this action will be achieved immediately after its implementation, which could be completed in a single construction season.

Alternative 3 will provide no active remediation of onsite contamination. This contamination, however, will be reduced over time as a result of natural attenuation processes. The risk remaining after implementation of the remedy will be gradually reduced as the contaminants degrade. Additionally, the monitoring results will provide warning if significant changes occur. The long-term effectiveness and permanence of Alternative 4 will be very good if routine maintenance of the stone cover were conducted. The cover will prevent direct contact with contaminated soils. Soil and groundwater contamination will be reduced over time as a result of natural attenuation processes. Excavation and offsite disposal of contaminated soils under Alternative 5 will provide a permanent and effective remedy for the contaminated soils at OU2 and OU3. The remaining contamination will be reduced over time as a result of natural attenuation processes. The time frame required to achieve the remedial action objectives will be substantially quicker than achieved under Alternatives 3 or 4.

Although Alternative 3 will provide no active remediation, contaminants in soils and groundwater will be reduced gradually over time as a result of natural attenuation processes. Alternative 3 will provide a means of monitoring the progress of the contaminant degradation and will provide a warning if any significant changes occur. Alternative 4 also will provide no active remediation of site contamination, and the stone covers will not significantly reduce the infiltration of precipitation into the contaminated soils. This alternative will do nothing more than Alternative 3 in reducing the toxicity and/or volume of contaminated soils and groundwater. Alternative 5 will reduce the volume of contaminated soil in OU2 and OU3 through the excavation and offsite disposal of these materials. This alternative will also reduce the volume and mobility of contaminants in groundwater by eliminating the source of those contaminants.

Alternative 3, 4 and 5 will be easily implemented. There will be ample availability and capacity of remedial contractors and equipment to construct the stone covers of Alternative 4 and complete the excavation activities of Alternative 5. In addition, the earthwork and transportation technologies necessary for the implementation of Alternative 5 are proven and reliable, and agency coordination and approvals will not be an issue. For all three alternatives there will be ample availability and capacity of environmental consultants and laboratories to collect the groundwater samples, perform the required analyses and evaluate the data.

Table 2 shows the estimated present worth cost to implement the proposed remedies for OU2 and OU3. The costs of these alternatives vary significantly. In addition to the costs of Alternative 3, Alternative 4 will have the added capital cost associated with the construction of the stone covers, and Alternative 5 will have the added capital cost associated with the excavation and offsite disposal of contaminated soils.

The estimated present worth cost to implement the excavation with offsite disposal and monitored natural attenuation remedy at OU2 is $584,000. The cost to construct the remedy is estimated to be $433,000. The estimated present worth cost to implement the excavation with offsite disposal and monitored natural attenuation remedy at OU3 is $312,000. The cost to construct the remedy is estimated to be $161,000. The average annual operation, maintenance, and monitoring costs for both operable units is estimated to be $16,700 for years 1 thru 3 and $8,300 for years 4 thru 30.

The elements of the selected remedy for each operable unit are as follows:

Operable Unit 1 - In-Situ Chemical Treatment with Monitored Natural Attenuation

- A remedial design program that includes a pilot-scale study to determine the efficacy of this remedy and to obtain data to design a full-scale system; and

- Injection of a chemical reagent into contaminated soils and groundwater to reduce the volume and toxicity of the contaminants present.

Operable Units 2 & 3 - Excavation with Offsite Disposal and Monitored Natural Attenuation

- A remedial design program to delineate the extent of contaminated soil requiring removal;

- Excavation of contaminated soils, with the excavated materials disposed of at an offsite, permitted landfill; and

- Following excavation, the areas will be backfilled with 'clean' offsite borrow material and graded to promote drainage.

In addition to the above, the following elements are applicable to all three operable units:

- Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (b) evaluate the potential for vapor intrusion for all current site buildings and any developed on the site in the future, including provision for mitigation of any impacts identified; (c) identify any use restrictions; and (d) development of a groundwater monitoring program to provide data on the effectiveness of in-situ chemical treatment and soil removal on overall site conditions, and to verify the effectiveness and progress of the natural attenuation process. This monitoring program will include groundwater analysis for VOCs and select natural attenuation parameters such as dissolved oxygen, pH, conductivity, and oxidation-reduction potential. Reporting of the monitoring data will be required on a periodic basis, and will include the evaluation of contaminant trends and a discussion of any changes observed in the nature and/or extent of the groundwater contaminant plume;

- Imposition of an institutional control in the form of an environmental easement that will (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 the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; and (d) require the property owner to complete and submit to the NYSDEC a periodic certification.

- The property owner will provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls are still in place, allow the NYSDEC access to the site, and that nothing has occurred that will 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.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

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

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A Fact Sheet announcing the beginning of the Remedial Investigation by Quality Distribution was distributed to the mailing list in July 2000.
- A Fact Sheet announcing the public meeting on the PRAP was distributed to the mailing list in February 2006.
- A public meeting was held on March 9, 2006 to present and receive comment on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1
Nature and Extent of Contamination
August 2000 - June 2004

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Operable Unit 1				
Volatile Organic Compounds (VOCs)	Benzene	ND[c] - 0.008	0.06	0 of 6
	Chlorobenzene	ND - 0.73	1.7	0 of 6
	1,2-Dichlorobenzene	ND	7.9	0 of 6
	1,3-Dichlorobenzene	ND	1.6	0 of 6
	1,4-Dichlorobenzene	ND	8.5	0 of 6
	1,2-Dichloroethene	ND	0.3	0 of 6
	Ethylbenzene	ND - 0.12	5.5	0 of 6
	Tetrachloroethene	ND	1.4	0 of 6
	Toluene	ND	1.5	0 of 6
	1,2,4-Trichlorobenzene	ND - 0.21	3.4	0 of 6
	1,1,1-Trichloroethane	ND	0.8	0 of 6
	Trichloroethene	ND	0.7	0 of 6
	Vinyl Chloride	ND	0.2	0 of 6
	Xylenes	ND - 0.047	1.2	0 of 6
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND - 0.71	0.224	2 of 6
	Benzo(a)pyrene	ND - 0.48	0.061	5 of 6
	Chrysene	ND - 0.72	0.4	1 of 6
	Dibenzo(a,h)anthracene	ND - 0.062	0.014	2 of 6
	4-Methylphenol	ND	0.9	0 of 6
	Phenol	ND	0.03	0 of 6
Pesticides	4,4'-DDT	ND	2.1	0 of 6
Inorganic Compounds	Antimony	ND	SB[d]	
	Chromium	4.8 - 17.8	10 or SB	4 of 6
	Lead	12.4 - 83.7	200[e]	0 of 6
	Zinc	60.9 - 250.0	20 or SB	6 of 6

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
Operable Unit 1				
Volatile Organic Compounds (VOCs)	Benzene	ND - 1.6	0.06	5 of 12
	Chlorobenzene	ND - 90.0	1.7	5 of 12
	1,2-Dichlorobenzene	ND - 20.0	7.9	2 of 12
	1,3-Dichlorobenzene	ND - 2.0	1.6	1 of 12
	1,4-Dichlorobenzene	ND - 71.0	8.5	2 of 12
	1,2-Dichloroethene	ND	0.3	0 of 12
	Ethylbenzene	ND - 17.0	5.5	1 of 12
	Tetrachloroethene	ND - 320.0	1.4	5 of 12
	Toluene	ND - 110.0	1.5	4 of 12
	1,2,4-Trichlorobenzene	ND - 2,200	3.4	4 of 12
	1,1,1-Trichloroethane	ND - 11.0	0.8	1 of 12
	Trichloroethene	ND - 590.0	0.7	5 of 12
	Vinyl Chloride	ND	0.2	0 of 12
	Xylenes	ND - 93.0	1.2	3 of 12
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND - 0.36	0.224	2 of 11
	Benzo(a)pyrene	ND - 0.32	0.061	2 of 11
	Chrysene	ND - 0.36	0.4	0 of 11
	Dibenzo(a,h)anthracene	ND	0.014	0 of 11
	4-Methylphenol	ND - 0.23	0.9	0 of 11
	Phenol	ND - 0.13	0.03	1 of 11
Pesticides	4,4'-DDT	ND	2.1	0 of 11
Inorganic Compounds	Antimony	ND - 0.45	SB	
	Chromium	4.4 - 31.4	10 or SB	9 of 11
	Lead	3.0 - 24.7	200.0	0 of 11
	Zinc	23.7 - 634.0	20 or SB	11 of 11

TABLE 1
Nature and Extent of Contamination (Continued)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Operable Unit 1				
Volatile Organic Compounds (VOCs)	Benzene	ND - 6.0	1.0	7 of 16
	Chlorobenzene	ND - 23.0	5.0	4 of 16
	1,2-Dichlorobenzene	ND	3.0	0 of 16
	1,3-Dichlorobenzene	ND - 4.0	3.0	1 of 16
	1,4-Dichlorobenzene	ND	3.0	0 of 16
	1,2-Dichloroethene	ND - 7.91	5.0	2 of 16
	Ethylbenzene	ND	5.0	0 of 16
	Tetrachloroethene	ND	5.0	0 of 16
	Toluene	ND - 0.83	5.0	0 of 16
	1,2,4-Trichlorobenzene	ND - 9.0	5.0	1 of 16
	1,1,1-Trichloroethane	ND - 1.36	5.0	0 of 16
	Trichloroethene	ND - 10.3	5.0	1 of 16
	Vinyl Chloride	ND - 19.0	2.0	5 of 16
	Xylenes	ND	5.0	0 of 16
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND	0.002	0 of 10
	Benzo(a)pyrene	ND	0.002	0 of 10
	Chrysene	ND	0.002	0 of 10
	Dibenzo(a,h)anthracene	ND	NS[f]	
	4-Methylphenol	ND - 4.0	1.0	1 of 10
	Phenol	ND	1.0	0 of 10
Pesticides	4,4'-DDT	ND - 0.24	0.2	1 of 10
Inorganic Compounds	Antimony	ND - 33.4	3.0	2 of 10
	Chromium	ND - 3.8	50.0	0 of 10
	Lead	ND - 73.5	25.0	2 of 10
	Zinc	4.6 - 29.9	2,000	0 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
Operable Unit 2				
Volatile Organic Compounds (VOCs)	Benzene	ND - 4.8	0.06	2 of 8
	Chlorobenzene	ND - 55.0	1.7	2 of 8
	1,2-Dichlorobenzene	ND - 49.0	7.9	1 of 8
	1,3-Dichlorobenzene	ND - 3.5	1.6	1 of 8
	1,4-Dichlorobenzene	ND - 68.0	8.5	1 of 8
	1,1-Dichloroethene	ND - 0.18	0.4	0 of 8
	1,2-Dichloroethene	ND - 94.2	0.3	4 of 8
	Ethylbenzene	ND - 3.5	5.5	0 of 10
	Tetrachloroethene	ND - 1.4	1.4	1 of 8
	Toluene	ND - 14.0	1.5	2 of 10
	1,2,4-Trichlorobenzene	ND - 81.0	3.4	1 of 8
	Trichloroethene	ND - 2,000	0.7	3 of 8
	Vinyl Chloride	ND - 4.0	0.2	1 of 8
	Xylenes	ND - 5.8	1.2	1 of 10
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND - 0.42	0.224	1 of 10
	Benzo(a)pyrene	ND - 0.46	0.061	3 of 10
	Chrysene	ND - 0.50	0.4	1 of 10
	Dibenzo(a,h)anthracene	ND - 0.30	0.014	2 of 10
	2-Methylphenol	ND	0.1	0 of 8
	4-Methylphenol	ND - 0.082	0.9	0 of 8
	Phenol	ND - 0.11	0.03	2 of 8
Pesticides	4,4'-DDT	ND - 0.005	2.1	0 of 8
Inorganic Compounds	Antimony	ND - 11.1	SB	
	Chromium	8.0 - 781.0	10 or SB	5 of 8
	Lead	5.8 - 97.7	200.0	0 of 8
	Zinc	37.6 - 701.0	20 or SB	8 of 8

TABLE 1
Nature and Extent of Contamination (Continued)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Operable Unit 2				
Volatile Organic Compounds (VOCs)	Benzene	ND - 720.0	1.0	7 of 11
	Chlorobenzene	ND - 1,100	5.0	6 of 11
	1,2-Dichlorobenzene	ND - 24.0	3.0	3 of 11
	1,3-Dichlorobenzene	ND	3.0	0 of 11
	1,4-Dichlorobenzene	ND - 14.0	3.0	2 of 11
	1,1-Dichloroethene	ND - 400.0	5.0	2 of 11
	1,2-Dichloroethene	ND - 250,400	5.0	3 of 11
	Ethylbenzene	ND - 27.0	5.0	1 of 11
	Tetrachloroethene	ND - 18.0	5.0	1 of 11
	Toluene	ND - 1,700	5.0	2 of 11
	1,2,4-Trichlorobenzene	ND	5.0	0 of 11
	Trichloroethene	ND - 200,000	5.0	3 of 11
	Vinyl Chloride	ND - 21,000	2.0	3 of 11
	Xylenes	ND	5.0	0 of 11
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND	0.002	0 of 9
	Benzo(a)pyrene	ND	0.002	0 of 9
	Chrysene	ND	0.002	0 of 9
	Dibenzo(a,h)anthracene	ND	NS	0 of 9
	2-Methylphenol	ND - 120.0	1.0	1 of 9
	4-Methylphenol	ND - 450.0	1.0	2 of 9
	Phenol	ND - 770.0	1.0	2 of 9
Pesticides	4,4'-DDT	ND - 0.25	0.2	2 of 9
Inorganic Compounds	Antimony	ND - 5.0	3.0	1 of 5
	Chromium	ND - 33.7	50.0	0 of 5
	Lead	ND - 27.8	25.0	1 of 5
	Zinc	12.5 - 25.9	2,000	0 of 5

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
Operable Unit 3				
Volatile Organic Compounds (VOCs)	Benzene	ND - 1.1	0.06	1 of 6
	Chlorobenzene	ND - 30.0	1.7	3 of 6
	1,2-Dichlorobenzene	ND - 140.0	7.9	4 of 6
	1,3-Dichlorobenzene	ND - 88.0	1.6	4 of 6
	1,4-Dichlorobenzene	ND - 300.0	8.5	4 of 6
	1,1-Dichloroethene	ND	0.4	0 of 6
	1,2-Dichloroethene	ND - 19.0	0.3	2 of 6
	Ethylbenzene	ND - 9.2	5.5	1 of 6
	Tetrachloroethene	ND - 0.95	1.4	0 of 6
	Toluene	ND - 35.0	1.5	1 of 6
	1,2,4-Trichlorobenzene	ND - 6,100	3.4	3 of 6
	Trichloroethene	ND - 0.47	0.7	0 of 6
	Vinyl Chloride	ND - 0.23	0.2	1 of 6
	Xylenes	ND - 38.0	1.2	1 of 6
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND - 0.49	0.224	1 of 6
	Benzo(a)pyrene	ND - 0.50	0.061	1 of 6
	Chrysene	ND - 0.59	0.4	1 of 6
	Dibenzo(a,h)anthracene	ND - 0.083	0.014	1 of 6
	2-Methylphenol	ND - 0.064	0.1	0 of 6
	4-Methylphenol	ND - 0.24	0.9	0 of 6
	Phenol	ND - 3.0	0.03	1 of 6
Inorganic Compounds	Chromium	7.1 - 216.0	10 or SB	4 of 6
	Lead	5.6 - 249.0	200.0	1 of 6
	Zinc	36.4 - 688.0	20 or SB	6 of 6

TABLE 1
Nature and Extent of Contamination (Continued)

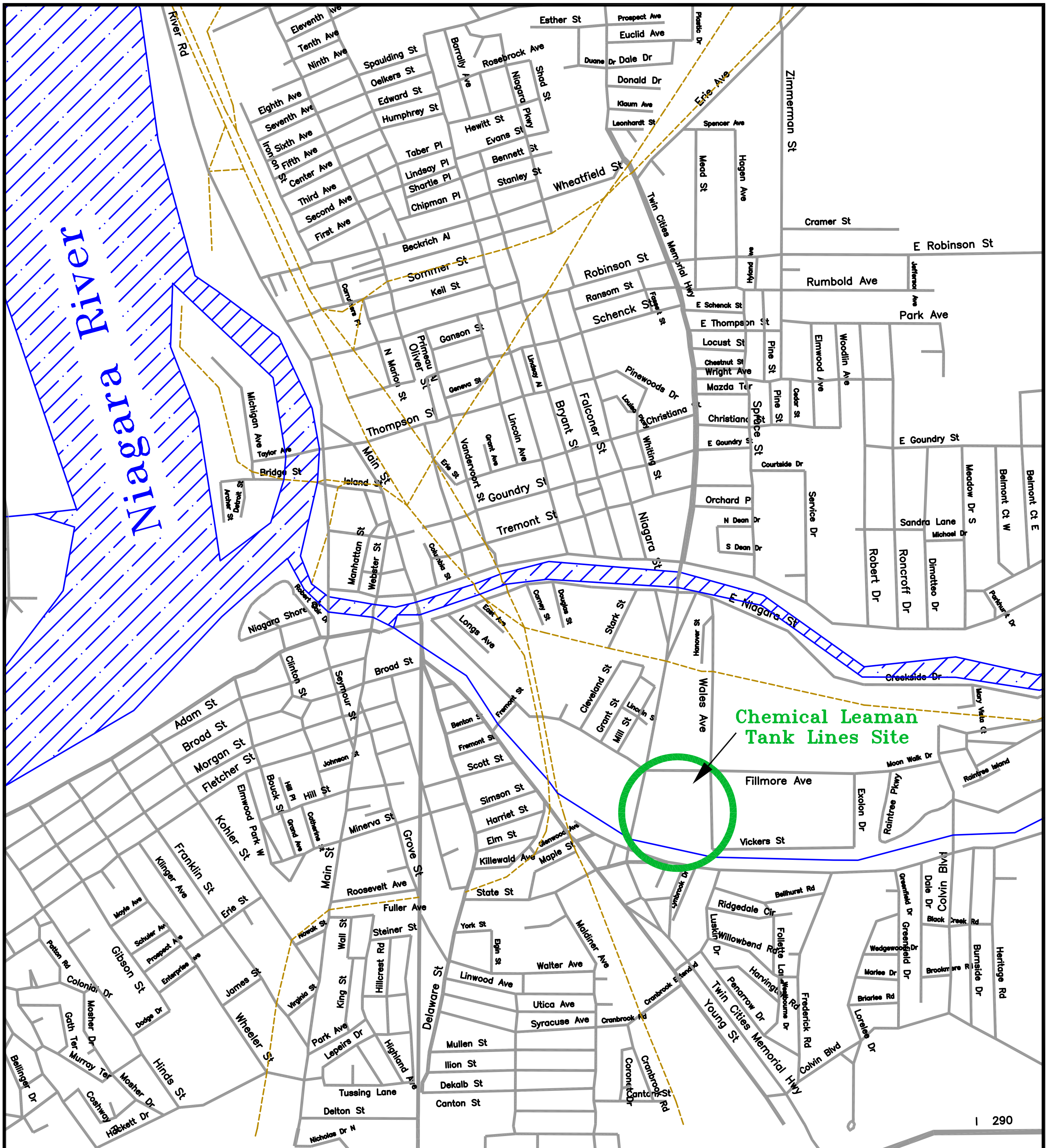
GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Operable Unit 3				
Volatile Organic Compounds (VOCs)	Benzene	ND - 1,420	1.0	14 of 16
	Chlorobenzene	ND - 3,100	5.0	9 of 16
	1,2-Dichlorobenzene	ND - 6,200	3.0	8 of 16
	1,3-Dichlorobenzene	ND - 1,200	3.0	8 of 16
	1,4-Dichlorobenzene	ND - 3,700	3.0	8 of 16
	1,1-Dichloroethene	ND - 8.98	5.0	2 of 16
	1,2-Dichloroethene	ND - 11,110	5.0	12 of 16
	Ethylbenzene	ND - 130.0	5.0	7 of 16
	Tetrachloroethene	ND - 250.0	5.0	5 of 16
	Toluene	ND - 550.0	5.0	5 of 16
	1,2,4-Trichlorobenzene	ND - 170.0	5.0	7 of 16
	Trichloroethene	ND - 850.0	5.0	10 of 16
	Vinyl Chloride	ND - 14,000	2.0	15 of 16
	Xylenes	ND - 160.0	5.0	5 of 16
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND	0.002	0 of 9
	Benzo(a)pyrene	ND	0.002	0 of 9
	Chrysene	ND	0.002	0 of 9
	Dibenzo(a,h)anthracene	ND	NS	0 of 9
	2-Methylphenol	ND - 2.0	1.0	3 of 9
	4-Methylphenol	ND - 5.0	1.0	2 of 9
	Phenol	ND - 13.0	1.0	5 of 9
Inorganic Compounds	Chromium	ND	50.0	0 of 4
	Lead	ND - 31.8	25.0	1 of 4
	Zinc	23.6 - 46.8	2,000	0 of 4

TABLE 1
Nature and Extent of Contamination (Continued)

[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; groundwater SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code, while soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".
[c] ND = contaminant analyzed but not detected;
[d] SB = site background concentration;
[e] The TAGM 4046 soil cleanup objective for lead is site background. In general, background concentrations vary widely, with average concentrations in metropolitan or suburban areas ranging from 200-500 ppm. A specific site background concentration for the Chemical Leaman Tank Lines Site has not been determined, so a 200 ppm value has been utilized for screening purposes; and
[f] NS = no standard or guidance value available.

TABLE 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
Operable Unit 1			
No Action	$0	$0	$0
Institutional Controls	$10,000	$0	$10,000
Monitored Natural Attenuation (MNA)	$20,000	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$171,000
Capping and MNA	$90,175	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$241,000
Chemical Oxidation with MNA *	$996,000	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$1,147,000
Operable Unit 2			
No Action	$0	$0	$0
Institutional Controls	$10,000	$0	$10,000
Monitored Natural Attenuation (MNA)	$20,000	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$171,000
Capping and MNA	$75,140	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$226,000
Excavation with Offsite Disposal and MNA *	$419,500	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$570,400
Operable Unit 3			
No Action	$0	$0	$0
Institutional Controls	$10,000	$0	$10,000
Monitored Natural Attenuation (MNA)	$20,000	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$171,000
Capping and MNA	$27,000	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$178,000
Excavation with Offsite Disposal and MNA *	$147,500	$16,700 (yrs 1-3) $8,300 (yrs 4-30)	$298,400
* **Proposed alternative.**			



Tonawanda East Quadrangle &

Tonawanda West Quadrangle

Scale Depends on Final Plotted Size

SITE LOCATION MAP

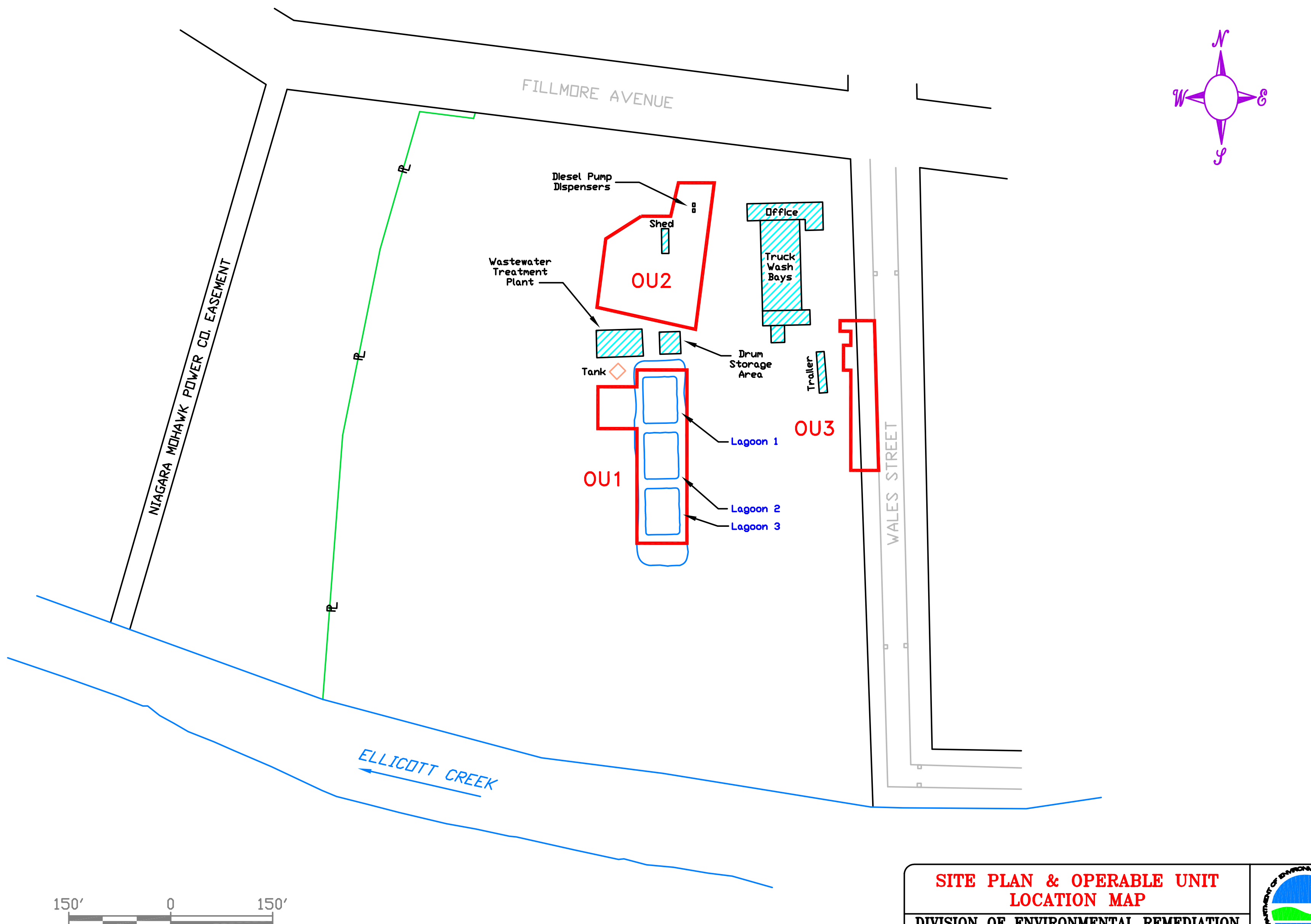
DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/05/06

DRAWING: Location Map.dwg

SITE: CHEMICAL LEAMAN TANK LINES

FIGURE 1



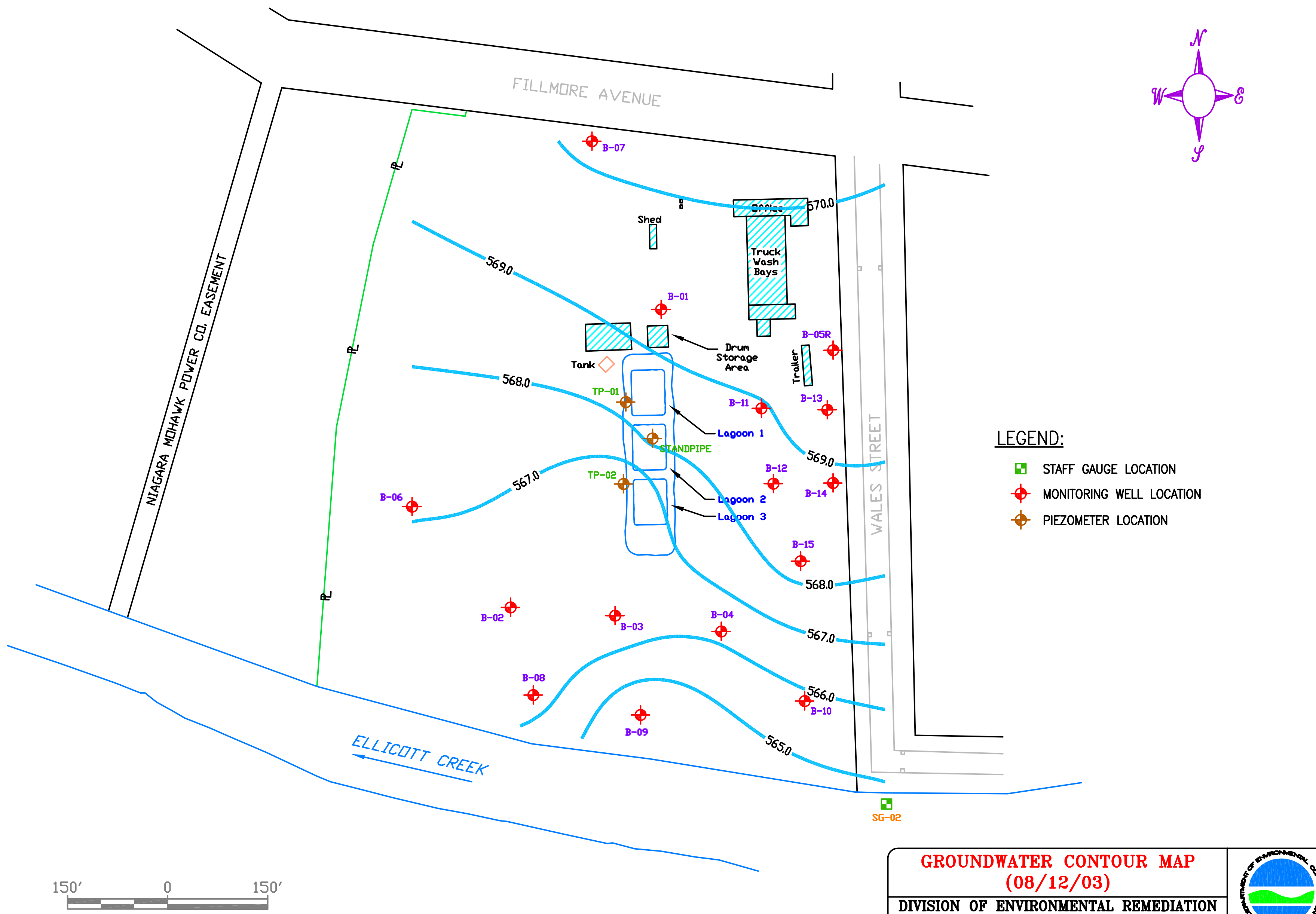
SITE PLAN & OPERABLE UNIT LOCATION MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/06/06 DRAWING: Leaman Site Map.dwg

SITE NAME: CHEMICAL LEAMAN TANK LINES

FIGURE 2



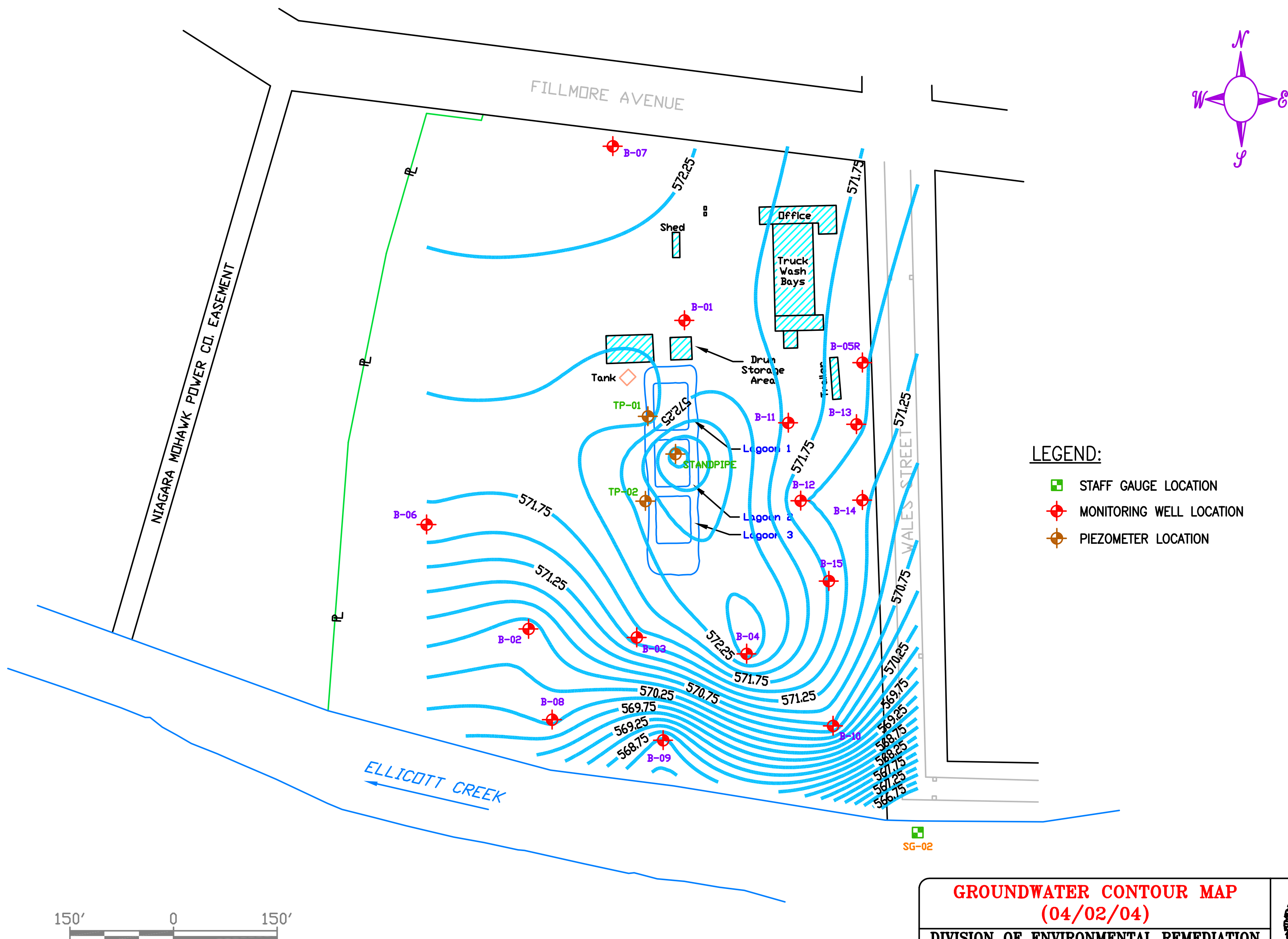
GROUNDWATER CONTOUR MAP (08/12/03)

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/06/06 | DRAWING: Leaman Site Map.dwg

SITE NAME: CHEMICAL LEAMAN TANK LINES

FIGURE 3



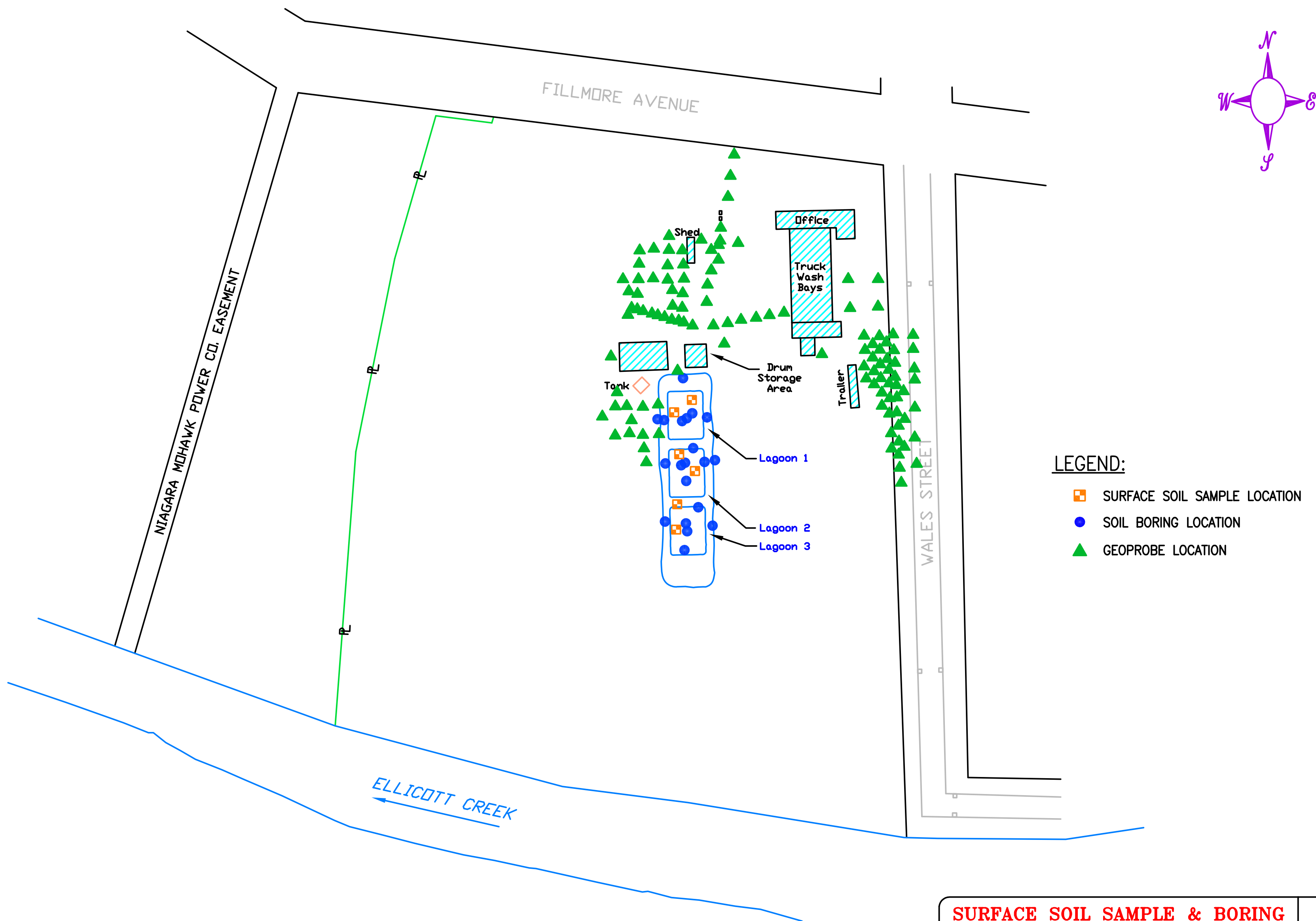
GROUNDWATER CONTOUR MAP (04/02/04)

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/06/06 | DRAWING: Leaman Site Map.dwg

SITE NAME: CHEMICAL LEAMAN TANK LINES

FIGURE 4



LEGEND:
- SURFACE SOIL SAMPLE LOCATION
- SOIL BORING LOCATION
- GEOPROBE LOCATION

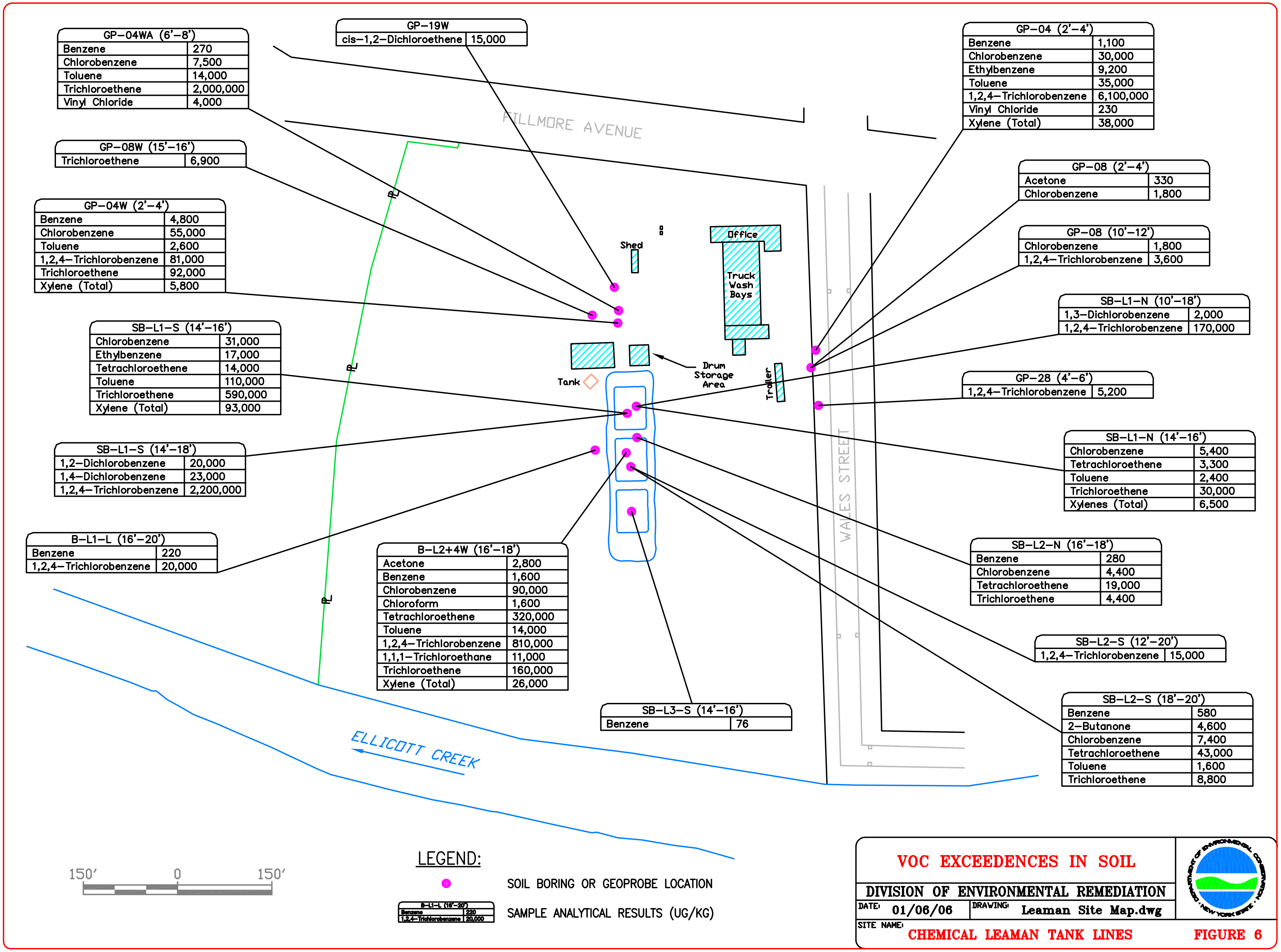
SURFACE SOIL SAMPLE & BORING LOCATION MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/06/06 DRAWING: Leaman Site Map.dwg

SITE NAME: CHEMICAL LEAMAN TANK LINES

FIGURE 5



GP-04WA (6'-8')	
Benzene	270
Chlorobenzene	7,500
Toluene	14,000
Trichloroethene	2,000,000
Vinyl Chloride	4,000

GP-19W	
cis-1,2-Dichloroethene	15,000

GP-08W (15'-16')	
Trichloroethene	6,900

GP-04W (2'-4')	
Benzene	4,800
Chlorobenzene	55,000
Toluene	2,600
1,2,4-Trichlorobenzene	81,000
Trichloroethene	92,000
Xylene (Total)	5,800

SB-L1-S (14'-16')	
Chlorobenzene	31,000
Ethylbenzene	17,000
Tetrachloroethene	14,000
Toluene	110,000
Trichloroethene	590,000
Xylene (Total)	93,000

SB-L1-S (14'-18')	
1,2-Dichlorobenzene	20,000
1,4-Dichlorobenzene	23,000
1,2,4-Trichlorobenzene	2,200,000

B-L1-L (16'-20')	
Benzene	220
1,2,4-Trichlorobenzene	20,000

B-L2+4W (16'-18')	
Acetone	2,800
Benzene	1,600
Chlorobenzene	90,000
Chloroform	1,600
Tetrachloroethene	320,000
Toluene	14,000
1,2,4-Trichlorobenzene	810,000
1,1,1-Trichloroethane	11,000
Trichloroethene	160,000
Xylene (Total)	26,000

SB-L3-S (14'-16')	
Benzene	76

GP-04 (2'-4')	
Benzene	1,100
Chlorobenzene	30,000
Ethylbenzene	9,200
Toluene	35,000
1,2,4-Trichlorobenzene	6,100,000
Vinyl Chloride	230
Xylene (Total)	38,000

GP-08 (2'-4')	
Acetone	330
Chlorobenzene	1,800

GP-08 (10'-12')	
Chlorobenzene	1,800
1,2,4-Trichlorobenzene	3,600

SB-L1-N (10'-18')	
1,3-Dichlorobenzene	2,000
1,2,4-Trichlorobenzene	170,000

GP-28 (4'-6')	
1,2,4-Trichlorobenzene	5,200

SB-L1-N (14'-16')	
Chlorobenzene	5,400
Tetrachloroethene	3,300
Toluene	2,400
Trichloroethene	30,000
Xylenes (Total)	6,500

SB-L2-N (16'-18')	
Benzene	280
Chlorobenzene	4,400
Tetrachloroethene	19,000
Trichloroethene	4,400

SB-L2-S (12'-20')	
1,2,4-Trichlorobenzene	15,000

SB-L2-S (18'-20')	
Benzene	580
2-Butanone	4,600
Chlorobenzene	7,400
Tetrachloroethene	43,000
Toluene	1,600
Trichloroethene	8,800

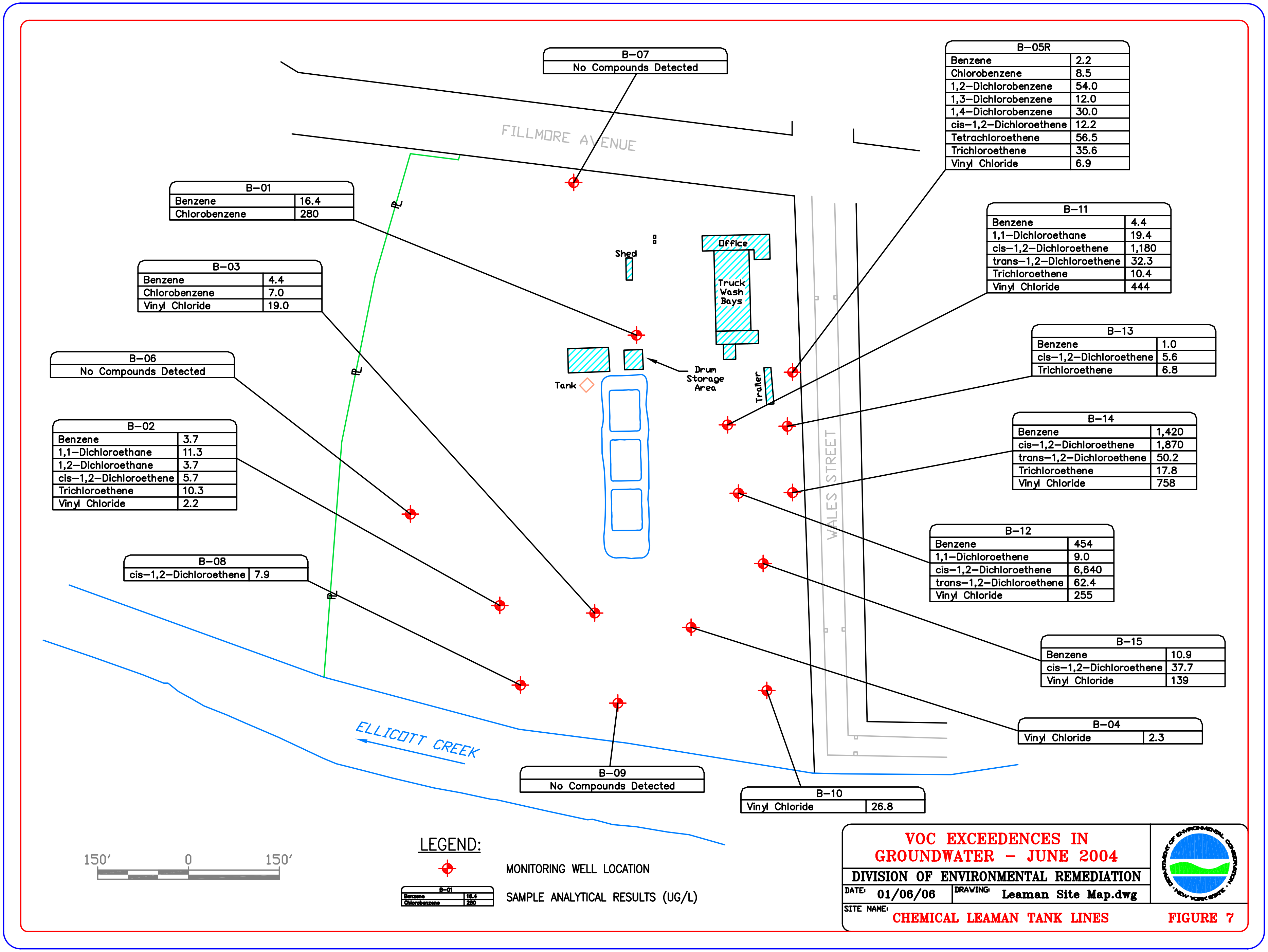
VOC EXCEEDENCES IN SOIL

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/06/06 DRAWING: Leaman Site Map.dwg

SITE NAME: CHEMICAL LEAMAN TANK LINES

FIGURE 6


B-07
No Compounds Detected
B-05R
Benzene 2.2
Chlorobenzene 8.5
1,2-Dichlorobenzene 54.0
1,3-Dichlorobenzene 12.0
1,4-Dichlorobenzene 30.0
cis-1,2-Dichloroethene 12.2
Tetrachloroethene 56.5
Trichloroethene 35.6
Vinyl Chloride 6.9
FILLMORE AVENUE
B-01
Benzene 16.4
Chlorobenzene 280
B-11
Benzene 4.4
1,1-Dichloroethane 19.4
cis-1,2-Dichloroethene 1,180
trans-1,2-Dichloroethene 32.3
Trichloroethene 10.4
Vinyl Chloride 444
Shed
Office
Truck Wash Bays
B-03
Benzene 4.4
Chlorobenzene 7.0
Vinyl Chloride 19.0
B-13
Benzene 1.0
cis-1,2-Dichloroethene 5.6
Trichloroethene 6.8
B-06
No Compounds Detected
Tank
Drum Storage Area
Trailer
B-14
Benzene 1,420
cis-1,2-Dichloroethene 1,870
trans-1,2-Dichloroethene 50.2
Trichloroethene 17.8
Vinyl Chloride 758
B-02
Benzene 3.7
1,1-Dichloroethane 11.3
1,2-Dichloroethane 3.7
cis-1,2-Dichloroethene 5.7
Trichloroethene 10.3
Vinyl Chloride 2.2
WALES STREET
B-12
Benzene 454
1,1-Dichloroethane 9.0
cis-1,2-Dichloroethene 6,640
trans-1,2-Dichloroethene 62.4
Vinyl Chloride 255
B-08
cis-1,2-Dichloroethene 7.9
B-15
Benzene 10.9
cis-1,2-Dichloroethene 37.7
Vinyl Chloride 139
B-04
Vinyl Chloride 2.3
ELLICOTT CREEK
B-09
No Compounds Detected
B-10
Vinyl Chloride 26.8
150′ 0 150′
LEGEND:
MONITORING WELL LOCATION
SAMPLE ANALYTICAL RESULTS (UG/L)
VOC EXCEEDENCES IN GROUNDWATER - JUNE 2004
DIVISION OF ENVIRONMENTAL REMEDIATION
DATE: 01/06/06
DRAWING: Leaman Site Map.dwg
SITE NAME: CHEMICAL LEAMAN TANK LINES
FIGURE 7

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Chemical Leaman Tank Lines Inactive Hazardous Waste Disposal Site
Operable Unit Nos. 1, 2 and 3
City of Tonawanda, Erie County, New York
Site No. 9-15-014

The Proposed Remedial Action Plan (PRAP) for the Chemical Leaman Tank Lines site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 23, 2006. The PRAP outlined the remedial measure proposed for the contaminated soils and groundwater at the Chemical Leaman Tank Lines site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 9, 2006, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. No citizens attended the public meeting. Written comments, however, were received by the PRP on March 23, 2006. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 24, 2006.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the NYSDEC's responses:

James A. Rakitsky, Vice President of Quality Carriers, Inc., successor to Chemical Leaman Tank Lines, submitted a letter (dated March 23, 2006) that included the following comments:

COMMENT 1: "Based on our remedial investigation of the Site and the current Site conditions, we do not agree that in-situ chemical treatment of the soils under the former lagoons is necessary and/or warranted. We believe that the primary source of contaminants has already been removed, and that the residual contaminated soils remaining under the lagoons are contained by the underlying low permeability clay unit and the overlying low-permeability backfill materials."

"Moreover, treatment is not necessary because . . . the risk posed by these soils to human health and the environment is extremely low for the following reasons: 1) the primary source of the contaminants has been removed, 2) there are low levels of VOCs that remain on the site, 3) VOCs are naturally attenuating at a rapid rate, the contaminants on-site are contained, and 5) given specific Site conditions, treatment may not be effective."

RESPONSE 1: The NYSDEC acknowledges that a significant quantity of contaminated materials were excavated from the lagoons by Chemical Leaman and transported off-site for disposal. Figure 6 shows, however, that significant concentrations of individual VOCs (e.g., 590 ppm of trichloroethene, 320 ppm of tetrachloroethene, and 2,200 ppm of 1,2,4-trichlorobenzene) remain in subsurface soil of Operable Unit 1. These soils will continue to act as a source of groundwater contamination.

Although the Remedial Investigation documented that natural attenuation was occurring at the site, the concentrations of individual VOCs suggest that compliance with SCGs (i.e., groundwater standards) may take years, if not decades, to achieve. As a result, long term groundwater monitoring will likely be required for a period significantly longer than the 30 years evaluated in the Feasibility Study.

The NYSDEC acknowledges that in-situ chemical treatment at Operable Unit 1 may not be effective due to the geologic materials underlying the site. Because of this uncertainty, the ROD required the completion of a pilot-scale study to determine the efficacy of this remedy and to obtain data to design a full-scale system.

COMMENT 2: "In general, we do not disagree with the proposed remedial alternative of excavation and off-site disposal of limited contaminated soils from both OU2 and OU3. However, the actual design of the program needs to be refined prior to implementation. . . . The excavation in both areas should be limited to localized "hot spots". This would consist of the areas within the immediate vicinity of GP-04W and GP-04WA in OU2 and GP-04 in OU3. The analytical results from soil samples collected in these areas (Figure 6 in ROD) indicate the greatest number and highest concentrations of contaminants in soils at these locations."

RESPONSE 2: The NYSDEC agrees with the completion of "hot spot" removal at Operable Units 2 and 3. "Hot spot" removal, however, will need to take place at the sample locations shown in Figure 6. These locations represent the most heavily contaminated soil, and as discussed in the response to comment 1, will continue to act as a source of groundwater contamination if not removed. The specific extent of the "Hot spot" area removal will be determined during the further investigation conducted as part of the remedial design activities.

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

Chemical Leaman Tank Lines Inactive Hazardous Waste Disposal Site
Operable Unit Nos. 1, 2 and 3
City of Tonawanda, Erie County, New York
Site No. 9-15-014

1. "Proposed Remedial Action Plan" for the Chemical Leaman Tank Lines site, Operable Unit Nos. 1, 2 and 3, dated February 2006, prepared by the NYSDEC.

2. Order on Consent, Index No. B9-0511-97-04, between NYSDEC and Chemical Leaman Tank Lines, Inc., executed on June 22, 1999.

3. "Phase I Investigation Report", January 1986, prepared by Engineering-Science.

4. "Closure Plan for Surface Impoundments, Chemical Leaman Tank Lines Facility", July 1988, prepared Ecology and Environment, Inc.

5. "Soil Sampling Plan for Surface Impoundments, Chemical Leaman Tank Lines Facility", July 1988, prepared Ecology and Environment, Inc.

6. "Final Draft, Hazard Ranking System Report", February 1989, prepared by the NUS Corporation.

7. "Final Draft, Site Inspection Report", February 1989, prepared by the NUS Corporation.

8. "Preliminary Site Assessment Data Records Search and Assessment Report", October 1990, prepared by Dunn Geoscience.

9. "Preliminary Site Assessment Report", March 1994, Rust Environment & Infrastructure of New York, Inc.

10. "Supporting Documents for Engineering Investigations at Inactive Hazardous Waste Sites", March 1994, Rust Environment & Infrastructure of New York, Inc.

11. "RI/FS Work Plan", October 1999, prepared by URS Greiner.

12. Fact Sheet announcing the beginning of the Remedial Investigation, July 2000, prepared by Quality Distribution, Inc.

13. "Remedial Investigation Report", March 2003, prepared by the URS Corporation.

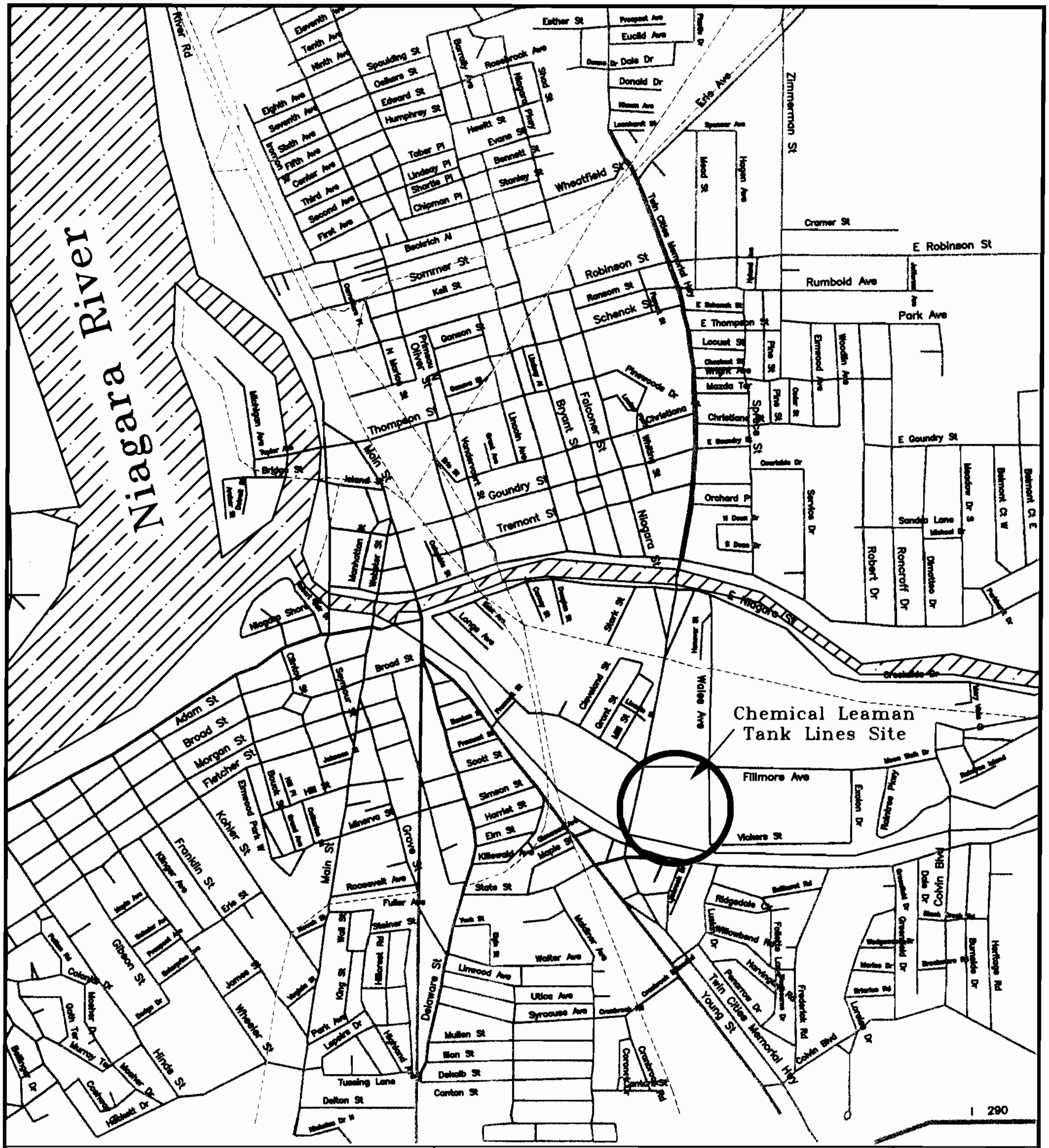
14. "Interim Report, Supplemental Remedial Investigation, Eastern Area", December 2003, prepared by the URS Corporation.

15. "Supplemental Remedial Investigation, Phase IV - Eastern Area", September 2004, prepared by the URS Corporation.

16. "Feasibility Study Report", December 2005, prepared by the URS Corporation.

17. Fact Sheet announcing the public meeting on the PRAP, February 2006, prepared by the NYSDEC.

18. Letter dated March 23, 2006 from Mr. James A. Rakitsky, Vice President of Quality Carriers, Inc., successor to Chemical Leaman Tank Lines.



Tonawanda East Quadrangle &
Tonawanda West Quadrangle

Scale Depends on Final Plotted Size

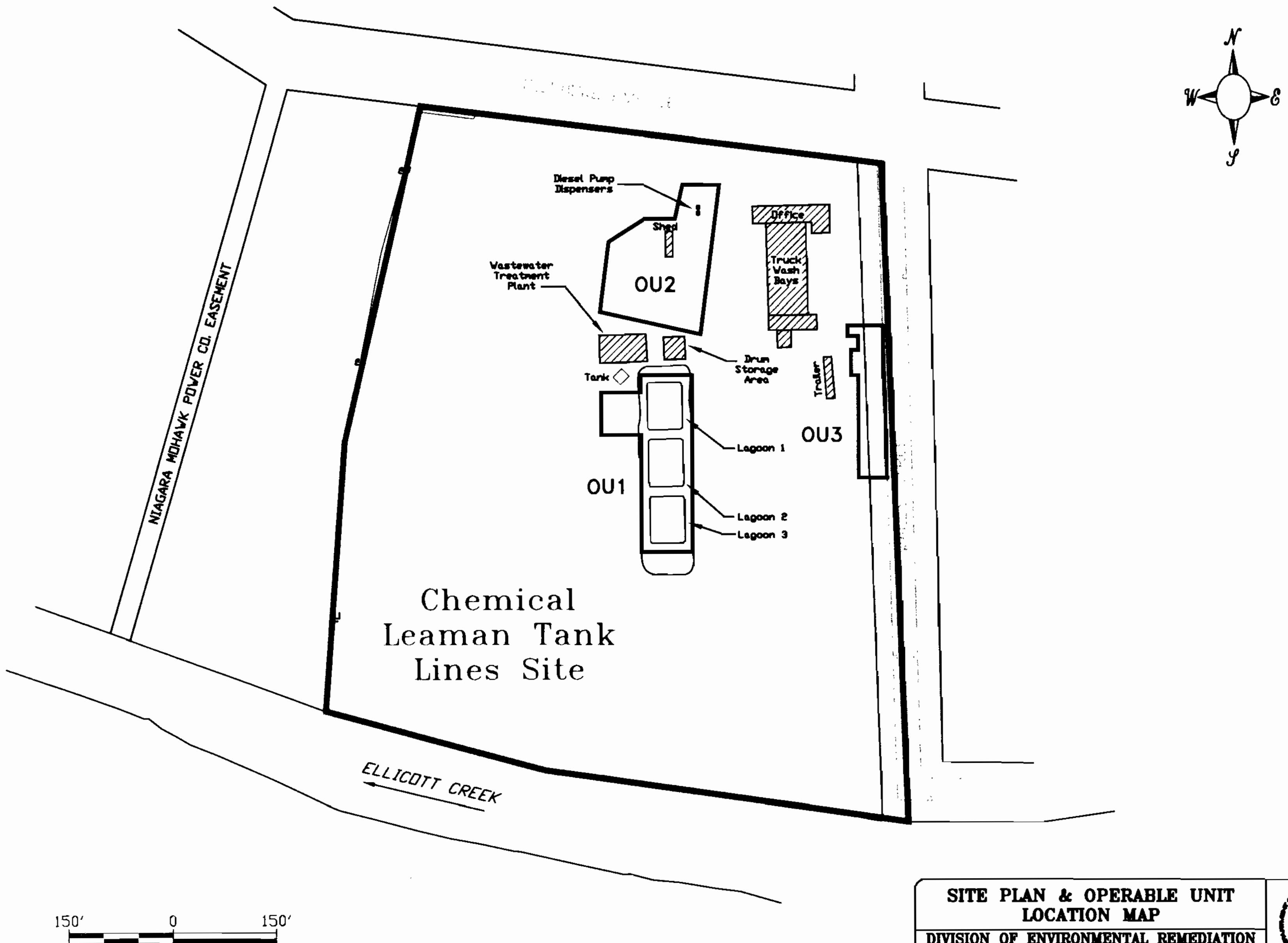
SITE LOCATION MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/05/06 **DRAWING:** Location Map.dwg

SITE: CHEMICAL LEAMAN TANK LINES

FIGURE 1



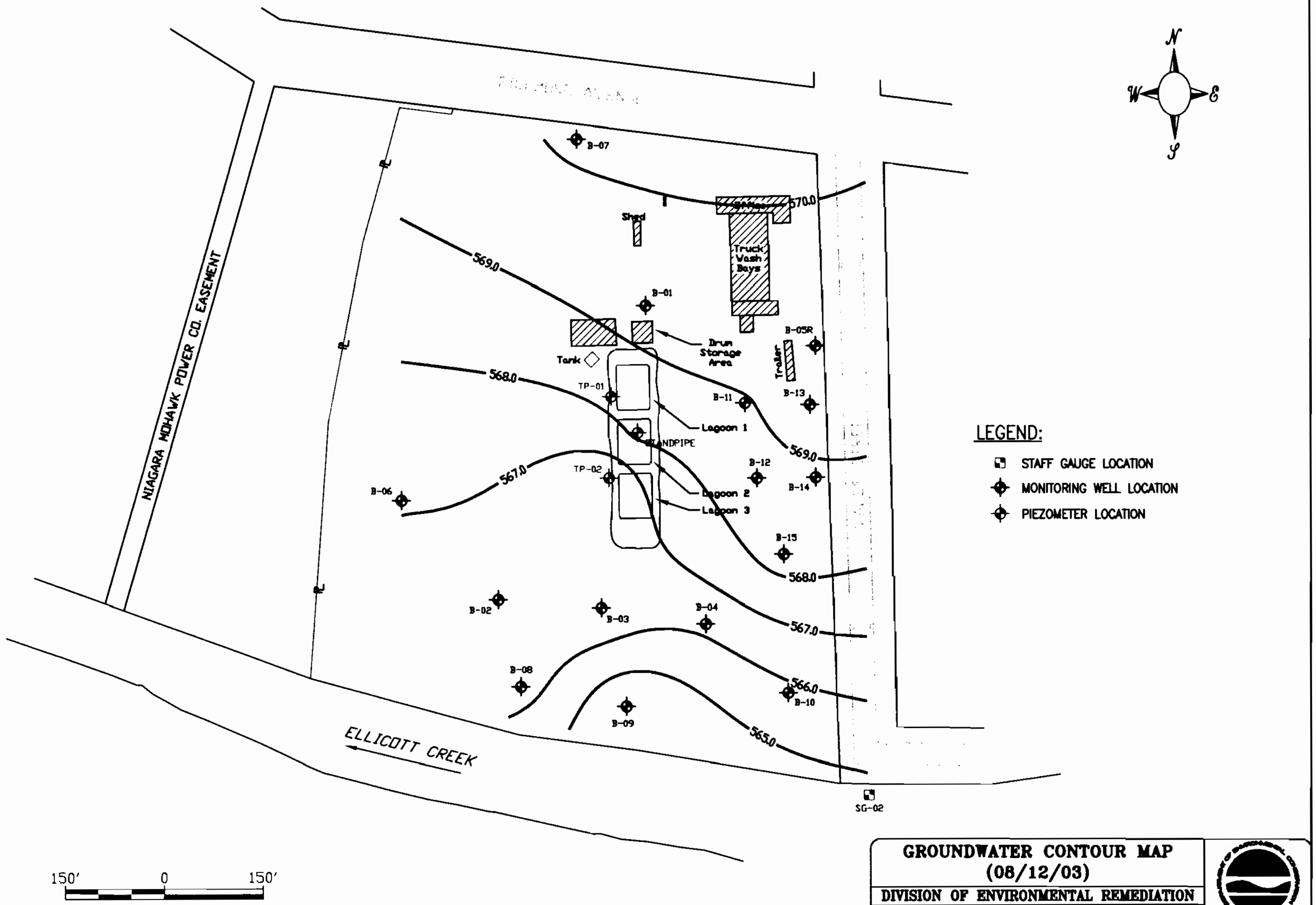
SITE PLAN & OPERABLE UNIT LOCATION MAP

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/06/06 DRAWING: Leaman Site Map.dwg

SITE NAME: CHEMICAL LEAMAN TANK LINES

FIGURE 2



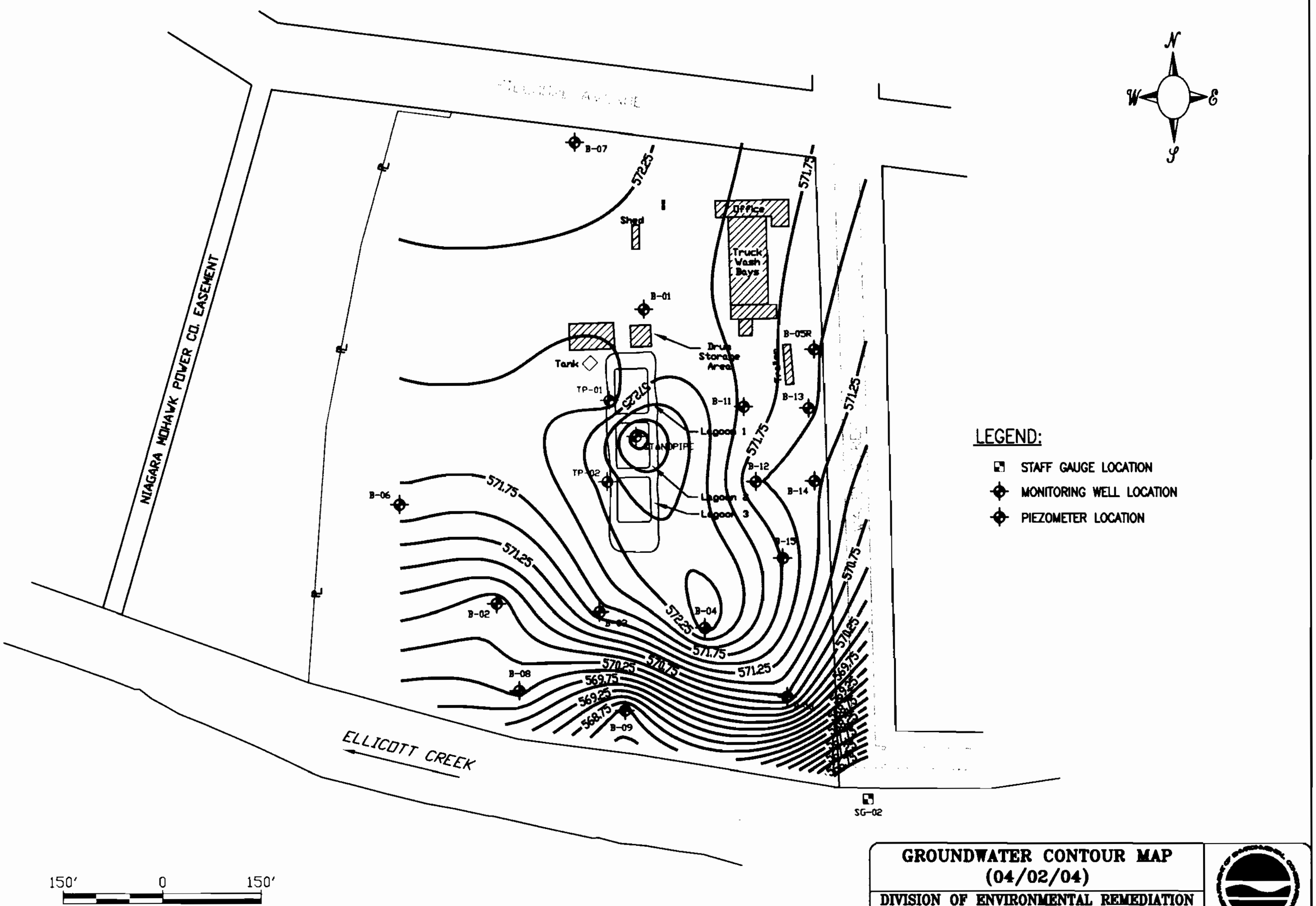
GROUNDWATER CONTOUR MAP (08/12/03)

DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: 01/06/06 | DRAWING: Leaman Site Map.dwg

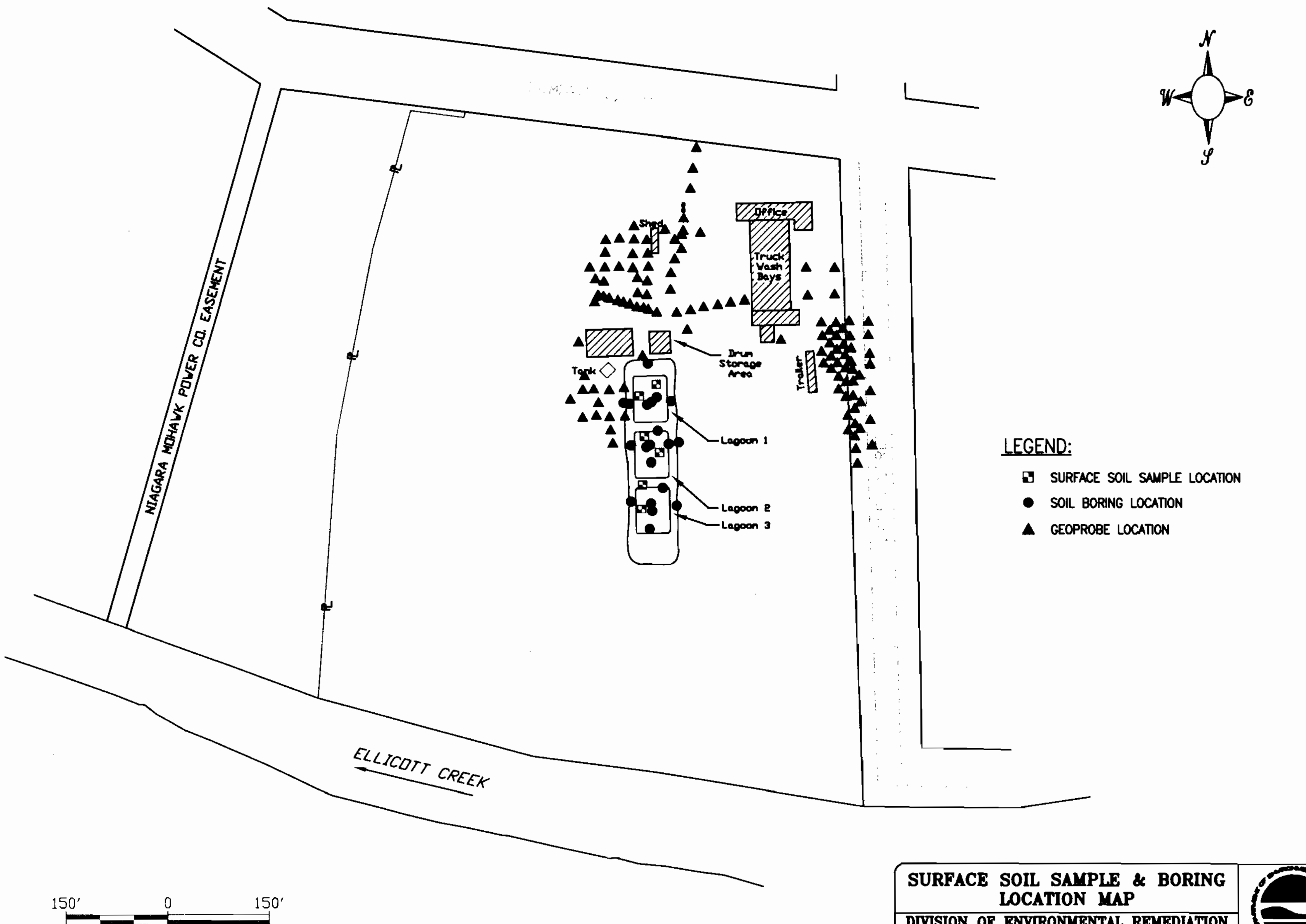
SITE NAME: CHEMICAL LEAMAN TANK LINES

FIGURE 3



GROUNDWATER CONTOUR MAP (04/02/04)

DIVISION OF ENVIRONMENTAL REMEDIATION	
DATE: 01/06/06	DRAWING: Leaman Site Map.dwg
SITE NAME: CHEMICAL LEAMAN TANK LINES	FIGURE 4



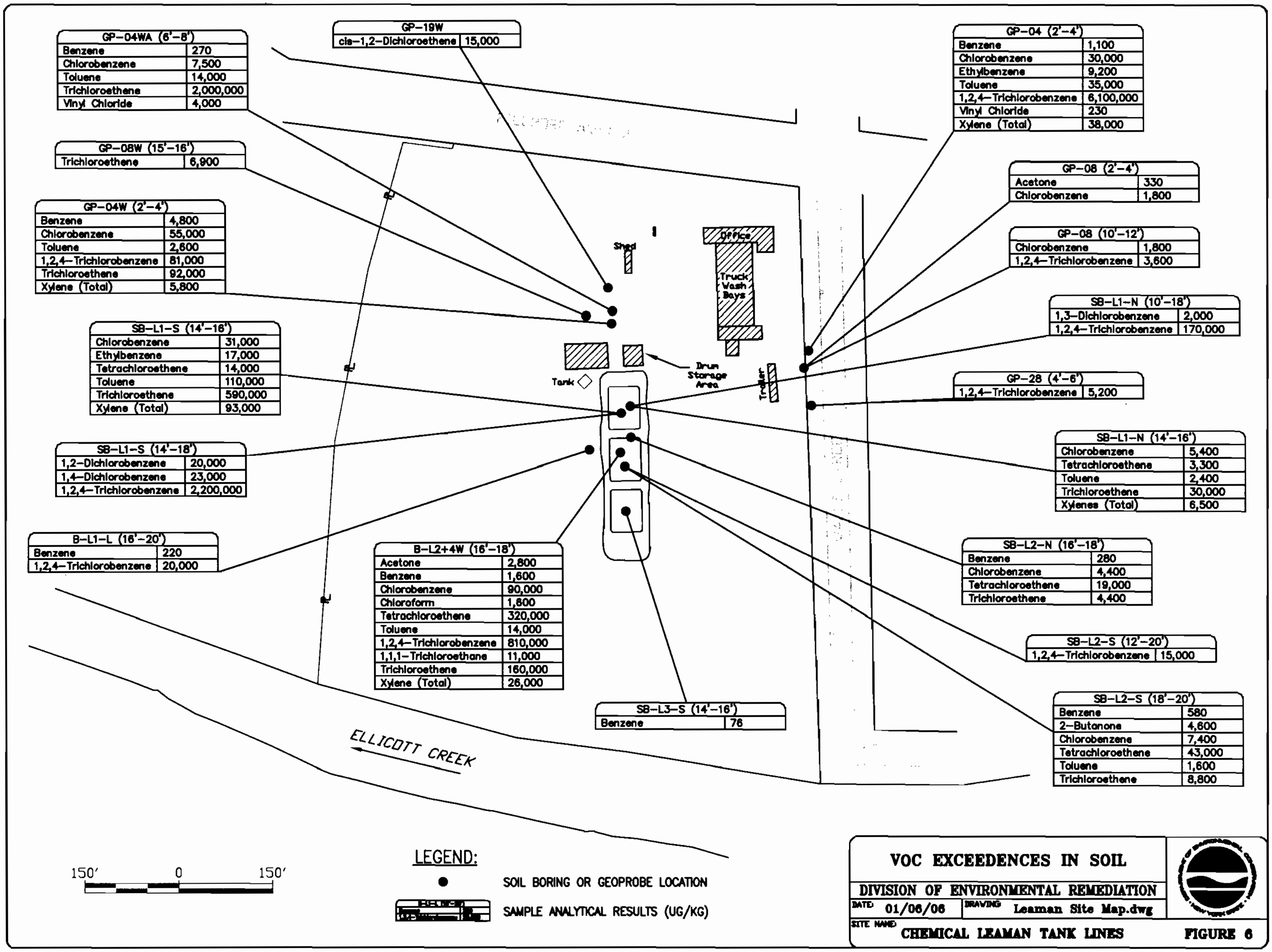
SURFACE SOIL SAMPLE & BORING LOCATION MAP

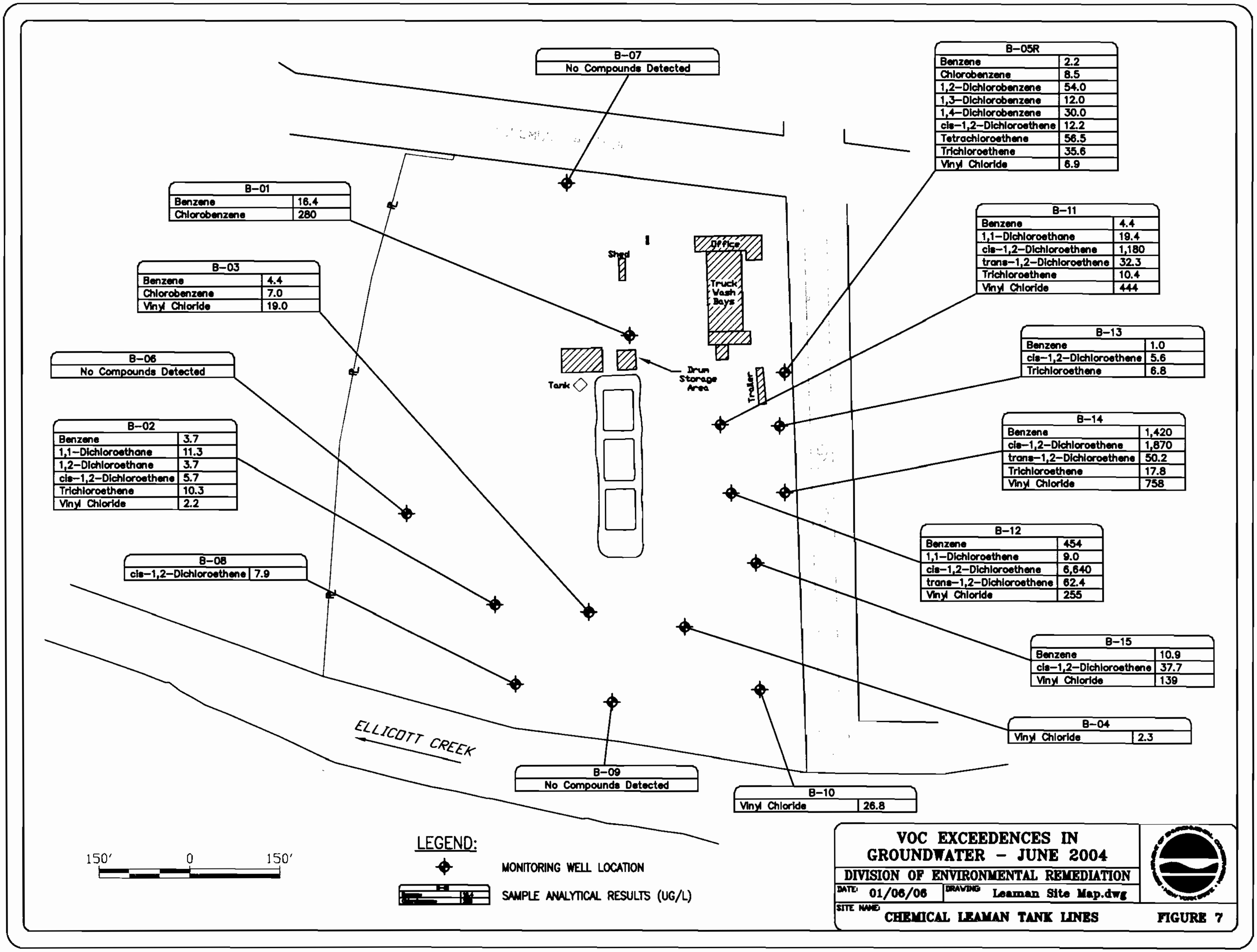
DIVISION OF ENVIRONMENTAL REMEDIATION

DATE: **01/06/06** DRAWING: **Leaman Site Map.dwg**

SITE NAME: **CHEMICAL LEAMAN TANK LINES**

FIGURE 5


GP-04WA (6'-8')
Benzene 270
Chlorobenzene 7,500
Toluene 14,000
Trichloroethene 2,000,000
Vinyl Chloride 4,000
GP-19W
cis-1,2-Dichloroethene 15,000
GP-04 (2'-4')
Benzene 1,100
Chlorobenzene 30,000
Ethylbenzene 9,200
Toluene 35,000
1,2,4-Trichlorobenzene 6,100,000
Vinyl Chloride 230
Xylene (Total) 38,000
GP-08W (15'-16')
Trichloroethene 6,900
GP-08 (2'-4')
Acetone 330
Chlorobenzene 1,800
GP-04W (2'-4')
Benzene 4,800
Chlorobenzene 55,000
Toluene 2,600
1,2,4-Trichlorobenzene 81,000
Trichloroethene 92,000
Xylene (Total) 5,800
GP-08 (10'-12')
Chlorobenzene 1,800
1,2,4-Trichlorobenzene 3,600
Shed
Office
Truck Wash Bays
SB-L1-N (10'-18')
1,3-Dichlorobenzene 2,000
1,2,4-Trichlorobenzene 170,000
SB-L1-S (14'-16')
Chlorobenzene 31,000
Ethylbenzene 17,000
Tetrachloroethene 14,000
Toluene 110,000
Trichloroethene 590,000
Xylene (Total) 93,000
Drum Storage Area
Tank
Trailer
GP-28 (4'-6')
1,2,4-Trichlorobenzene 5,200
SB-L1-N (14'-16')
Chlorobenzene 5,400
Tetrachloroethene 3,300
Toluene 2,400
Trichloroethene 30,000
Xylenes (Total) 6,500
SB-L1-S (14'-18')
1,2-Dichlorobenzene 20,000
1,4-Dichlorobenzene 23,000
1,2,4-Trichlorobenzene 2,200,000
B-L1-L (16'-20')
Benzene 220
1,2,4-Trichlorobenzene 20,000
B-L2+4W (16'-18')
Acetone 2,800
Benzene 1,600
Chlorobenzene 90,000
Chloroform 1,600
Tetrachloroethene 320,000
Toluene 14,000
1,2,4-Trichlorobenzene 810,000
1,1,1-Trichloroethane 11,000
Trichloroethene 160,000
Xylene (Total) 26,000
SB-L2-N (16'-18')
Benzene 280
Chlorobenzene 4,400
Tetrachloroethene 19,000
Trichloroethene 4,400
SB-L2-S (12'-20')
1,2,4-Trichlorobenzene 15,000
SB-L3-S (14'-16')
Benzene 76
SB-L2-S (18'-20')
Benzene 580
2-Butanone 4,600
Chlorobenzene 7,400
Tetrachloroethene 43,000
Toluene 1,600
Trichloroethene 8,800
ELLICOTT CREEK
150' 0 150'
LEGEND:
SOIL BORING OR GEOPROBE LOCATION
SAMPLE ANALYTICAL RESULTS (UG/KG)
VOC EXCEEDENCES IN SOIL
DIVISION OF ENVIRONMENTAL REMEDIATION
DATE 01/06/06
DRAWING Leaman Site Map.dwg
SITE NAME CHEMICAL LEAMAN TANK LINES
FIGURE 6


B-07
No Compounds Detected
B-05R
Benzene 2.2
Chlorobenzene 8.5
1,2-Dichlorobenzene 54.0
1,3-Dichlorobenzene 12.0
1,4-Dichlorobenzene 30.0
cis-1,2-Dichloroethene 12.2
Tetrachloroethene 56.5
Trichloroethene 35.6
Vinyl Chloride 6.9
B-01
Benzene 16.4
Chlorobenzene 280
B-03
Benzene 4.4
Chlorobenzene 7.0
Vinyl Chloride 19.0
B-11
Benzene 4.4
1,1-Dichloroethane 19.4
cis-1,2-Dichloroethene 1,180
trans-1,2-Dichloroethene 32.3
Trichloroethene 10.4
Vinyl Chloride 444
Shed
Office
Truck Wash Bays
Tank
Drum Storage Area
Trailer
B-06
No Compounds Detected
B-13
Benzene 1.0
cis-1,2-Dichloroethene 5.6
Trichloroethene 6.8
B-02
Benzene 3.7
1,1-Dichloroethane 11.3
1,2-Dichloroethane 3.7
cis-1,2-Dichloroethene 5.7
Trichloroethene 10.3
Vinyl Chloride 2.2
B-14
Benzene 1,420
cis-1,2-Dichloroethene 1,870
trans-1,2-Dichloroethene 50.2
Trichloroethene 17.8
Vinyl Chloride 758
B-08
cis-1,2-Dichloroethene 7.9
B-12
Benzene 454
1,1-Dichloroethene 9.0
cis-1,2-Dichloroethene 6,640
trans-1,2-Dichloroethene 62.4
Vinyl Chloride 255
B-15
Benzene 10.9
cis-1,2-Dichloroethene 37.7
Vinyl Chloride 139
B-04
Vinyl Chloride 2.3
ELLICOTT CREEK
B-09
No Compounds Detected
B-10
Vinyl Chloride 26.8
150' 0 150'
LEGEND:
MONITORING WELL LOCATION
SAMPLE ANALYTICAL RESULTS (UG/L)
VOC EXCEEDENCES IN GROUNDWATER - JUNE 2004
DIVISION OF ENVIRONMENTAL REMEDIATION
DATE: 01/06/06
DRAWING Leaman Site Map.dwg
SITE NAME CHEMICAL LEAMAN TANK LINES
FIGURE 7