REMEDIAL INVESTIGATION REPORT - VOLUME I

TNT-Red Star Express Site
97 Industrial Park Drive
Town of Kirkwood, Broome County, New York
NYSDEC Site #704028

PREPARED FOR:

USF RED STAR, Inc.
400 Delancy Street
Newark, New Jersey

PREPARED BY:

LEADER ENVIRONMENTAL, INC.
640 Kreag Road, Suite 300
Pittsford, New York 14534

250.001

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EXECUTIVE SUMMARY

This Remedial Investigation ("RI") Report was completed in partial fulfillment of the requirements stipulated in the April 30, 1998 Order-On-Consent (Index # B7-97-09) between USF Red Star, Inc. ("USF Red Star") and the New York State Department of Environmental Conservation ("NYSDEC") for the TNT-Red Star Express Site, Site Code #704028, located in Kirkwood, Broome County, New York (hereafter referred to as "the Site"). Leader Environmental, Inc. ("Leader") prepared the RI Report for USF Red Star to convey the historical, hydrogeological, chemical and engineering data gathered during the RI, in general accordance with the NYSDEC approved November, 1998 Remedial Investigation/Feasibility Study ("RI/FS") Work Plan.

In 1991 a portion of the Site was rented by TNT-Red Star Express, Inc. from C&D Terminal Leasing. C&D Terminal Leasing also leased portions of the Site to Preston Trucking Company and Herlihy Trucking. TNT-Red Star Express, Inc. and the other renters used the Site as a trucking terminal where goods were transferred between trucks for distribution. The renters also had access and use to the maintenance garage including the oil/water separator and waste oil tank. On January 7, 1991 TNT-Red Star Express reported a spill of Perchloroethene ("PCE"). The spill apparently occurred while moving drums of PCE into a truck trailer when a forklift punctured several drums releasing approximately 100 gallons of PCE into the trailer and eventually onto the asphalt pavement. On January 7, 1991, Allwash of Syracuse [now known as AAA Environmental, Inc. ("AAA")] excavated asphalt and soil containing PCE as part of a spill response action completed under the direction of NYSDEC. Allwash of Syracuse removed approximately 120 tons of contaminated soil during the spill response; however, some PCE remained in the soil and further remediation was completed using soil vapor extraction techniques. The installation of monitoring wells later showed that PCE had impacted the uppermost groundwater zone.

Based on the data collected during the RI, the following conclusions have been developed:

- There are at least two groundwater zones in the overburden beneath the Site. The uppermost groundwater zone is composed of silty sand and is underlain by either glacial till or a silt and clay. Groundwater flow in the uppermost groundwater zone flows to the south. The lower groundwater zone was penetrated by only one monitoring well (MW-3D) in the PCE source area. The lower groundwater zone consists of clay with silt, sand or gravel lenses. There is an upward, vertical flow gradient between the upper and lower groundwater zones which results in a potentiometric surface that rises approximately 5.4 feet above the potentiometric surface in the upper groundwater zone.

- Sampling of the soil and groundwater indicates that there are two principal contaminants on the Site; PCE and 1,1,1-Trichloroethane ("TCA"). The PCE from the 1991 spill near the terminal building, and TCA and PCE from a release from either the Site's oil/water separator or waste oil tank located on the south side of the maintenance garage. Neither source area appears to have soil contamination that requires remediation since the concentrations are lower than the NYSDEC's soil clean up objectives for the protection of groundwater quality, See Table 1.

- Both PCE and TCA have impacted groundwater quality in the uppermost groundwater zone at concentrations greater than NYSDEC's Class GA groundwater quality criteria. The lower groundwater zone, as monitored by monitoring well MW-3D, has not been impacted.

- PCE appears to be migrating off-Site at a velocity of approximately 0.02 feet per day. The absence of PCE degradation breakdown products suggests that microbial mineralization of PCE is not occurring and that only dilution of the PCE is causing the low off-Site concentrations observed in monitoring wells.

- TCA appears to have been affected by microbial mineralization because TCA degradation products are present in the groundwater samples. This mineralization process appears to be driven by the presence of Toluene, Xylenes and Ethylbenzene ("TX&E") in the soil and groundwater.

- Since at least part of the Site conditions appears to support degradation of TCA, it appears that Site conditions may be altered to enhance further degradation of TCA and degradation of PCE. Remediation techniques that can stimulate and increase the rate of degradation of both TCA and PCE should be evaluated in the FS.

- Since groundwater velocities are relatively slow and there are no high contaminant concentrations off-Site, passive in-situ techniques should also be evaluated in the FS.

- Additional investigation is required to determine if an off-Site source of TCA is contributing to the Site contamination.

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1. INTRODUCTION

This Remedial Investigation ("RI") Report is submitted in partial fulfillment of the requirements stipulated in the April 30, 1998 Order-On-Consent (Index # B7-97-09) between USF Red Star, Inc. ("USF Red Star") and the New York State Department of Environmental Conservation ("NYSDEC"). This RI Report has been prepared for the TNT-Red Star Express Site, Site Code #704028, located in Kirkwood, Broome County, New York (hereafter referred to as "the Site"). Leader Environmental, Inc. ("Leader") prepared the RI Report for USF Red Star to convey the historical, hydrogeological, chemical and engineering data gathered during the RI, in general accordance with the NYSDEC approved November, 1998 Remedial Investigation/Feasibility Study ("RI/FS") Work Plan.

1.1 BACKGROUND

1.1.1 Project Chronology

In 1991 a portion of the Site was rented by TNT-Red Star Express, Inc. from C&D Terminal Leasing as a trucking terminal where goods were transferred between trucks for distribution. In 1991, portions of the Site had also been leased to Herlihy Trucking and Preston Trucking. All of these companies used these facilities in the maintenance garage. Herlihy Trucking continues to lease a portion of the Site. C&D Terminal Leasing, as lessor, was and still is responsible for Site maintenance, including maintenance of all underground storage tanks, the oil/water separator, and the maintenance garage. On January 7, 1991 TNT-Red Star Express, Inc. reported a spill of PCE. The spill apparently occurred while moving drums of PCE into a trailer, when a forklift punctured several drums releasing approximately 100 gallons of PCE into the trailer and eventually on the asphalt pavement. On January 7, 1991, Allwash of Syracuse (now known as AAA Environmental, Inc. ["AAA"]) excavated asphalt and soil containing PCE as part of a spill response action completed under the direction of NYSDEC. Allwash of Syracuse removed approximately 120 tons of contaminated soil during the spill response.

Subsequent to the spill, the following remedial actions and monitoring were conducted under the direction of NYSDEC Region 7 personnel:

- January 7, 1991 - Allwash of Syracuse, Inc. ("Allwash") drummed the spent absorbent and excavated approximately 120 tons of PCE contaminated soil.

- January 18, 1991 - Allwash installed a soil vapor extraction system and began the monthly collection and analysis of air samples.

- November 1991 - Allwash completed a soil gas survey of the spill area.

- April 1992 - Allwash completed a soil boring on-Site.

- November 1992 - Allwash installed three monitoring wells and began quarterly sampling and analysis. Sample results were reported to NYSDEC. One monitoring well MW-3 was located near the spill area.

- December 1994 - NYSDEC requested that an additional downgradient monitoring well be installed, MW-4. TNT-Red Star Express, Inc. also requested that an upgradient piezometer be installed. NYSDEC confirmed the request in a letter dated December 27, 1994.

- January through October 1995 - Allwash continued quarterly monitoring of groundwater quality. In response to the NYSDEC's request an additional downgradient monitoring well MW-4, was installed on March 23, 1995. Also, TNT-Red Star Express, Inc. had requested permission from the NYSDEC to install an upgradient piezometer (PIEZ-1). Permission was granted and the piezometer was installed on March 23, 1995.

- November 1995 - TNT- Red Star Express, Inc. issued a stop work order to Allwash.

- December 18, 1996 - NYSDEC provided the Broome County Industrial Development Agency ("BCIDA"), as listed owner or ownership partner of the property, a letter notifying the BCIDA of the listing of the Site on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites.

- November 11, 1997 - Leader Environmental, Inc. working on the behalf of USF Red Star sampled the monitoring wells and had the samples analyzed for volatile organic compounds.

- July 31, 1998 - USF Red Star signed an Order on Consent, Index #B7—0521-97-09, with the NYSDEC to complete a RI/FS the TNT-Red Star Express, Inc. Site.

- August 31, 1998 - Leader Environmental, Inc. submitted a draft RI/FS Work Plan for NYSDEC review.

- November 6, 1998 - NYSDEC approved the RI/FS Work Plan to address the nature and extent of contamination originating from the 1991 PCE spill.

- March 8, 2000 - Leader submitted the RI Report to the NYSDEC.

Table 2 provides a summary of groundwater sample results collected prior to the start of the RI.

1.1.2 Site Location and Land Use

The Site occupies approximately 5 acres and is used as a trucking terminal where materials are unloaded and loaded onto trailers for distribution. USF Red Star shares the property with Herlihy Trucking and leases the property from C&D Terminal Leasing. USF Red Star uses the space for the loading and unloading trucks and also has access to the on-Site maintenance garage for minor truck repairs. Herlihy Trucking uses the Site to park unused trucks, the maintenance garage, and the fueling facilities. C&D Terminal Leasing is responsible for the property management and maintenance of the facility including the Site's underground storage tanks (including a Diesel fuel tank and a waste oil tank) and an oil/water separator. The Site is located at 97 Industrial Park Drive in the Town of Kirkwood within an active industrial park. A Site Location Map is presented as Figure 1. The industrial park is located adjacent to and southwest of US Interstate Route 81, and northwest of Route 11.

Within the industrial park, the Site is directly adjacent to and south of the Raytheon Corporation (formerly Hughes Flight Simulator facility), east of the Universal Instruments Corporation, and northeast of Universal Applied Conveyor Engineering Division facility. The industrial park is zoned I-D, for industrial development by the Town of Kirkwood.

Property to the west and south of the Site is zoned as I-D industrial or B-1 business. Property east of the Site is zoned as Planned Recreation (Park Creek) or Residential (Town of Kirkwood). The nearest residential area to the Site is approximately 0.1 miles to the southeast.

1.1.3 Previous and Ongoing Environmental Cleanups Within the Surrounding Area

Spills have occurred in the general area surrounding the Site, but these spills were generally the result of the use of underground storage tanks and incidents involving vehicle accidents or delivery trucks. Two sites with on-going investigations and, or remediation are the Gorick Landfill Superfund Site and the Dover Electronics Superfund Site.

The greatest potential environmental impact to the Kirkwood area appears to be from the Gorick Landfill Superfund Site located approximately 0.4 miles south of the Site. The Gorick Landfill contributed volatile organic compounds ("VOCs"), including chlorinated hydrocarbons, aromatic hydrocarbons, and trihalomethanes to the Town of Kirkwood drinking water supply wells at concentrations greater than New York State's Water Quality Regulations 6 NYCRR Part 700-705.

The Dover Electronics Superfund Site is notable because the facility used PCE in their operation. According to the NYSDEC the facility stored PCE in drums and tanks. The use of PCE resulted in PCE contamination of the soil, groundwater and the sediments found in the storm water system. Contamination from the facility also resulted in off-Site contamination. Dover Electronics is located approximately 0.5 miles northwest of the Site and across the regional hydraulic gradient, as shown on Figure 5.

Figure 2 shows the relationship between the Site and the known spill and environmental cleanup Sites. The figure was obtained from the Broome County Health Department on February 16, 1999 from Mr. Ronald Brink. As Figure 2 shows, the closest spills and cleanups to the Site have occurred on the property currently occupied by Raytheon, Universal Instruments, and Herlihy/Penske Trucking.

1.1.4 Previous Site Investigations and Description of Current Site Conditions

Following the cleanup of the PCE spill, AAA was retained to install monitoring wells to assess the impact to groundwater. Investigative and remedial work and groundwater monitoring took place on the Site from January 18, 1991 to October 1995. In November 1997, AAA retained Leader to assist with the RI/FS for the Site. On November 11, 1997, Leader sampled the existing on-Site monitoring wells.

Table 2 shows a summary of the past pre-remedial investigation groundwater monitoring results. The data show that the concentrations of PCE have generally decreased with time in downgradient monitoring wells MW-3 and MW-4. The data from downgradient monitoring well MW-2 suggests that the well is located near the edge of the plume and may also indicate decreasing or near steady-state conditions in the upper groundwater zone.

The pre-remedial investigation on-Site monitoring wells (i.e., MW-1 through MW-4) range in depth from 13 feet to 15 feet below ground surface and monitor groundwater quality in the uppermost water bearing zone. In general, the decrease in PCE concentrations in the monitoring wells could be the result of natural bio-attenuation, plume migration, and natural variation due to the rise and fall of the groundwater table. The data also indicates that the concentration of PCE in groundwater exceeds the NYSDEC's Class GA water quality standard of 5 micrograms per liter (ug/l). The data from the pre-remedial investigation, however, does not indicate multiple sources of contamination.

2. REMEDIAL INVESTIGATION PROGRAM

2.1 OBJECTIVES

The purpose of the RI was to address the extent of contamination and to provide information and data for designing, constructing, operating and monitoring an appropriate remedial response. To address all concerns, USF Red Star completed the RI using a phased approach. Phase I of the RI addressed on-Site contamination and Phase II addressed any on-Site data gaps and off-Site concerns. The RI activities were based on the project's NYSDEC approved Work Plan (November 9, 1998) and the approved Phase II Scope of Work (October 22, 1999).

The Phase I RI addressed the following issues:

- Assessed the extent of contamination related to Site operations, including PCE and its degradation products, in the vicinity of the spill area;
- Evaluated on-Site contamination and compared the results to Technical and Administrative Document ("TAGM") *Determination of Soil Cleanup Objective and Goals - TAGM 4046, dated January 24, 1999*; and
- Assessed potential off-Site migration of contamination related to Site operations.

The Phase II RI addressed the following issues:

- The extent of off-Site PCE contamination on the "Universal Conveyor Property" (the Universal Conveyor Property is owned by SARBRO Realty); and
- Identified the source and delineated the extent of a TCA plume.

2.2 FIELD PROGRAM SCOPE OF WORK

The RI field program was completed in two phases, as described in Section 2.1, and characterized the Site and off-Site areas of contamination, (See Figure 3 for a Site Map). Tables 3 through 8 presents the results of the RI sampling effort and Table 9 presents a description of samples location, sample media, and analytical testing program. Figure 4 presents the sampling locations.

2.2.1 Phase I

During Phase I, the following Site characterization activities were completed from February 16, 1999 to April 1, 1999:

- Site Infrastructure Assessment - To address this requirement of the Work Plan a Site Plan was prepared by a New York State licensed land surveyor. The Site Plan included Site topography and locations of property lines, buildings and structures, soil borings and monitoring wells.

- Horizontal and Vertical Extent of Contamination - To delineate the extent of contamination, four soil borings (B-1 through B-4) were drilled and sampled, and five monitoring wells (MW-3D and GP-1 through GP-4) were installed. Soil borings were drilled to evaluate the Site geology and to estimate the depth to the top of the first low permeability layer beneath the Site, (soil boring logs and monitoring well logs are provided in Appendix 1). An organic vapor analyzer ("OVA") was used to screen the headspace of each soil sample and these results can be found on the boring log sheets. Samples retained for analysis were based on the detection of organic vapors at a concentration greater than 10 parts per million ("ppm"), the presence of waste like materials, or soil stains. Downgradient of the PCE spill, one soil sample was collected and analyzed from the top of the low permeability layer to determine if PCE had migrated from the spill area along the upper surface of the low permeability layer. The sample from boring B4 (and later referred to as monitoring well MW3D) was analyzed for USEPA Target Compound List ("TCL") VOCs using NYSDEC's Analytical Services Procedure ("ASP") 95-1. At this downgradient location, B4/MW3D, one deep monitoring well screen was installed below the low permeability layer to evaluate whether PCE had migrated into the lower groundwater zone.

  Along the property line of the Site, four temporary monitoring wells (GP-1 through GP-4) were installed to assist in the evaluation of the extent of the PCE plume. These temporary monitoring wells are still in place. These wells were sampled and analyzed using USEPA Method 8260 for USEPA TCL VOCs. The wells were placed without sampling the soil because groundwater contamination was the primary concern. These wells are "temporary" because they lack grout backfilling, protective casings, and were installed for easy removal.

  In addition to the sampling of these monitoring wells, the four existing monitoring wells (MW-1 through MW-4) were also sampled for VOCs using NYSDEC ASP 95-1. Monitoring well MW-4 was also sampled for PCBs using USEPA Method 8082, semi-volatile organic compounds ("SVOCs") using NYSDEC ASP-95-2, and Target Analyte List ("TAL") metals.

- Sediment Sampling - Dye tracing was completed to determine the location storm sewer discharge pipe and the path of storm water flow. Based on the most probable path for PCE to flow from the spill area, one sample (identified as Basin 1 on Table 3) was collected from the catchbasin likely to have received the PCE spill, D.I. #4 on Figure 8. A second sample (identified as Swale on Table 3) was collected from the sediment below the storm sewer discharge pipe. This pipe discharges to the drainage swale on the south side of the Site. The sediment samples were analyzed for VOCs using NYSDEC ASP-95-1.

Variances to the original Work Plan that were implemented with the NYSDEC's concurrence included the drilling and sampling of an additional soil boring B-4 (MW-3D). Although it was anticipated in the Work Plan that an additional soil boring may be required, its exact location and depth was not specified in the Work Plan.

2.2.2 Phase II

At the completion of the Phase I field activities, groundwater sample results indicated off-Site PCE migration and that there is a second source of contamination on the Site in the vicinity of temporary monitoring well GP-2. The Phase I sample results from GP-2 indicated that TCA was present in the groundwater at a concentration of 2,200 parts per billion ("ppb"). The Phase II field activities had two goals: identify the source of the TCA contamination, and delineate the extent of both TCA and PCE contamination. The Scope of Work for the Phase II activities was approved by NYSDEC on October 22, 1999. Phase II activities were completed from October 25, 1999 to November 2, 1999. During the first two days of the Phase II activities, soil and groundwater samples were collected, and analyzed on the same day by Buck Environmental Laboratory, a New York State Department of Health ("NYSDOH") certified laboratory, and the results used to direct the next day's sampling activities. Below is a summary of these activities.

- TCA Assessment - To assist in the definition of the TCA contaminant plume, a total of eleven soil or groundwater samples were collected. All samples were analyzed for TCL VOCs using Method 8260 or ASP-95-1. In addition, two samples were collected from the oil/water separator and the drainage swale along the Site's southern most property line and analyzed for NYSDEC STARS Memo #1 listed SVOCs using USEPA Method 8270 to determine the amount of petroleum based contamination present at the sampling locations.

  A total of seven groundwater samples were collected on and off of the Site to evaluate the extent of the TCA plume. These samples were collected from the following locations: GP-1, GP-2, PW-4, PW-6, PW-7, PW-8, and PW-9. Four soil/sediment samples were collected from the following locations: borings B-5 and PW-5; the sediment from the oil/water separator; and from the sediment below the oil/water separator discharge pipe located in the drainage swale (identified as Sample #1-Drainage Swale on Table 3) along the southern most property boundary. These soil and sediment samples and a soil gas survey in the maintenance garage, were used to evaluate the source of the TCA. The soil gas survey involved a total of 16 probes and soil gas readings for VOCs.

- PCE Assessment - To delineate the extent of off-Site PCE migration, three groundwater samples were collected and analyzed for TCL VOCs using USEPA Method 8260. Samples were collected from the following locations; PW-1, PW-2, and PW-3. In addition, one groundwater sample was collected from monitoring well MW-4, since the previous sampling results identified

PCE in the groundwater and it would be a point of comparison for the newly collected data.

Variances to the agreed to Scope of Work for the RI Phase II included: the collection of soil gas samples in the maintenance garage; soil headspace samples and one soil sample for laboratory testing from the drainage swale; and the sampling of three additional soil borings in which two monitoring wells were installed. In addition, a sample from the waste oil tank was collected and analyzed for VOC using USEPA Method 8260 to assist in determining its role as a source of PCE and TCA. All work was done with the concurrence of the NYSDEC.

Appendices 1, 2, 3, 4, 5 and 6 present copies of the boring logs, well construction diagrams, sample data, and field measurements collected as part of the RI field program.

2.3 GEOLOGY AND HYDROGEOLOGY

2.3.1 Background

The Town of Kirkwood area is located in the Appalachian Plateau physiographic province. The Appalachian Plateau is an area of Silurian and Devonian aged sedimentary rocks that are generally flat lying. The area appears to be mountainous, but the frequent and steep changes in ground surface elevation are reportedly the result of tectonic uplift and erosion. Tectonic movement, thermal cracking, and glacial unloading, has resulted in rock fractures. The most of the dominant fractures are oriented northwest to southeast.

The Susquehanna River and its river valley are the dominant land features of the area. The Site is located on the north flank of the river valley, approximately 0.5-miles north of the Susquehanna River. There is also a small tributary to the Susquehanna River, named Park Creek, that is located approximately 150 feet east of the Site's easternmost property line.

The Susquehanna River Valley was reportedly formed by a pre-glacial river which cut into the shale and sandstone of the Appalachian Plateau. The valley was widened and deepened through erosion. During the advance and retreat of the glaciers, a blanket of glacial till and stream and lake silt, and sand and gravel sediments were deposited across the area. Till sediments tend to cover the hills and the edges of the river valley. In the area of the Site, the USGS has mapped the sediment as kame and kame terrace sand and gravel deposits. Coarser sediments, sands and gravel, are typically found in the center of the river valley. An aquifer has formed in the shallow sand and gravel outwash deposits and today the aquifer is known as the Endicott-Johnson City Aquifer. The aquifer provides potable water for the towns and villages in the area.

The USGS has mapped the limits of the aquifer and the Site appears to be partially within the limits of the aquifer. However, the Broome County Department of Health has identified the limit of the aquifer as east of the Site. This discrepancy may be from the limited amount of actual data. In the USGS report, "Stimulation of Ground Water Flow and Infiltration from the Susquehanna River to a Shallow Aquifer at Kirkwood and Conklin, Broome County, New York" the USGS estimates that the aquifer beneath the Site may be less than 10 feet thick. In addition to mapping the aquifer the USGS has completed a computer model of the aquifer, and simulated the distribution of hydraulic heads throughout the aquifer. Based on this analysis, the USGS has determined that regional groundwater flow in the area of the Site is south to southwest, or parallel with the flow of Park Creek, (see Figure 5).

2.4 SITE GEOLOGY AND HYDROGEOLOGY

2.4.1 Geology

During the RI, five soil borings were advanced and sampled to obtain a better understanding of the Site's subsurface soil characteristics, the depth to a potential low permeability zone, and to install one deep groundwater monitoring well for sampling and hydraulic head measurements. In addition, twelve boreholes were drilled for the installation of temporary monitoring wells. These monitoring wells were installed to delineate the extent of the PCE and TCA plumes and to collect potentiometric head measurements.

The soil borings indicate that the overburden is relatively silty with small amounts of sand and gravel. In most samples, the percentage of silt-sand-gravel and the soil's relative density indicate that the soil is a till. Breaking-up the till sequence is a sand layer between 8 and 22 feet below the ground surface. In a west to east traverse across the Site, the sand layer thickness appears to increase, see Figure 6. The soil samples from boring B-3, on the east side of the Site, indicate a thick layer of sand and gravel between the depths of 14 and 22 feet below ground surface. Soil boring B-1, located on the west side of the terminal building and at approximately the same ground surface elevation as boring B-3, found no significant amounts of sand except for a four foot lens at 14 feet below ground surface. These findings are consistent with the USGS' interpretation of the geology and delineation of the aquifer limits; Park Creek being within the aquifer and the Site somewhere on the aquifer boundary.

Three of the soil borings were terminated once a low permeability unit consisting of sandy silt and some clay was encountered. Two samples from boring B-2 and B-3, at a depth of 22 feet below ground surface, exhibited slight plasticity. In boring B-1, at a depth of 18 feet, the sample clearly contained some clay, but did not exhibit plasticity above a depth of 22 feet below ground surface. Based on the southeast slope of the low permeability unit, as defined by soil borings, a fourth (B-4) soil boring was drilled and sampled downslope (southeast) of the PCE spill area. The soil boring location was approved by NYSDEC prior to drilling. During the sampling of soil borings B-1 and B-4 no evidence (i.e., elevated levels of VOCs, as measured by the sampling of soil sample headspace vapors) of DNAPL was found.

Boring B-4 penetrated the low permeability layer at a depth of approximately 16 feet below ground surface. The low permeability layer appeared to consist of sequences of clay with variable, minor amounts of silt, sand and gravel. At certain depths, the clay sequence was interrupted with varved sequences containing thin lenses of silt, sand or gravel. The sequence of clay, and sand and silt varves was sampled to a depth of 50 feet below ground surface. A sequence of thin layers of sand and silt, and silt and gravel was encountered between the depths of 32 and 42 feet below ground surface, where a monitoring well intake zone was placed with the concurrence of the NYSDEC. Soil boring B-4 was converted to monitoring well MW-3D.

2.4.2 Hydraulic Head Measures and Direction of Groundwater Flow

Hydraulic head measurements from the monitoring wells and temporary monitoring wells were obtained on several occasions. The first complete set of hydraulic head measurements was collected on November 2, 1999, three days after installation of the final temporary monitoring well. The results of the hydraulic head measurements are presented on Table 10. Figure 5 presents the USGS' interpretation of the direction of groundwater flow. The potentiometric contours of the upper most groundwater zone are shown on Figure 7. Figure 7 indicates the direction of groundwater flows north to south, across the Site. The trough like feature suggested in Figure 7 may be a function of several things including: groundwater flow coming off the higher elevations to the west; and an edge affect caused by the glacial till cliff (aquifer boundary) on the Site's west side, see Figure 5. The storm sewer system which appears to parallel the trend of the trough is not responsible for the trough like feature, because the sewer elevation is higher than the groundwater elevation. As a result, the storm sewer could not produce the trough like groundwater feature.

The interpretation of the groundwater contours, the direction of groundwater flow, and the "aquifer" boundary are consistent with the regional groundwater contours and flow information reported by the USGS in its report, "Stimulation of Ground Water Flow and Infiltration from the Susquehanna River to a Shallow Aquifer at Kirkwood and Conklin, Broom County, New York."

Only one deep groundwater zone monitoring well, MW-3D, was installed during the RI. Hydraulic head measurements from the monitoring well were higher than its counterparts in the uppermost groundwater zone. This difference implies that there is a low permeability layer between the two groundwater zones and an upward flow component to the lower groundwater flow regime.

2.4.3 Hydraulic Conductivity and Groundwater Velocity

Hydraulic conductivity was measured during the RI using two methods, rising head and falling head methods, and their results interpreted using a Bouwer and Rice methodology. Each 2-inch diameter monitoring well was tested three times and the results were averaged. Appendix 2 shows the actual test data. Table 11 shows the individual test results and test averages. In the uppermost groundwater zone, test results ranged from 0.00054 to 0.0011 feet per minute, with the slowest results coming from monitoring well MW-2 and the fastest results coming from monitoring well MW-1.

Monitoring well MW-3D was the only monitoring well positioned in the deep groundwater zone. The average hydraulic conductivity value measured from this well, 0.0007 feet per minute, suggest a silty sand interval similar to the split spoon sample descriptions. The test results appear to be consistent with the grain sizes observed in the saturated zone and the generalized hydraulic conductivity reported by Freeze and Cherry, see Table 12.

Based on the average hydraulic conductivity values and the difference in hydraulic head between monitoring well MW-3 and MW-4 (MW-3 and MW-4 are located in a line which is parallel with the direction of groundwater flow and appropriate to use for this calculation) a groundwater velocity was estimated to be 0.02 feet per day, (see Appendix 3 for calculations).

2.5 Site Infrastructure

There are two structures on the Site: 1) a terminal building which has offices and a loading dock (shipping and receiving area); and 2) a maintenance garage for minor truck and trailer repairs. In addition to these buildings, the Site also has an oil/water separator and two underground storage tanks.

The property owner is responsible for the management and maintenance of the Site's oil/water separator and underground storage tanks. The oil/water separator appears to have a holding capacity of 1,000-gallons and is located south of the southwest corner of the garage. On July 15, 1999, prior to starting the Phase II activities, the liquid in the oil/water separator pumped out by the Safety Kleen Company to assist in the completion of the Phase II investigation activities. After the pumping of the oil/water separator the sediment was sampled and analyzed for USF Red Star. One hundred and twenty gallons of a waste oil mixture was removed and handled as a non-hazardous waste. Safety Kleen separated the water from the oily waste prior to disposal. The oily waste was treated at the Safety Kleen facility located in East Chicago, Indiana. The filtered water was treated at the Safety Kleen facility located in Buffalo, New York. The sediment sample results are discussed in Section 2.6.1.

The Site's two underground storage tanks include a 300-gallon waste oil tank located south of the maintenance garage, and is no longer used, and a 12,000-gallon Diesel tank located west of the garage near the property line. The waste oil tank is in poor condition and is partially buried, exposing it to weather. The steel tank appears to be of single wall construction and is not contained within a secondary containment vessel or pit. The tank is property of the Site owner and was once used to store oil removed from vehicles. The tank is no longer used and the period of its use can not be documented. The small amount of residuals remaining in the waste oil tank were sampled on June 9, 2000 and these results are discussed in Section 2.6.1. The sampling was done as a follow up to NYSDEC comments to the Draft RI Report. The buildings are connected to private and publicly owned utilities including sanitary sewer, water, electric, natural gas and telephone. Figure 8 shows the location of the utilities.

Conveyances for storm water runoff from the terminal building and the paved areas of the Site are directed to an underground storm sewer system. This storm sewer system was evaluated by introducing a biodegradable dye into the system and following the flow. In general, runoff from the east side of the terminal is directed to the east to a drainage swale that parallels Industrial Park Drive. Runoff from the west side of the terminal is directed to the drainage swale located on the south side of the Site. Storm water entering the storm sewer system on the west side of the terminal is discharged through a 12-inch plastic pipe exiting into the drainage swale. Storm water accumulating on the paved areas west of the terminal is directed to one of two catchbasins. The storm water entering the northernmost catchbasin is conveyed through a pipe to the terminal building where it is combined with runoff from the roof. From this collection pipe the flow is directed west to the southernmost catchbasin where it is combined with pavement runoff before it is discharged to the drainage swale on the south side of the Site. No floor drains are present in the terminal building.

Storm water falling on the roof of the maintenance garage runs off onto the pavement where it is either directed toward the catchbasins or the water flows the slope of the pavement to the pavement edges. Within the maintenance garage there are four floor drains located in the two southern most service bays. These drains collect snow melt, vehicle wash water, and floor wash water and directs the flow to an oil/water separator located next to the southwest corner of the garage. The oil/water separator has an approximate volume of 1,000 gallons. The total depth to the bottom of the separator is six feet from ground surface. The connection between floor drains and the oil/water separator was confirmed during the Phase II investigation activities by running water into one of the floor drains and observing the water discharging in the oil/water separator. Leak testing of the drain pipes was not done. Effluent enters the oil/water separator on the north side and is discharged out the south side of the separator. The discharge enters the swale on the south side of the Site, see Figure 3. The property owner is responsible for the maintenance of the oil/water separator.

2.6 SAMPLE RESULTS

Sample data in the form of field headspace analyses and laboratory chemical data were obtained from a number of different media and locations. Table 9 includes the sampling locations, sample date, media, and the analyses completed. The following sections are divided based on the various sampling activities. Table 3 through 8 lists the results from the chemical analyses.

2.6.1 Oil/Water Separator and Waste Oil Tank Samples

Sampling of the oil/water separator occurred on two occasions; as part of pumping of the separator tank and as part of the agreed to RI Work Plan. The waste oil tank was sampled once in response to the NYSDEC's comments to the Draft RI Report.

The oil/water separator was sampled on two occasions: on July 22, 1999 as part of the pumping of the separator and on October 26, 1999 during the Phase II of the RI. One sediment sample was collected during the pumping of the separator on July 22, 1999 and the sample was analyzed using USEPA Method 8021 for VOCs. Those compounds detected included: 1,2,3-Trichloropropane at a concentration of 311 micrograms per Kilogram ("ug/Kg"); Toluene at a concentration of 673 ug/Kg; Ethylbenzene at a concentration of 597 ug/Kg; m&p-Xylene at a concentration of 3,910 ug/Kg; o-Xylene at a concentration of 2,280 ug/Kg; Styrene at a concentration of 1140 ug/Kg; Isopropylbenzene at a concentration of 666 ug/Kg; n-Propylbenzene at a concentration of 1,440 ug/Kg; 1,3,5-Trimethylbenzene at a concentration of 6,120 ug/Kg; t-Butylbenzene at a concentration of 5,010 ug/Kg; 1,2,4-Trimethylbenzene at a concentration of 14,300 ug/Kg; sec-Butylbenzene at a concentration of 845 ug/Kg; p-Isopropyltoluene at a concentration of 1,360 ug/Kg; n-Butlybenzene at a concentration of 7,720 ug/Kg; and Naphthalene at a concentration of 8,700 ug/Kg. PCE was not found in the July 22, 1999 sample.

Two samples (one sample and a duplicate sample) were collected from the sediment within the oil/water separator located on the south side of the maintenance garage during the Phase II field activities. The samples were analyzed for VOCs using ASP method 95-1. Similar compounds and concentrations were detected in both samples: Acetone was detected at a concentration of 1,600J (the "J" postscript indicates that the compound was detected at a concentration less than the analytical detection limit) and 1,900J ug/Kg; PCE was detected at 790J and 1,000J ug/Kg; Toluene was detected at 6,200 and 7,600 ug/Kg; Ethylbenzene was detected at 8,000 and 9,300 ug/Kg and total Xylenes were detected at 78,000 and 85,000 ug/Kg. Concentrations of tentatively identified compounds ("TICs") were also detected. TIC found in the samples ranged in concentration from 486,000 ug/Kg to 545,000 ug/Kg. The "U" sample result postscript indicates that the compound was not detected by the analysis.

A sample of the residuals in the waste oil tank was collected and then analyzed using USEPA Method 8260 for TCL VOCs. The waste oil tank was analyzed on June 16, 2000. Results from the small amount of liquid remaining in the tank revealed the presence of the following compounds: N-Butylbenzene at a concentration of 22,000 micrograms per Liter ("ug/L"); 4-Isopropyltoluene at a concentration of 7,600 ug/L; n-Propylbenzene at a concentration of 2,600 ug/L; Naphthalene at a concentration of 42,000 ug/L; 1,2,4-Trimethylbenzene at a concentration of 64,000 ug/L; 1,3,5-Trimethylbenzene at a concentration of 37,000 ug/L; m&p-Xylene at a concentration of 6,500 ug/L; and o-Xylene at a concentration of 4,500 ug/L.

Some of the contaminants found in the waste oil tank and the oil/water separator have also been found in samples from the drainage swale along the south property line and also in the soil and groundwater. It is noteworthy that PCE was identified in the oil/water separator sediment and in the groundwater samples analyzed from downgradient monitoring wells, including: GP-2, GP-3, GP-4, MW-4, PW-1, PW-7, and PW-9. As a result, the oil/water separator area is suspected to be a source of PCE contamination. Confirmation of the oil/water separator area as a separate source area for PCE and possibly TCA may require additional sampling.

Contaminants entering the soil and or groundwater from the waste oil tank could have leaked or been spilled on to the ground surface. Contaminants from the oil/water separator could have been released as they passed-through the discharge pipe to the swale, leak through joints and cracks, or leaked from the separator. How the contaminant is release from the oil/water separator will dictate where it might appear in the environment. Hence, comparisons between results, for example between the oil/water separator and the subsurface soil, may show inconsistencies.

2.6.2 Storm Sewer Catchbasin Sample

The storm sewer system was evaluated to determine if the system was a possible migration pathway for PCE from the spill area. This evaluation indicated that the two catchbasins located on the west side of the terminal building discharge storm water to the drainage swale located on the south side of the Site. The northern most catchbasin (shown as D.I.#4 on Figure 8) is located nearest to the spill area and might have received some of the liquid PCE or PCE contaminated debris during cleanup. The second catchbasin (labeled as D.I.#3 on Figure 8), located south of the spill area, is believed to be too far from the spill to have received any contaminants. Based on this assessment, one sample (identified as "Basin 1" on Table 3) was collected from the northernmost catchbasin and analyzed.

The Basin sample was analyzed using ASP 95-1 for the TCL VOCs. PCE was the only contaminant detected from the analysis, at a concentration of 4J ug/Kg. One TIC was detected at a concentration of 9J ug/Kg.

2.6.3 Drainage Swale Samples

Two soil samples were collected from the drainage swale located on the south side of the Site. The samples were collected to aid in the identification of either the oil/water separator and/or the Site's storm sewer system as a potential source or pathway of contamination.

Four equally spaced soil samples were collected along the centerline of the drainage swale and screened for VOCs using a portable OVA. The soil sample locations are identified on Figures 4 and 8 as HSS#1, HSS#2, HSS#3, and HSS#4. The headspace screening process was completed using the same protocol as described in the project Work Plan. The headspace results are as follows:

- HSS#1 at the oil/water separator outfall, 1.6 parts per million (“ppm”);
- HSS#2 near monitoring well MW-4, 2.5 ppm;
- HSS#3, downslope from HSS#2, 1.8 ppm;
- HSS#4, downslope from HSS#3, 0.8 ppm.

The sample collected below the oil/water separator discharge pipe at the location of Sample HSS#1, identified as #1 (Drainage Swale on Table 3) was analyzed using USEPA Method 8260 for the TCL VOCs and STARS listed SVOCs. This sampling location was selected because none of the samples had a significantly different vapor concentration and the probability of having significant contaminant concentration was greater closer to the outfall. Several VOCs were detected in sample #1 (HSS#1) at concentrations below the detection limit for the analysis. The compounds detected include Toluene at a concentration of 540J ug/Kg, m,p-Xylene at a concentration of 490J ug/Kg and o-Xylene at a concentration of 360J ug/Kg. No STARS listed SVOCs were detected.

The storm sewer discharge pipe is located approximately 100 feet east of the oil/water separator discharge. The storm sewer discharge pipe discharges storm water originating from catchbasin D.I.#3 and D.I.#4, and the roof drains from the terminal building, See Figure 8. The sediment sample from this location was analyzed using ASP 95-1 for TCL VOCs and is identified on Table 3 a “Swale.” The following compounds were detected in this sample: Acetone at a concentration of 42 ug/Kg; 2-Butanone at a concentration of 13J ug/Kg; Chlorobenzene at a concentration of 2J ug/Kg; Ethylbenzene at a concentration of 2J ug/Kg; Toluene at a concentration of 4J ug/Kg; and m,p-Xylene and o-Xylene at a concentration of 4J ug/Kg. In addition to these compounds, 19 TICs were identified at a total concentration of 7,620 ug/kg.

2.6.4 Subsurface Soil Samples

Four subsurface soil samples were collected from the spilt spoon samples during drilling of the soil borings and monitoring wells: soil boring B-4 which was converted to monitoring well MW-3D; soil boring B-5; the soil boring converted to monitoring well PW-4; and the soil boring PW-5. Soil samples collected from B-4, B-5, and PW-4 were selected for analysis because they contained elevated levels of VOC vapors as identified by headspace analyses with an OVA. One sample was collected from boring PW-5, but this sample did not satisfy the analysis criteria. The sample was analyzed because it was moist and may have contained contaminants reflective of off-site, upgradient groundwater conditions. To verify that groundwater would not infiltrate into this 29-foot boring, the boring was left open and uncased or screened for a 12-hour period. No soil cavings or water were measured in the hole after 12 hours.

The sample from soil boring B-4 was collected at a depth of 14 to 16 feet below ground surface and was selected based on the results of headspace sample screening. The intent of the sampling was to identify PCE product that may have migrated along the top of the low permeability layer from the spill area. The sample was analyzed using method ASP

95-1 for TCL VOCs and detected 12 ug/Kg of PCE, which is below the NYSDEC recommend soil cleanup guidance.

Two soil samples were collected from borings, PW-4 and B-5 in the vicinity of the oil/water separator and the waste oil tank, to evaluate whether these units had released contaminants that potentially impacted the groundwater. The samples from PW-4 and B-5 were analyzed using USEPA Method 8260 for TCL VOCs. The sample from monitoring well PW-4 was collected at a depth of 10 to 11.4 feet below ground surface. The analysis did not detect any VOCs. The sample from B-5 was collected at a depth of 6 to 8 feet below ground surface and the following five compounds were detected above the analytical detection limit: Acetone at a concentration of 26 ug/Kg; Carbon Disulfide at a concentration of 2 ug/Kg; 1,1-Dichloroethane ("1,1-DCA") at a concentration of 29 ug/Kg; Toluene at a concentration of 1.7 ug/Kg; and TCA at a concentration of 130 ug/Kg. All concentrations were detected at below the NYSDEC's recommended soil cleanup levels for the protection of groundwater.

Since TCA was found in both the soil sample from B-5 and in the groundwater sample from monitoring well PW-4, it can be concluded that the soil in the vicinity of the oil/water separator and the waste oil tank is a source of TCA contamination.

A soil sample was also collected from soil boring PW-5, and as previously mentioned, none of the soil samples collected from this boring fit the sample analysis criteria described in the Work Plan. To show a link between potential off-Site contaminant sources and the Site a soil sample was from a depth ranging from 12 to 14 feet below ground surface and analyzed using USEPA Method 8260 for TCL VOCs. No VOCs were detected in the soil sample. A groundwater sample would have been made a stronger argument for an off-Site source contaminating the Site; however, groundwater was no found in this 29-foot boring. A depth of 29-feet below ground surface should have intersected the potentiometric surface of the uppermost groundwater zone identified by the other on-Site monitoring wells.

2.7 GROUNDWATER SAMPLES

2.7.1 Volatile Organic Compounds

A total of 21 groundwater samples, not including QA/QC samples, were collected for the RI to delineate the extent of groundwater contamination. Groundwater samples were analyzed using two different analytical methods, ASP-95-1 and USEPA Method 8260. In general, the sample results identified two principal contaminants in the groundwater; PCE and TCA. The PCE found in the groundwater is the result of a spill in the vicinity of monitoring well MW-3. TCA and PCE in the groundwater were found in the vicinity of the oil/water separator and the waste oil tank.

The extent of the PCE plumes has been illustrated in Figure 9. Within the 1991 PCE spill area, PCE was found in the groundwater at concentration of 1,500 ug/L in monitoring well MW-3. The plume from the 1991 spill extends to at least monitoring well PW-1 and PW-7. Downgradient of the oil/water separator and the waste oil tank source area, the leading edge of the PCE plume has PCE concentrations of 4.4 ug/L at monitoring well PW-1 and 15 ug/L at monitoring well PW-9. The width of the plume appears to extend from monitoring wells PW-9 to GP-3 (as measured across the hydraulic gradient).

The TCA plume extends approximately 175 feet from the oil/water separator and waste oil tank source area. The source of the TCA is believed to be either the oil/water separator or the waste oil tank because TCA was found in the soil in this area and in the groundwater. TCA was not found in the oil/water separator sediment or the waste oil tank. TCA in the groundwater plume ranged in concentration from 3,500 ug/L (in monitoring well PW-4) near the oil/water separator and the waste oil tank, to 1.7J ug/L in GP-3. The approximate limits of the TCA plume are well defined by monitoring wells GP-1 (4J ug/L), GP-3 (1.7J ug/L), GP-4 (1.4 J ug/L) and PW-9 (4.2J ug/L).

In addition to the VOCs of concern (i.e., PCE and TCA), the groundwater was also found to contain degradation products from the degradation of TCA, petroleum related compounds, acetone (probably related to laboratory contamination), and other miscellaneous compounds. Degradation products of the TCA degradation were found in the following monitoring wells: GP-1, GP-2, PW-4 and PW-9. At monitoring well GP-1, only 1,1-Dichloroethane ("DCA") was detected at a concentration of 3.1J ug/L. In the sample from monitoring well GP-2, DCA and 1,1-Dichloroethene ("1,1-DCE") were detected at concentrations of 170 ug/L and 140 ug/L, respectively. In the sample from monitoring well PW-4, DCA and 1,1-DCE were detected at concentrations of 230 ug/L and 280 ug/L, respectively. In the sample from monitoring well PW-9, DCA and 1,1-DCE were detected at concentrations of 32 ug/L and 1.5J ug/L, respectively.

Petroleum-related compounds were detected in groundwater samples from the following monitoring wells: PW-1, MW-4, PW-9, and PW-4. In the sample from monitoring well PW-1 m,p-Xylene and o-Xylene were detected at concentrations of 1.7 ug/L and 2.1 ug/L, respectively. In the sample from monitoring well MW-4, m,p-Xylene and o-Xylene were detected at concentrations of 2 ug/L and 4 ug/L, respectively. In the sample from monitoring well PW-9 o-Xylene and m,p-Xylene were detected at concentrations of 3.4J ug/L and 3.6J ug/L, respectively. In the sample from monitoring well PW-4, Toluene and o-Xylene were detected at a concentration of 6.5 ug/L and 5.5 ug/L, respectively.

Acetone was detected in groundwater samples from the following monitoring wells: GP-1 at a concentration of 94 ug/L; GP-2 at a concentration of 8J ug/L; GP-3 at a concentration of 4J ug/L; PW-1 at a concentration of 17J ug/L; PW-2 at a concentration of 8.6J ug/L; PW-3 at a concentration of 12J ug/L; and PW-9 at a concentration of 28 ug/L.

2-Butanone, 2-Hexanone, Chloroform, and Carbon Disulfide were also detected in the groundwater samples, but these appear to be unrelated to PCE, TCA, or petroleum products. VOCs were also detected at concentrations below the NYSDEC's GA groundwater quality criteria: 2-Butanone was found in samples from three monitoring wells: GP-1 at a concentration of 18 ug/L; GP-2 at a concentration of 8J ug/L; and MW-4 at a concentration of 6 ug/L. Monitoring well MW-4 also contained 3J ug/L of 2-Hexanone. In the sample from monitoring well PW-4, Chloroform was detected at a concentration of 7.1 ug/L. In the samples from monitoring wells MW-1 and MW-3D, Carbon Disulfide was detected at concentrations of 1J and 2J ug/L, respectively.

2.7.2 Semi-volatile Organic Compounds and PCBs

Only the sample from monitoring well MW-4 was analyzed for SVOCs and PCBs. SVOCs were analyzed using ASP 95-2. PCBs were analyzed using USEPA Method 8082. The only compound found in this groundwater sample was Bis (2-ethylhexyl) Phthalate at a concentration of 19 and 30 ug/L (a duplicate sample). No PCBs were found in either sample or the duplicate sample collected from monitoring well MW-4.

2.7.3 Target Analyte Listed Metals

TAL total metals were analyzed in the two samples collected from monitoring well MW-4 using ASP methods for TAL metals. Only two metals were found in the samples at concentrations greater than NYSDEC's GA groundwater criteria: iron at concentrations of 8,710 ug/L and 15,100 ug/L; and manganese at a concentration of 216 ug/L and 528 ug/L. The GA groundwater criteria for both iron and manganese is 300 ug/L. If both iron and manganese are present, the standard (i.e., the sum of their concentrations in a sample) is 500 ug/L.

2.7.4 Soil Gas Sampling within the Maintenance Garage

Sixteen soil gas locations were sampled within and immediately outside of the maintenance garage using soil gas sampling techniques. See Figure 11 for sampling locations and sample results. The sample locations were initially determined based on the locations of the building's floor drains. Following review of the initial soil gas data, additional sampling locations were determined. The maintenance garage concrete floor was drilled using an electric drill followed by driving a metal rod into the underlying earth. The rod penetration ranged from 3 to 12 inches. After the sampling hole was made, the hole was covered with plastic sheeting and taped to the concrete floor. The soil gas was allowed to accumulate beneath the plastic for approximately 10 minutes then sampled using a portable organic vapor analyzer with a photoionization detector. Sample results ranged from 1.1 ppm to 19 ppm. The higher soil gas concentrations were found beneath the northern half of the maintenance garage floor, ranging in concentration from 6.2 ppm to 19 ppm. These soil gas concentrations do not appear to be associated with any of the floor drains or any significant maintenance activity. In addition, VOCs were not found in the soil or groundwater during the sampling of monitoring well PW-8 located on the north side of the maintenance garage.

Beneath the southern half of the garage, soil gas concentrations ranged from 1.1 ppm to 6.9 ppm. The floor drains, which can carry spilled truck maintenance fluids and floor wash water, are located beneath the south half of the garage. If VOCs entered the soil beneath the garage via the flow drain or the drain pipe system, high concentrations of VOCs in the soil gas would be expected. Based on these soil gas sample results and the neighboring soil and groundwater sample results, there does not appear to be a significant source of soil gas contamination beneath the maintenance garage.

2.8 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Quality Assurance and Quality Control ("QA/QC") samples were collected and analyzed for each sampling event with the exception of the soil gas samples. The QA/QC sampling results, the analytical data were validated by independent third party (Data Validation Services, Inc.). During the soil gas sampling, the organic vapor analyzer was used to measure the soil gas. The organic vapor analyzer was calibrated according to the manufacturer's specifications prior to the day's sampling. Taking duplicate measurements during the water level measurements and hydraulic conductivity measurements provided QA/QC in accordance with the RI/FS Work Plan. QA/QC sample results, duplicates, trip blanks and field blanks are presented in Table 3 through 8. Matrix spike and matrix spike duplicate samples results are present in the copies of the analytical data presented in Appendix 4.

2.8.1 Trip Blanks

In general, the trip blank samples were contaminant free with the exception of two samples submitted with the sediment samples from the oil/water separator. These samples, labeled trip blank and cooler blank samples for October 26, 1999, both contained acetone at concentrations of 2 ug/L and 1 ug/L, respectively. In addition, the trip blank sample dated February 18, 1999 and October 26, 1999 contained TIC concentrations of 16 ug/L and 7 ug/L, respectively. Acetone contamination was found in the oil/water separator sediment samples, decontamination water, and the field blank ("Rinse Spoon") samples.

2.8.2 Field Blank Samples

Field blank samples were found to be contaminant free with the exception of the Rinse Spoon sample collect during the sampling of the oil/water separator. This sample was found to contain 3 ug/L of acetone and 6 ug/L of TICs.

2.8.3 Decontamination Water

Decontamination water was collected from two sources the municipal water supply obtained at the Site and from Columbia Analytical Services (used for trip blank water prepared in the laboratory and field blank samples). Water obtained from Columbia Analytical Services was distilled and de-ionized prior to bottling. The sample of the municipal water contained acetone at a concentration of 5 ug/L and 2-Butanone at a concentration of 2 ug/L. Both contaminants are also common laboratory contaminants.

2.8.4 *Duplicate Samples*

Duplicate samples were collected during each round of groundwater sampling and soil sampling. In general, the sample results of the duplicate analyses showed good reproducibility with the exception of the groundwater analyses of TAL metals.

2.8.4.1 Groundwater-Volatile Organic Compounds

Duplicate samples were collected from monitoring wells MW-3, MW-4 and GP-4. The sample results from monitoring well MW-3 indicated agreement between the single detected compound, PCE. The MW-3 samples detected PCE at concentrations of 1,400 ug/L and 1,500 ug/L. The duplicate samples from monitoring well MW-4 contained PCE and TCA. A concentration of 110 ug/L of PCE was detected in both MW-4 samples. A concentration of 19 ug/L and 20 ug/L of TCA was detected in the MW-4 samples. The analysis of duplicate samples from monitoring well GP-4 detected three compounds: Chloromethane; PCE; and TCA. A concentration of 1.4 ug/L of Chloromethane was detected in one GP-4 sample. A concentration of 5.7 ug/L and 5.9 ug/L of PCE was detected in the GP-4 samples. A concentration of 1.4 ug/L and 1.5 ug/L of TCA was detected in the GP-4 samples.

2.8.4.2 Groundwater - Semi-Volatile Organic Compounds, PCBs and TAL Metals

Duplicate samples collected for SVOCs, PCB and TAL metals analyses were collected from monitoring well MW-4. In general, the analyses the duplicate sample tended to detect only half the constituent concentration found in the initial sample. The duplicate SVOCs analysis detected Bis (2-ethylhexyl) phthalate was detected at concentrations of 19 ug/L and 30 ug/L. Bis (2-ethylhexyl) phthalate, having an organic partitioning coefficient of approximately 8,706, might be found at higher concentrations in samples with greater turbidity. No PCBs were detected in the duplicate sample. The duplicate TAL metals analyses detected iron at concentrations of 8,710 ug/L and 15,100 ug/L. Manganese was detected at concentrations of 216 ug/L and 528 ug/L. The discrepancies could be the result of sampling variability or turbidity. Higher turbidity concentrations will lead to higher organic concentrations due to the compound's organic partitioning coefficient and the affinity to absorb onto particulates; and in the case of metals, turbidity (fine mineral particulates) may be analyzed as part of the sample, thereby increasing the sample's metal concentrations.

2.8.4.3 Soil - Volatile Organic Compounds

Two duplicate samples were collected; one sample was collected from the drainage swale (identified as "Swale") and one from the oil/water separator. The duplicate sample from the drainage swale was inadvertently not tested by the laboratory, but used as the matrix spike and matrix spike duplicate analyses. In the samples from the oil/water separator, five compounds were found including TICs. The concentrations of VOCs detected include: Acetone at concentrations of 1,600 ug/Kg and 1,900 ug/Kg; PCE at concentrations of 790J ug/Kg and 1,000J ug/Kg; Toluene at concentrations of 6,200 ug/Kg and 7,600 ug/Kg; Xylene at concentrations of 78,000 ug/Kg and 85,000 ug/Kg; and TICs at concentration of 486,000 ug/Kg and 545,000 ug/Kg. The difference between concentrations increased with higher concentrations.

2.8.4.4 Data Validation Results

Data Validation Services completed a data validation review of the following samples: 1. thirteen soil and aqueous ASP sample data packages; 2. two aqueous samples analyzed for PCBs using USEPA Method 8082; 3. TAL metals using Methods 6000/7000; and 4. five aqueous samples analyzed using USEPA Method 8260 for TCL VOCs from the RI. Data Validation Services report is provided as Appendix 5. Data Validation Services performed its review in accordance with the most current USEPA Certified Laboratory Program ("CLP") National Functional Guidelines for Organic and Inorganic Data Review and the USEPA Standard Operating Procedures HW-2 and HW-6.

In general, the data validation review found that the sample processing was conducted to in compliance with the established protocols and adherence with protocol quality criteria. Most reported results were found to be usable. Some minor qualifications were noted and most were corrected by Columbia Analytical Services upon receiving a corrective action memorandum from Data Validation Services. One sample cooler with eleven samples collected on April 1, 1999 was received by the laboratory on April 2, 1999 at a temperature of 12 degrees Celsius. Losses affecting VOC concentrations may have occurred and the results qualified as estimated. It should be noted, however, that elevated temperatures do not necessarily imply a loss of components, because samples are warmed to ambient temperature prior to analysis.

3. NATURE AND EXTENT OF CONTAMINATION

3.1 NATURE AND EXTENT OF CONTAMINATION

The contamination detected in the samples consists of the contaminants of concern, PCE and TCA, and degradation products of TCA. To a minor extent, aromatic hydrocarbons, such as those related to petroleum oils and fuel were also detected. Relatively minor contamination, below NYSDEC recommended cleanup levels for the protection of groundwater quality, was detected in the soil and sediment. Sediment samples collected from the oil/water separator found the highest concentrations of PCE, aromatic hydrocarbons, and Acetone. The waste oil tank contained residuals with high concentrations of aromatic hydrocarbons.

In general, the data indicate that there are two sources of contamination; the 1991 PCE spill area and the area centered around the oil/water separator and waste oil tank. The extent of contamination discussion will focus on the characteristics of each contaminant plume. Additional investigation in the area of the oil/water separator and the waste oil tank is needed to define their role as a contaminant source.

3.2 PCE CONTAMINATION

The PCE contamination from the 1991 spill has been well documented and substantially remediated by soil excavation and soil vapor extraction. But the extent of PCE contamination in the groundwater is not consistent with a single path of PCE migration or single source of contamination. The sample data supports that PCE from the 1991 spill followed two pathways of migration, and that the oil/water separator released PCE causing an impact in the groundwater:

The data supports the following migration of PCE from the 1991 spill:

1. From the spill on the ground surface, through the soil and into the groundwater; and

2. From the spill on the ground surface and migration over the ground surface into the storm sewer system. Leakage from the storm sewer or discharge from the storm sewer pipe eventually entering into the groundwater.

The migration of PCE following route 1 is supported by the presence of soil and groundwater contamination found in soil boring B-4 and monitoring well MW-3. Evidence for route 2 is revealed in the presence of trace amounts of PCE in the catchbasin D.I. #4, monitoring well MW-2 and MW-4, and the extent of PCE contamination based on the measured and calculated velocity of groundwater flow. The presence of PCE in the samples from MW-2 suggests leakage of PCE contaminated stormwater from the storm sewer pipe.

If 1991 PCE spill were to migrate to monitoring well MW-2 in the groundwater alone, the PCE and groundwater would both have to flow at a velocity of 0.68 feet per day, approximately 245 feet within one year, see data in Table 2. Estimates of groundwater velocity based on the hydraulic conductivity of the upper groundwater zone shows that groundwater moves at a rate of approximately 0.02 feet per day. The discrepancy between the measured (0.68 feet per day velocity) and the calculated (0.02 feet per day velocity) can be resolved by the PCE entering into the storm sewer system and leap-frogging across the Site and developing into the plume originating from MW-3 and MW-4, and extending to PW-1, see Figure 9.

The extent of PCE from the 1991 spill is best described assuming these routes of migration; however, these routes of migration cannot satisfactorily explain the appearance of PCE in monitoring well GP-2. The reason this is not a satisfactory explanation is that GP-2 is across the hydraulic gradient from the appearance of PCE in the storm sewer and monitoring well MW-2, which in turn, are downgradient from the 1991 PCE spill. Contaminants in a dissolved phase with the groundwater will migrate in the direction of groundwater flow, not across the flow. As a result, there must be an addition source of PCE. Since PCE was found in the oil/water separator, the separator is a likely source for PCE in the downgradient groundwater samples from monitoring wells MW-4, PW-1, PW-7 and PW-9, and possibly GP-3 and GP-4. The presence of PCE in these samples may have also been expedited by PCE passing through the separator and being discharged into the swale by way of the 4-inch PVC outfall. Although the oil/water separator is a likely source of PCE contamination, additional sampling is required for verification.

The vertical migration of PCE through the saturated zone appears to have been limited by the presence of a till and clay layer found throughout the Site area and the upward hydraulic gradient of the lower groundwater zones. As mentioned in Section 4, beneath the area of the spill there is a low permeability layer. This low permeability layer consists of silt and clay and extends downward from approximately 18 feet to 32 feet.

Since pure PCE product may migrate through both clay and hydraulic barriers, concerns over the presence of PCE product are eased by soil and groundwater sampling. A soil sample collected from the top of the low permeability zone at boring B-4/MW3D found only 12 ug/Kg of PCE and no substantial soil gas levels in the headspace of the soil samples. This data helps support that pure PCE product is not present. Also, supporting the absence of PCE product is the absence of evidence in upper groundwater zone. The groundwater sample from monitoring well MW-3 contained PCE at a concentration of 1,500 ug/L. PCE product would be indicated if PCE was found at concentrations of 15,000 ug/L. PCE was also absent in the groundwater sample from the lower groundwater zone, monitoring well MW-3D.

3.3 TCA CONTAMINATION

The presence of TCA in the groundwater is likely a result of contamination from the area around the oil/water separator and the waste oil tank. TCA is commonly used as a degreasing agent and lubricant in metal cutting operations, but it was also used in aerosols as a propellant and in drain cleaners. The use of TCA as a solvent or as a constituent in a commercial product cannot be verified at this time; however, the former use of TCA is likely in the maintenance garage. Pure TCA, or a TCA containing product, could have been disposed of in either the waste oil tank or the oil/water separator along with other waste materials. Its migration from these vessels could have occurred as a result of spillage or leakage. Leakage from the concrete oil/water separator could have occurred through cracks in the concrete or from any of the associated pipes and drains.

TCA probably migrated using one or both of the following paths: 1.) leaks or spills into soil from the oil/water separator; 2.) leaks from the waste oil tank followed by eventual infiltration into the groundwater; or 3.) discharge of the TCA into the drainage swale as a direct discharge from the oil/water via the separator's 4-inch PVC outfall. Once in the groundwater, the TCA appears to have migrated in response to the groundwater flow patterns. The extent of the TCA contamination is shown in Figure 10 where the downgradient limits of the contamination are represented by groundwater concentrations in monitoring wells PW-9, (4.2 ug/L), GP-3, (1.7 ug/L) and no detection in monitoring well PW-1.

The oil/water separator and waste oil tank area is likely to be the source of the TCA contamination based on the following findings:

- TCA at a concentration of 130 ug/Kg in a soil sample collected from soil boring B-5 at a depth of 6 to 8 feet below ground surface. The 6 foot sampling depth is equal to the bottom of the oil/water separator;

- TCA concentrations in groundwater samples collected from monitoring wells PW-4 and GP-2; 3,500 ug/L and 2,200 ug/L, respectively;

- The absence of a large soil gas plume beneath the maintenance garage floor;

- The absence of TCA in upgradient monitoring wells PW-6 and PW-8;

- The absence of a groundwater zone at a similar elevation in the upgradient soil boring PW-5 which would provide a pathway for an off-Site contaminant source to migrate onto the Site; and

- Absence of TCA soil contamination, at soil boring PW-5, at an elevation equal to the upper-most groundwater zone, further evidence of a lack of an upgradient contaminant transport mechanism.

Although the TCA concentrations in the soil are not indicative of a contamination problem, there are two possible reasons for the lower than expected TCA soil concentrations. First, the migration of TCA from the oil/water separator or the waste oil tank could have occurred over a very small area. Second, the presence of petroleum residuals, in particular Toluene in the soil and Toluene, Xylene, and Ethylbenzene ("TX&E") in the oil/water separator and in waste oils are electron donors capable of contributing to in the breakdown of TCA. Bio-degradation of TCA is further supported by the presence of 1,1-DCA in the soil sample from soil boring B-5 and the presence of 1,1-DCA and DCE in monitoring wells GP-1, GP-2 and PW-4.

3.4 COMPARISION OF RI GROUNDWATER SAMPLING DATA TO PRE-REMEDIAL INVESTIGATION GROUNDWATER SAMPLING DATA

Groundwater sampling data from the pre-remedial investigation monitoring wells was collected on an irregular basis starting in December 1992 and ending in November 1997. The data is summarized on Table 2 and provided as a summary because no other compounds were detected at concentrations above NYSDEC groundwater quality criteria were found. Of the other compounds detected by the analyses, the most notable include: trans-1,2-Dichloroethene and 1,1-Dichloroethene which can be breakdown products of PCE. Methylene Chloride and TCA were also found. TCA was found in both monitoring wells MW-3 and MW-4. These compounds were left off the table because of they were detected at concentrations below NYSDEC's groundwater quality criteria and the frequency which they were detected. The most frequently detected compound was TCA, but it was detected only five times out of the 26 analyses.

In general, when compared to the RI data the pre-remedial investigation data suggests:

- PCE concentrations found in samples from monitoring well MW-2 have decreased slightly over time, and have remained in the low part per billion concentration. The lowest observed concentration occurred on April 1, 1999 when 8 ug/L of PCE was detected. Lower PCE concentrations appear to be more prevalent during traditional periods of higher water table levels compared to periods when low water levels are expected. It is not a perfect trend, for example the March 1995 sample for MW-2 found 23 ug/L of PCE, a relatively high PCE concentration for the monitoring well.

- PCE concentrations found in samples from monitoring well MW-3 do not appear to follow the same general trend that is suggested in the data collected from monitoring well MW-2. The highest concentrations have been found in December 1992, at a concentration of 1,200 ug/L, and April 1999, at a concentration of 1,500 ug/L, when water levels are expected to be low and potentially increasing (December) and when water levels should be at their highest (April).
- PCE concentrations found in samples from monitoring well MW-4 appear to show a trend of decreasing concentrations with time. Although this trend may be biased because there is only five data points, it does appear to be real. When monitoring well MW-4 was first sampled in March of 1995 the PCE concentration was measured at

250 ug/L. Since this time there has been a steady decrease in concentration to 98 ug/L on April 1, 1999. The following sampling on October 26, 1999 is slightly elevated from 98 to 110 ug/L of PCE. Although this measurement appears to break up the trend, the difference between the two values is small and probably not statistically significant. In addition, if the concentrations from November 1997, April 1999 and October 1999 are compared the difference between the values suggest that the PCE concentration is relatively stable.

4. DATA COMPARED TO NYSDEC CLEANUP OBJECTIVES AND GOALS

The data provided in Tables 3 through 8 shows the detected contaminant concentrations compared to NYSDEC's clean up objectives and goals. In general, none of the contaminants found in soil samples exceeded NYSDEC's TAGM 4046, Clean Up Objectives for the Protection of Groundwater. In the groundwater, contaminant concentrations which exceed NYS Part 703 GA groundwater quality criteria are found in the following wells for one or more compounds:

- MW-2, PCE;
- MW-3, PCE;
- MW-4, PCE and TCA;
- GP-2, PCE and TCA;
- GP-3 PCE;
- GP-4, PCE;
- PW-4, 1,1-DCA, 1,1-DCE, Toluene, TCA and Xylene;
- PW-7, PCE and TCA; and
- PW-9, PCE and 1,1-DCA.

Acetone has been omitted from our evaluation because it is a likely laboratory contaminant and was not found in the soil or sediment samples at concentrations above the NYSDEC's TAGM 4046, Clean Up Objectives for the Protection of Groundwater.

5. *EXPOSURE ASSESSMENT*

The contamination found on the Site in the soil and groundwater does not represent an exposure risk at this time due to the lack of receptors. Soil contamination found on the Site exists below an asphalt pavement; therefore, there is not a dust or direct contact exposure. In addition, the Site is used for industrial purposes where under normal working conditions, workers or passersby's would not come into contact with the soil. There are also no apparent receptors for groundwater contaminants. In the area of the contaminant plumes, there are no water supply wells where individuals might use the groundwater. Users of groundwater are also lacking in the general vicinity of the Site, according to the Town of Kirkwood, Clerk and Public Works Superintendent.

Because the contaminants found on the Site are VOCs, there is a potential for VOC vapor migration upward into building work areas. However, because the potentially affected buildings are used for industrial purposes and have either slab on grade or elevated slabs, which limit vapor migration, the exposure potential is greatly reduced. In addition, because the detected contaminant concentrations were low, the corresponding vapor concentrations would also be low.

Potential impacts to wildlife and sensitive environments caused by contaminants do not appear to be significant, because contaminants are not threatening any waterways or wet lands. The nearest water way is Park Creek located approximately 150 feet to the east of the Site's easternmost property line. The direction of groundwater flow is to the south; therefore, groundwater is not a threat to Park Creek. Since groundwater contamination associated with the Site is approximately 0.5-miles north of the Susquehanna River, the river and the sensitive environments next to the river are not expected to be impacted by the contamination.

6. SUMMARY AND CONCLUSIONS

6.1 PROJECT SUMMARY

This RI was completed in response to residual PCE contamination in the soil and groundwater resulting from spill of PCE at the loading dock of the terminal building. The spill occurred in 1991 and was cleaned up immediately thereafter by Allwash under the direction of NYSDEC. During cleanup, approximately 120 tons of asphalt, soil and cleaning materials were removed. Although the remediation was completed shortly after the spill, PCE remained in the soil and further remediation was completed using soil vapor extraction techniques. The installation of monitoring wells later showed that PCE had migrated into the uppermost groundwater zone.

On July 31, 1998, NYSDEC and USF Red Star entered into an Order on Consent to complete an RI/FS. Leader was retained by USF Red Star to prepare the RI/FS Work Plan and complete the RI/FS Report. After completion of the RI fieldwork, two principal contaminants were detected at the Site; PCE from the original 1991 spill, and TCA and PCE as a result of a release from either the facility's oil/water separator or waste oil tank. The oil/water separator and the Site's underground storage tanks are the property of the Site owner, C&D Terminal Leasing, who is responsible for the maintenance of all facilities on the property.

The RI identified a relatively small amount of soil contamination caused by the PCE and TCA releases. Soil contamination appears to be in the vicinity of the spills, (see Figure 9 and 10). When compared to NYSDEC soil cleanup objectives for the protection of groundwater quality, none of the identified soil contamination requires remediation.

Groundwater contamination resulting from the PCE and TCA; however, will require some level of remediation and, or management. Two plumes of groundwater contamination were found during the RI, see Figures 9 and 10, and both have impacted the groundwater on the property of SARBRO Realty Corporation ("SARBRO") located south of the Site. SARBRO owns the manufacturing property which is operated by the Universal Applied Conveyor. The PCE plume appears to extend from the original spill area southward to the SARBRO property, an approximate length of 350 feet. Based on the extent of contamination and the estimated velocity of groundwater, it appears unlikely that groundwater flow alone spread PCE in the groundwater. A more likely contaminant migration scenario is that some of the PCE entered into the Site's storm sewer system and was discharged from the storm sewer pipe which exits into the drainage swale that separates the Site and the SARBRO property. From the property line, surface water and groundwater flow appear to have spread PCE to the present locations. The absence of PCE degradation breakdown products suggests that natural conditions are not favorable for natural attenuation of the PCE plume.

The TCA and PCE plume appears to have migrated in response to groundwater flow from the area of the oil/water separator and waste oil tank. The TCA and PCE plume is approximately 175 to 225 feet in length. Unlike the 1991 PCE spill plume, there is no spill date from which we can calculate a contaminant flow velocity and compare it to the estimated groundwater flow velocity. However, the presence of TCA degradation products, 1,1-DCA and DCE, suggests that some natural attenuation is occurring.

6.2 CONCLUSIONS

Based on the data collected during the RI, the following conclusions have been developed:

- There are at least two groundwater zones in the overburden beneath the Site. The uppermost groundwater zone is composed of a silty sand and is underlain by either glacial till or silt and clay. Groundwater flow in the uppermost groundwater zone flows to the south. The lower groundwater zone was penetrated by only one monitoring well (MW-3D) in the PCE source area. The lower groundwater zone consists of clay with silt, sand or gravel lenses. There is an upward, vertical flow gradient between the lower and upper groundwater zones that rises approximately 5.4 feet above the potentiometric surface in the upper groundwater zone.

- Sampling of the soil and groundwater indicates that there are two principal contaminants on the Site; PCE and TCA. Two source areas have been identified: the PCE from the 1991 spill; and the TCA and PCE from either the Site's oil/water separator and waste oil tank area located on the south side of the maintenance garage. None of the source areas appear to have soil contamination that requires remediation since the concentrations are lower than the NYSDEC's soil clean up objectives for the protection of groundwater quality.

- Groundwater quality has been impacted by both PCE and TCA at concentrations greater than NYSDEC's Class GA groundwater quality criteria. The plumes from the different source areas have co-mingled near the southern most property line.

- PCE appears to be migrating off-Site at a velocity of approximately 0.02 feet per day. The absence of PCE degradation breakdown products suggests that microbial mineralization of PCE is not occurring and that only dilution of the PCE is causing the low off-Site concentrations observed in monitoring wells.

- TCA appears to have been affected by microbial mineralization because TCA degradation products are present in the groundwater samples. This mineralization process appears to be driven by the presence of TX&E in the soil and groundwater.

- Since at least part of the Site conditions appear to support degradation of TCA, it appears that Site conditions may be altered to enhance further degradation of TCA and degradation of PCE. Remediation techniques that can stimulate and increase the rate of degradation of both TCA and PCE should be evaluated in the FS.

- Since groundwater velocities are relatively slow and there are no high contaminant concentrations off-Site, passive in-situ techniques should also be evaluated in the FS.

- Additional investigation is required to determine if an off-Site source of TCA is contributing to the Site contamination.

7. LIMITATIONS

Explorations

The analyses and recommendations submitted in this report are based in part on the data obtained from subsurface explorations and field test results made by others as described in the text. The nature and extent of variations between these exploration or results may not become evident, until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations.

The geologic profiles presented and described in the text are intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the boring logs.

Groundwater level readings have been made in the monitoring wells at times and under conditions stated on the summary of water table measurements. This data has been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater will occur due to variations in rainfall and other factors occurring at the time of measurement.

Survey

Surveying (location and elevation) of monitoring wells installed during the current study was done by Southern Tier Surveying, LLP using photogramatric and optical survey techniques. Survey data were used in developing the conclusions made in this report. Should variations in these measurements become evident, it will be necessary to re-evaluate the conclusions in this report.

Analyses

The analyses and conclusions submitted in this report are based in part on samples collected and analytical test data provided by others, and contingent upon their validity. The samples collected for analytical testing occurred during a brief time period and some test data and interpretations are based solely upon one analytical test. This data has been reviewed and interpretations have been made in the text and on the figures of this report. However, fluctuations of contaminant levels, types and flow paths may occur due to seasonal fluctuations, temperature variations, groundwater level fluctuations, and other factors. If variations appear evident during future studies, it will be necessary to re-evaluate the conclusions.

Use of This Report

This report has been prepared exclusively for USF Red Star for the specific application to the TNT-Red Star Express Site located in Kirkwood, New York in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made. This report was prepared for site assessment purposes only.

LIST OF REFERENCES

Broome County Department of Health, GIS map out of spill sites in the vicinity of the TNT-Red Star Express Site, 1999.

Environmental Risk Assessment, Office of Emergency and Remedial Response - Hazardous Response Support Division, USEPA, pp120- 132, 1986.

Simulation of Ground-Water Flow and Infiltration from the Susquehanna River to a Shallow Aquifer at Kirkwood and Conklin, Broome County, New York, USGS Water Resources Investigations Report 86-4123, 1986.

Atlas of Eleven Selected Aquifers in New York, USGS Water-Resources Investigations Open-File Report 82553, 1981.

Groundwater, Allan Freeze and John Cherry, Prentice Hall, Inc. p. 604, 1979.

See page, Drainage and Flow Nets, Harry R. Cedergren, John Wiley & Sons, p. 41, 1977.

TABLE 1

SUMMARY OF SAMPLE FINDINGS
CONTAMINANTS OF CONCERN

Contaminants	Affected Media	Maximum Concentration Observed	Frequency of Detections in all Samples
Perchloroethene (“PCE”)	Soil	12 ppb at B-4 (MW-3D), 14-16 ft.	2 out of 7
	Groundwater	1,500 ppb at Monitoring Well MW-3	20 out of 47
	Oil/Water Separator Sediment	1,000J ppb	2 out 2 samples (total number of samples includes a duplicate sample)
1,1,1-Trichloroethane (“TCA”)	Soil	130 ppb at B-5, 6- 8 ft.	1 out of 7
	Groundwater	3,500 ppb at monitoring Well PW-4	12 out of 47

ppb = parts per billion

TABLE 2

TABLE 3 through 8

REMEDIAL INVESTIGATION SAMPLES RESULTS

TABLE 9

SAMPLE LOCATIONS

Location	Date	Media	Analyses
Catch Basin	2-18-99	Sediment	ASP-95-1
Field Rinse Spoon	2-18-99	Water	ASP-95-1
Drainage Swale	2-18-99	Sediment	ASP-95-1
Decontamination Water	2-18-99	Water	ASP-95-1
B4/MW3D 14-16 ft.	2-18-99	Soil	ASP-95-1
Trip Blank	2-18-99	Water	ASP-95-1
MW-1	4-1-99	Water	ASP-95-1
MW-2	4-1-99	Water	ASP-95-1
MW-3	4-1-99	Water	ASP-95-1
MW-3D	4-1-99	Water	ASP-95-1
MW-Dup	4-1-99	Water	ASP-95-1
MW-4	4-1-99	Water	ASP-95-1,2 TAL Metals, USEPA 8082
MW-4	10-26-99	Water	8260
MW-4 Dup	10-26-99	Water	8260
MW-Dup	4-1-99	Water	ASP-95-2 TAL Metals, USEPA 8082
MW-Field Blank	4-1-99	Water	ASP-95-1,2 TAL Metals, USEPA 8082
Matrix Spike/Matrix Spike Dup	4-1-99	Water	ASP-95-1,2 TAL Metals, USEPA 8082
Trip Blank	4-1-99	Water	ASP-95-1
GP-1	4-1-99	Water	8260
GP-1	10-26-99	Water	8260
GP-2	4-1-99	Water	8260
GP-2	10-25-99	Water	8260
GP-3	4-1-99	Water	8260
GP-4	4-1-99	Water	8260
GP-Dup	4-1-99	Water	8260
GP Field Blank	4-1-99	Water	8260
GP Trip Blank	4-1-99	Water	8260

TABLE 9 (continued)

SAMPLE LOCATIONS

Location	Date	Media	Analyses
Oil Water Separator	7-22-99	Sediment	8021
Oil Water Separator	10-25-99	Sediment	ASP-95-1
Oil Water Separator	10-25-99	Sediment	ASP-95-1
Waste Oil Tank	6-09-00	Sludge	8260
Field Blank	10-29-99	Water	8260
Trip Blank	10-29-99	Water	8260
PW-1	10-29-99	Water	8260
PW-2	10-29-99	Water	8260
PW-3	10-29-99	Water	8260
PW-4	10-25-99	Water	8260
PW-4	6-09-00	Water	8260
PW-5	10-26-99	Soil	8260
PW-6	10-29-99	Water	8260
PW-7	10-26-99	Water	8260
PW-8	10-26-99	Water	8260
PW-9	10-29-99	Water	8260
Drainage Swale #1 (Oil/Water Separator Outfall)	10-29-99	Sediment	8260, 8270 STARS
B-5	10-29-99	Soil	8260, 8270 STARS
Trip Blank	10-26-99	Water	8260
Trip Blank	10-26-99	Water	8260
GP-FB	10-29-99	Water	8260

TABLE 10

WATER LEVEL MEASUREMENTS
NOVEMBER 2, 1999

Well Identification	Ground Surface Elevation (feet above mean sea level)	Monitoring Well Total Depth (feet below ground surface)	Screened Interval (feet below ground surface)	Water Level Depth (feet below ground surface)	Water Elevation (feet above mean sea level)
MW1	856.46	13.5	Not Known	8.4	848.06
MW2	857.83	14.25	Not Known	10.9	846.93
MW3	858.4	12.3	Not Known	10.74	847.66
MW3D	857.11	42.5	32-42	4.05	853.06
MW4	855.1	13.5	Not Known	8.55	846.55
GP1	857.6	18	13-18	10.35	847.25
GP2	855.63	15	10-15	8.85	846.78
GP3	855.46	15	10-15	8.9	846.56
GP4	855.63	15	10-15	8.86	846.77
PW-1	857.69	22	10-20	11.61	846.08
PW-2	854.41	22	7-22	8.64	845.77
PW3	855.06	22	10-20	9.47	845.59
PW4	857.84	19	8-18	10.83	847.01
PW6	858.7	15	9-14	10.46	848.24
PW7	860.38	22	9.5-19.5	14.15	846.23
PW8	859.96	16	10-15	12	847.96
PW9	862.32	27	16-26	16.84	845.48

TABLE 11

HYDRAULIC CONDUCTIVITY RESULTS
(Ft./Minute)

Well Identification	Test 1	Test 2	Test 3	Average
MW-1	7×10^{-4}	1.1×10^{-3}	8.5×10^{-4}	9.0×10^{-4}
MW-2	5.4×10^{-4}	7.9×10^{-4}	6.4×10^{-4}	7.0×10^{-4}
MW-3	7.4×10^{-4}	7.9×10^{-4}	8.0×10^{-4}	8.0×10^{-4}
MW-3D	7.2×10^{-4}	6.3×10^{-4}	8.9×10^{-4}	7.0×10^{-4}
MW-4	6.3×10^{-4}	6.3×10^{-4}	6.9×10^{-4}	7.0×10^{-4}

TABLE 12

TYPICAL HYDRAULIC CONDUCTIVITY RANGES
(Values Shown in Feet per Minute)

Grain Size	Hydraulic Conductivity Range
Sand	10^{-6} - 10^{2}
Silt	10^{-8} - 10^{-4}
Till	10^{-11} - 10^{-3}

Values from Freeze and Cherry 1979, *Groundwater*, Prentice Hall, Inc. p. 604

FIGURES

Insert Figure 1
Site Location

Insert Figure 2 Spill Sites

Insert Figure 3 Site Plan

Insert Figure 4
Sample Locations

Insert Figure 5
USGS GW Flow

Insert Figure 6
X-Section

Insert Figure 7
Site GW Flow

Insert Figure 8
Site Utilities

Insert Figure 9
PCE Plume

Insert Figure 10
TCA Plume

Insert Figure 11
Soil Gas Locations

APPENDIX 1

BORING AND WELL LOGS

APPENDIX 2

HYDRAULIC CONDUCTIVITY TEST DATA

APPENDIX 3

VELOCITY CALCULATIONS

APPENDIX 4

ANALYTICAL DATA

APPENDIX 5

DATA VALIDATION REPORT

APPENDIX 6

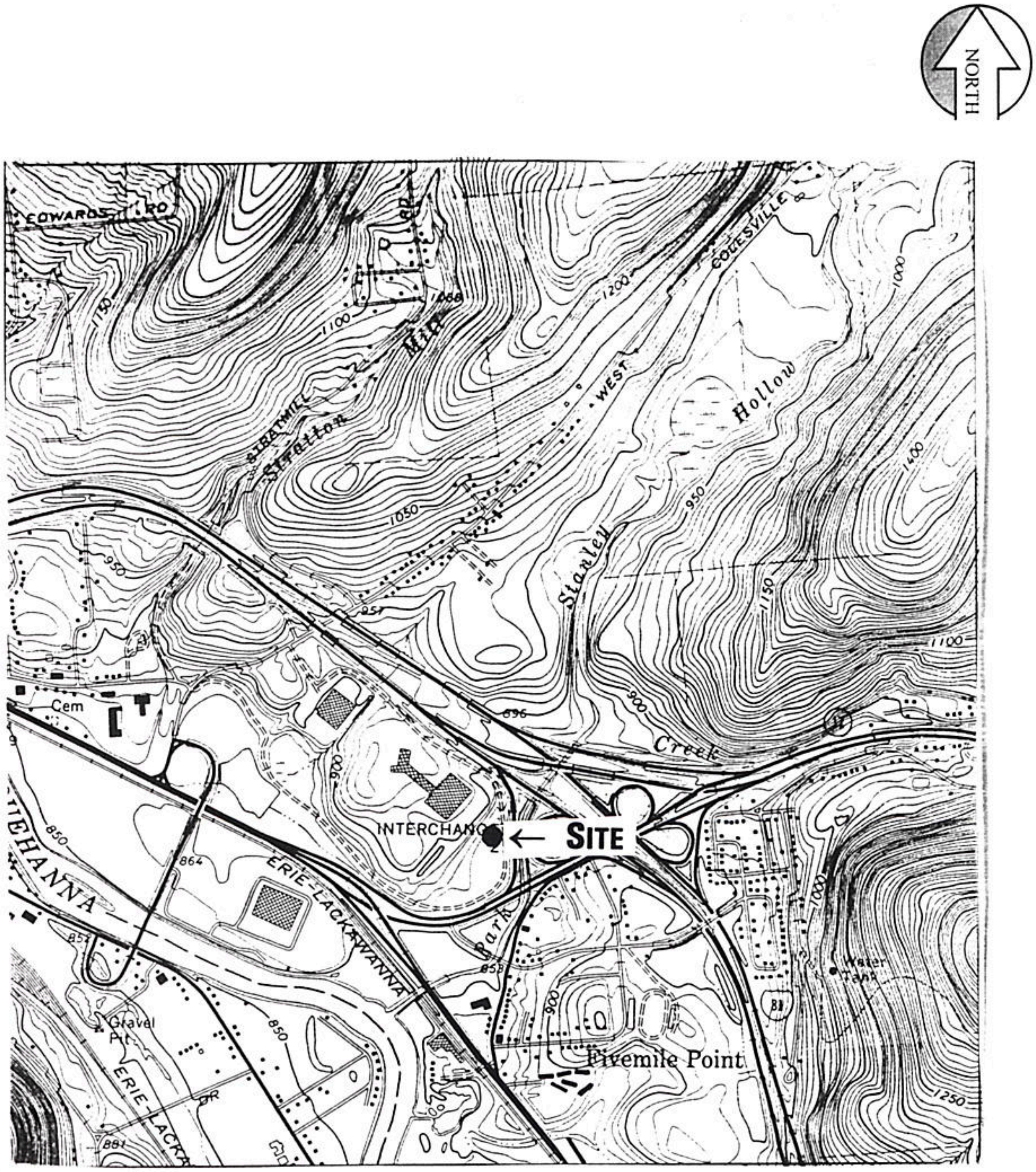
SURVEY DATA

APPENDIX 7

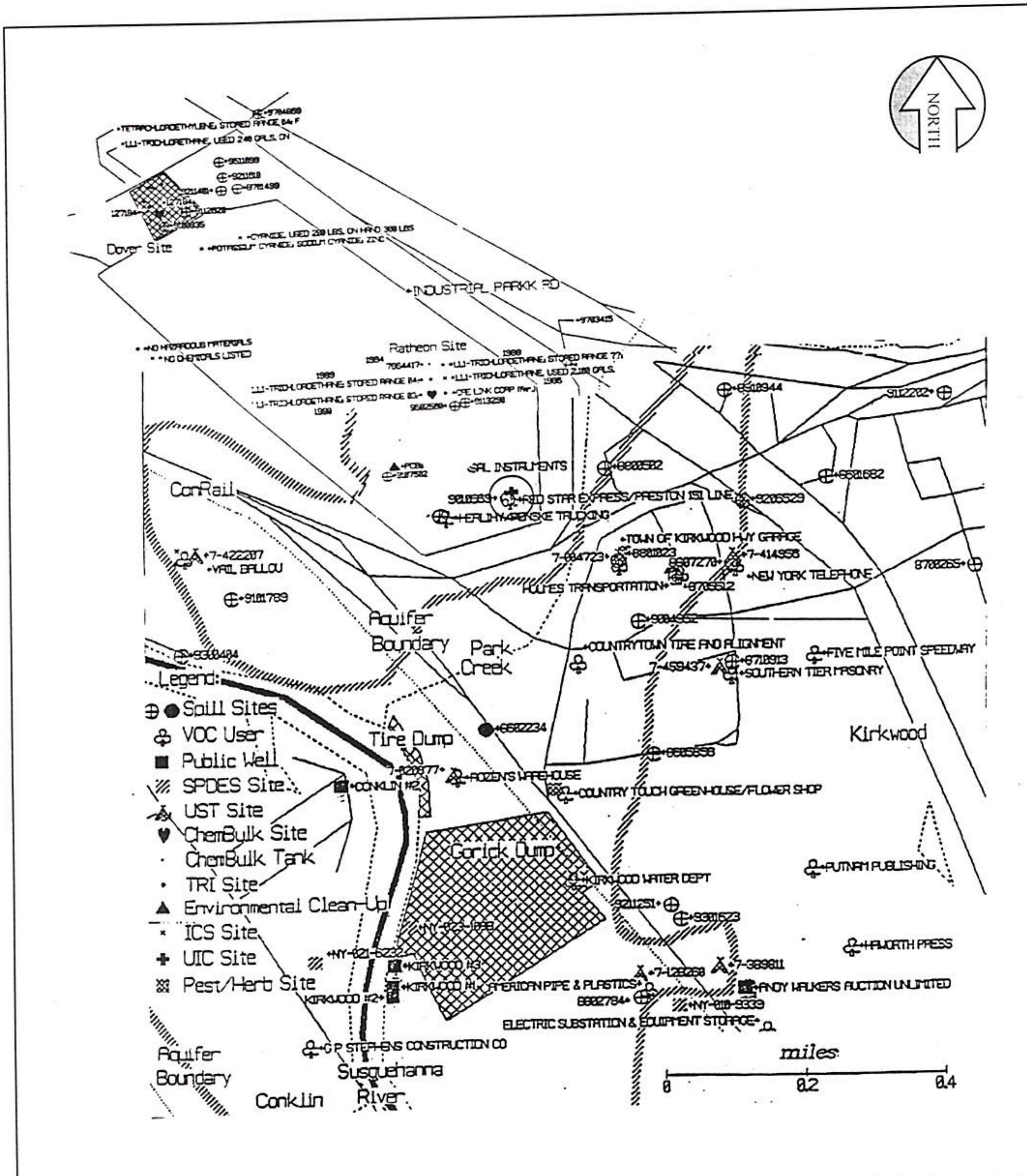
NYSDEC SPILL REPORTS

APPENDIX 8

PRE-REMEDIAL INVESTIGATION SAMPLING DATA



Title: Site Location Map TNT-Red Star Express Site Kirkwood, New York	LEADER	Project 250.001	Drawn PVS	Figure
Prepared For: USF Red Star Newark, New Jersey	Leader Environmental, Inc 640 Kreag Road-Suite 300 Pittsford, New York 14534 (716) 248-2413 FAX (716) 248-2834	Date 1-7-00 Scale 1" = 2,000'	Checked MPR File Name	1



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Prepared For: USF Red Star Newark, New Jersey		Scale: As Shown	File Name	

Figure 2 "Site Boundaries"

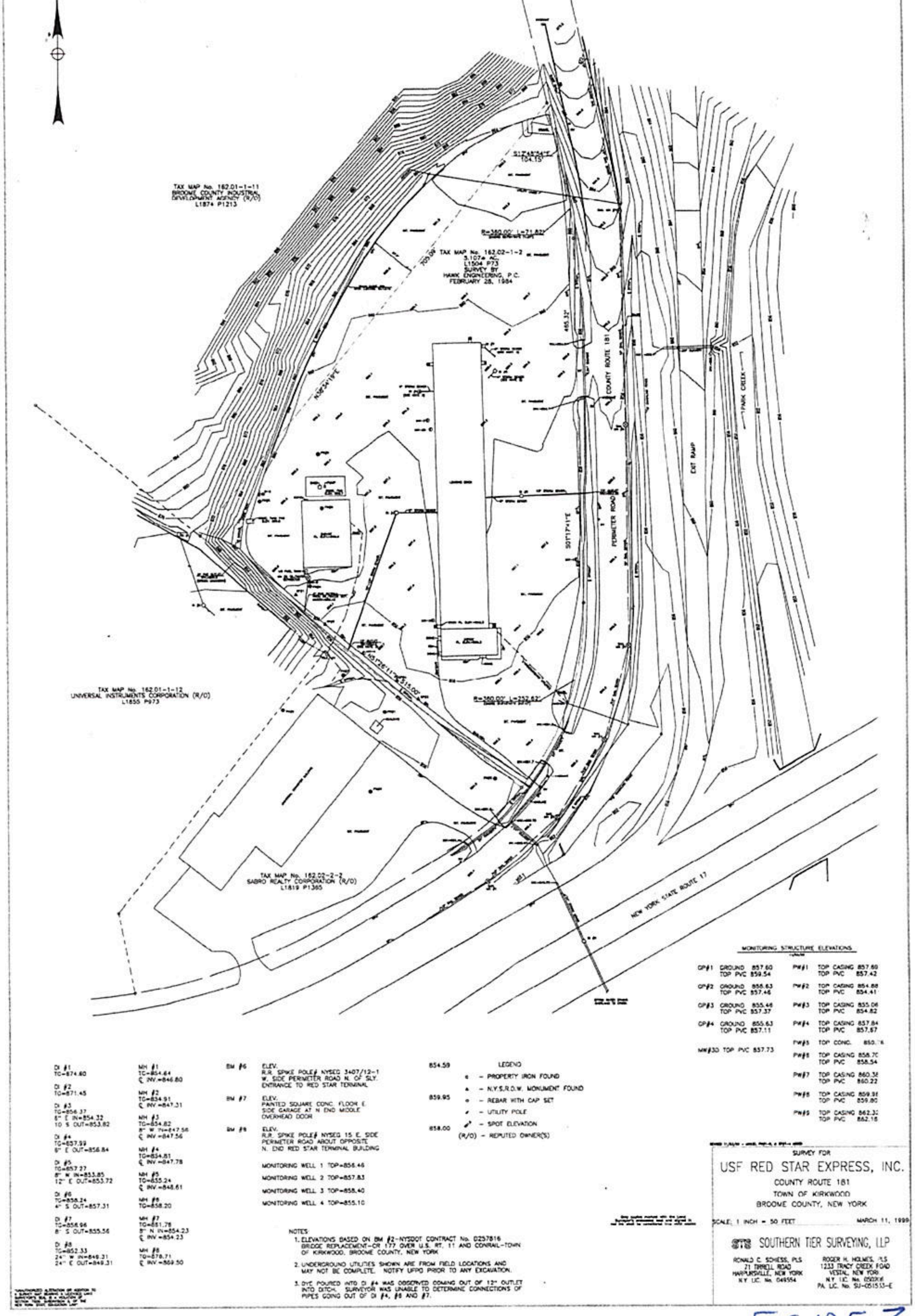
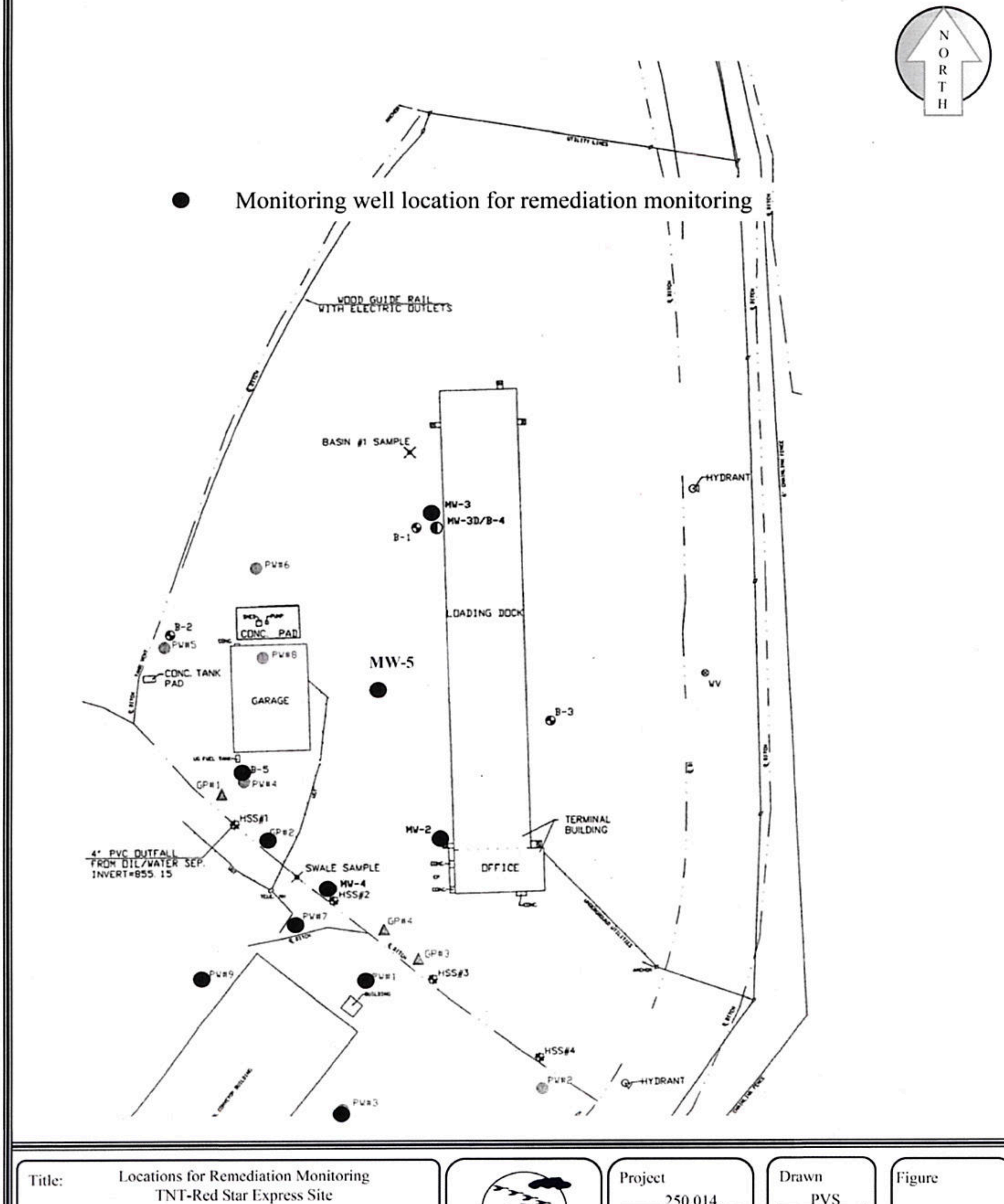


FIGURE 3
RI Rpt.



Title: Locations for Remediation Monitoring TNT-Red Star Express Site Kirkwood, NY	LEADER Leader Professional Services, Inc 271 Marsh Road-Suite 2 Pittsford, New York 14534 (585) 248-2413 FAX (585) 248-2834	Project 250.014	Drawn PVS	Figure
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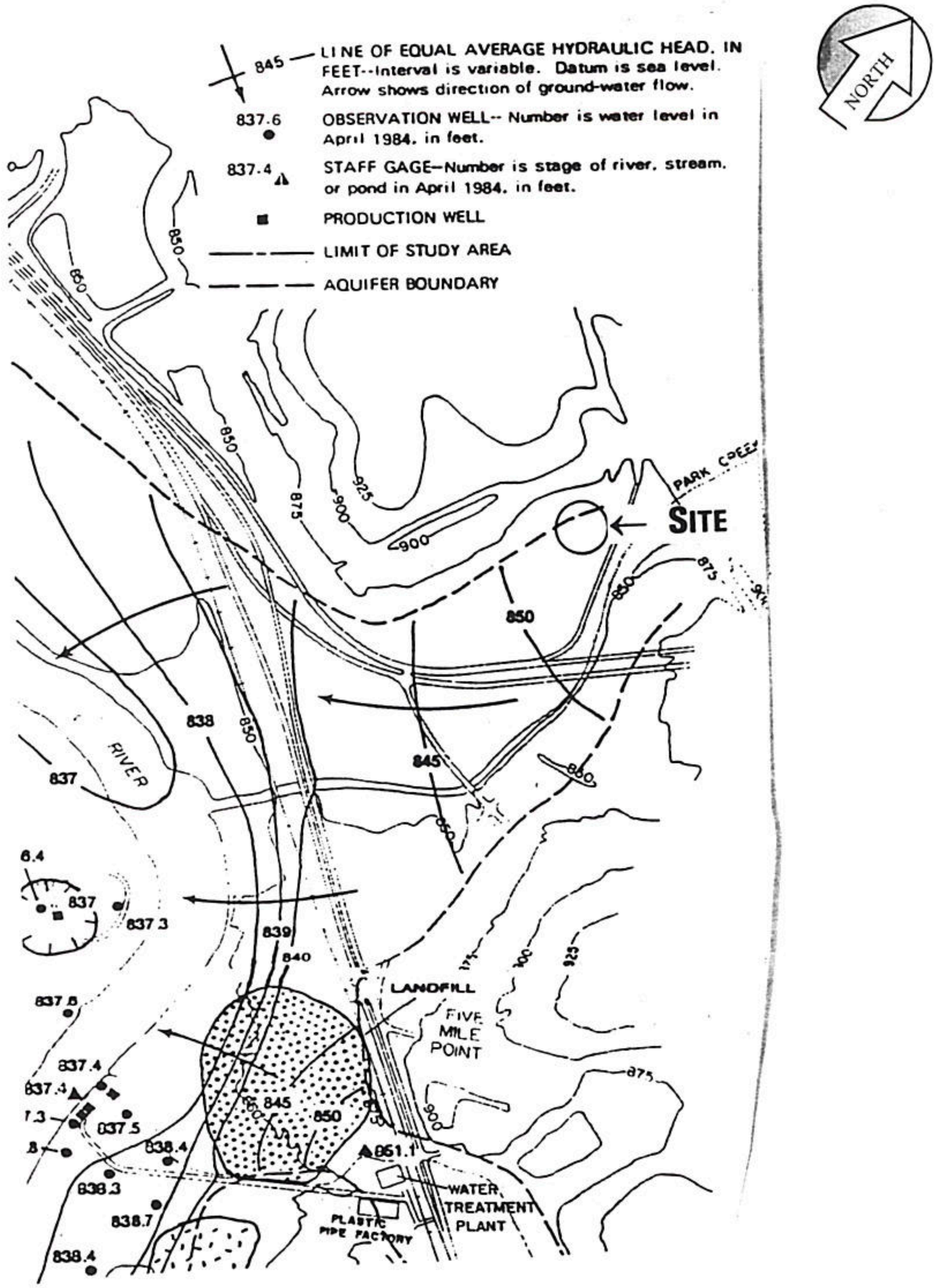
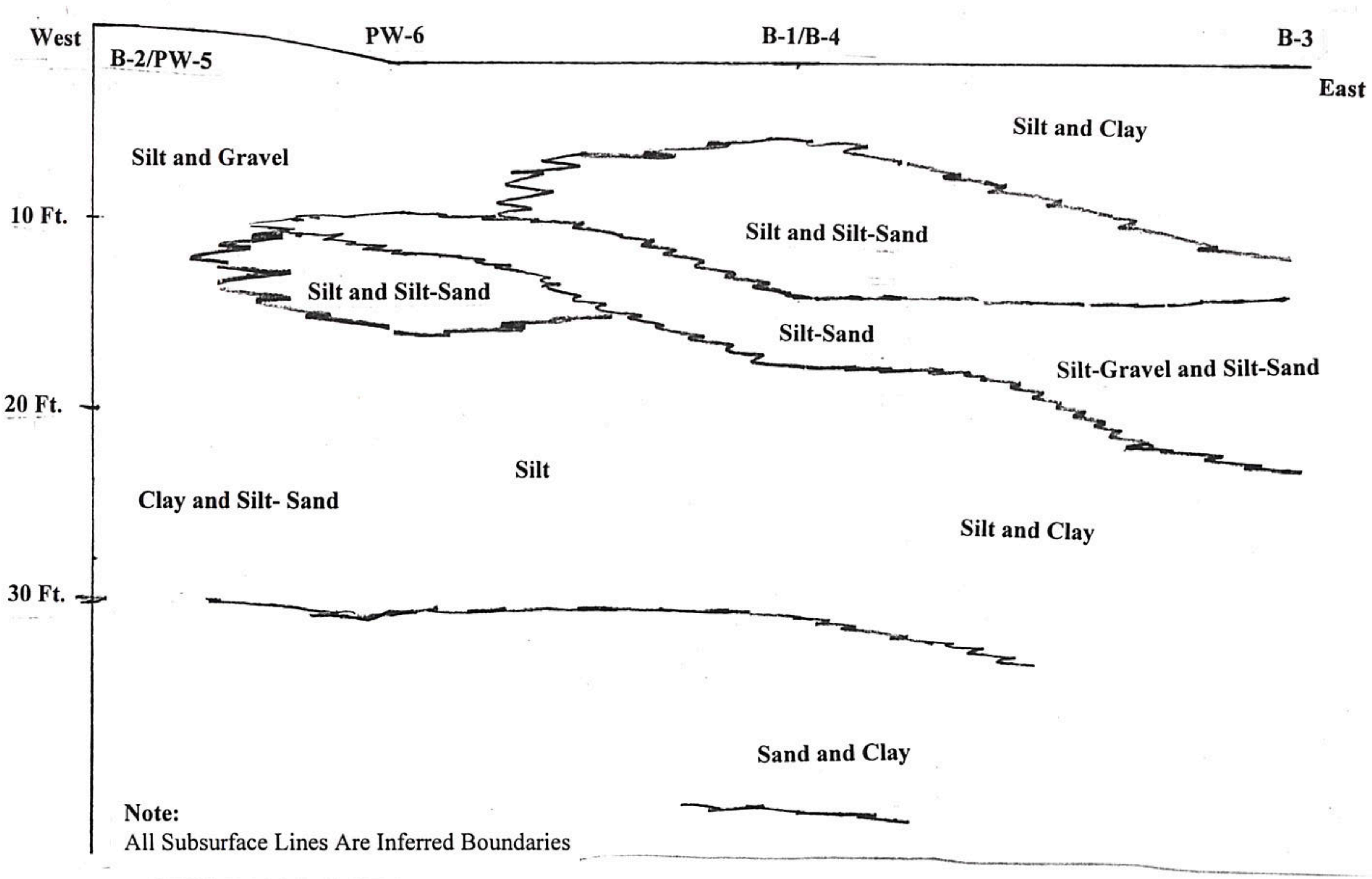
Prepared For: USF Red Star LLC Akron, Ohio		Scale NTS	File Name Site Map	

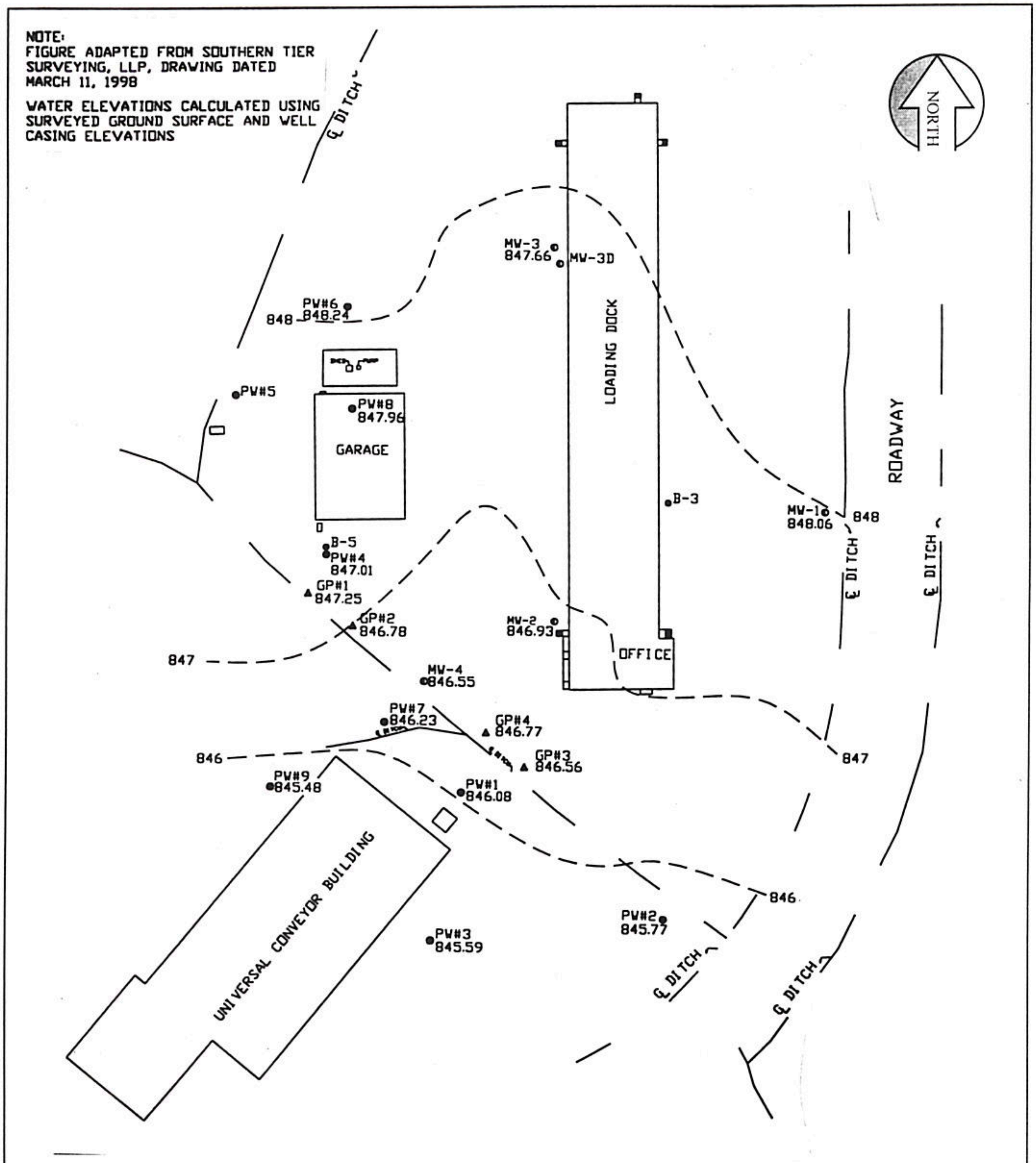


Title USGS Groundwater Flow Interpretation TNT-Red Star Express Site Kirkwood, New York	LEADER	Project 251.001	Drawn PVS	Figure
		Date 10-11-99	Checked MPR	5
Prepared For USF Red Star Newark, New Jersey	Leader Environmental, Inc 640 Kreag Road-Suite 300 Pittsford, New York 14534 (716) 248-2413 FAX (716) 248-2834	Scale 1" =1,300'	File Name	



Note:
All Subsurface Lines Are Inferred Boundaries

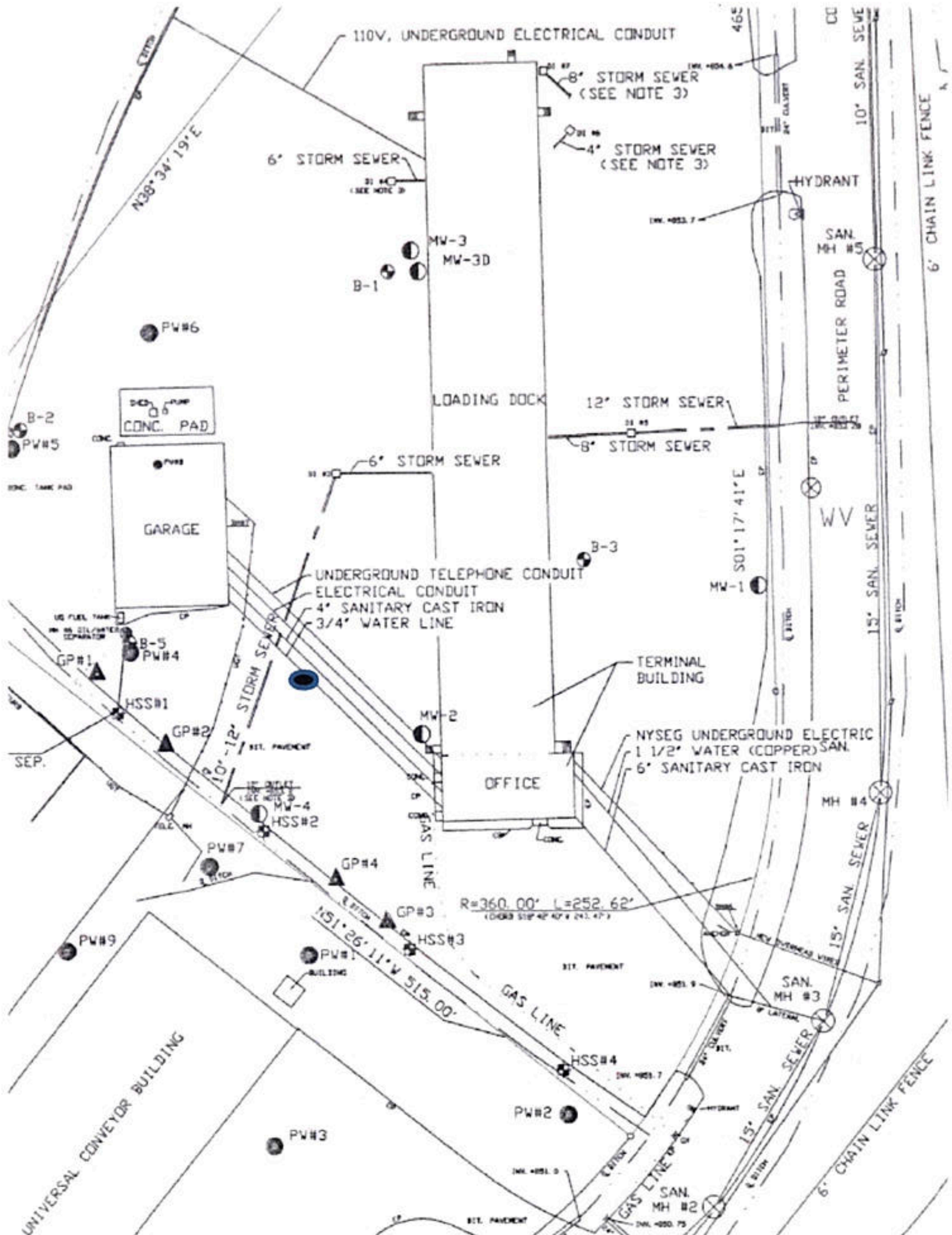
Title: Geologic Cross-Section TNT-Red Star Express Site Kirkwood, New York	LEADER Leader Environmental, Inc 640 Kreag Road-Suite 300 Pittsford, New York 14534 (716) 248-2413	Project 250.001	Drawn PVS	Figure
Prepared For: USF Red Star Newark, New Jersey		Date 1-7-00	Checked MPR	6
		Scale H: 36.5' = 1" V: 8' = 1"	File Name	



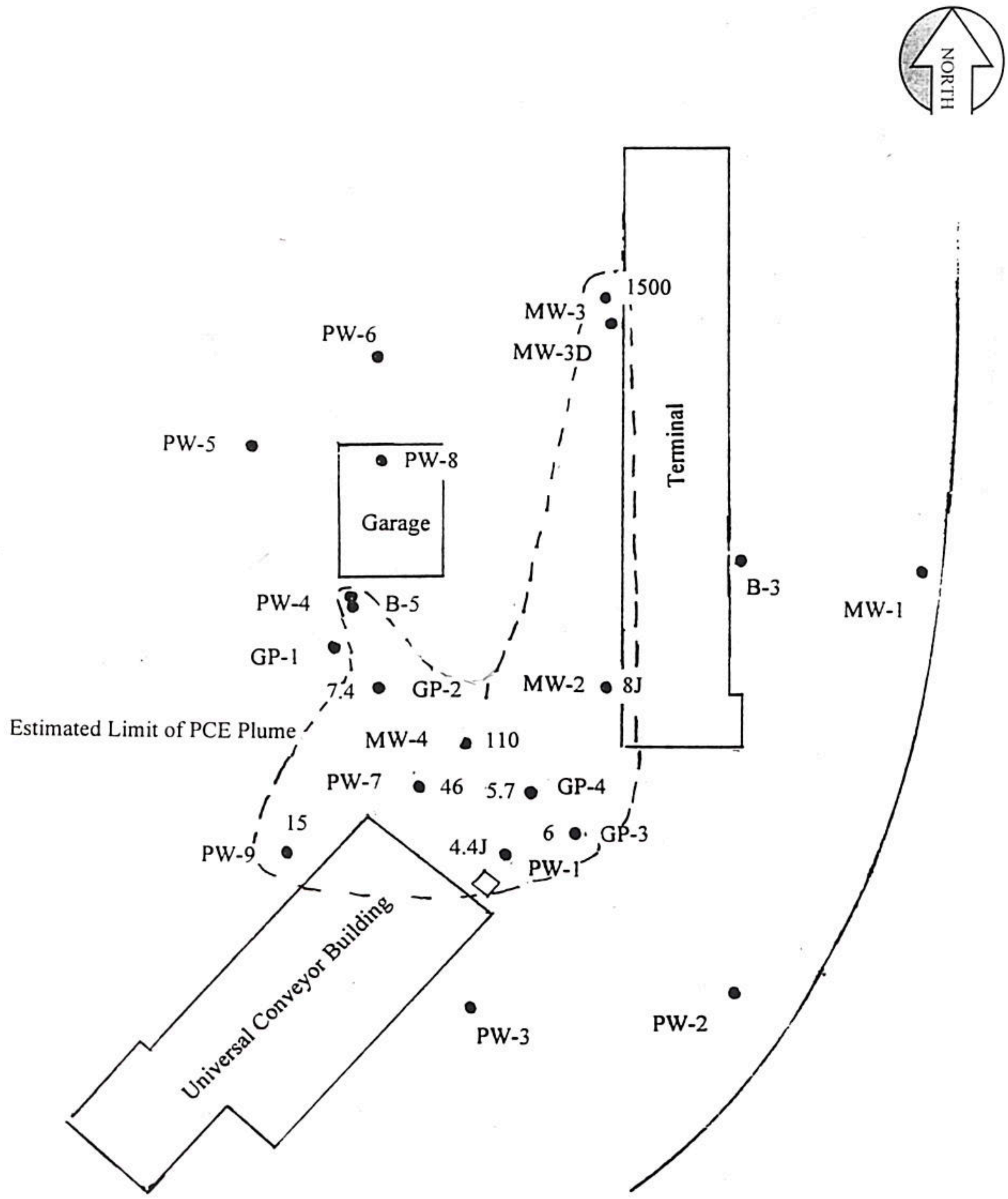
Title	Groundwater Contours November 2, 1999 TNT-Red Star Express Site Kirkwood, New York
Prepared For	USF Red Star Newark, New Jersey

LEADER
Leader Environmental, Inc
640 Kreag Road-Suite 300
Pittsford, New York 14534
(716) 248-2413
FAX (716) 248-2834

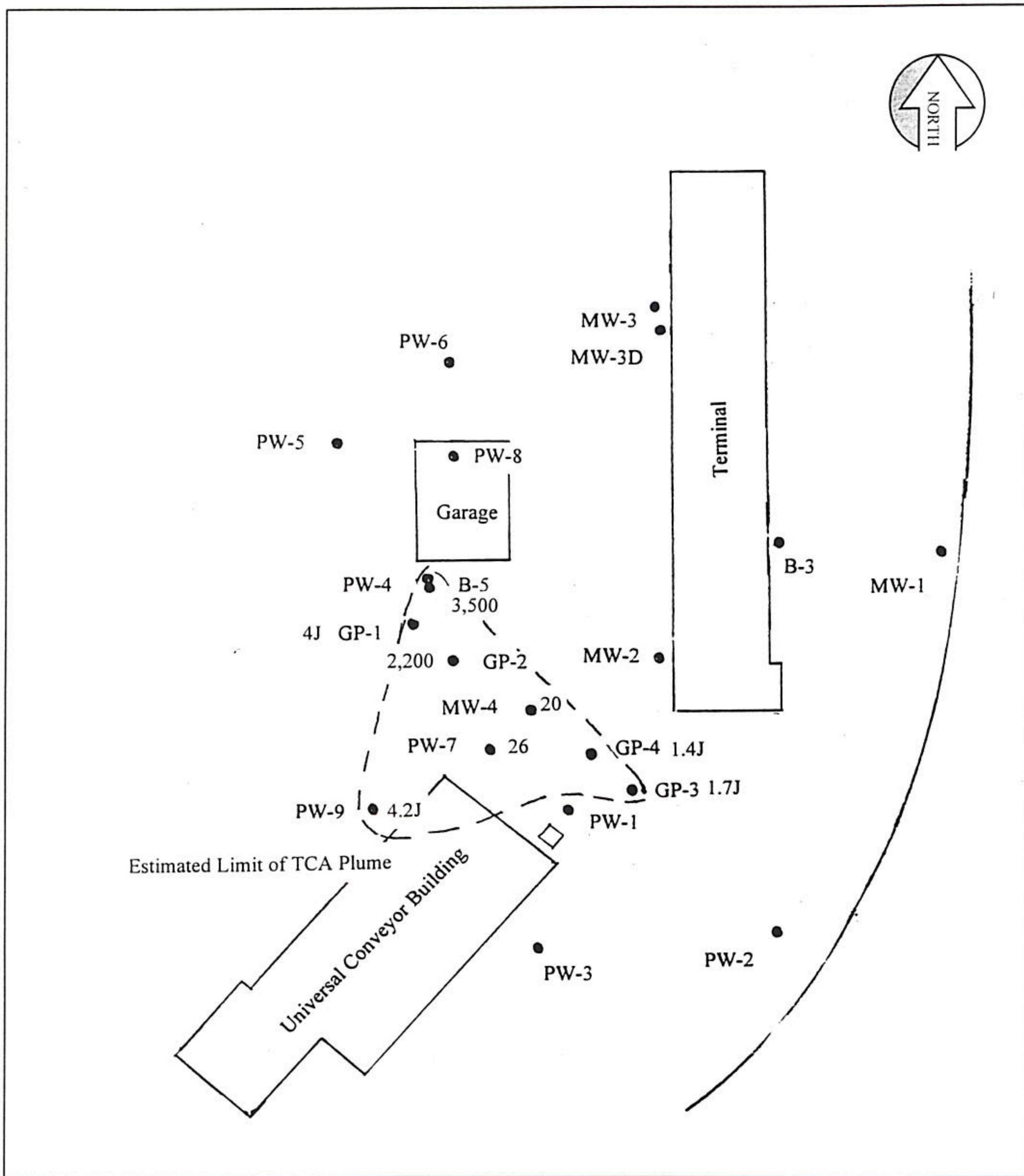
Project	250.001
Date	11-11-99
Scale	1" = 100'
Drawn	PVS
Checked	MPR
File Name	
Figure	7



RI Report
Utility Location Plan
Figure 8



Title Groundwater PCE Concentrations (PPB) TNT-Red Star Express Site Kirkwood, New York	LEADER Leader Environmental, Inc 640 Kreag Road-Suite 300 Pittsford, New York 14534 (716) 248-2413 FAX (716) 248-2834	Project 250.001	Drawn PVS	Figure 9
Prepared For USF Red Star Newark, New Jersey		Date 11-11-99	Checked MPR	
		Scale 1" = 100'	File Name	

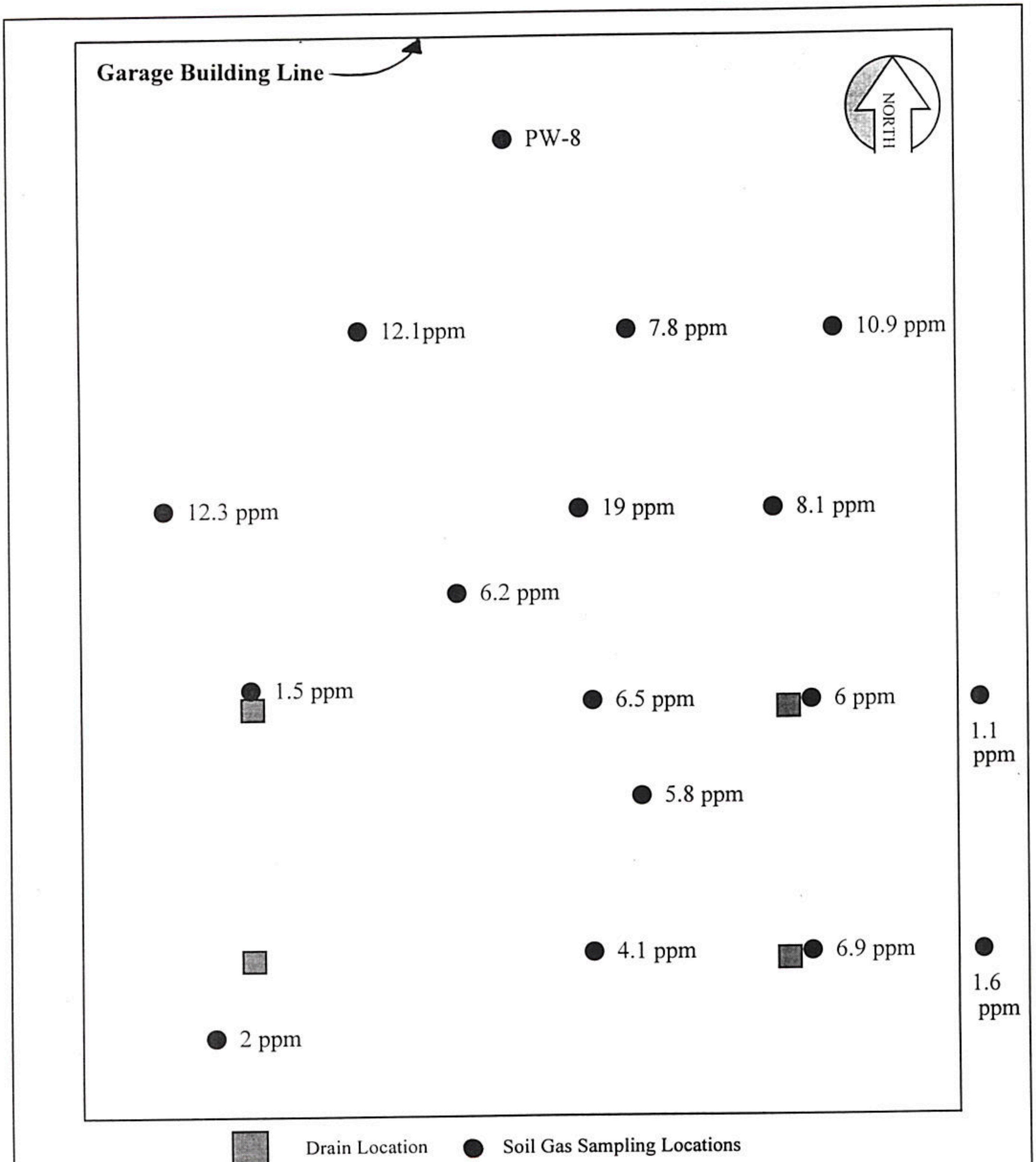


Title Groundwater TCA Concentrations (PPB)
TNT-Red Star Express Site
Kirkwood, New York

Prepared For
USF Red Star
Newark, New Jersey

LEADER
Leader Environmental, Inc
640 Kreag Road-Suite 300
Pittsford, New York 14534
(716) 248-2413
FAX (716) 248-2834

Project 250.001	Drawn PVS	Figure 10
Date 11-11-99	Checked MPR	
Scale 1" = 100'	File Name	



Title	Garage Soil Gas Results TNT-Red Star Express Site Kirkwood, New York
Prepared For	USF Red Star Newark, New Jersey

LEADER
Leader Environmental, Inc
640 Kreag Road-Suite 300
Pittsford, New York 14534
(716) 248-2413
FAX (716) 248-2834

Project	250.001
Date	11-9-99
Scale	1" = 10'
Drawn	PVS
Checked	MPR
File Name	
Figure	11

TABLE 1

SUMMARY OF SAMPLE FINDINGS CONTAMINANTS OF CONCERN

Contaminants	Affected Media	Maximum Concentration Observed	Frequency of Detections in all Samples
Perchloroethene ("PCE")	Soil	12 ppb at B-4 (MW-3D), 14-16 ft.	2 out of 7
	Groundwater	1,500 ppb at Monitoring Well MW-3	20 out of 47
	Oil/Water Separator Sediment	1,000J ppb	2 out 2 samples (total number of samples includes a duplicate sample)
1,1,1-Trichloroethane ("TCA")	Soil	130 ppb at B-5, 6- 8 ft.	1 out of 7
	Groundwater	3,500 ppb at monitoring Well PW-4	12 out of 47

ppb = parts per billion

TABLE 2

PRE-REMEDIAL INVESTIGATION SUMMARY OF SAMPLE RESULTS (VOCs Only)

TNT-RED STAR EXPRESS SITE

NYSDEC SITE #704028

Kirkwood, New York

Sample Number	N/A	MW-2	MW-3	MW-2	MW-3	MW-2	MW-3	MW-2	MW-3	MW-2
Sampling Date	N/A	12/1/92	12/1/92	5/21/93	May-93	8/30/93	8/30/93	11/27/93	11/27/93	7/5/94
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Field Location	Part 703.5	MW-2	MW-3	MW-2	MW-3	MW-2	MW-3	MW-2	MW-3	MW-2
Sample Depth	N/A	14.25'	12.5'	14.25'	12.5'	14.25'	12.5'	14.25'	12.5'	14.25'
Concentration	ug/Liter	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses	N/A	N/A	N/A	USEPA 8010	USEPA 8010	USEPA 601	USEPA 601	USEPA 601	USEPA 601	USEPA 8010
Tetrachloroethene	5	21	1200	12	152	23	304	28	343	14
Methylene Chloride	5	ND	ND	ND	ND	ND	3	ND	ND	ND
trans-1,2-DCE	5	ND	ND	ND	ND	ND	1	ND	ND	ND
1,1-DCE	5	ND	ND	ND	ND	ND	ND	ND	1	ND
1,1,1-TCA	5	ND	ND	ND	ND	ND	2	ND	2	ND

trans - 1,2-DCE = trans-1,2-Dichloroethene

1,1 - DCE = 1,1-Dichloroethene

1,1,1-TCA = 1,1,1-Trichloroethene

TABLE 2
PRE-REMEDIAL INVESTIGATION SUMMARY OF SAMPLE RESULTS (VOCs Only)
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

Sample Number	MW-3	MW-2	MW-3	MW-2	MW-3	MW-4	P-1	MW-2	MW-3	MW-4
Sampling Date	7/5/94	1/6/95	1/6/95	3/23/95	3/23/95	3/23/95	3/23/95	6/23/95	6/23/95	7/25/95
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Field Location	MW-3	MW-2	MW-3	MW-2	MW-3	MW-4	P-1	MW-2	MW-3	MW-4
Sample Depth	12.5'	14.25'	12.5'	14.25'	12.5'	13.5'	N/A	14.25'	12.5'	13.5'
Concentration	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses	USEPA 8010	USEPA 601	USEPA 601	USEPA 601	USEPA 601	USEPA 601	USEPA 601	USEPA 601	USEPA 601	USEPA 601
Tetrachloroethene	907	19	780	23	760	250	ND	18	77.5	148.3
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-DCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-TCA	ND	ND	ND	ND	ND	ND	ND	ND	2.5	2.6

trans - 1,2-DCE = trans-1,2-Dichloroethene
1,1 - DCE = 1,1-Dichloroethene
1,1,1-TCA = 1,1,1-Trichloroethene

TABLE 2
PRE-REMEDIAL INVESTIGATION SUMMARY OF SAMPLE RESULTS (VOCs Only)
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

Sample Number	MW-2	MW-3	MW-4	MW-1	MW-2	MW-3	MW-4
Sampling Date	9/22/95	9/22/95	9/22/95	11/2/97	11/2/97	11/2/97	11/2/97
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Field Location	MW-2	MW-3	MW-4	MW-1	MW-2	MW-3	MW-4
Sample Depth	14.25'	12.5'	13.5'	13.5'	14.25'	12.5'	13.5'
Concentration	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses	USEPA 601	USEPA 601	USEPA 601	USEPA 8260	USEPA 8260	USEPA 8260	USEPA 8260
Tetrachloroethene	33	460	130	ND	23.2	207.9	113.7
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND
trans-1,2-DCE	ND	ND	ND	ND	ND	ND	ND
1,1-DCE	ND	ND	ND	ND	ND	3.2	ND
1,1,1-TCA	ND	ND	ND	ND	ND	4	2.1

trans - 1,2-DCE = trans-1,2-Dichloroethene
1,1 - DCE = 1,1-Dichloroethene
1,1,1-TCA = 1,1,1-Trichloroethene

TABLE 3 through 8

REMEDIAL INVESTIGATION SAMPLES RESULTS

NOTES

TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

NL -	Not Listed
NS -	No Standard
NA -	Not Analyzed
U -	Number preceding "U" is the analytical detection limit. Therefore, a result followed by a U indicates that the compound was not detected at a concentration above quantity shown.
J -	Compound identified, but at a concentration lower than the contract or method specified detection limit.
B -	Organic compounds only - Compound identified by the laboratory as a possible laboratory contaminant.
B -	Inorganic compounds only - Compound identified, but at a concentration lower than the contract or method specified detection limits.
TAGM 4046 -	The general soil cleanup guidance for semi-volatiles total concentration for non-carcinogenic semi-volatile compounds is less than 500 ug/Kg and the total concentration of carcinogenic semi-volatile compounds is less than 10 ug/Kg.

TABLE 3
SOIL RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	B4/MW3D	PW-4	PW-5	B-5	Basin 1	Swale	#1	Trip Blank
Sampling Date	N/A	2/19/99	10/25/99	10/26/99	10/25/99	2/18/99	2/18/99	10/29/99	10/29/99
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Water
Field Location	N/A	14 - 16 ft.	PW-4	PW-5	B-5	1	Swale	Drainage Swale	NA
Sample Depth	N/A	NA	10-11.4 ft.	12-14 ft.	6-8 ft.	0-6 in.	0-6 in.	0-6 in.	NA
Concentration	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L
Analyses	NYSDEC TAGM 4046	ASP-95-1	8260	8260	8260	ASP-95-1	ASP-95-1	8260	8260
Acetone	110	3J	5.0U	5.0U	26	11U	42	3400U	5.0U
Benzene	60	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
Bromobenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
Bromodichloromethane	NL	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
Bromoform	NL	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
Bromomethane	NL	10U	5.0U	5.0U	5.0U	11U	15U	840U	5.0U
2-Butanone	300	10U	5.0U	5.0U	11U	11U	13J	1700U	5.0U
n-Butylbenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
sec-Butylbenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
tert-Butylbenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
Carbon Disulfide	2,700	10U	5.0U	5.0U	2J	11U	15U	1700U	5.0U
Carbon Tetrachloride	500	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
Chlorobenzene	1,700	10U	5.0U	5.0U	5.4U	11U	2J	840U	5.0U
Chloroethane	1,900	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
2-Chloroethyl vinyl ether	NL	NA	5.0U	5.0U	NA	NA	NA	NA	5.0U
Chloroform	300	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
Chloromethane	NL	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
2-Chlorotoluene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
4-Chlorotoluene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
1,2-Dibromo-3-chloropropane	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
Dibromochloromethane	NA	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
1,2-Dibromoethane	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
Dibromomethane	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
1,2-Dichlorobenzene	7,900	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
1,3-Dichlorobenzene	1,550	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
1,4-Dichlorobenzene	8,500	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
Dichlorodifluoromethane	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5.0U
1,1-Dichloroethane	200	10U	5.0U	5.0U	29	11U	15U	840U	5.0U
1,2-Dichloroethane	100	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U
1,1-Dichloroethene	400	10U	5.0U	5.0U	5.4U	11U	15U	840U	5.0U

TABLE 3
SOIL RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	B4/MW3D	PW-4	PW-5	B-5	Basin 1	Swale	#1	Trip Blank
Sampling Date	N/A	2/19/99	10/25/99	10/26/99	10/29/99	2/18/99	2/18/99	10/29/99	10/29/99
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Water
Field Location	N/A	14 - 16 ft.	PW-4	PW-5	B-5	1	Swale	Drainage Swale	NA
Sample Depth	N/A	NA	10-11.4 ft.	12-14 ft.	6-8 ft.	0-6 in.	0-6 in.	0-6 in.	NA
Concentration	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L
Analyses	NYSDEC TAGM 4046	ASP-95-1	8260	8260	8260	ASP-95-1	ASP-95-1	8260	8260
cis-1,2-Dichloroethene	250	NA	5.0U	5.0U	5.4U	NA	NA	840U	5U
1,2-Dichloroethene	NL	10U	NA	NA	NA	11U	15U	NA	5U
trans-1,2-Dichloroethene	300	NA	5.0U	5.0U	5.4U	11U	15U	840U	5U
1,2-Dichloropropane	NL	10U	5.0U	NA	NA	NA	NA	840U	5U
1,3-Dichloropropane	300	NA	5.0U	NA	NA	NA	NA	840U	5U
2,2-Dichloropropane	NL	NA	NA	NA	5.4U	11U	NA	NA	0U
cis-1,3-Dichloropropene	NL	10U	NA	NA	5.4U	11U	15U	NA	0U
trans-1,3-Dichloropropene	NL	10U	5.0U	5.0U	5.4U	11U	15U	NA	5U
Hexachlorobutadiene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
Ethylbenzene	5,500	10U	5.0U	5.0U	5.4U	11U	2J	840U	5U
1,1-Dichloropropene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
2-Hexanone	NL	10U	5.0U	5.0U	11U	11U	15U	1700U	5U
Methylene chloride	100	10U	5.0U	5.0U	5.4U	11U	15U	840U	5U
4-Isopropyltoluene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
Methyl-tert-butyl ether	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
4-Methyl-2-pentanone	1,000	10U	5.0U	5.0U	11U	11U	15U	1700U	5U
n-Propylbenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
Styrene	NL	10U	5.0U	5.0U	5.4U	11U	15U	840U	5U
Isopropylbenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
Naphthalene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
1,1,1,2-Tetrachloroethane	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
1,1,2,2-Tetrachloroethane	600	10U	5.0U	5.0U	5.4U	11U	15U	840U	5U
Tetrachloroethene	1,400	12	5.0U	5.0U	5.4U	4J	15U	840U	5U
Toluene	1,500	10U	5.0U	5.0U	1.7J	11U	4J	540J	5U
1,2,3-Trichlorobenzene	NL	NA	5.0U	5.0U	5.4U	NA	15U	NA	5U
1,2,4-Trichlorobenzene	3,400	NA	5.0U	5.0U	5.4U	NA	15U	NA	5U
1,1,1-Trichloroethane	760	10U	5.0U	5.0U	130	11U	15U	840U	5U
Trichloroethene	700	10U	5.0U	5.0U	5.4U	11U	15U	840U	5U
1,1,2-Trichloroethane	NL	10U	5.0U	5.0U	5.4U	11U	15U	840U	5U
1,2,3-Trichloropropane	340	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
Trichlorofluoromethane	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
1,2,4-Trimethylbenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
1,3,5-Trimethylbenzene	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
Vinyl acetate	NL	NA	5.0U	5.0U	5.4U	NA	NA	NA	5U
Vinyl chloride	120	10U	5.0U	5.0U	5.4U	11U	15U	840U	5U
m,p-Xylene	NL	NA	10U	10U	5.4U	11U	4J	490J	5U
o-Xylene	NL	NA	5.0U	5.0U	5.4U	11U	4J	360J	5U
Total Xylene	1,200	10U	5.0U	5.0U	NA	NA	NA	NA	10U
Tics	N/A	17J	NA	NA	NA	9J	7620	NA	NA

TABLE 3
SOIL RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	99-5-25	1	1 (Dup of 1)	UST (Waste Oil)	Rinse Spoon	Decon	Trip Blank	Cooler Blank	Cooler Blank	Trip Blank
Sampling Date	N/A	7/22/99	10/25/99	10/25/99	6/9/00	2/18/99	2/18/99	2/18/99	2/18/99	10/26/99	10/26/99
Sample Matrix	Soil	Sediment	Sediment	Sediment	Water	Water	Water	Water	Water	Water	Water
Field Location	N/A	O/W Separator	O/W Separator	O/W Separator	Waste Oil Tank	Field Blank	Decon Water	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Sample Depth	N/A	6ft.	6ft.	6ft.	NA	NA	NA	NA	NA	NA	NA
Concentration	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses	NYSDEC TAGM 4046	8021	ASP-95-1	ASP-95-1	8260	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1
Acetone	110	250U	1600JB	1900BJ	12,000U	3J	5J	10U	10U	1JB	2JB
Benzene	60	250U	2800U	2800U	2,500U	10U	10U	10U	10U	10U	10U
Bromobenzene	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Bromodichloromethane	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Bromoform	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Bromomethane	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
2-Butanone	300	250U	2800U	2500U	12,000U	10U	2J	10U	2J	10U	10U
n-Butylbenzene	NL	7720	NA	NA	22,000	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NL	845	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NL	5010	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Carbon Disulfide	2,700	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Carbon Tetrachloride	500	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Chlorobenzene	1,700	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Chloroethane	1,900	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
2-Chloroethyl vinyl ether	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Chloroform	300	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Chloromethane	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
2-Chlorotoluene	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Dibromochloromethane	NA	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
1,2-Dibromoethane	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Dibromomethane	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	7,900	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	1,550	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	8,500	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	200	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
1,2-Dichloroethane	100	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
1,1-Dichloroethene	400	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U

TABLE 3
SOIL RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	99-5-25	1	1 (Dup of 1)	UST (Waste Oil)	Rinse Spoon	Decon	Trip Blank	Cooler Blank	Cooler Blank	Trip Blank
Sampling Date	N/A	7/22/99	10/25/99	10/25/99	6/9/00	2/18/99	2/18/99	2/18/99	2/18/99	10/18/99	10/25/99
Sample Matrix	Soil	Sediment	Sediment	Sediment	Water	Water	Water	Water	Water	Water	Water
Field Location	N/A	O/W Separator	O/W Separator	O/W Separator	Waste Oil Tank	Field Blank	Decon Water	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Sample Depth	N/A	6ft.	6ft.	6ft.	NA	NA	NA	NA	NA	NA	NA
Concentration	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses	NYSDEC TAGM 4046	8021	ASP-95-1	ASP-95-1	8260	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1
cis-1,2-Dichloroethene	250	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,2-Dichloroethene	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
trans-1,2-Dichloroethene	300	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
1,3-Dichloropropane	300	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
cis-1,3-Dichloropropene	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
trans-1,3-Dichloropropene	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Hexachlorobutadiene	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Ethylbenzene	5,500	597	9300	8000	2,500U	10U	10U	10U	10U	10U	10U
1,1-Dichloropropene	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
2-Hexanone	NL	250U	2800U	2500U	12,000U	10U	10U	10U	10U	10U	10U
Methylene chloride	100	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
4-Isopropyltoluene	NL	1,360	NA	NA	7,600	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	1,000	250U	2800U	2500U	12,000U	10U	10U	10U	10U	10U	10U
n-Propylbenzene	NL	1,140	NA	NA	2,600	NA	NA	NA	NA	NA	NA
Styrene	NL	1,140	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Isopropylbenzene	NL	666	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Naphthalene	NL	8,700	NA	NA	42,000	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	600	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
Tetrachloroethene	1,400	250U	1000J	790J	2,500U	10U	10U	10U	10U	10U	10U
Toluene	1,500	673	7600	6200	2,500U	10U	10U	10U	10U	10U	10U
1,2,3-Trichlorobenzene	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	3,400	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	760 STD.	250U ?	2800U ?	2500U	2,500U	10U	10U	10U	10U	10U	10U
Trichloroethene	700	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
1,1,2-Trichloroethane	NL	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
1,2,3-Trichloropropane	340	311	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	NL	14,300	NA	NA	60,000	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	NL	6,120	NA	NA	37,000	NA	NA	NA	NA	NA	NA
Vinyl acetate	NL	250U	NA	NA	2,500U	NA	NA	NA	NA	NA	NA
Vinyl chloride	120	250U	2800U	2500U	2,500U	10U	10U	10U	10U	10U	10U
m,p-Xylene	NL	3,910	NA	NA	6,500	10U	NA	NA	NA	NA	NA
o-Xylene	NL	2,280	NA	NA	4,500	10U	NA	NA	NA	NA	NA
Total Xylene	1,200	6,190	85000	78000	11,000	NA	10U	10U	10U	10U	10U
Tics	N/A	N/A	545000	486000	N/A	6J	12J	16J	10U	10U	7NJ

TABLE 4
SOIL RESULTS OF SEMI-VOLATILE ORGANIC COMPOUNDS ("SVOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	1	B-5
Sampling Date	N/A	10/29/99	10/29/99
Sample Matrix	Soil	Soil	Soil
Field Location	TAGM	Drainage Swale	B-5
Sample Depth	N/A	0-6 in.	6 -8 ft.
Concentration	ug/Kg	ug/Kg	ug/Kg
Analyses		8270-STARS	8270-STARS
Acenaphthene	91,000	22000U	350U
Anthracene	700,000	22000U	350U
Benzo (a) Anthracene	3,000	22000U	350U
Benzo (a) Pyrene	11,000	22000U	350U
Benzo (b) Fluoranthene	1,100	22000U	350U
Benzo (G,H,I) Perylene	800,000	22000U	350U
Benzon (k) Fluoranthen	1,100	22000U	350U
Indeno (1,2,3-cd) Pyren	3,200	22000U	350U
Chrysene	400	22000U	350U
Dibenzo (a,h) Anthracen	165,000	22000U	350U
Fluoranthene	1,900,000	22000U	350U
Fluorene	350,000	22000U	350U
Naphthalene	13,000	13000U	210U
Phenanthrene	220,000	22000U	350U
Pyrene	650,000	22000U	350U

TABLE 5

GROUNDWATER RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")

TNT-RED STAR EXPRESS SITE

NYSDEC SITE #704028

Kirkwood, New York

EPA Sample Number	N/A	MW-1	MW-2	MW-3	MW-DUP	MW-3D	MW-4	MW-4
Sampling Date	N/A	4/1/99	4/1/99	4/1/99	4/1/99	4/1/99	4/1/99	10/26/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Field Location	Part 703.5	MW-1	MW-2	MW-3	MW-3	MW-3D	MW-4	MW-4
Sample Depth	N/A	13.5'	14.25'	12.5'	12.5'	32-42'	13.5'	13.5'
Concentration	ug/Liter	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses		ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	8260
Acetone	50	10U	10U	100U	50U	10U	10U	5.0U
Benzene	0.7	10U	10U	100U	50U	10U	10U	5.0U
Bromobenzene	5	NA	10U	100U	50U	10U	10U	5.0U
Bromodichloromethane	50	10U	10U	100U	50U	10U	10U	5.0U
Bromoform	50	10U	10U	100U	50U	10U	10U	5.0U
2-Butanone	50	10U	10U	100U	50U	10U	6J	5.0U
n-Butylbenzene	5	NA	NA	NA	NA	NA	NA	5.0U
sec-Butylbenzene	5	NA	NA	NA	NA	NA	NA	5.0U
tert-Butylbenzene	5	NA	NA	NA	NA	NA	NA	5.0U
Carbon Disulfide	50	1J	10U	100U	50U	2J	10U	5.0U
Carbon Tetrachloride	5	10U	10U	100U	50U	10U	10U	5.0U
Chlorobenzene	5	10U	10U	100U	50U	10U	10U	5.0U
Chloroethane	50	10U	10U	100U	50U	10U	10U	5.0U
2-Chloroethyl vinyl ether	NS	NA	NA	NA	NA	NA	NA	5.0U
Chloroform	7	10U	10U	100U	50U	10U	10U	5.0U
Chloromethane	5	10U	10U	100U	50U	10U	10U	5.0U
2-Chlorotoluene	5	NA	NA	NA	NA	NA	NA	5.0U
4-Chlorotoluene	5	NA	NA	NA	NA	NA	NA	5.0U
1,2-Dibromo-3-chloropropane	0.04	NA	NA	NA	NA	NA	NA	5.0U
Dibromochloromethane	50	10U	10U	100U	50U	10U	10U	5.0U
1,2-Dibromoethane	5	NA	NA	NA	NA	NA	NA	5.0U
Dibromomethane	5	NA	NA	NA	NA	NA	NA	5.0U
1,2-Dichlorobenzene	3	NA	NA	NA	NA	NA	NA	5.0U
1,3-Dichlorobenzene	3	NA	NA	NA	NA	NA	NA	5.0U
1,4-Dichlorobenzene	3	NA	NA	NA	NA	NA	NA	5.0U
Dichlorodifluoromethane	5	NA	NA	NA	NA	NA	NA	5.0U
1,1-Dichloroethane	5	10U	10U	100U	50U	10U	10U	5.0U
1,2-Dichloroethane	5	10U	10U	100U	50U	10U	10U	5.0U
1,1-Dichloroethene	5	10U	10U	100U	50U	10U	10U	5.0U
cis-1,2-Dichloroethene	5	10U	10U	100U	50U	10U	10U	5.0U
trans-1,2-Dichloroethene	5	10U	10U	100U	50U	10U	10U	5.0U
1,2-Dichloropropane	1	10U	10U	100U	50U	10U	10U	5.0U
1,3-Dichloropropane	5	10U	10U	100U	50U	10U	10U	5.0U
2,2-Dichloropropane	5	NA	NA	NA	NA	NA	NA	5.0U

TABLE 5
GROUNDWATER RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	MW-1	MW-2	MW-3	MW-DUP	MW-3D	MW-4	MW-4
Sampling Date	N/A	4/1/99	4/1/99	4/1/99	4/1/99	4/1/99	4/1/99	10/26/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Field Location	Part 703.5	MW-1	MW-2	MW-3	MW-3	MW-3D	MW-4	MW-4
Sample Depth	N/A	13.5'	14.25'	12.5'	12.5'	32-42'	13.5'	13.5'
Concentration	ug/Liter	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses		ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	ASP-95-1	8260
cis-1,3-Dichloropropene	5	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	5	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	0.5	NA	NA	NA	NA	NA	NA	5.0U
Ethylbenzene	5	10U	10U	100U	50U	10U	5U	5.0U
1,1-Dichloropropene	5	NA	NA	NA	NA	NA	NA	5.0U
2-Hexanone	50	10U	10U	100U	50U	10U	3J	5.0U
Methylene chloride	5	10U	10U	100U	50U	10U	5U	5.0U
4-Isopropyltoluene	5	NA	NA	NA	NA	NA	NA	5.0U
Methyl-tert-butyl ether	50	NA	NA	NA	NA	NA	NA	5.0U
4-Methyl-2-pentanone	50	10U	10U	100U	50U	10U	10U	5.0U
n-Propylbenzene	5	NA	NA	NA	NA	NA	NA	5.0U
Styrene	50	10U	10U	100U	50U	10U	5U	5.0U
Isopropylbenzene	5	NA	NA	NA	NA	NA	NA	5.0U
Naphthalene	10	NA	NA	NA	NA	NA	NA	5.0U
1,1,1,2-Tetrachloroethane	5	NA	NA	NA	NA	NA	NA	5.0U
1,1,2,2-Tetrachloroethane	5	10U	10U	100U	50U	10U	5U	5.0U
Tetrachloroethene	5	10U	8J	1500	1400	10U	98	110
Toluene	5	10U	10U	100U	50U	10U	10U	5.0U
1,2,3-Trichlorobenzene	5	NA	NA	NA	NA	NA	NA	5.0U
1,2,4-Trichlorobenzene	5	NA	NA	NA	NA	NA	NA	5.0U
1,1,1-Trichloroethane	5	10U	10U	100U	50U	10U	12	19
Trichloroethene	5	10U	10U	100U	50U	10U	10U	5.0U
1,1,2-Trichloroethane	5	10U	10U	100U	50U	10U	10U	5.0U
1,2,3-Trichloropropane	5	NA	NA	NA	NA	NA	NA	5.0U
Trichlorofluoromethane	5	NA	NA	NA	NA	NA	NA	5.0U
1,2,4-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	5.0U
1,3,5-Trimethylbenzene	5	NA	NA	NA	NA	NA	NA	5.0U
Vinyl acetate	NL	NA	NA	NA	NA	NA	NA	5.0U
Vinyl chloride	2	10U	10U	100U	50U	10U	10U	5.0U
m,p-Xylene	5	10U	10U	100U	50U	10U	2J	10U
o-Xylene	5	10U	10U	100U	50U	10U	4J	5.0U
Total Xylene	5	NA	NA	NA	NA	NA	NA	NA
Tics	NA	ND	ND	ND	ND	ND	197	NA

TABLE 5
GROUNDWATER RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	MW-4-Dup	GP-1	GP-1	GP-2	GP-2	GP-3	GP-4	GP-DUP	PW-1	PW-2	PW-3	PW-4	PW-4
Sampling Date	N/A	10/26/99	4/1/99	10/26/99	4/1/99	10/25/99	4/1/99	4/1/99	4/1/99	10/29/99	10/29/99	10/29/99	10/25/99	6/9/00
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Field Location	Part 703.5	MW-4	GP-1	GP-1	GP-2	GP-2	GP-3	GP-4	GP-4	PW-1	PW-2	PW-3	PW-4	PW-4
Sample Depth	N/A	13.5'	14.95 - 19.95'	14.95 - 19.95'	9' - 14'	9' - 14'	8.8' - 13.8'	9.8' - 14.8'	9.8' - 14.8'	16' - 26'	7' - 22'	10' - 20'	9'- 19'	9'-19'
Concentration	ug/Liter	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses		8260	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
Acetone	50	5.0U	94	5.0U	8J	5.0U	4J	20U	20U	17J	8.6J	12J	5.0U	25U
Benzene	0.7	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Bromobenzene	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	NA	NA	NA	5.0U	5.0U
Bromodichloromethane	50	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Bromoform	50	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
2-Butanone	50	5.0U	18	5.0U	8J	5.0U	10U	10U	10U	10U	10U	10U	5.0U	25U
n-Butylbenzene	5	5.0U	NA	NA	24	5.0U	5.0U	5.0U	5.0U	NA	NA	NA	5.0U	5.0U
sec-Butylbenzene	5	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
tert-Butylbenzene	5	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Carbon Disulfide	50	5.0U	10U	5.0U	10U	5.0U	10U	10U	10U	10U	10U	10U	5.0U	5.0U
Carbon Tetrachloride	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Chlorobenzene	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Chloroethane	50	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
2-Chloroethyl vinyl ether	NS	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Chloroform	7	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	7.1	5.0U
Chloromethane	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
2-Chlorotoluene	5	5.0U	5.0U	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
4-Chlorotoluene	5	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,2-Dibromo-3-chloropropane	0.04	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Dibromochloromethane	50	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
1,2-Dibromoethane	5	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Dibromomethane	5	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,2-Dichlorobenzene	3	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,3-Dichlorobenzene	3	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,4-Dichlorobenzene	3	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Dichlorodifluoromethane	5	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,1-Dichloroethane	5	5.0U	3.1J	5.0U	96	170	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	230	5.5
1,2-Dichloroethane	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
1,1-Dichloroethene	5	5.0U	5.0U	5.0U	24	140	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	280	5.0U
cis-1,2-Dichloroethene	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
trans-1,2-Dichloroethene	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
1,2-Dichloropropane	1	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
1,3-Dichloropropane	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
2,2-Dichloropropane	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U

TABLE 5
GROUNDWATER RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	MW-4-Dup	GP-1	GP-1	GP-2	GP-2	GP-3	GP-4	GP-DUP	PW-1	PW-2	PW-3	PW-4	PW-4
Sampling Date	N/A	10/26/99	4/1/99	10/26/99	4/1/99	10/26/99	4/1/99	4/1/99	4/1/99	10/29/99	10/29/99	10/29/99	10/25/99	6/9/00
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Field Location	Part 703.5	MW-4	GP-1	GP-1	GP-2	GP-2	GP-3	GP-4	GP-4	PW-1	PW-2	PW-3	PW-4	PW-4
Sample Depth	N/A	13.5'	14.95 - 19.95'	14.95 - 19.95'	9' - 14'	9' - 14'	8.8' - 13.8'	9.8' - 14.8'	9.8' - 14.8'	16' - 26'	7' - 22'	10' - 20'	9'- 19'	9'-19'
Concentration	ug/Liter	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses		8260	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260	8260
cis-1,3-Dichloropropene	5	NA	5.0U	5.0U	5.0U	NA	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	NA	5.0U
trans-1,3-Dichloropropene	5	NA	5.0U	5.0U	5.0U	NA	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	NA	5.0U
Hexachlorobutadiene	0.5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Ethylbenzene	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
1,1-Dichloropropene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
2-Hexanone	50	5.0U	5.0U	5.0U	10U	5.0U	10U	10U	10U	10U	10U	10U	5.0U	25U
Methylene chloride	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
4-Isopropyltoluene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Methyl-tert-butyl ether	50	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
4-Methyl-2-pentanone	50	5.0U	5.0U	5.0U	10U	5.0U	10U	10U	10U	10U	10U	10U	5.0U	25U
n-Propylbenzene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Styrene	50	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Isopropylbenzene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Naphthalene	10	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,1,1,2-Tetrachloroethane	5	5.0U	NA	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	NA	NA	NA	5.0U	5.0U
1,1,2,2-Tetrachloroethane	5	5.0U	5.0U	5.0U	5.0U	5.0U	NA	NA	NA	5.0U	5.0U	5.0U	5.0U	5.0U
Tetrachloroethene	5	110	5.0U	5.0U	7.4	7.4	6	5.7	5.9	4.4J	5.0U	5.0U	5.0U	5.0U
Toluene	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	6.5	5.0U
1,2,3-Trichlorobenzene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,2,4-Trichlorobenzene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,1,1-Trichloroethane	5	20	4.0J	5.0U	2200	1900	1.7J	1.4J	1.5J	5.0U	5.0U	5.0U	3500	12
Trichloroethene	5	5.0U	5.0U	5.0U	1.6J	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
1,1,2-Trichloroethane	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
1,2,3-Trichloropropane	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Trichlorofluoromethane	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,2,4-Trimethylbenzene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
1,3,5-Trimethylbenzene	5	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Vinyl acetate	NL	5.0U	NA	5.0U	NA	5.0U	NA	NA	NA	NA	NA	NA	5.0U	5.0U
Vinyl chloride	2	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
m,p-Xylene	5	10U	5.0U	10U	5.0U	10U	5.0U	5.0U	5.0U	1.7J	5.0U	5.0U	10U	10U
o-Xylene	5	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	2.1J	5.0U	5.0U	5.5	5.0U
Total Xylene	5	5.0U	NA	NA	NA	5.0U	NA	NA	NA	NA	NA	NA	NA	N/A
Tics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5
GROUNDWATER RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	PW-6	PW-7	PW-8	PW-9	Trip Blank	Trip Blank	Trip Blank	Field Blank	GP-TB	GP-FB	Field Blank	Trip Blank	Cooler Blank	Cooler Blank
Sampling Date	N/A	10/29/99	10/26/99	10/26/99	10/29/99	4/1/99	10/25/99	10/26/99	4/1/99	4/1/99	4/1/99	10/29/99	10/29/99	4/1/99	10/29/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Field Location	Part 703.5	PW-6	PW-7	PW-8	PW-9	Blank	Blank	Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Cooler Blank	Cooler Blank
Sample Depth	N/A	9' - 14'	9.5' - 19.5'	9' - 19'	16' - 26'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Concentration	ug/Liter	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses		8260	8260	8260	8260	ASP-95-1	8260	8260	ASP-95-1	8260	8260	8260	8260	ASP 95-1	ASP 95-1
Acetone	50	77	5.0U	5.0U	28	10U	5.0U	5.0U	10U	20U	20U	20U	20U	10U	10U
Benzene	0.7	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Bromobenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Bromodichloromethane	50	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Bromoform	50	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
2-Butanone	50	7.3J	5.0U	5.0U	10U	10U	5.0U	5.0U	10U	10U	10U	10U	10U	10U	10U
n-Butylbenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	50	10U	5.0U	5.0U	10U	10U	5.0U	5.0U	10U	5.0U	5.0U	10U	10U	10U	10U
Carbon Tetrachloride	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Chlorobenzene	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Chloroethane	50	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
2-Chloroethyl vinyl ether	NS	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Chloroform	7	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Chloromethane	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
2-Chlorotoluene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	0.04	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Dibromochloromethane	50	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,2-Dibromoethane	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Dibromomethane	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	3	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	3	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	3	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Dichlorodifluoromethane	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	5	5.0U	5.0U	5.0U	32	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,2-Dichloroethane	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,1-Dichloroethene	5	5.0U	5.0U	5.0U	1.5J	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
cis-1,2-Dichloroethene	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
trans-1,2-Dichloroethene	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,2-Dichloropropane	1	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,3-Dichloropropane	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
2,2-Dichloropropane	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA

TABLE 5
GROUNDWATER RESULTS OF VOLATILE ORGANIC COMPOUNDS ("VOCs")
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	PW-6	PW-7	PW-8	PW-9	Trip Blank	Trip Blank	Trip Blank	Field Blank	GP-TB	GP-FB	Field Blank	Trip Blank	Cooler Blank	Cooler Blank
Sampling Date	N/A	10/29/99	10/26/99	10/26/99	10/29/99	4/1/99	10/25/99	10/26/99	4/1/99	4/1/99	4/1/99	10/29/99	10/29/99	4/1/99	10/29/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Field Location	Part 703.5	PW-6	PW-7	PW-8	PW-9	Blank	Blank	Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Cooler Blank	Cooler Blank
Sample Depth	N/A	9' - 14'	9.5' - 19.5'	9' - 19'	16' - 26'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Concentration	ug/Liter	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Analyses		8260	8260	8260	8260	ASP-95-1	8260	8260	ASP-95-1	8260	8260	8260	8260	ASP 95-1	ASP 95-1
cis-1,3-Dichloropropene	5	5.0U	NA	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
trans-1,3-Dichloropropene	5	5.0U	NA	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U	5.0U
Hexachlorobutadiene	0.5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,1-Dichloropropene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	50	10U	5.0U	5.0U	10U	10U	5.0U	5.0U	10U	10U	10U	10U	10U	10U	10U
Methylene chloride	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
4-Isopropyltoluene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butyl ether	50	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	50	10U	5.0U	5.0U	10U	10U	5.0U	5.0U	10U	10U	10U	10U	10U	10U	10U
n-Propylbenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Styrene	50	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Isopropylbenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Naphthalene	10	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,1,1,2-Tetrachloroethane	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Tetrachloroethene	5	5.0U	46	5.0U	15	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Toluene	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,2,3-Trichlorobenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	5	5.0U	26	5.0U	4.2J	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Trichloroethene	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,1,2-Trichloroethane	5	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
1,2,3-Trichloropropane	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	5	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Vinyl acetate	NL	NA	5.0U	5.0U	NA	NA	5.0U	5.0U	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	2	5.0U	5.0U	5.0U	5.0U	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
m,p-Xylene	5	4.5J	10U	10U	3.4J	10U	10U	10U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
o-Xylene	5	3.9J	5.0U	5.0U	3.6J	10U	5.0U	5.0U	10U	5.0U	5.0U	5.0U	5.0U	10U	10U
Total Xylene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tics	NA	NA	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA	ND	ND

TABLE 6
RESULTS OF SEMI-VOLATILE ORGANIC ANALYSIS OF MONITORING WELL SAMPLES
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	MW-4	MW Dup 2 (Dup MW-4)	MW FB2
Sampling Date	N/A	4/1/99	4/1/99	4/1/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Water
Field Location	New York State Water Quality Reg. 6 NYCRR Part 703, GA Groundwater Standards	MW-4	MW-4	Field Blank
Sample Depth	N/A	10-15 ft.	10-15ft.	Bailer
Concentration	ug/Liter	ug/Liter	ug/Liter	ug/Liter
Analyte		95-3	95-3	95-3
Phenol	1	11U	10U	11U
bis(2-Chloroethyl) Ether	1	11U	10U	11U
2-Chlorophenol	50	11U	10U	11U
1,3-Dichlorobenzene	No Standard	11U	10U	11U
1,4-Dichlorobenzene	No Standard	11U	10U	11U
1,2-Dichlorobenzene	No Standard	11U	10U	11U
2,2-oxybis(1-Chloropropane)	No Standard	11U	10U	11U
2-Methylphenol	5	11U	10U	11U
N-Nitroso-Di-n-propylamine	No Standard	11U	10U	11U
Hexachloroethane	No Standard	11U	10U	11U
4-Methylphenol	50	11U	10U	11U
Nitrobenzene	5	11U	10U	11U
Isophorone	50	11U	10U	11U
2-Nitrophenol	5	11U	10U	11U
2,4-Dimethylphenol	0.3	11U	10U	11U
bis(2-Chloroethoxy) Methane	No Standard	11U	10U	11U
2,4-Dichlorophenol	1	11U	10U	11U
1,2,4-Trichlorobenzene	No Standard	11U	10U	11U
Naphthalene	10	11U	10U	11U
4-Chloroaniline	5	11U	10U	11U
Hexachlorobutadiene	No Standard	11U	10U	11U
4-Chloro-3-methylphenol	5	11U	10U	11U
2-Methylnaphthalene	50	11U	10U	11U
Hexachlorocyclopentadiene	No Standard	11U	10U	11U
2,4,6-Trichlorophenol	1	11U	10U	11U
2,4,5-Trichlorophenol	No Standard	27U	25U	29U
2-Chloronaphthalene	10	11U	10U	11U
2-Nitroaniline	No Standard	27U	25U	29U
Acenaphthylene	20	11U	10U	11U
Dimethyl Phthalate	50	11U	10U	11U
2,6-Dinitrotoluene	5	11U	10U	11U
Acenaphthene	20	11U	10U	11U
3-Nitroaniline	5	27U	25U	29U
2,4-Dinitrophenol	5	27U	25U	29U
Dibenzofuran	5	11U	10U	11U

TABLE 6
RESULTS OF SEMI-VOLATILE ORGANIC ANALYSIS OF MONITORING WELL SAMPLES
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	MW-4	MW Dup 2 (Dup MW-4)	MW FB2
Sampling Date	N/A	4/1/99	4/1/99	4/1/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Water
Field Location	New York State Water Quality Reg. 6 NYCRR Part 703, GA Groundwater Standards	MW-4	MW-4	Field Blank
Sample Depth	N/A	10-15 ft.	10-15ft.	Bailer
Concentration	ug/Liter	ug/Liter	ug/Liter	ug/Liter
Analyte		95-3	95-3	95-3
2,4-Dinitrotoluene	No Standard	11U	10U	11U
4-Nitrophenol	5	27U	25U	29U
Fluorene	50	11U	10U	11U
4-Chlorophenyl-phenylether	No Standard	11U	10U	11U
Diethylphthalate	50	11U	10U	11U
4-Nitroaniline	5	27U	25U	29U
4,6-Dinitro-2-methylphenol	No Standard	27U	25U	29U
N-Nitrosodiphenylamine	No Standard	11U	10U	11U
4-Bromophenyl-phenyther	No Standard	11U	10U	11U
Hexachlorobenzene	0.35	11U	10U	11U
Pentachlorophenol	1	27U	25U	29U
Phenanthrene	50	11U	10U	11U
Anthracene	50	11U	10U	11U
Carbazole	No Standard	11U	10U	11U
Di-n-Butylphthalate	50	11U	10U	11U
Fluoranthene	50	11U	10U	11U
Pyrene	50	11U	10U	11U
Butylbenzyl phthalate	50	11U	10U	11U
3,3-Dichlorobenzidine	No Standard	11U	10U	11U
Benzo(a)Anthracene	0.002	11U	10U	11U
Chrysene	0.002	11U	10U	11U
Bis(2-Ethylhexyl)Phthalate	50	19	30	11U
Di-n-octyl phthalate	50	11U	10U	11U
Benzo(b)Fluoranthene	0.002	11U	10U	11U
Benzo(k)Fluoranthene	0.002	11U	10U	11U
Benzo(a)Pyrene	0.002	11U	10U	11U
Indeno(1,2,3-cd)Pyrene	0.002	11U	10U	11U
Dibenz(a,h)anthracene	50	11U	10U	11U
Benzo(g, h, i)Perylene	5	11U	10U	11U

TABLE 7
RESULTS OF PCB ANALYSIS OF MONITORING WELL SAMPLES
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	MW-4	MW Dup 2 (Dup of MW-4)	MW FB2
Sampling Date	N/A	4/1/99	4/1/99	4/1/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Water
Field Location	New York State Water Quality Reg. 6 NYCRR Part 703, GA Groundwater Standard	MW-4	MW-4	Field Blank
Sample Depth	N/A	10-15 ft.	10-15ft.	Bailer
Concentration	ug/Liter	ug/Liter	ug/Liter	ug/Liter
Analyte		8082	8082	8082
PCB 1016	0.1	0.5U	0.5U	0.5U
PCB 1221	0.1	0.5U	0.5U	0.5U
PCB 1232	0.1	0.5U	0.5U	0.5U
PCB 1242	0.1	0.5U	0.5U	0.5U
PCB 1248	0.1	0.5U	0.5U	0.5U
PCB 1254	0.1	0.5U	0.5U	0.5U
PCB 1260	0.1	0.5U	0.5U	0.5U

TABLE 8
RESULTS OF METAL ANALYSIS OF MONITORING WELL SAMPLES
TNT-RED STAR EXPRESS SITE
NYSDEC SITE #704028
Kirkwood, New York

EPA Sample Number	N/A	MW-4	MW Dup 2 (Dup of MW-4)	MW FB2
Sampling Date	N/A	4/1/99	4/1/99	4/1/99
Sample Matrix	Groundwater	Groundwater	Groundwater	Water
Field Location	New York State Water Quality Reg. 6 NYCRR Part 703, GA Groundwater Standard	MW-4	MW-4	Field Blank
Sample Depth	N/A	10-15 ft.	10-15ft.	Bailer
Concentration	ug/Liter	ug/Liter	ug/Liter	ug/Liter
Analyte		TAL Metals	TAL Metals	TAL Metals
Aluminum	No Standard	6,710.0	8,250.0	42.1U
Antimony	No Standard	8.8B	13.1B	7.7U
Arsenic	25.0	2.7U	2.7U	2.7U
Barium	1,000.0	130B	143.0B	4.4U
Beryllium	No Standard	0.17U	0.17U	0.17U
Cadmium	10.0	2.5B	1.9B	0.63U
Calcium	No Standard	63,700.0	62,500.0	171U
Chromium	50.0	6.2B	7.8B	0.64U
Cobalt	No Standard	1.9B	4.1B	1.2U
Copper	200.0	9.8B	14.2B	1.2U
Iron	300*	**8,710.0**	**15,100.0**	11.1U
Lead	25.0	7.0	12.7	2.6U
Magnesium	No Standard	15,300.0	16,100.0	51.4U
Manganese	300*	216.0	**528.0**	0.92U
Mercury	No Standard	0.04U	0.04U	0.04U
Nickel	No Standard	10.0UB	18.7B	0.89U
Potassium	No Standard	3930B	4460B	624U
Selenium	10.0	3.0U	3.0U	3.0U
Silver	50.0	1.3U	1.3U	1.3U
Sodium	No Standard	142,000.0	150,000.0	192U
Thallium	No Standard	5.3U	5.3U	5.3U
Vanadium	No Standard	11.8B	13.3B	2.7U
Zinc	300.0	37.4	46.8	1.7U

TABLE 9

SAMPLE LOCATIONS

Location	Date	Media	Analyses
Catch Basin	2-18-99	Sediment	ASP-95-1
Field Rinse Spoon	2-18-99	Water	ASP-95-1
Drainage Swale	2-18-99	Sediment	ASP-95-1
Decontamination Water	2-18-99	Water	ASP-95-1
B4/MW3D 14-16 ft.	2-18-99	Soil	ASP-95-1
Trip Blank	2-18-99	Water	ASP-95-1
MW-1	4-1-99	Water	ASP-95-1
MW-2	4-1-99	Water	ASP-95-1
MW-3	4-1-99	Water	ASP-95-1
MW-3D	4-1-99	Water	ASP-95-1
MW-Dup	4-1-99	Water	ASP-95-1
MW-4	4-1-99	Water	ASP-95-1,2 TAL Metals, USEPA 8082
MW-4	10-26-99	Water	8260
MW-4 Dup	10-26-99	Water	8260
MW-Dup	4-1-99	Water	ASP-95-2 TAL Metals, USEPA 8082
MW-Field Blank	4-1-99	Water	ASP-95-1,2 TAL Metals, USEPA 8082
Matrix Spike/Matrix Spike Dup	4-1-99	Water	ASP-95-1,2 TAL Metals, USEPA 8082
Trip Blank	4-1-99	Water	ASP-95-1
GP-1	4-1-99	Water	8260
GP-1	10-26-99	Water	8260
GP-2	4-1-99	Water	8260
GP-2	10-25-99	Water	8260
GP-3	4-1-99	Water	8260
GP-4	4-1-99	Water	8260
GP-Dup	4-1-99	Water	8260
GP Field Blank	4-1-99	Water	8260
GP Trip Blank	4-1-99	Water	8260

TABLE 9 (continued)

SAMPLE LOCATIONS

Location	Date	Media	Analyses
Oil Water Separator	7-22-99	Sediment	8021
Oil Water Separator	10-25-99	Sediment	ASP-95-1
Oil Water Separator	10-25-99	Sediment	ASP-95-1
Waste Oil Tank	6-09-00	Sludge	8260
Field Blank	10-29-99	Water	8260
Trip Blank	10-29-99	Water	8260
PW-1	10-29-99	Water	8260
PW-2	10-29-99	Water	8260
PW-3	10-29-99	Water	8260
PW-4	10-25-99	Water	8260
PW-4	6-09-00	Water	8260
PW-5	10-26-99	Soil	8260
PW-6	10-29-99	Water	8260
PW-7	10-26-99	Water	8260
PW-8	10-26-99	Water	8260
PW-9	10-29-99	Water	8260
Drainage Swale #1 (Oil/Water Separator Outfall)	10-29-99	Sediment	8260, 8270 STARS
B-5	10-29-99	Soil	8260, 8270 STARS
Trip Blank	10-26-99	Water	8260
Trip Blank	10-26-99	Water	8260
GP-FB	10-29-99	Water	8260

TABLE 10

WATER LEVEL MEASUREMENTS
NOVEMBER 2, 1999

Well Identification	Ground Surface Elevation (feet above mean sea level)	Monitoring Well Total Depth (feet below ground surface)	Screened Interval (feet below ground surface)	Water Level Depth (feet below ground surface)	Water Elevation (feet above mean sea level)
MW1	856.46	13.5	Not Known	8.4	848.06
MW2	857.83	14.25	Not Known	10.9	846.93
MW3	858.4	12.3	Not Known	10.74	847.66
MW3D	857.11	42.5	32-42	4.05	853.06
MW4	855.1	13.5	Not Known	8.55	846.55
GP1	857.6	18	13-18	10.35	847.25
GP2	855.63	15	10-15	8.85	846.78
GP3	855.46	15	10-15	8.9	846.56
GP4	855.63	15	10-15	8.86	846.77
PW-1	857.69	22	10-20	11.61	846.08
PW-2	854.41	22	7-22	8.64	845.77
PW3	855.06	22	10-20	9.47	845.59
PW4	857.84	19	8-18	10.83	847.01
PW6	858.7	15	9-14	10.46	848.24
PW7	860.38	22	9.5-19.5	14.15	846.23
PW8	859.96	16	10-15	12	847.96
PW9	862.32	27	16-26	16.84	845.48

TABLE 11

HYDRAULIC CONDUCTIVITY RESULTS
(Ft./Minute)

Well Identification	Test 1	Test 2	Test 3	Average
MW-1	7×10^{-4}	1.1×10^{-3}	8.5×10^{-4}	9.0×10^{-4}
MW-2	5.4×10^{-4}	7.9×10^{-4}	6.4×10^{-4}	7.0×10^{-4}
MW-3	7.4×10^{-4}	7.9×10^{-4}	8.0×10^{-4}	8.0×10^{-4}
MW-3D	7.2×10^{-4}	6.3×10^{-4}	8.9×10^{-4}	7.0×10^{-4}
MW-4	6.3×10^{-4}	6.3×10^{-4}	6.9×10^{-4}	7.0×10^{-4}

TABLE 12

TYPICAL HYDRAULIC CONDUCTIVITY RANGES
(Values Shown in Feet per Minute)

Grain Size	Hydraulic Conductivity Range
Sand	10^{-6} - 10^{2}
Silt	10^{-8} - 10^{-4}
Till	10^{-11} - 10^{-3}

Values from Freeze and Cherry 1979, *Groundwater,* Prentice Hall, Inc. p. 604