Interim Remedial Measure Work Plan

Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie
Dutchess County, New York

Prepared for:

Avis Rent A Car System, Inc.
6 Sylvan Way
Parsippany, New Jersey 07054

November 2005

Project No. 9328.000

Geomatrix

Geomatrix

November 1, 2005
Project 9328.000 Task 3

Michelle Tipple
Project Manager
Division of Environmental Remediation, Region 3
New York State Department of Environmental Conservation (NYSDEC)
21 South Putt Corners Road
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Subject: INTERIM REMEDIAL MEASURE WORK PLAN
Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie
Dutchess County, New York

Dear Ms. Tipple:

Please find enclosed the Interim Remedial Measure Work Plan, dated November 1, 2005, for the Former Drive & Park, Inc. Site in Poughkeepsie, New York. This report was prepared by Geomatrix Consultants, Inc. on behalf of Avis Rent A Car System, Inc. The Interim Remedial Measure Work Plan includes as appendices the Citizen Participation Plan, Soil Vapor Investigation Work Plan, Chemical Health and Safety Plan, Air Monitoring Plan, and Sampling and Analysis Plan.

Sincerely yours,
GEOMATRIX CONSULTANTS, INC.

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Enclosure

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Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie
Dutchess County, New York

Prepared for:

Avis Rent A Car System, Inc.
6 Sylvan Way
Parsippany, New Jersey 07054

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November 2005

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Geomatrix

Geomatrix

PROFESSIONAL CERTIFICATION

INTERIM REMEDIAL MEASURE WORK PLAN

Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie,
Dutchess County, New York

1 November 2005
Project 9328.000

This report was prepared by Geomatrix Engineering LLC, under the professional supervision of Kelly R. McIntosh. The findings, recommendations, specifications, and/or professional opinions presented in this report were prepared in accordance with generally accepted professional engineering practice, and within the scope of the project. There is no other warranty, either express or implied.

KELLY R. McINTOSH
No. 68079

11/1/05

Kelly R. McIntosh, Ph.D., P.E.
Senior Engineer

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28 IBM Road
Poughkeepsie, New York

1.0 INTRODUCTION

Geomatrix Consultants, Inc. (Geomatrix) has prepared this Interim Remedial Measure Work Plan (IRM Work Plan) on behalf of Avis Rent A Car System, Inc. (Avis) for implementing an interim remedial measure, excavation, at the Former Drive & Park, Inc. Site located at 28 IBM Road in Poughkeepsie, New York (the site; Figure 1). The IRM Work Plan outlines the approach for preparing the appropriate documents for implementing the interim remedial measure, excavation, as agreed upon by the New York State Department of Environmental Conservation (NYSDEC) and Avis at a September 27, 2005, meeting. The purpose of the interim remedial measure is to mitigate risks to the environment and/or public health, per the May 2004 *Draft Brownfield Cleanup Program Guide*. This IRM Work Plan is prepared in accordance with the Brownfield Site Cleanup Agreement (BCA) executed July 6, 2005, and NYSDEC's *Draft DER-10 Technical Guidance for Site Investigation and Remediation* (NYSDEC DER-10; NYSDEC, 2002).

In addition to presenting the IRM Work Plan for the site, this document presents details of the proposed off-site soil vapor survey, unknown potential conduit investigation, upgradient oxygenate groundwater investigation, and geotechnical investigation. These activities are discussed in Section 3.0, Proposed Additional Remedial Investigations. The following documents are also included: Citizen Participation Plan (Appendix A), Soil Vapor Investigation Work Plan (Appendix B), Chemical Health and Safety Plan (Appendix C), Air Monitoring Plan (Appendix D), and Sampling and Analysis Plan (Appendix E).

1.1 SITE BACKGROUND

A release of gasoline at the site was reported to the NYSDEC by Drive & Park, Inc. on December 9, 1986. The NYSDEC issued spill number 86-05706. The release was discovered when impacted soils were encountered during the removal of two gasoline underground storage tanks (USTs), which had been in use from approximately 1965 to 1986. In 1987, two USTs were installed in place of and at the same location as those removed.

At the time of the release, the site was owned by Broad Act Corporation and used as a car rental facility by Drive & Park, Inc. Avis purchased the property in 1991, five years after the leaking UST system was removed.

Avis installed groundwater monitoring wells in 1992 and collected water samples for analysis from the wells in 1992 and 1997. Analytical data for groundwater samples collected from the monitoring wells indicated that the release had extended onto the adjacent property to the south.

In 1998, the two USTs that were installed in 1987 were removed. The 1998 removal of the two USTs was witnessed by the NYSDEC, and it was determined that there was no evidence of a release from these gasoline USTs installed in 1987, although existing soil contamination was observed. After removal of these USTs, the NYSDEC closed spill number 86-05706, although Avis was not informed of the case closure. Avis continued to monitor the site. The NYSDEC subsequently reopened the case, as discussed below.

In March 2003, Avis collected groundwater samples from eight existing monitoring wells on the site and from three monitoring wells on the adjacent property. Analytical results in groundwater were similar to previous sampling events conducted in 1992 and 1997. However, floating free product (gasoline) was found in one monitoring well near the former USTs. Floating free product, other than a sheen, had not previously been reported at the site.

Avis conducted high-vacuum extraction at the site from mid-April 2003 until September 2003 to recover floating free product from the impacted monitoring well. In September 2003, extraction was discontinued when measurable floating free product was no longer observed. The monitoring well has been monitored at least semi-annually between September 2003 and September 2005.

Upon discovery of the floating free product, Avis met with representatives from the NYSDEC in September 2003 to discuss the status of the site. NYSDEC concurred with Avis that the contamination was related to the 1986 release, and therefore, re-opened spill number 86-05706. Avis conducted a soil boring investigation in November 2003, and no areas of recoverable floating free product were located. Avis collected discrete-depth groundwater samples on the adjacent property to the south to evaluate the extent of impacted groundwater. No floating free product was observed; however, one location contained dissolved petroleum constituents. Dissolved petroleum constituents were not found to extend below the building on the adjacent property. The results of the investigation were presented to the NYSDEC in the April 2004 *November 2003 Soil and Groundwater Investigation Report*.

Avis applied for entry to the Brownfield Cleanup Program in April 2004 and was accepted; a Brownfield Site Cleanup Agreement was executed in July 2005.

1.2 PHYSICAL SETTING AND SENSITIVE RECEPTORS

The site is currently an active car rental facility located at 28 IBM Road in Poughkeepsie, New York, within a commercial/residential section just south of the city limits. Neighboring properties include an IBM business campus to the north, commercial facilities to the east and west, and residential property to the south. Approximately 14,000 square feet of the eastern portion of the property is occupied by office and maintenance bay structures (Figure 2). The remainder of the site property is used primarily for vehicle storage and is paved with asphalt and concrete, with the exception of several landscaped traffic berms. The adjacent property to the south contains a day care facility.

The geology of the site consists of silty sand overlying peat and gravel layers of undetermined extent, with an underlying layer of fine-grained silt and clay. The extent of the peat, gravel, and fine-grained layers has recently been further characterized by electrical conductivity and soil borings.

The topography of the site slopes gently downward to the south and southeast. Shallow groundwater flow is generally to the south and southeast. Based on water levels in the monitoring wells measured by Geomatrix in September 2005, first groundwater in cased and uncased soil borings at the site was encountered under unconfined conditions at depths ranging from 1.5 feet below ground surface (bgs) on the adjacent property to the south to 9 feet bgs at the north end of the site (Table 1). Horizontal groundwater flow direction appears to be toward the southwest at a gradient of approximately 0.013 foot per foot. In past monitoring events, including November 2003, the groundwater flow downgradient of the site direction turned more to the southeast. Figure 3 provides a recent (September 2005) potentiometric surface map.

National Environmental Technology Corporation (NETC) performed slug tests using on-site wells MW-1 through MW-13 and analyzed the data using the Bouwer and Rice Slug Test Method to measure hydraulic conductivity (K) in fully or partially penetrating wells under unconfined aquifer conditions. NETC's values ranged from 9.62×10^{-6} feet per minute (ft/min) to 1.2×10^{-3} ft/min (NETC, 1992).

Municipal water supplies the site and the site area, and no sources of drinking water have been identified within 2,000 feet of the site.

2.0 SITE CONDITIONS

2.1 SUMMARY OF RECENT REMEDIAL INVESTIGATION

The previous work conducted at the site, briefly described in Section 1.1, defined the nature of contamination and identified the source. Additional soil and groundwater remedial investigation work was performed in June, July, and September 2005 to delineate the extent of constituents in soil and groundwater and to define the target remediation area.

The results of the previous and most recent investigations are summarized in Figures 4 and 8 and Tables 2 through 8. These data, and data previously collected at the site, were used to develop the extent of constituents in soil shown on Figure 2. This is the area targeted in this IRM Work Plan. Summaries of the on- and off-site soil, groundwater, surface water, and soil vapor conditions based on these investigations are provided in the following sections.

2.2 SOIL INVESTIGATIONS AND CURRENT CONDITIONS

2.2.1 On-Site Areas

2.2.1.1 Former Gulf Station

A Gulf gasoline station was formerly located on what is now the northwest corner of the site, at the intersection of Barnegat Road and IBM Road, and is the location of four abandoned USTs.

During a site audit on December 18, 1990, NETC advanced two soil borings (PK-6 and PK-7) to 8 to 10 feet bgs south of the abandoned tanks (NETC, 1990). Soils encountered showed no indication of petroleum hydrocarbons (i.e., no odor or discoloration), and organic vapor meter measurements ranged from 0 to 20 parts per million (ppm). Soil samples collected from the soil borings at the water table (between 6 and 8 feet bgs) were analyzed for the volatile organic compounds (VOCs) benzene, toluene, ethylbenzene, and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH). No analytical parameters were detected in the samples.

On November 20, 2003, Geomatrix advanced three soil borings (PZ-10, PZ-11, and PZ-12) to 10 feet bgs and one soil boring for a well installation (MW-103) to 14 feet bgs in the area of the former Gulf gasoline station. Locations were selected based on the findings of a 2003 geophysical investigation, which showed several likely underground storage tanks in the area. Soils encountered showed no indication of petroleum hydrocarbons (i.e., no odor or discoloration), and organic vapor meter measurements ranged from 0 to 0.5 ppm. Soil samples collected from the soil borings at the water table (between 6 and 8 feet bgs) were analyzed for VOCs, gasoline range organics (GROs), and diesel range organics (DROs). No VOCs, GROs, or DROs were detected in the samples.

2.2.1.2 Former UST Source Area

During a site audit on December 18, 1990, NETC advanced two soil borings (PK-3 and PK-4) to 9.5 feet bgs south of the USTs currently in use at that time (NETC, 1990); a third boring, PK-5, was proposed but abandoned following field observations at PK-3 and PK-4. Soils encountered exhibited a strong petroleum odor, and organic vapor meter measurements exceeded 400 ppm. Soil samples collected from the soil borings at the water table (between 7 and 9.5 feet bgs) were analyzed for BTEX and TPH. Analytical parameters were detected in the samples, as listed in Tables 2 and 3 and shown on Figure 4.

Two additional borings, PK-1 and PK-2, were advanced to 6 feet bgs southeast of the main building, hydraulically down- and crossgradient of the USTs. Soils encountered showed no indication of petroleum hydrocarbons (i.e., no odor or discoloration), and organic vapor meter measurements ranged from 0 to 20 ppm. Soil samples collected from the soil borings at the water table (between 4 and 6 feet bgs) were analyzed for BTEX and TPH. No analytical parameters were detected in the samples.

NETC learned in 1990 that hydraulic assessment work had been completed at the site in 1987 and 1988. This previous work included the removal of contaminated soil in 1986, when two USTs were removed and replaced by two new USTs (NETC, 1991).

On October 5, 1998, NETC witnessed the removal of the two USTs installed in 1986. The excavated soil was screened with an organic vapor meter, and six samples were collected for characterization from the sidewall and base of the 24-foot by 14-foot excavation. The photoionization detector (PID) did not detect the presence of petroleum compounds, visible staining was not present, and the tanks were visually inspected and found to be in good condition. The six analytical samples did contain some petroleum constituents; however, the detected concentrations did not exceed the NYSDEC Human Health Guidance Values, and therefore no further action was required (NETC, 1991). The NYSDEC determined that the existing soil contamination was not from the USTs installed in 1987.

In November 2003, Geomatrix advanced three soil borings (PZ-1, PZ-7, and PZ-13) in the vicinity of the former USTs, near existing well MW 2, where free product has been detected. One additional soil boring (PZ-5) was advanced in the area of the former fuel dispenser, and another (PZ-6) was advanced on the east side of the former USTs. The approximate locations of these soil borings are shown in Figures 2 and 4. Because impacted soils were encountered at these locations, Geomatrix added additional step-out borings (PZ-2, PZ-3, PZ-4, PZ-8, and PZ-9) to evaluate the lateral extent of soil contamination. The borings were approximately 10 feet deep and soil samples were collected between 2 and 8 feet bgs. A sheen was visible either on the sampling equipment or on soil samples at seven borings (PZ-1, PZ-2, PZ-3, PZ-5, PZ-6, PZ-7, and PZ-13). No visible sheen was noted on equipment or soil samples at the other two borings (PZ-4 and PZ-8).

VOCs consistent with a petroleum hydrocarbon release were detected at nine of the ten soil sample locations in the area of the former USTs. A soil sample was collected from PZ-5 at the 2- to 4-foot interval because there was no recovery at the depth (4 to 6 feet) where a sheen was noted. Thus, although a sheen was visible at this location, VOCs were not detected in the soil sample from PZ-5.

Soil boring PZ-8 was located immediately west of an unknown subsurface feature crossing the site from north to south, identified during the geophysics investigation. PZ-9 and MW-101 were immediately east of the line, 10 feet from PZ-8. Observations made during sampling (odor, sheen, and headspace readings) indicated that soil and groundwater at PZ-8 were less impacted than those at PZ-9 and MW-101. Additionally, concentrations of VOCs detected in soil samples collected from PZ-8 were lower than those detected in soil samples from MW-101.

In November 2003, Geomatrix advanced three soil borings on site for the installation of monitoring wells upgradient (MW-104) and downgradient (MW-101 and MW-102) of the suspected release area. Soils encountered at boring MW-101 exhibited a strong petroleum odor and elevated organic vapor meter measurements (25 to 3,000 ppm) from 2 feet bgs to total depth at 14 feet bgs, suggesting an impact from petroleum hydrocarbons. Soil encountered at down/crossgradient boring MW-102 and upgradient boring MW-104 showed no indication of petroleum hydrocarbons (i.e., no odor or discoloration), and organic vapor meter measurements ranged from 0 to 2 ppm. Soil samples collected from the three soil borings above (between 0 to 2 feet bgs) and at the water table (between 4 and 6 feet bgs) were analyzed for VOCs. Only soil collected from soil boring MW-101 contained VOCs.

In June and July 2005, Geomatrix advanced 22 membrane interface probe (MIP) and soil conductivity (SC) borings (MIP-1 through MIP-22). To calibrate the MIP/SC borings, one soil boring was also advanced using the direct-push method (MIP-B-1) and logged by a Geomatrix geologist. Four additional soil borings (MIP-B-13W, -14E,-16N, and -20) were advanced at the site using the direct-push method to collect soil samples for chemical analysis of VOCs and fuel oxygenates by EPA Method 8260B. The headspaces of soil samples collected from the soil borings were also screened in the field with a handheld organic vapor meter and field tested for residual product by placing soil samples inside a jar with clean water, shaking the jar, and noting if a sheen formed on the surface of the clean water. Based on relative concentrations observed with the MIP and compared to analytical data from soil samples collected at companion borings, highly affected soil corresponded to greater than approximately 60,000 electron volts (eV) on the PID of the MIP. The lateral and vertical extent was delineated using these observations and data from previous investigations, as described in Section 2.2.3.

2.2.2 Off-Site Areas

2.2.2.1 Adjacent Property to the South

NETC conducted a soil gas survey, discussed in Section 2.3, to identify the approximate extent of petroleum hydrocarbon-affected soil and to determine placement of off-site monitoring wells MW-11 through MW-13. NETC collected shallow soil samples from off-site monitoring well borings during the installation of wells MW-11 through MW-13. The samples were collected and analyzed for BTEX by EPA Method 8020 to quantify any dermal hazards associated with contacting affected soil (NETC, 1992).

The surface samples (surface to 3 inches below the surface) did not contain BTEX, except for 34 micrograms per kilogram (µg/kg) toluene at MW-13. The deeper samples did contain BTEX; the highest concentrations were in MW-11 and MW-12. Results of the shallow soil sampling are provided in Tables 2 and 3 and shown on Figure 4.

In April 2003, MFG collected four soil samples at 0 to 0.5-foot depths from the seasonally wet area at the base of a slope above the adjacent off-site wetland and submitted them for analysis for VOCs and polynuclear aromatic hydrocarbons (PAHs). Results of the analyses are listed in

Table 4 and shown as locations 1, 2, 3, and 4 on Figure 4. Only one of the four locations had detections of VOCs.

In November 2003, Geomatrix advanced seven hand auger-borings (HA-1 through HA-7) to approximately 4 feet bgs on the adjacent property south of the site to collect grab groundwater samples, but did not submit soil samples for laboratory analysis.

In July 2005, Geomatrix advanced eight direct-push soil borings to further evaluate the extent of gasoline impact on the adjacent property to the south. The soil was logged by a Geomatrix geologist, headspaces of soil samples collected from the soil borings were screened in the field with a handheld organic vapor meter, and soil was field tested for residual product by placing soil samples inside a jar with clean water, shaking the jar, and noting if a sheen formed on the surface of the clean water. Of the eight locations (GP-1 through GP-8), five contained petroleum-impacted soil (except locations GP-6, GP-7, and GP-8). In September 2005, four companion soil borings (HA-GP-1 through HA-GP-4) were advanced next to four of the eight locations (GP-1 through GP-4) using a hand auger. A soil sample was collected from the most impacted zone of each boring and submitted for laboratory analysis for VOCs by EPA Method 8260B. Soil samples from all four locations had moderate to high detections of BTEX and other VOCs (benzene ranged from 0.234 to 11.4 mg/kg).

2.2.3 Extent of Hydrocarbons in Soil

The extent of soil potentially containing residual hydrocarbon is defined and bounded on the site by MIP borings, as confirmed by companion soil borings and shown on Figures 2 and 4. The estimated extent of residual hydrocarbons in soil is bound on the north by MIP-4, MIP-15, MIP-21, MIP-3, and MIP-11, to the west by MIP-B-13W, MIP-19, and MIP-9 and previous borings PZ-4, PZ-8, PZ-9, and MW-101, and to the east by MIP-2, MIP-10, and MIP-B-1. The extent of residual hydrocarbons in soil extends to the adjacent property to the south approximately 120 feet, as defined by soil borings GP-6, GP-7, and GP-8. Cross sections A-A' and B-B', delineated in Figure 2, are shown as Figures 5 and 6, illustrating the subsurface view of the lithology and extent of constituents in the soil.

Soil samples collected in the former Gulf gasoline station area did not show evidence of petroleum hydrocarbons or other fuel constituents.

2.3 SOIL GAS INVESTIGATION

In the early 1990s, NETC conducted a soil gas survey in an attempt to refine the proposed monitoring well locations south of the southern property boundary, on an adjacent property (NETC, 1992). Based upon the shallow soil boring analytical results from the Phase I ESA and the topographic relief across the study area, NETC established a 20-foot by 20-foot grid approximately 30 feet south of the property line. The initial grid system was 100 feet wide east to west and 80 feet deep north to south (Figure 5). NETC installed soil gas tubes at each of the 30 grid locations to 2 feet bgs, left them overnight, and returned to sample the vapor content within each tube with a PID and an HNU Systems, Inc., Model PI-101 (HNU), utilizing a 10.2 electron volt (eV) ultraviolet light. The initial grid system was extended 40 feet to the east, and six probe locations were added to the initial soil gas sampling program and left 2 hours before sampling. Ambient air concentrations also were recorded prior to measuring each sample.

Results of the soil gas measurements are listed in Table 5. Figure 7 shows the grid system. The shaded area represents the soil gas vapor readings that exceed five times the background concentrations. The soil vapor measurements were used to locate monitoring wells MW-11 through MW-13 outside of the suspected affected areas. Additional soil gas measurements have not been conducted at the site since this investigation; therefore, the extent of constituents currently in soil vapor is not known.

2.4 GROUNDWATER INVESTIGATIONS AND CURRENT CONDITIONS

2.4.1 On-Site Areas

2.4.1.1 Former Gulf Station

Monitoring wells MW-08 and MW-103 were installed south and downgradient of the former Gulf station in 1991 and 2003, respectively. Groundwater samples collected from these wells since their installation have been nondetect for petroleum compounds, with the exception of methyl tertiary-butyl ether (MTBE). MTBE has been detected in both monitoring wells, at concentrations ranging from 6 to 87 micrograms per liter (µg/L).

On November 20, 2003, Geomatrix advanced boreholes PZ-10, PZ-11, and PZ-12 to 10 feet bgs (approximately 5 feet below the water table) in the vicinity of the former Gulf station to assess whether a sheen is present in the borehole. The three boreholes were sealed following logging because no petroleum impacts were observed, and no groundwater samples were collected.

2.4.1.2 Former UST Source Area

NETC learned in 1990 that hydraulic assessment work had been completed at the site in 1987 and 1988 that included the installation and sampling of four monitoring wells (DP-1 through DP-4 on Figure 2) in the former UST area (NETC, 1991). The groundwater samples collected from these monitoring wells contained BTEX (Table 6). NETC was able to locate three of the four wells (DP-1, DP-2, and DP-3), retrofit them with permanent caps, and use them as monitoring locations. Additional wells have since been installed in the former UST source area, as well as up-, cross-, and downgradient of the area (Figure 8).

Analytical results from groundwater samples collected in September 2005 from the 13 on- and off-site monitoring wells (MW-1, MW-6 through MW-13, and MW-101, MW-102, MW-110, and MW-111) show concentrations of VOCs similar to the previous sampling events, where applicable, conducted in March and November 2003. VOCs associated with petroleum were detected in wells in the vicinity of or downgradient of the former UST source area, and include MW-1 through MW-4, MW-11, MW-12, and MW-101. The two new wells, MW-110 and MW-111, installed on the adjacent property to the south, did not show concentrations of VOCs. However, MTBE was detected in groundwater samples collected from all the monitoring wells except MW-110.

2.4.2 Off-Site Areas

Groundwater samples have been collected from monitoring wells and hand auger locations on the property adjacent to the south. Monitoring wells located on and off site have had detections of MTBE, the source of which is not determined.

2.4.2.1 Adjacent Property to the South

Three monitoring wells, MW-11, MW-12, and MW-13, were installed on the adjacent property to the south of the site in August 1992, and two additional wells, MW-110 and MW-111, were installed in July 2005. Groundwater samples were collected from these wells in 1992, 2003, and 2005 (Tables 6 and 7). BTEX has consistently been detected in MW-11 and MW-12, whereas MW-13, MW-110, and MW-111 have not had detections of BTEX compounds, with the exception of toluene at 1 µg/L in MW-13 in November 1992. Wells MW-111 and MW-13 have had detections of MTBE (1.31 to 11.2 µg/L). MTBE has not been detected in MW-110.

In November 2003, Geomatrix collected grab groundwater samples from seven locations (HA-1 through HA-7) located east of the day care building and analyzed the samples for VOCs. The locations of the grab groundwater samples are shown on Figure 2. HA-2 was the only grab groundwater sample location with detected concentrations of several VOCs; acetone was detected in the sample collected from HA-1 (Tables 6 and 7). VOCs were not detected in any of the other grab groundwater samples, including those advanced adjacent to the day care building (HA-4 and HA-6). Residual hydrocarbon was not observed in any of the borings. In July 2005, Geomatrix collected grab groundwater samples from three locations (HA-101 through HA-103) located in the wetlands area and analyzed the samples for VOCs. MTBE was the only constituent detected in the three borings, at concentrations ranging from 2.9 to 41.4 µg/L.

2.4.2.2 Unidentified Potential Off-Site Oxygenates Source

MTBE was detected in samples collected from monitoring wells along the north, east, and west sides of the site in November 2003 and September 2005. MTBE concentrations in samples collected from wells MW-6 (182 µg/L) and MW-7 (549 µg/L) on the west side of the property were among the highest detected at the site. The oxygenate tertiary-amyl methyl ether (TAME) was detected in MW-6, MW-7, MW-8, and MW-10, and oxygenate tert butyl alcohol (TBA) was detected in MW-6, MW-7, MW-11, MW-101, and MW-111. The source of oxygenates MTBE, TAME, and TBA may not be related to the historical gasoline release at the site.

2.4.3 Extent of Hydrocarbons in Groundwater

The extent of groundwater apparently impacted by the historical gasoline release is defined and bounded by the perimeter monitoring wells MW-6 through MW-10, MW-13, MW-102 through MW-104, MW-110 and MW-111, as illustrated by Figure 8. Residual hydrocarbon was detected in MW-2 (0.01 foot) during water level measurements made on September 7, 2005. Residual hydrocarbon was not present in any of the other monitoring wells during the event; however, a sheen was noted in MW-101.

Groundwater samples collected upgradient of the UST source area in the former Gulf gasoline station area did not show evidence of petroleum hydrocarbons or other fuel constituents, except MTBE detected in groundwater sample collected from wells MW-8 and MW-104.

Downgradient of the potential UST source area, grab groundwater results and monitoring well sampling results suggest that petroleum hydrocarbons in groundwater do not extend to the day care facility building, as illustrated by the non-detects in samples HA-3, HA-4, and HA-6 and MW-110.

TAME was detected in the groundwater samples collected from wells up- and crossgradient, and MTBE, and often TBA, was detected in samples collected from monitoring wells along the north, east, and west sides of the site. The source of the MTBE, TAME, and TBA may not be related to the historical gasoline release at the site.

2.5 SURFACE WATER INVESTIGATION

On August 19, 1992, NETC conducted a surface water investigation to assess possible direct contact with petroleum constituents in the wetland area south of the site in times of high water, and possible impacts on a nearby stream. NETC collected three surface water samples upstream (at the stormwater outfall), midstream (near MW-13), and downstream (at Barnegat Road overpass) from the stream southeast of the site. The surface water samples were analyzed for BTEX analysis by EPA Method 602 (NETC, 1992). No relative impact was observed, as none of the samples contained BTEX, with the exception of 1 part per billion (ppb) toluene detected in the upstream sample (Table 8).

3.0 PROPOSED ADDITIONAL REMEDIAL INVESTIGATIONS

3.1 SOIL VAPOR INVESTIGATION SAMPLING AND ANALYSIS

Soil vapor sampling will be conducted on the adjacent property to the south of the site, north and east of the day care building and south of the extent of residual product in soil (Figure 2). A total of eight soil vapor samples are proposed in this area, as shown on Figure 9. The purpose of the soil vapor sampling is to identify current or potential human exposures to contaminated subsurface vapors associated with the site. Previous soil and groundwater investigations have shown that neither the residual product in soil nor dissolved constituents in groundwater extend to the day care building. However, because the existing day care building is near a subsurface source of volatile chemicals, a soil vapor investigation has been requested by the NYSDEC.

Soil vapor samples will be collected prior to implementing the interim remedial measure and then, pending these initial results, possibly re-sampled at least one month after the excavation is completed to confirm the effectiveness of the interim remedial measure. Successive soil vapor sampling rounds are required until both potential and current exposures are adequately addressed, measures can be designed to remediate subsurface vapor contamination, and the effectiveness of remedial measures can be monitored and confirmed. A work plan detailing the soil vapor investigation sampling locations and procedures is provided as Appendix B.

3.2 POTENTIAL CONDUIT INVESTIGATION

A geophysical investigation was conducted by Geomatrix at the site in November 2003. Using ground penetrating radar (GPR), the geophysical investigation identified a previously unknown subsurface feature interpreted as a pipe crossing the site from north to south and extending onto the neighboring adjacent property to the south at 185 Barnegat Road. The location of the feature is shown on Figure 2 as a suspected utility pipe. The suspected utility pipe appeared to be greater than 4 feet bgs in depth and approximately 10 to 18 inches in diameter. The exact depth and diameter of the suspected utility pipe could not be determined using the geophysical instruments.

The suspected utility pipe was traced via GPR to a concrete dry well structure located on the adjacent property to the south. The dry well was inspected by removing the cover plate. The dry well contained water. A connection between the dry well and the suspected utility pipe could not be seen by inspection.

The suspected utility pipe is within the footprint of the proposed excavation, and the backfill of this feature may serve as a potential conduit for contaminant migration, not only from the site, but onto the site from upgradient locations. Per the DER-10, Section 3.3, requirements, further investigation of this suspected utility pipe will be completed prior to excavation. The investigation will include conducting additional file research, physically exposing the suspected utility pipe, and collecting samples of the backfill for chemical analysis.

Avis conducted a file review at the town of Poughkeepsie and contacted local sewer and water purveyors in March 2004. Results of the file review and further research with the sewer department did not provide additional useful information. Additional research will be conducted after identifying records or files that have not been reviewed.

Geomatrix will use an air knife to expose two, or possibly three, areas of the suspected utility pipe and to collect samples of the backfill material for chemical analysis. Potential sample locations are shown on Figure 9. The air knife will be used to expose the suspected utility pipe without damaging it. The air knife uses high-pressure air to loosen soils in a 12-inch by 12-inch test area. Loosened soils are then vacuumed through a separate line and drummed. By repeating the procedure to depth, a test boring can be advanced without damaging subsurface utilities.

The suspected utility pipe will be exposed near the center of the site, upgradient (west/northwest) of the former USTs where the GPR recorded a possible displacement of the piping. If the pipe can be identified at this displaced area, then an additional location to the north will be investigated. A third location also is proposed near the south property boundary to identify whether the utility backfill serves as a conduit for the on-site source area. Once the suspected utility pipe is exposed, the depth to the subsurface feature and backfill materials will be noted. Geomatrix may also invite local utility representatives to the site to view the unearthed suspected utility pipe for potential identification. The relative elevation of each exposed portion of the suspected utility pipe will be measured using a transit to determine the flow direction within the suspected utility pipe. A sample of the soils backfilling the pipe excavation also will be collected for chemical analysis. Test holes will be backfilled with native soil.

3.3 UPGRADIENT OXYGENATE GROUNDWATER INVESTIGATION

MTBE, and other oxygenates at some locations, have been identified in groundwater samples collected from most on- and off-site monitoring wells and grab groundwater samples, including those upgradient and crossgradient of the former USTs at the site (Table 6). The highest MTBE concentrations are from samples collected at locations upgradient and crossgradient of the site's former USTs. Because the source of the MTBE and other oxygenates does not appear to be related to the historical gasoline release at the site, an up- or crossgradient source(s) is probable. Therefore, the excavation interim remedial measure may not remove the MTBE source, and MTBE may continue to be present in groundwater beneath the site.

To further investigate the potential for MTBE to migrate from off-site sources onto the site, the extent of MTBE in groundwater up and crossgradient of the site will be investigated. Six direct-push borings, at proposed locations shown on Figure 9, will be advanced on the properties north of IBM Road and west of Barnegat Road to collect grab groundwater samples for MTBE analysis. Three discrete-depth groundwater samples will be collected from each location and submitted to ESS Laboratory of Cranston, Rhode Island, for analysis of TPHg, BTEX, and oxygenates by EPA Method 8260.

3.4 GEOTECHNICAL BORINGS

Geomatrix will complete a geotechnical investigation prior to implementation of the interim remedial measure. Data collected during the geotechnical investigation will provide design parameters for the temporary shoring that will be used to support the excavation. Data collected during the geotechnical investigation will also be used to design excavation backfill materials and methods.

Geomatrix will contract a licensed geotechnical drilling contractor and advance two hollow-stem auger borings, one each in the north and south areas of the on-site excavation footprint. The locations of the geotechnical borings are shown on Figure 9. Blow counts will be recorded during drilling, and a pocket penetrator will be used in the field to determine in-place soil mechanical properties. In addition, geotechnical samples will be collected from each boring and sent to a licensed geotechnical laboratory. Specific geotechnical analyses will include particle size analysis, Atterberg Limit analysis to determine soil plasticity, and tri-axial tests to determine soil strength. Based on the investigation results, a soil report will be prepared describing soil conditions at the site, geotechnical boring logs, geotechnical analytical results, soil parameters for shoring design (friction angle, unit weight, shear strength, etc.) and recommendations.

4.0 INTERIM REMEDIAL MEASURE PLAN

The objective of the interim remedial measure is to remove currently known residual petroleum constituents on and off site, as delineated by the previous site investigation activities described in Section 2.0 of this Work Plan.

As discussed during the September 29, 2005 meeting between NYSDEC and Avis, the interim remedial measure will consist of residual source removal through excavation of petroleum-impacted soils using conventional earthmoving equipment. Excavated soil will be transported to an appropriate licensed waste disposal facility. In addition to excavation, loading, transportation, and disposal of petroleum-impacted soil, interim remedial measure activities will also likely include temporarily storing, treating, and discharging groundwater extracted during construction dewatering; and backfilling, compacting, and repaving excavated areas. Details of the specific soil excavation activities are discussed in the following sections.

5.0 SOIL EXCAVATION PLAN

5.1 EXTENT OF EXCAVATION

The horizontal and vertical extent of the excavation has been determined by the results of previous site geologic, hydrogeologic, and environmental investigations, which were summarized in Section 2.0. The approximate extent of the excavation is shown on Figure 2.

There are two primary excavation areas: the On-Site excavation area and the Off-Site excavation area.

The On-Site excavation area is located adjacent and to the southwest of the main building, where field observations have indicated the presence of residual petroleum hydrocarbons in soil in the smear zone and trapped in macropores in the saturated zone. The On-Site excavation surface area covers approximately 14,000 square feet; the surface area will be confirmed during a pre-excavation site survey. The maximum vertical extent of the On-Site excavation area is to 13 feet below the current ground surface. Due to differences in ground surface elevation, the depth of the excavation will decrease toward the property boundary to the south. Previous site investigations, including the MIP investigation described in Section 2.0 of this IRM Work Plan, have delineated the area of on-site soil impacted by residual petroleum hydrocarbons, and the vertical and horizontal extents of the On-Site excavation presented in this Work Plan extend to where previous investigations results indicate that residual petroleum is no longer present in on-site soil.

The Off-Site excavation area extends approximately 120 feet to the southwest from the southern site boundary, where the On-Site excavation ends. The Off-Site excavation area covers approximately 9,600 square feet. The maximum vertical extent of the Off-Site excavation area is to 7 feet below current ground surface. The actual horizontal and vertical extents of the excavation will be determined based on field conditions and field observations (visual observations and PID readings) and after confirmation sampling of the completed Off-Site excavation.

Excavation confirmation elevations will be measured during the course of the work from temporary benchmarks using a laser-plane survey or equivalent instrument that will be calibrated at least daily to within 0.01 foot.

5.2 EXCAVATION PROTECTION AND SHORING

Shoring and other methods to protect the integrity of the excavation will be necessary, as portions of the excavation areas are adjacent to existing buildings, and since entry into the excavations will likely be necessary.

As shown on Figure 2, the northern and eastern perimeter is immediately adjacent to an existing building. Due to the extent of the excavation and its proximity to the existing building, it is anticipated that the entire perimeter of the On-Site excavation will be shored. The Off-Site excavation will be cut back to at least a 2:1 (horizontal:vertical) slope, as required by the Occupational Safety and Health Administration (OSHA), to protect the integrity of the excavation and to protect personnel and equipment entering the excavation.

Specific shoring methods and equipment will be described in an Excavation Protection and Shoring Plan, which will be submitted by the contractor to Geomatrix and the Town of Poughkeepsie Engineering Department prior to the start of work. The Excavation Protection and Shoring Plan will be prepared and stamped by a Professional Civil Engineer licensed by the State of New York. Geomatrix will review and approve the Excavation Protection/Shoring Plan, and obtain all required engineering permits prior to the work.

5.3 MONITORING WELL DESTRUCTION

Monitoring wells DP-1, DP-2, DP-3, MW-2, MW-3, MW-4, MW-11, and MW-101 are located within the proposed excavation area. To facilitate soil removal, these eight monitoring wells will be destroyed. However, those wells that can be used for dewatering activities during excavation will be fitted with appropriate pumps and will remain in use until their appropriate destruction. Well destruction will consist of removing the well casing down to total depth with excavation equipment and backfilling with approved materials. Prior to initiating field work, well destruction permits, if necessary, will be obtained from the appropriate agency and Dig Safely, New York, a regional utility notification center, will be called at least 48 hours before well destruction commences. Geomatrix staff will be on site to observe well destruction activities. Soil cuttings and decontamination water generated during the well destructions will be stored on site pending analysis and proper disposal.

5.4 EXCAVATED SOIL MANAGEMENT

Excavated soil will be stockpiled in temporary soil management areas adjacent to loading areas. Excavated soil will be segregated based on field observations (visible observations and PID measurements). Soil not observed to be impacted with residual hydrocarbons will be kept on site for possible use as backfill. The contractor will be responsible for handling and stockpiling excavated soil.

Excavated soil will be screened during excavation, and soil visibly impacted by residual petroleum hydrocarbons will be segregated from the other soil excavated from the site. Stockpiles will rest on, at minimum, one layer of 10-mil black plastic sheeting, and will be covered, at minimum, by one layer of 10-mil black plastic sheeting at all times except when the material is being handled. During excavation all appropriate efforts will made to reduce the moisture content of the excavated soil below 50 percent prior to stockpiling or loading on the transport vehicles for off-site disposal. Any wet soil excavated will be placed in the secondary containment berm to dewater, and the drained water will be pumped to the on-site groundwater collection system.

The contractor will be required to keep written documentation and implement tracking procedures to track each stockpile or stockpile segment from initial excavation through off-site disposal or on-site reuse as backfill. Prior to the work, the contractor will prepare and submit to Geomatrix a Stockpile Management Plan, which will present the specific methods and equipment used to manage soil generated during excavation.

5.5 EXCAVATED SOIL DISPOSAL

Based on analytical results for composite soil samples collected during previous investigations, it is assumed that the soil qualifies as a non-hazardous waste and can be disposed of as a non-regulated waste used for cover at a landfill. However, landfills require collecting a composite excavated soil sample every 250 cubic yards of excavated soil for characterization prior to use as a cover material. As a result, temporary stockpiles will be limited to 250 cubic yards in volume. One four-point composite soil sample will be collected from each stockpile. Stockpile samples will be analyzed by a New York State-certified analytical laboratory for organic and inorganic analytes. Upon receipt of laboratory analyses, the analytical results will be compared to landfill acceptance criteria. Once deemed to be acceptable, waste profile forms, waste manifests, and bills of lading will be prepared and will accompany all soil transported to the selected landfill.

A truck loading zone and decontamination station will be created by the contractor in an area near the soil stockpiles. The loading zone and decontamination station will remain in the same location as the work progresses. Dust control by wetting with water will be performed as necessary based on air monitoring measurements and physical conditions. Loaded trucks will move to the truck decontamination station, where soil will be removed from fenders and tires and the bed. Each loaded truck will leave the site with a completed manifest or bill of lading for transport of soil to the disposal destination.

Prior to the work, the contractor will prepare and submit to Geomatrix a Transportation Plan, which will present the specific methods and equipment, including soil loading and off-haul routes, used to load and off-haul soil generated during excavation.

5.6 GROUNDWATER MANAGEMENT

It is anticipated that active dewatering of the excavation will be required. Based on site historical groundwater chemical data, it is anticipated that groundwater extracted during construction dewatering will contain petroleum hydrocarbons and other chemicals of concern. Geomatrix will design a temporary treatment system that will be used to remove sediment, separate-phase petroleum hydrocarbons, and dissolved-phase petroleum hydrocarbons from extracted water prior to surface discharge. Geomatrix will also acquire the necessary permitting associated with treating and discharging groundwater generated during construction dewatering, and will operate the treatment system during the excavation.

The contractor will be responsible for performing dewatering as necessary to maintain workable conditions in the excavation. Dewatering requirements will be described in detail in the technical specifications.

5.7 CONFIRMATION SAMPLING

Geomatrix will be responsible for collecting confirmation soil samples in accordance with the interim remedial measure Sampling and Analysis Plan (SAP). The SAP is described in Section 6.5.4 and is attached as Appendix E.

As the horizontal and vertical extents of the On-Site excavation have been predetermined based on the results of previous site investigations (see Sections 2.0 and 5.1), and because the presence of excavation shoring makes sidewall sampling technically infeasible, no confirmation samples will be collected from the completed On-Site excavation.

During the Off-Site excavation, field observations, including visual observations and photoionization detector (PID) measurements, will be used to screen the excavated soil and to preliminarily determine the horizontal extents of the excavation. When field observations indicate that the required horizontal extent of the Off-Site excavation has been reached, soil samples will be collected from the sidewalls of the excavation and will be analyzed on a 24-hour turnaround time to confirm the final horizontal extent of the excavation. Sidewall samples will be collected every 30 feet along the perimeter of the Off-Site excavation, and the location of all sidewall confirmation samples will be documented. The sidewall confirmation samples will be collected at a depth corresponding to the groundwater/residual petroleum smear zone in the subsurface. The depth of the excavation and the shallow depth to groundwater (approximately 1 foot below ground surface) in the Off-Site excavation make collecting proper excavation bottom confirmation samples infeasible. As a result, the entire Off-Site excavation will extend to 7 feet below ground surface, which is below the depth of the known source area, and excavation bottom confirmation samples will not be collected.

The analytical results of the confirmation sampling will be compared to the concentrations listed in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Soil Cleanup Levels (NYSDEC, 1994). If the results of confirmation sampling are below the cleanup levels presented in the TAGM 4046, Geomatrix will request approval from the NYSDEC to end the Off-Site excavation. If the results of the confirmation sampling are not below the cleanup levels presented in the TAGM 4046, the excavation will be expanded, as long as the expanded excavation is technically, logistically, and economically feasible and does not compromise the structural integrity or foundations of nearby buildings. The Off-Site excavation will be backfilled upon approval from NYSDEC.

5.8 SITE RESTORATION

After field observations and confirmation soil sampling have verified that the extents of the impacted soil have been reasonably excavated, the excavation will be backfilled and compacted per requirements described in the Town of Poughkeepsie Municipal Code (Section 210-71).

The excavation will be lined with filter fabric, backfilled, and compacted to previously existing ground surface level. The shallow water-bearing zone within the excavation will be filled with crushed rock, and a layer of filter fabric placed on top of the crushed rock. The unsaturated zone will be backfilled with acceptable, excavated soil and import fill. Import fill material will be free of naturally occurring organic material, such as peat and vegetation, and will not contain chemicals of concern greater than the interim remedial measure goals and other limits specified in the SAP (Appendix E). A schematic backfill section is shown on Figure 10.

Representative soil samples will be collected for chemical analysis from the proposed fill import source in accordance with the SAP. These samples will be analyzed for organic and inorganic analytes for comparison with the interim remedial measure objectives and other requirements specified in the SAP. The import fill material will also be analyzed for geotechnical properties, including, but not limited to, particle size and compaction characteristics. The contractor will submit the results of these analyses to Geomatrix, and based upon comparison of these analytical results to specifications presented in the contract documents, Geomatrix will notify the contractor of the suitability of the import fill material.

In an effort to expedite groundwater remediation while implementing the interim remedial measure, Oxygen Releasing Compound (ORC), a proprietary material developed and marketed by Regenesis, Inc., will be added to the backfill material to create a subsurface treatment zone for the in situ treatment of groundwater. It is anticipated that ORC will gradually release oxygen into the subsurface, which will stimulate naturally occurring aerobic bacteria and result in aerobic degradation of dissolved-phase petroleum hydrocarbons in groundwater.

Backfill material will be compacted to compaction requirements suitable for unrestricted property use and as specified in the contract documents, and as required by the land contour permit obtained by the contractor for the work. Backfilling activities will bring the ground surface back to at least the pre-excavation elevation. The site will then be graded and paved to direct storm water runoff to existing surface water drainage features.

5.9 MONITORING WELL REPLACEMENT

After site restoration activities, groundwater monitoring wells that were destroyed during excavation activities will be replaced with new groundwater monitoring wells. Based on the existing monitoring well network, it is estimated that between four and six wells will be installed. This well network will be sufficient for the future on- and off-site groundwater monitoring. Construction details and locations of the replacement groundwater monitoring wells will be submitted to NYSDEC for approval prior to installation.

6.0 INTERIM REMEDIAL MEASURE IMPLEMENTATION

6.1 DESIGN DRAWINGS AND TECHNICAL SPECIFICATIONS

Geomatrix will produce design drawings as required to successfully bid and implement the interim remedial measure. The drawings will include, but are not limited to, the vertical and horizontal extent of the excavation, backfill specifications, existing topography, and the final site grading plan.

The drawings will be stamped by a professional engineer licensed to practice in the State of New York. The drawings will be included in the contract documents sent to bid, and will be submitted to appropriate permitting and regulatory agencies as required to permit the work.

Geomatrix will produce technical specifications as required to successfully bid and implement the interim remedial measure. The technical specifications will include method, equipment, and material specifications for all work associated with implementation of the interim remedial measure. The technical specifications will be included in the contract document sent to bid.

A geotechnical soils report will also be produced as required to successfully bid and design the shoring system necessary at the On-Site excavation.

6.2 PERMITTING/REGULATORY APPROVAL

It is anticipated that the following permits and regulatory approvals will need to be acquired prior to the work:

- A Land Contour Change Permit; per the Town of Poughkeepsie Municipal Code Section 210-71;
- A Sewer Discharge Permit; for the discharge of water generated during construction dewatering to the local publicly-owned treatment works,
- NYSDEC acceptance of the interim remedial measure, including addressing any public comments;
- New York State Department of Health acceptance of the Site Health and Safety Plans and Air Monitoring Plan; and
- A New York State Department of Transportation Hazardous Waste Transportation Permit, only if excavated soil stockpile samples indicate that excavated soils are a characteristic federal or state hazardous waste.

Geomatrix and/or the contractor will acquire all required permits and regulatory approvals prior to the work.

6.3 CONTRACTING

Geomatrix will prepare contract documents for interim remedial measure implementation, including design drawings, technical specifications, an Engineer's Cost Estimate, and bid instructions. Geomatrix will solicit competitive bids from a group of prescreened contractors. Upon receipt of bids, Geomatrix will evaluate the bids and recommend a contractor, after which Avis may elect to execute the contract with the recommended contractor and issue a notice-to-proceed to begin implementation of the interim remedial measure.

6.4 PRE-EXCAVATION SURVEY

Prior to beginning excavation activities, the contractor will contract a licensed surveyor to perform a site survey to document the condition of the adjacent main building, and to document site topography and other pre-excavation features of the site.

The pre-excavation survey will also establish vertical and lateral survey control for the site. The surveyor will mark the corners of the excavation areas. Offset markers will be placed around the perimeter of the excavation area in order to reestablish excavation boundaries as needed during the work.

6.5 SUBMITTAL OF PLANS

This section discusses the plans that will be prepared to assist in the management of the environmental remediation activities at the site. The discussion below describes only the general requirements for the required plans. Actual means, methods, and techniques that will be used to implement interim remedial measure activities will be identified in the final plans. Copies of these final plans will be retained at the site during implementation of the interim remedial measure.

6.5.1 Chemical Health and Safety Plan

Geomatrix has prepared a written site-specific Chemical Health and Safety Plan (Chemical HASP) under the direction of a Certified Industrial Hygienist (CIH). The Chemical HASP is included with this Work Plan as Appendix C. The Chemical HASP was prepared in accordance with Federal and State OSHA standards for heavy construction and hazardous waste operations.

The Chemical HASP will serve to communicate hazards associated with petroleum-impacted soil and groundwater. The Chemical HASP lists permissible exposure levels, mitigation measures, personal protective equipment, and response measures associate with potential exposure to chemicals of concern at the site. The Chemical HASP does not address health and safety issues related to other physical, chemical, or biological hazards at the site (i.e., heavy construction equipment, slip/trip/fall hazards, heat/cold exposure, excavation protection). The Chemical HASP will be furnished to the contractor, who can then provide the Chemical HASP to their subconsultants or other parties.

6.5.2 Contractor's Health and Safety Plan

The contractor will prepare and submit a written site-specific Health and Safety Plan (HASP) under the direction of a CIH. The contractor's HASP will be prepared in accordance with Federal and State OSHA standards for heavy equipment, subsurface construction, and hazardous waste operations. The contractor's HASP will address the contractor's health and safety responsibilities, required health and safety training, and addresses health and safety hazards associated with the various field activities associated with implementing the interim remedial measure. The contractor's HASP will not be required to address hazards associated with potential exposure to soil and groundwater impacted by petroleum constituents or other chemicals of concern at the site. These hazards will be addressed by the Chemical HASP described above.

All subcontractors and subconsultants of the contractor, whose workers may contact potentially contaminated soil or groundwater, will either prepare their own site-specific HASPs under the direction of a CIH, or alternatively, the contractor will prepare its HASP to cover all tasks and operations of subcontractors and subconsultants.

6.5.3 Air Monitoring Plan

Geomatrix has prepared an Air Monitoring Plan (AMP). The AMP is based on requirements listed in Appendix 1A of the NYSDEC DER-10. The AMP is included with this Work Plan as Appendix D.

The AMP describes the monitoring procedures to be used during construction activities designed to reduce the potential airborne exposure to impacted materials mobilized during construction activities. Specific air monitoring measures include worker breathing zone air monitoring and sampling, real-time site perimeter air monitoring and sampling, and real-time dust monitoring.

6.5.4 Sampling and Analysis Plan

Geomatrix has prepared a Sampling and Analysis Plan (SAP), included as Appendix E, that details sampling requirements for excavation confirmation sampling, import fill sampling, and stockpile sampling associated with the interim remedial measure. The SAP will specify sample collection methods, sampling frequency, required analytes, analytical methods, analytical laboratory requirements, laboratory turnaround times, laboratory analytical reporting limits, QA/QC requirements, and contractor reporting requirements.

6.5.5 Stockpile Management and Transportation Plan

The contractor will prepare a Stockpile Management and Transportation Plan (SMP) that will describe requirements and actions related to the management and characterization of petroleum-impacted soils excavated during interim remedial measure implementation.

The SMP will describe screening procedures for separating visibly impacted soil generated during excavation, contractor requirements for preparing an impacted soil stockpile, stockpile characterization sampling methodology, and related actions meant to limit potential exposure to petroleum hydrocarbons from stockpiled soil. The SMP will also describe the destination of the excavated soil and site debris, the designated route for transporting excavated soil to the selected disposal and concrete recycling facilities, the designated truck route for transporting imported backfill from the selected quarries/sources, the proposed staging area(s), procedures for loading and covering trucks, the estimated number and load capacity of trucks, anticipated hours or operation, and emergency procedures. The SMP will be in accordance with all local, state, and federal regulatory requirements.

The contractor will submit the SMP to Geomatrix for approval prior to the start of work.

6.5.6 Storm Water Pollution Prevention Plan

The contractor will prepare a Storm Water Pollution Prevention Plan (SWPPP) that will describe Best Management Practices (BMPs) to be implemented by the contractor during the work to prevent impairment of receiving waters by storm waters containing sediment, silt, or other pollutants. The SWPPP will be in accordance with all local, state, and federal regulatory requirements.

The contractor will submit the SWPPP to Geomatrix for approval prior to the start of work. The contractor will also be responsible for acquiring all necessary regulatory approvals and permits for discharging storm water from the site during implementation of the interim remedial measure.

6.5.8 Excavation Protection and Shoring Plan

As discussed in Section 5.2, the contractor will prepare and submit an Excavation Protection and Shoring Plan. The Excavation Protection and Shoring Plan will be prepared and stamped by a professional engineer licensed by the State of New York. Geomatrix will review and approve the Excavation Protection and Shoring Plan prior to the work.

7.0 REPORTING

After completion of field activities and receipt of final documentation for disposal of the excavated soil and other wastes, a report will be prepared for submission to the NYSDEC. This report will include descriptions of field methods, observations, monitoring, and disposal of excavated soil and waste materials. Field and laboratory data will be tabulated as appropriate. Maps and cross sections will be prepared as needed to illustrate the extent and result of the excavation. Copies of appropriate documentation (e.g., field or laboratory data sheets, manifests, bills of lading) will be included.

8.0 SCHEDULE

Geomatrix intends to start excavation activities in December 2005. To facilitate this schedule, Geomatrix plans to work in parallel with the NYSDEC approval process. Geomatrix will arrange for the necessary permits, prepare contract documents, prescreen potential contractors, and begin the bid process and other pre-field activities pending NYSDEC approval. Actual field operations will not commence without approval from the NYSDEC.

9.0 REFERENCES

NETC, 1990 (Excerpts), *Avis Rent A Car System, Inc., New York Site Audits*, December 27.

NETC, 1991, *Preliminary Hydrogeologic Assessment Report*, Avis Rent A Car System, Inc, Avis Poughkeepsie, February 28.

NETC, 1992, *Final Phase II Hydrogeological Investigation*, Avis Rent A Car System, Inc., Poughkeepsie, New York Facility, October 15.

NYSDEC, 2002, *Draft DER-10 Technical Guidance for Site Investigation and Remediation*, December 25.

NYSDEC, 1994, *TAGM 4046, Determination of Soil Cleanup Objectives and Cleanup Levels*, January 24.

TABLES

TABLE 1

SUMMARY OF HISTORICAL WATER LEVEL ELEVATION DATA

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Well Identification	Gauging Date	Measuring Point Elevation[1] (feet NGVD)	Free-Phase Product Thickness (feet)	Depth to Groundwater (feet below measuring point)	Water Level Elevation (feet NGVD)	References
MW-1	01/31/91	99.29	NA[2]	8.25	91.04	NETC, 1991
	08/26/92	99.29	NA	8.46	90.83	NETC, 1992
	04/15/03	99.29	NA	7.28	92.01	MFG, 2003
	04/24/03	99.29	NA	7.51	91.78	MFG, 2003
	05/01/03	99.29	NA	7.68	91.61	MFG, 2003
	05/13/03	99.29	NA	7.72	91.57	MFG, 2003
	06/26/03	99.29	NA	7.65	91.64	MFG, 2003
	07/30/03	99.29	NA	8.2	91.09	MFG, 2003
	08/13/03	99.29	NA	8.1	91.19	MFG, 2003
	09/24/03	99.29	NA	8.1	91.19	MFG, 2003
	11/24/03	99.29	NP[3]	7.71	91.58	Geomatrix, 2004
	09/07/05	99.29	NP	8.97	90.32	Geomatrix, 2005
MW-2	01/31/91	98.35	NA	7.39	90.96	NETC, 1991
	08/26/92	98.35	NA	7.75	90.60	NETC, 1992
	04/15/03	98.35	NA	6.13	92.22	MFG, 2003
	04/24/03	98.35	NA	6.75	91.60	MFG, 2003
	05/01/03	98.35	NA	6.88	91.47	MFG, 2003
	05/13/03	98.35	NA	6.91	91.44	MFG, 2003
	06/26/03	98.35	NA	6.85	91.50	MFG, 2003
	07/30/03	98.35	NA	7.35	91.00	MFG, 2003
	08/13/03	98.35	NA	7.2	91.15	MFG, 2003
	09/24/03	98.35	NA	7.35	91.00	MFG, 2003
	11/24/03	98.35	NP	6.94	91.41	Geomatrix, 2004
	09/07/05	98.35	0.01	8.2	90.15	Geomatrix, 2005
MW-3	01/31/91	98.34	NA	6.80	91.54	NETC, 1991
	08/26/92	98.34	NA	7.1	91.24	NETC, 1992
	04/15/03	98.34	NA	5.67	92.67	MFG, 2003
	04/24/03	98.34	NA	5.99	92.35	MFG, 2003
	05/01/03	98.34	NA	6.2	92.14	MFG, 2003
	05/13/03	98.34	NA	6.29	92.05	MFG, 2003
	06/26/03	98.34	NA	6.18	92.16	MFG, 2003
	07/30/03	98.34	NA	6.84	91.50	MFG, 2003
	08/13/03	98.34	NA	6.65	91.69	MFG, 2003
	09/24/03	98.34	NA	6.7	91.64	MFG, 2003
	11/24/03	98.34	NP	6.35	91.99	Geomatrix, 2004
	09/07/05	98.34	NP	7.86	90.48	Geomatrix, 2005
MW-4	01/31/91	96.38	NA	5.66	90.72	NETC, 1991
	08/26/92	96.38	NA	6.34	90.04	NETC, 1992
	04/15/03	96.38	NA	5.24	91.14	MFG, 2003
	04/24/03	96.38	NA	5.37	91.01	MFG, 2003
	05/01/03	96.38	NA	5.59	90.79	MFG, 2003
	05/13/03	96.38	NA	5.61	90.77	MFG, 2003
	06/26/03	96.38	NA	5.51	90.87	MFG, 2003
	07/30/03	96.38	NA	6.21	90.17	MFG, 2003
	08/13/03	96.38	NA	5.72	90.66	MFG, 2003
	09/24/03	96.38	NA	5.71	90.67	MFG, 2003
	11/24/03	96.38	NP	5.51	90.87	Geomatrix, 2004
	09/07/05	96.38	NP	7.39	88.99	Geomatrix, 2005

TABLE 1

SUMMARY OF HISTORICAL WATER LEVEL ELEVATION DATA

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Poughkeepsie, New York

Well Identification	Gauging Date	Measuring Point Elevation[1] (feet NGVD)	Free-Phase Product Thickness (feet)	Depth to Groundwater (feet below measuring point)	Water Level Elevation (feet NGVD)	References
MW-5[4]	08/26/92	95.1	NA	5.01	90.09	NETC, 1992
	09/24/03	95.1	NA	4.1	91.00	MFG, 2003
	11/24/03	NM[5]	NM	NM	NM	Geomatrix, 2004
MW-6	08/26/92	98.56	NA	8.13	90.43	NETC, 1992
	11/24/03	98.56	NP	7.91	90.65	Geomatrix, 2004
	09/07/05	98.56	NP	9.95	88.61	Geomatrix, 2005
MW-7	08/26/92	99.21	NA	8.94	90.27	NETC, 1992
	11/24/03	99.21	NP	8.22	90.99	Geomatrix, 2004
	09/07/05	99.21	NP	10.11	89.10	Geomatrix, 2005
MW-8	08/26/92	99.66	NA	9.44	90.22	NETC, 1992
	04/15/03	99.66	NA	8.58	91.08	MFG, 2003
	04/24/03	99.66	NA	8.92	90.74	MFG, 2003
	05/01/03	99.66	NA	9.06	90.60	MFG, 2003
	05/13/03	99.66	NA	9.1	90.56	MFG, 2003
	06/26/03	99.66	NA	8.32	91.34	MFG, 2003
	07/30/03	99.66	NA	9.3	90.36	MFG, 2003
	08/13/03	99.66	NA	9.3	90.36	MFG, 2003
	09/24/03	99.66	NA	9.3	90.36	MFG, 2003
	11/24/03	99.66	NP	8.88	90.78	Geomatrix, 2004
	09/07/05	99.66	NP	9.94	89.72	Geomatrix, 2005
MW-9	08/26/92	95.04	NA	4.9	90.14	NETC, 1992
	04/15/03	95.04	NA	4.07	90.97	MFG, 2003
	04/24/03	95.04	NA	4.43	90.61	MFG, 2003
	05/01/03	95.04	NA	4.61	90.43	MFG, 2003
	05/13/03	95.04	NA	4.66	90.38	MFG, 2003
	06/26/03	95.04	NA	4.2	90.84	MFG, 2003
	07/30/03	95.04	NA	4.3	90.74	MFG, 2003
	08/13/03	95.04	NA	4.22	90.82	MFG, 2003
	09/24/03	95.04	NA	NM	NA	MFG, 2003
	11/24/03	95.04	NA	3.3	91.74	Geomatrix, 2004
	09/07/05	95.04	NP	5.39	89.65	Geomatrix, 2005
MW-10	08/26/92	95.69	NA	4.05	91.64	NETC, 1992
	11/24/03	95.69	NP	3.11	92.58	Geomatrix, 2004
	09/07/05	95.69	NP	6.92	88.77	Geomatrix, 2005
MW-11	08/26/92	92.02	NA	2.65	89.37	NETC, 1992
	11/24/03	92.02	NP	1.56	90.46	Geomatrix, 2004
	09/07/05	92.02	NP	4.15	87.87	Geomatrix, 2005
MW-12	08/26/92	92.64	NA	4.47	88.17	NETC, 1992
	11/24/03	92.64	NP	3.49	89.15	Geomatrix, 2004
	09/07/05	92.64	NP	5.57	87.07	Geomatrix, 2005
MW-13	08/26/92	90.84	NA	4	86.84	NETC, 1992
	11/24/03	90.84	NP	3.15	87.69	Geomatrix, 2004
	09/07/05	90.84	NP	4.93	85.91	Geomatrix, 2005

TABLE 1

SUMMARY OF HISTORICAL WATER LEVEL ELEVATION DATA

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Well Identification	Gauging Date	Measuring Point Elevation[1] (feet NGVD)	Free-Phase Product Thickness (feet)	Depth to Groundwater (feet below measuring point)	Water Level Elevation (feet NGVD)	References
DP-1	08/26/92	97.92	NA	7.06	90.86	NETC, 1992
	04/15/03	97.92	NA	5.26	92.66	MFG, 2003
	04/24/03	97.92	NA	5.65	92.27	MFG, 2003
	05/01/03	97.92	NA	5.86	92.06	MFG, 2003
	05/13/03	97.92	NA	5.94	91.98	MFG, 2003
	06/26/03	97.92	NA	5.91	92.01	MFG, 2003
	07/30/03	97.92	NA	6.51	91.41	MFG, 2003
	08/13/03	97.92	NA	6.3	91.62	MFG, 2003
	09/24/03	97.92	NA	6.35	91.57	MFG, 2003
	11/24/03	97.92	NP	6	91.92	Geomatrix, 2004
	09/07/05	97.92	NP	7.54	90.38	Geomatrix, 2005
DP-2	08/26/92	97.92	NA	7.01	90.91	NETC, 1992
	04/15/03	97.92	NA	5.26	92.66	MFG, 2003
	04/24/03	97.92	NA	5.6	92.32	MFG, 2003
	05/01/03	97.92	NA	5.81	92.11	MFG, 2003
	05/13/03	97.92	NA	5.85	92.07	MFG, 2003
	06/26/03	97.92	NA	5.72	92.20	MFG, 2003
	07/30/03	97.92	NA	NM	NA	MFG, 2003
	08/13/03	97.92	NA	NM	NA	MFG, 2003
	09/24/03	97.92	NA	NM	NA	MFG, 2003
	11/24/03	97.92	NA	NM	NA	Geomatrix, 2004
	09/07/05	97.92	NP	NM	dry	Geomatrix, 2005
DP-3	08/26/92	98.14	NA	6.94	91.20	NETC, 1992
	04/15/03	98.14	NA	5.45	92.69	MFG, 2003
	04/24/03	98.14	NA	5.6	92.54	MFG, 2003
	05/01/03	98.14	NA	5.81	92.33	MFG, 2003
	05/13/03	98.14	NA	NM	NA	MFG, 2003
	06/26/03	98.14	NA	5.83	92.31	MFG, 2003
	07/30/03	98.14	NA	NM	NA	MFG, 2003
	08/13/03	98.14	NA	NM	NA	MFG, 2003
	09/24/03	98.14	NA	NM	NA	MFG, 2003
	11/24/03	98.14	NP	5.51	92.63	Geomatrix, 2004
	09/07/05	98.14	NP	NM	dry	Geomatrix, 2005
MW-101	09/07/05	96.95	sheen	8.02	88.93	Geomatrix, 2005
MW-102	09/07/05	95.02	NP	5.51	89.51	Geomatrix, 2005
MW-103	09/07/05	98.86	NP	8.85	90.01	Geomatrix, 2005
MW-104	09/07/05	98.23	NP	7.44	90.79	Geomatrix, 2005
MW-110	09/07/05	95.24	NP	6.11	89.13	Geomatrix, 2005
MW-111	09/07/05	89.05	NP	4.15	84.90	Geomatrix, 2005

Notes:

[1] Measuring point elevation is the surveyed elevation of a reference mark at the top of each well casing. Measuring point elevations were surveyed on September 15, 1992 and September 29, 2005, by Morris and Associates of Poughkeepsie, New York. Elevations are in feet relative to assumed datum.

[2] NA = not available.

[3] NP= no product measured in well.

[4] Decommissioned November 20, 2003

[5] NM = not measured.

TABLE 2
SUMMARY OF HISTORICAL SOIL ANALYTICAL RESULTS FOR BTEX[1] AND OXYGENATES[2,3,4]
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in milligrams per kilogram (mg/kg)

Sample ID	Sample Location	Date Collected	Sample Depth (feet bgs)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Methyl-tert Butyl Ether	Di-isopropyl ether	Ethyl tertiary-butyl ether	Tert butyl alcohol	Tertiary-amyl methyl ether
Hollow Stem Auger Borings												
PK-1	PK-1	12/19/1990	4-6	<25	<25	<25	<25	--	--	--	--	--
PK-2	PK-2	12/19/1990	4-6	<25	<25	<25	<25	--	--	--	--	--
PK-3[2]	PK-3	12/19/1990	7.5-9.5	**17**	**225**	**76**	**368**	--	--	--	--	--
PK-4[2]	PK-4	12/19/1990	7-9	**3.1**	**3.9**	**5.1**	**50**	--	--	--	--	--
PK-6	PK-6	12/19/1990	6-8	<25	<25	<25	<25	--	--	--	--	--
PK-7	PK-7	12/19/1990	6-8	<125	<125	<125	<125	--	--	--	--	--
Monitoring Well Borings												
MW-11 (0-3")	MW-11	8/12/1992	0-0.25	ND	ND	ND	ND	--	--	--	--	--
MW-11 (24-30")	MW-11	8/12/1992	2.0-2.5	ND	**140**	**140**	**1300**	--	--	--	--	--
MW-12 (0-3")	MW-12	8/12/1992	1-0.25	ND	ND	ND	ND	--	--	--	--	--
MW-12 (6-12")	MW-12	8/12/1992	0.5-1.0	**49**	**970**	**370**	**2200**	--	--	--	--	--
MW-13 (0-3")	MW-13	8/12/1992	0-0.25	ND	ND	ND	**0.034**	--	--	--	--	--
MW-13 (6-12")	MW-13	8/12/1992	0.5-1.0	ND	**0.02**	**0.008**	**0.04**	--	--	--	--	--
MW-101 0204	MW-101	11/19/03	2-4	**0.232**	**0.938**	**3.78**	**24**	<0.0539	--	--	--	--
MW-101 0406	MW-101	11/19/03	4-6	<0.0504	<0.0504	**0.156**	**0.816**	<0.0504	--	--	--	--
MW-102 0002	MW-102	11/20/03	0-2	<0.0383	<0.0383	<0.0383	<0.0767	<0.0383	--	--	--	--
MW-103 0607[3]	MW-103	11/20/03	6-7	<0.0435	<0.0435	<0.0435	<0.0871	<0.0435	--	--	--	--
MW-104 0405	MW-104	11/20/03	4-5	<0.0441	<0.0441	<0.0441	<0.0882	<0.0441	--	--	--	--
Surface Samples												
#1	#1	4/25/2003	0-0.5	<0.0457	<0.0457	<0.0457	<0.0914	<0.0457	--	--	--	--
#2	#2	4/25/2003	0-0.5	<0.0675	<0.0675	<0.0675	<0.135	<0.0675	--	--	--	--
#3	#3	4/25/2003	0-0.5	<0.0738	<0.0738	<0.0738	<0.148	<0.0738	--	--	--	--
#4	#4	4/25/2003	0-0.5	**0.119**	<0.0843	<0.0843	**0.437**	<0.0843	--	--	--	--
Piezometer Borings												
PZ-1 0204	PZ-1	11/19/03	2-4	**0.857**	**1.43**	**1.48**	**4.55**	**0.0704**	--	--	--	--
PZ-3 0204	PZ-3	11/19/03	2-4	**1.41**	**2.57**	**1.53**	**8.15**	**0.0545**	--	--	--	--
PZ-3 0406	PZ-3	11/19/03	4-6	**12.6**	**86.8**	**55.1**	**325**	**0.106**	--	--	--	--
PZ-4 0204	PZ-4	11/19/03	2-4	<0.0431	<0.0431	<0.0431	**0.16**	**0.0539**	--	--	--	--
PZ-5 0204	PZ-5	11/19/03	2-4	<0.043	<0.043	<0.043	<0.0859	<0.043	--	--	--	--
PZ-6 0406	PZ-6	11/19/03	4-6	**0.0983**	**0.865**	**1.19**	**5.44**	<0.0468	--	--	--	--
PZ-7 0204	PZ-7	11/19/03	2-4	**2.67**	**12.6**	**5.92**	**34.3**	**0.243**	--	--	--	--
PZ-8 0204	PZ-8	11/19/03	2-4	<0.0346	<0.0346	**0.0592**	**0.162**	<0.0346	--	--	--	--
PZ-8 0406	PZ-8	11/19/03	4-6	<0.043	<0.043	**0.0775**	**0.347**	<0.043	--	--	--	--
PZ-10 0607[3]	PZ-10	11/20/03	6-7	<0.0445	<0.0445	<0.0445	<0.089	<0.0445	--	--	--	--
PZ-11 0607[3]	PZ-11	11/20/03	6-7	<0.0433	<0.0433	<0.0433	<0.0867	<0.0433	--	--	--	--
PZ-12 0708[3]	PZ-12	11/20/03	7-8	<0.0458	<0.0458	<0.0458	<0.0916	<0.0458	--	--	--	--
PZ-13 0204	PZ-13	11/20/03	2-4	**0.0563**	**0.0634**	**0.973**	**5.03**	<0.0477	--	--	--	--
DUP-1[5]	DUP-1	11/20/03	2-4	**0.0908**	**0.0823**	**1.47**	**7.41**	<0.0499	--	--	--	--

TABLE 2

SUMMARY OF HISTORICAL SOIL ANALYTICAL RESULTS FOR BTEX[1] AND OXYGENATES[2,3,4]

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in milligrams per kilogram (mg/kg)

Sample ID	Sample Location	Date Collected	Sample Depth (feet bgs)	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Methyl-tert Butyl Ether	Di-isopropyl ether	Ethyl tertiary-butyl ether	Tert butyl alcohol	Tertiary-amyl methyl ether
Geoprobe Borings												
MIP-B-13W-6.5	MIP-B-13W	7/6/05	6-6.5	**0.775**	**0.669**	**0.335**	**1.76**	**0.12**	<0.0595	<0.0595	<1.20 UJ	<0.0595
MIP-B-13W-8.5	MIP-B-13W	7/6/05	8-8.5	**0.316**	<0.0783	<0.0783	**0.204 J**	<0.0783	<0.0783	<0.0783	<1.30	<0.0783
MIP-B-13W-12.5	MIP-B-13W	7/6/05	12-12.5	--	--	--	--	--	--	--	--	--
MIP-B-14E-6.0	MIP-B-14E	7/6/05	5.5-6	**2.36**	**12.1**	**49**	**397**	<0.0674	<0.0674	<0.0674	<1.10	<0.0674
MIP-B-14E-8.5	MIP-B-14E	7/6/05	8-8.5	**--**	**--**	**--**	--	--	--	--	--	--
MIP-B-14E-9.0	MIP-B-14E	7/6/05	8.5-9	**1.13**	**3.03**	**18.7**	**82.8**	<0.0635	<0.0635	<0.0635	<5.30	<0.0635
MIP-B-14E-13.0	MIP-B-14E	7/6/05	12.5-13	**--**	**--**	**--**	--	--	--	--	--	--
MIP-B-14E-14.0	MIP-B-14E	7/6/05	13.5-14	<379	<0.379	<0.379	<1.14	<0.379	<0.379	<0.379	<2.60	<0.379
MIP-B-14E-14.4	MIP-B-14E	7/6/05	14-14.4	--	--	--	--	--	--	--	--	--
MIP-B-16N-3.0	MIP-B-16N	7/6/05	2.5-3.0	--	--	--	--	--	--	--	--	--
MIP-B-16N-6.0	MIP-B-16N	7/6/05	5.5-6.0	--	--	--	--	--	--	--	--	--
MIP-B-16N-6.3	MIP-B-16N	7/6/05	6.0-6.3	**50.2**	**348**	**128**	**672**	<0.0584	<0.0584	<0.0584	<5.40	<0.0584
MIP-B-16N-8.5	MIP-B-16N	7/6/05	8-8.5	**--**	**--**	**--**	--	--	--	--	--	--
MIP-B-16N-10.0	MIP-B-16N	7/6/05	9.5-10	**10.9**	**0.316**	<0.239	**0.383 J**	**0.268**	<0.239	<0.239	<2.00	<0.239
MIP-B-16N-12.0	MIP-B-16N	7/6/05	11.5-12	**--**	--	--	--	--	--	--	--	--
MIP-B-16N-13.0	MIP-B-16N	7/6/05	12.5-13	**0.362**	**0.0882**	**0.3**	**1.26**	<0.0678	<0.0678	<0.0678	<4.90	<0.0678
MIP-B-20-6.5	MIP-B-20	6/30/05	6-6.5	**18.2**	**395**	**206**	**1170**	<0.0575	<0.0575	<0.0575	<5.20 UJ	<0.0575
MIP-B-20-8.5	MIP-B-20	6/30/05	8-8.5	**--**	**--**	**--**	--	--	--	--	--	--
MIP-B-20-9.5	MIP-B-20	6/30/05	9-9.5	**2.84**	**3.24**	**1.95**	**8.67**	<0.0675	<0.0675	<0.0675	<1.10 UJ	<0.0675
MIP-B-20-10.3	MIP-B-20	6/30/05	10-10.3	**--**	**--**	**--**	--	--	--	--	--	--
MIP-B-20-11.0	MIP-B-20	6/30/05	10.5-11.0	**1.6**	**0.129**	**0.32**	**0.357**	**0.092**	<0.0511	<0.0511	<1.00 UJ	<0.0511
MIP-B-20-13.0	MIP-B-20	6/30/05	12.5-13	**2.04**	**0.465**	**0.55**	**1.37**	**0.0929**	<0.0553	<0.0553	<1.00 UJ	<0.0553
MIP-B-20-15.0	MIP-B-20	6/30/05	14.5-15	**0.0951 J**	**0.589 J**	**0.25 J**	**1.39 J**	**2.99 J**	<0.061 UJ	<0.061 UJ	<1.10 UJ	<0.061 UJ
MIP-B-20-17.0	MIP-B-20	6/30/05	16.5-17	<0.0612 UJ	<0.0612 UJ	<0.0612 UJ	<0.183 UJ	**0.0759 J**	<0.0612 UJ	<0.0612 UJ	<1.10 UJ	<0.0612 UJ
Hand Auger Borings												
HA-GP-1	HA-GP-1	9/8/05	3.5	**>2.80J (11.4)**	**221**	**76.1**	**524**	<2.08	<0.417	<0.417	<0.417	<417
HA-GP-2	HA-GP-2	9/8/05	2	**>2.48 J (3.08)**	**74.4**	**53.8**	**463**	<2.48	<0.497	<0.497	<0.497	<497
HA-GP-3	HA-GP-3	9/8/05	2.8	**>0.048 J (0.234)**	<0.0484	**0.167**	**0.174**	**0.0165 J**	<0.484	<0.484	<0.484	<484
HA-GP-4	HA-GP-4	9/8/05	2.5	**>1.40 J (2.69)**	**7.16**	**47.7**	**238**	<1.4	<0.560	<0.560	<0.560	<560

Notes:

[1] BTEX = benzene, toluene, ethylbenzene, and xylenes

[2] PK-3 and PK-4 were also anaylzed for Total Petroleum Hydrocarbons as gasoline (TPHg) by EPA Method 418.1, results were 410 mg/kg and 500 mg/kg respectively.

[3] PZ-10, PZ-11, PZ-12 and MW-103 0607 were analyzed for gasoline range organics (GRO), diesel range organics (DRO), and TPHg by EPA Method 8015M. Constituents were not detected above the laboratory reporting limit.

[4] BTEX and oxygenates collected from 1992 to 2005 analyzed by EPA Method 8260. Method of analysis for samples collected in 1990 not documented.

[5] DUP-1 duplicate of PZ-13 0204

Abbreviations
feet bgs = feet below ground surface
ND = not detected
"BOLD" = Detected concentration
< = Not detected above the shown reporting limit
> = Detected above the shown upper reporting limit. Estimated results shown in "( )".
UJ = Results not detected above the reporting limit and considered an estimate.
J = Results considered an estimate
"--" = Not analyzed

TABLE 3

SUMMARY OF HISTORICAL SOIL ANALYTICAL RESULTS FOR ADDITIONAL VOLATILE ORGANIC COMPOUNDS[1,2,3]

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in micrograms per kilogram (mg/kg)

Sample ID	Sample Location	Date Collected	1,2,4 - Trimethyl-benzene	1,2-Dichloro-benzene	1,3,5 - Trimethyl-benzene	2-Butanone	1,3-Dichloro-benzene	1,4-Dichloro-benzene	4-Isopropyl-toluene	Acetone	Chloro-benzene	Chloro-methane	cis-1,2-Dichloro-ethene	Isopropyl-benzene	n-Propyl-benzene	Naphth-alene	n-Butyl-benzene	sec-Butyl-benzene	Tetra-chloroethene	Trichloro-fluoro-methane	Trichloro-ethene
Monitoring Well Borings																					
MW-101 0204	MW-101	11/19/03	**21.6**	<0.0539	**8.01**	--	--	--	**0.453**	--	--	--	--	**0.777**	**2.82**	**3.84**	--	**0.6**	--	--	<0.0539
MW-101 0406	MW-101	11/19/03	**0.65**	<0.0504	**0.182**	--	--	--	<0.0504	--	--	--	--	<0.0504	**0.0852**	**0.186**	--	<0.0504	--	--	<0.0504
MW-102 0002	MW-102	11/20/03	<0.0383	<0.0383	<0.0383	--	--	--	<0.0383	--	--	--	--	<0.0383	<0.0383	<0.0383	--	<0.0383	--	--	<0.0383
MW-103 0607	MW-103	11/20/03	<0.0435	<0.0435	<0.0435	--	--	--	<0.0435	--	--	--	--	<0.0435	<0.0435	<0.0435	--	<0.0435	--	--	<0.0435
MW-104 0405	MW-104	11/20/03	<0.0441	<0.0441	<0.0441	--	--	--	<0.0441	--	--	--	--	<0.0441	<0.0441	<0.0441	--	<0.0441	--	--	**0.0829**
Surface Samples																					
#1	#1	4/25/2003	<0.0457	<0.0457	<0.0457	--	--	--	<0.0457	--	--	--	--	<0.0457	<0.0457	<0.0457	--	<0.0457	--	--	<0.0457
#2	#2	4/25/2003	<0.0675	<0.0675	<0.0675	--	--	--	<0.0675	--	--	--	--	<0.0675	<0.0675	<0.0675	--	<0.0675	--	--	<0.0675
#3	#3	4/25/2003	<0.0738	<0.0738	<0.0738	--	--	--	<0.0738	--	--	--	--	<0.0738	<0.0738	<0.0738	--	<0.0738	--	--	<0.0738
#4	#4	4/25/2003	**0.617**	<0.0843	**0.169**	--	--	--	<0.0843	--	--	--	--	<0.0843	<0.0843	**0.344**	--	<0.0843	--	--	<0.0843
Piezometer Borings																					
PZ-1 0204	PZ-1	11/19/03	**1.41**	<0.046	**0.586**	--	--	--	<0.046	--	--	--	--	**0.11**	**0.38**	**0.435**	--	<0.046	--	--	<0.046
PZ-3 0204	PZ-3	11/19/03	**2.79**	<0.0447	**0.94**	--	--	--	<0.0447	--	--	--	--	**0.141**	**0.449**	**0.589**	--	**0.0652**	--	--	<0.0447
PZ-3 0406	PZ-3	11/19/03	**149**	<0.0448	**58.2**	--	--	--	**3.07**	--	--	--	--	**7.55**	**25.4**	**0.712**	--	**3.56**	--	--	<0.0448
PZ-4 0204	PZ-4	11/19/03	**0.132**	<0.0431	<0.0431	--	--	--	<0.0431	--	--	--	--	<0.0431	<0.0431	<0.0431	--	<0.0431	--	--	<0.0431
PZ-5 0204	PZ-5	11/19/03	<0.043	<0.043	<0.043	--	--	--	<0.043	--	--	--	--	<0.043	<0.043	<0.043	--	<0.043	--	--	<0.043
PZ-6 0406	PZ-6	11/19/03	**6.15**	**0.104**	**1.95**	--	--	--	**0.132**	--	--	--	--	**0.205**	**0.821**	**1.88**	--	**0.165**	--	--	<0.0468
PZ-7 0204	PZ-7	11/19/03	**14.1**	<0.0502	**4.83**	--	--	--	**0.255**	--	--	--	--	**0.659**	**2.08**	**2.53**	--	**0.356**	--	--	<0.0502
PZ-8 0204	PZ-8	11/19/03	**0.243**	<0.0346	**0.0492**	--	--	--	<0.0346	--	--	--	--	<0.0346	**0.0374**	**0.123**	--	<0.0346	--	--	<0.0346
PZ-8 0406	PZ-8	11/19/03	**0.261**	<0.043	**0.0551**	--	--	--	<0.043	--	--	--	--	<0.043	<0.043	**0.205**	--	<0.043	--	--	<0.043
PZ-10 0607	PZ-10	11/20/03	<0.0445	<0.0445	<0.0445	--	--	--	<0.0445	--	--	--	--	<0.0445	<0.0445	<0.0445	--	<0.0445	--	--	<0.0445
PZ-11 0607	PZ-11	11/20/03	<0.0433	<0.0433	<0.0433	--	--	--	<0.0433	--	--	--	--	<0.0433	<0.0433	<0.0433	--	<0.0433	--	--	<0.0433
PZ-12 0708	PZ-12	11/20/03	<0.0458	<0.0458	<0.0458	--	--	--	<0.0458	--	--	--	--	<0.0458	<0.0458	<0.0458	--	<0.0458	--	--	<0.0458
PZ-13 0204	PZ-13	11/20/03	**2.77**	<0.0477	**0.991**	--	--	--	<0.0477	--	--	--	--	**0.109**	**0.422**	**0.609**	--	**0.0668**	--	--	<0.0477
DUP-1[4]	DUP-1	11/20/03	**3.83**	<0.0499	**1.37**	--	--	--	**0.0604**	--	--	--	--	**0.159**	**0.601**	**0.83**	--	**0.0883**	--	--	<0.0499
Hand Auger Borings																					
HA-GP-1	HA-GP-1	9/8/05	**234**	<2.08	**74.2**	<52.1	<2.08	<2.08	**4.38**	<52.1	<2.08	<2.08	<2.08	**10.4**	**35.7**	**26.3**	**17.7**	**4.54**	<2.08	<2.08	--
HA-GP-2	HA-GP-2	9/8/05	**189**	<2.48	**64**	<62.1	<2.48	<2.48	**1.89 J**	<62.1	<2.48	<2.48	<2.48	**8.29**	**28.2**	**22**	<2.48	**3.82**	<2.48	<2.48	--
HA-GP-3	HA-GP-3	9/8/05	**1.68**	<0.0484	**0.529**	<1.21	<0.0484	<0.0484	**0.268**	<1.21	<0.0484	<0.0484	<0.0484	**0.0629**	**0.283**	**0.224**	<0.0484	**0.0474J**	<0.0484	<0.0484	--
HA-GP-4	HA-GP-4	9/8/05	**190**	<1.4	**64.7**	<35	<1.4	<1.4	**5.88**	<35	<1.4	<1.4	<1.4	**7.95**	**30.4**	**22**	<1.4	**6.69**	<1.4	<1.4	--

Abbreviations
feet bgs = feet below ground surface
-- = Not analyzed
"BOLD" = Detected concentration
< = Not detected above the shown reporting limit
J = Results considered an estimate

Notes:

[1] Polynuclear aromatic hydrocarbon (PAH) results listed in Table 4.

[2] Volatile Organic Compounds (VOCs) collected in 1990 and 1992 analyzed by EPA Method 602 and VOCs collected in 2003 and 2005 analyzed by EPA Method 8260B.

[3] Other volatile organic compounds that are not listed in this table were not detected at or above their respective laboratory reporting limits.

[4] DUP-1 duplicate of PZ-13 0204

Geomatrix

TABLE 4

SUMMARY OF HISTORICAL SOIL ANALYTICAL RESULTS FOR POLYNUCLEAR AROMATIC HYDROCARBONS[1]

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in micrograms per kilogram (µg/kg)

				Polyaromatic Hydrocarbons[2,3]														
Sample ID	Sample Location	Date Collected	Sample Depth (feet bgs)	Acenaphthylene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)perylene	Benzo(k)-fluoranthene	Chrysene	Dibenzo(a,h)Anthracene	Fluoranthene	Indeno(1,2,3-cd)Pyrene	Napthalene	Phenanthrene	Pyrene	Reference
#1	#1	04/25/03	0-0.5	**17.4**	<12.9	**60**	**73.5**	**146**	**141**	**56.1**	**69.7**	**52.9**	**127**	**150**	**104**	**56.8**	**91.6**	MFG, 2003
#2	#2	04/25/03	0-0.5	<10.6	**14.9**	**120**	**132**	**180**	**96.6**	**95**	**132**	**44.6**	**293**	**105**	<10.6	**88.1**	**196**	MFG, 2003
#3	#3	04/25/03	0-0.5	<15.7	**22.8**	**150**	**161**	**214**	**135**	**146**	**164**	**59.8**	**355**	**143**	<15.7	**118**	**251**	MFG, 2003
#4	#4	04/25/03	0-0.5	<13.2	**40.3**	**289**	**340**	**418**	**297**	**221**	**328**	**133**	**659**	**297**	<13.2	**202**	**473**	MFG, 2003

Abbreviations
feet bgs = feet below ground surface
"<" = not detected above the reporting limit listed.
"BOLD" = Detected concentration

Notes:

[1] Polyaromatic hydrocarbons (PAHs) analyzed by EPA Method 8270C.

[2] Temperature of cooler containing soil samples was 18.9 degrees centigrade upon arrival at the laboratory.

[3] Other PAHs that are not listed in this table were not detected at or above their respective laboratory reporting limits.

TABLE 5
SUMMARY OF HISTORICAL SOIL GAS ANALYTICAL RESULTS

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in parts per million (ppm)[1]

Sample ID	Date Collected	Soil Gas Measurement[2]	Background Measurement[2]	Denotes multiplier soil gas measurement exceeds background measurement[3]	Notes
1	1992	1.2	0.2	**6.0**	
2	1992	0.3	0.2	1.5	
3	1992	0.2	0.2	1.0	
4	1992	200	0.2	**1000.0**	Gasoline odor
		200.0	0.2	**1000.0**	Time Control location[4]; Gasoline odor
5	1992	220.0	0.8	**275**	Gasoline odor
		54.0	0.4	**135**	Time Control location[4]; Gasoline odor
6	1992	162.0	0.6	**270.0**	Gasoline odor
		161.0	0.6	**268.3**	Time Control location[4]; Gasoline odor
7	1992	1.4	0.8	1.8	
8	1992	1.8	0.6	3.0	
9	1992	1.6	0.3	**5.3**	
10	1992	225.0	0.4	**562.5**	Gasoline odor
		220.0	0.8	**275.0**	Time Control location[4]; Gasoline odor
11	1992	118.0	0.8	**147.5**	Gasoline odor
		174.0	1.0	**174.0**	Time Control location[4]; Gasoline odor
12	1992	200.0	0.8	**250.0**	Gasoline odor
		188.0	0.8	**235.0**	Time Control location[4]; Gasoline odor
13	1992	1.8	0.8	2.3	
14	1992	1.4	0.6	2.3	
15	1992	1.6	0.6	2.7	
16	1992	4.8	0.4	**12.0**	
		2.4	0.8	**3.0**	Time Control location[4]
17	1992	1.8	0.4	4.5	
		1.8	0.6	3.0	Time Control location[4]
18	1992	5.4	0.4	**13.5**	
		3.6	0.4	**9.0**	Time Control location[4]
19	1992	1	0.3	3.3	
20	1992	0.6	0.3	2.0	
21	1992	1	0.3	3.3	
22	1992	0.6	0.3	2.0	
23	1992	2.4	0.3	**8.0**	
24	1992	42	0.3	**140**	
25	1992	0.6	0.3	2.0	
26	1992	0.6	0.3	2.0	
27	1992	0.9	0.3	3.0	
28	1992	0.8	0.3	2.7	
29	1992	0.4	0.3	1.3	
30	1992	0.3	0.3	1.0	
31	1992	0.4	0.3	1.3	
32	1992	0.6	0.3	2.0	
33	1992	0.3	0.3	1.0	
34	1992	0.3	0.3	1.0	
35	1992	0.8	0.4	2.0	
36	1992	0.5	0.4	1.3	

Notes:

[1] Soil gas readings collected with a photoionization detector, an HNU Systems, Inc., Model PI-101 utilizing a 10.2 electron Volt (eV) utraviolet lamp.

[2] Data reference NETC, 1992, *Final Phase II Hydrogeological Investigation* .

[3] Values exceeding 5 are in Bold and are shaded in Figure 7.

[4] NETC extended the sample grid 40 feet east, installed additional probes and left undisturbed 2 hours prior to sampling. Probes 4 through 6, 10 through 12, and 16 through 18 were recapped as time control measurement locations. NETC surmised that measurements from the time control probes were similar to the initial readings, therefore the time undisturbed factor was irrelevant.

TABLE 6

SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS FOR BTEX AND OXYGENATES[1,2]

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in micrograms per liter (ug/L)

Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Methyl tert-Butyl Ether	Di-isopropyl-ether	Ethyl tertiary-butyl ether	Tert butyl alcochol	Tertiary-amyl methyl ether
Monitoring Wells										
MW-1	01/31/91	**12**	**2.5**	ND	**20**	--	--	--	--	--
	11/14/91	**10**	**2.8**	**6.4**	**8.7**	--	--	--	--	--
	02/20/92	**637**	**1028**	**170**	**920**	--	--	--	--	--
	05/21/92	**926**	**3000**	**950**	**5,300**	--	--	--	--	--
	08/26/92	**990**	**3800**	**830**	**4,200**	--	--	--	--	--
	11/18/92	**150**	**33**	ND	**110**	--	--	--	--	--
	12/03/97	**230**	**77**	**220**	**3,300**	--	--	--	--	--
	03/19/03	**79**	**27.8**	**182**	**1,600**	**13**	--	--	--	--
	11/25/03	**50.5**	**4.71**	**81.8**	**902**	**13.1**	<1	--	--	<1
	09/09/05	**22.1**	**1.6**	**11.2**	**38.1**	**20.1**	<1.00	<1.00	<25.0	<1.00
MW-2	01/31/91	**33,000**	**23,000**	**1,100**	**7,500**	--	--	--	--	--
	11/14/91	**4,880**	**14,200**	**1,420**	**7,190**	--	--	--	--	--
	02/20/92	**2,900**	**2,900**	**430**	**6,500**	--	--	--	--	--
	05/21/92	**10,000**	**26,000**	<5000	**27,000**	--	--	--	--	--
	08/26/92	**5,400**	**14,000**	**1,800**	**9,700**	--	--	--	--	--
	11/18/92	**8,700**	**17,000**	**2,500**	**11,000**	--	--	--	--	--
	12/03/97	**3,000**	**14,000**	**2,400**	**19,500**	--	--	--	--	--
	03/19/03	**1,190**	**6,860**	**2,050**	**22,100**	**100**	--	--	--	--
	11/25/03	**433**	**5,820**	**2,650**	**12,600**	**17.5**	<1	--	--	<1
MW-3	01/31/91	**660**	**1320**	**110**	**560**	--	--	--	--	--
	11/14/91	**1600**	**4060**	**374**	**1,820**	--	--	--	--	--
	02/20/92	**850**	**1700**	**260**	**1,200**	--	--	--	--	--
	05/21/92	**3600**	**4800**	**28**	**2,600**	--	--	--	--	--
	08/26/92	**2100**	**1400**	**140**	**650**	--	--	--	--	--
	11/18/92	**1400**	**1500**	**101**	**480**	--	--	--	--	--
	12/03/97	**260**	**110**	**48**	**390**	--	--	--	--	--
	03/19/03	**693**	**83.9**	**172**	**1,040**	--	--	--	--	--
	11/25/03	**328**	**83.9**	**186**	**962**	**21.1**	<1	--	--	<1
MW-4	01/31/91	**150**	**90**	ND	**110**	--	--	--	--	--
	11/14/91	**1,170**	**1,510**	**336**	**1,570**	--	--	--	--	--
	02/20/92	**2,100**	**2,900**	ND	**1,900**	--	--	--	--	--
	05/21/92	**3,200**	**6,900**	**35**	**4,400**	--	--	--	--	--
	08/26/92	**4,000**	**9,500**	**1,100**	**5,900**	--	--	--	--	--
	11/18/92	**1,010**	**180**	**190**	**380**	--	--	--	--	--
	12/03/97	**2,400**	**5,200**	**570**	**4,600**	--	--	--	--	--
	03/19/03	**1,950**	**6,690**	**1,160**	**6,500**	**187**	--	--	--	--
	11/25/03	**1,150**	**1,160**	**517**	**2,880**	**77.4**	**3.34**	--	--	<1
MW-5	11/14/91	**2,660**	**3,840**	**449**	**3,620**	--	--	--	--	--
	02/20/92	**2,100**	**1,700**	**32**	**2,300**	--	--	--	--	--
	05/21/92	**7,700**	**12,000**	**1,200**	**9,300**	--	--	--	--	--
	08/26/92	**5,900**	**12,000**	**1,300**	**7,800**	--	--	--	--	--
	11/18/92	**8,100**	**7,800**	**1,400**	**5,300**	--	--	--	--	--
	12/03/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/19/03	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/25/03[3]	NS	NS	NS	NS	NS	NS	NS	NS	NS

TABLE 6

SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS FOR BTEX AND OXYGENATES[1,2]

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in micrograms per liter (ug/L)

Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Methyl tert-Butyl Ether	Di-isopropyl-ether	Ethyl tertiary-butyl ether	Tert butyl alcochol	Tertiary-amyl methyl ether
MW-6	11/14/91	ND	ND	ND	ND	--	--	--	--	--
	02/20/92	**110**	**220**	ND	**300**	--	--	--	--	--
	05/21/92	ND	ND	ND	ND	--	--	--	--	--
	08/26/92	ND	ND	ND	ND	--	--	--	--	--
	11/18/92	**2**	**2**	**3**	**4**	--	--	--	--	--
	12/03/97	NS	NS	NS	NS	--	--	--	--	--
	03/19/03	ND	ND	ND	ND	**30.2**	--	--	--	--
	11/24/03	<1	<1	<1	<1	**154**	<1	--	--	<1
	09/08/05	**22.9**	**0.2J**	**0.7J**	<3.0	**182**	<1.00	<1.00	**3270 J**	**0.91J**
MW-7	11/14/91	**3.4**	**5.1**	**0.7**	**5.5**	--	--	--	--	--
	02/20/92	**8**	**13**	**0.8**	**13**	--	--	--	--	--
	05/21/92	ND	ND	ND	ND	--	--	--	--	--
	08/26/92	ND	ND	ND	ND	--	--	--	--	--
	11/18/92	NS	NS	NS	NS	NS	NS	NS	NS	NS
	12/03/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	03/19/03	ND	ND	ND	ND	**404**	--	--	--	--
	11/24/03	<1	<1	<1	<1	**645**	<1	--	--	**9.45**
	09/07/05	<1.0	<1.0	<1.0	<3.0	**549**	<1.00	<1.00	**139**	**2.33**
MW-8	11/14/91	**4.6**	**13**	**1.6**	**8.4**	--	--	--	--	--
	02/20/92	ND	ND	ND	**0.5**	--	--	--	--	--
	05/21/92	ND	ND	ND	ND	--	--	--	--	--
	08/26/92	ND	ND	ND	ND	--	--	--	--	--
	11/18/92	ND	ND	ND	ND	--	--	--	--	--
	12/03/97	<1.0	<1.0	<1.0	<2.0	--	--	--	--	--
	03/18/03	ND	ND	ND	ND	**7.8**	--	--	--	--
	11/24/03	<1	<1	<1	<1	**40.4**	<1	--	--	<1
	09/07/05	<1.0	<1.0	<1.0	<3.0	**86.5**	<1.00	<1.00	<25.0	**0.72J**
MW-9	11/14/91	ND	ND	ND	ND	--	--	--	--	--
	02/20/92	ND	**0.6**	ND	**0.7**	--	--	--	--	--
	05/21/92	ND	ND	ND	ND	--	--	--	--	--
	08/26/92	ND	ND	ND	ND	--	--	--	--	--
	11/18/92	ND	ND	ND	ND	--	--	--	--	--
	12/03/97	<1.0	<1.0	<1.0	<2.0	--	--	--	--	--
	03/18/03	ND	ND	ND	ND	**1.09**	--	--	--	--
	11/24/03	<1	<1	<1	<1	**1.3**	<1	--	--	<1
	09/08/05	<1.0	<1.0	<1.0	<3.0	**1.3**	<1.00	<1.00	<25.0	<1.00
MW-10	08/26/92	ND	ND	ND	ND	--	--	--	--	--
	11/18/92	ND	ND	ND	ND	--	--	--	--	--
	12/03/97	<1.0	<1.0	<1.0	<2.0	--	--	--	--	--
	03/18/03	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/24/03	<1	<1	<1	<1	**24**	<1	--	--	<1
	09/08/05	<1.0	<1.0	<1.0	<3.0	**16.3**	<1.00	<1.00	<25.0	**0.32J**
MW-10-DUP	09/08/05	<1.0	<1.0	<1.0	<3.0	**11.5**	<1.00	<1.00	<25.0	<1.0
MW-11	08/26/92	**5,800**	**23,000**	**1,200**	**10,000**	--	--	--	--	--
	11/18/92	**9,300**	**30,100**	<1000	**11,000**	--	--	--	--	--
	03/18/03	**994**	**9,690**	**1,740**	**9,240**	19.5	--	--	--	--
	11/24/03	**1,180**	**14,600**	**2,830**	**15,800**	<100	<100	--	--	<100
	09/09/05	**2,190**	**586**	**1860**	**3450**	**209**	<1.00	<1.00	**308**	<1.00
MW-12	08/26/92	**860**	**620**	**150**	**1,700**	--	--	--	--	--
	11/18/92	**1,400**	**350**	**204**	**1,100**	--	--	--	--	--
	03/19/03	**492**	**268**	**301**	**1,490**	**8.22**	--	--	--	--
	11/24/03	**861**	**189**	**976**	**2,970**	**9.7 J**	<10	--	--	<10
	09/09/05	**410**	**49.4**	**231**	**924**	**13.4**	<10.0	<10.0	<250	<10.0
MW-13	08/26/92	ND	ND	ND	ND	--	--	--	--	--
	11/18/92	ND	**1**	ND	ND	--	--	--	--	--
	03/18/03	ND	ND	ND	ND	**1.33**	--	--	--	--
	11/25/03	<1	<1	<1	<1	**1.31**	<1	--	--	<1
	09/09/05	<1.0	<1.0	<1.0	<3.0	**1.4**	<1.00	<1.00	<25.0	<1.00
DP-1	7/29/88[4]	**8800**	**21000**	--	**15900**	--	--	--	--	--
DP-2	7/29/88[4]	**11000**	**5000**	--	**5230**	--	--	--	--	--
DP-3	7/29/88[4]	**15000**	**4800**	--	**17000**	--	--	--	--	--
DP-4	7/29/88[4]	**21000**	**33000**	--	**11900**	--	--	--	--	--
MW-101	11/25/03	**1,630**	**4,520**	**1,830**	**10,800**	**227**	<100	--	--	<100
DUP-2[5]	11/25/03	**1,650**	**4,620**	**1,880**	**11,000**	**206**	<100			<100
MW-101	09/08/05	**3,340**	**9,010**	**3,610**	**19,200**	**134**	<100	<10	**3180**	<10

TABLE 6

SUMMARY OF HISTORICAL GROUNDWATER ANALYTICAL RESULTS FOR BTEX AND OXYGENATES[1,2]

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in micrograms per liter (ug/L)

Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Methyl tert-Butyl Ether	Di-isopropyl-ether	Ethyl tertiary-butyl ether	Tert butyl alcohol	Tertiary-amyl methyl ether
MW-102	11/24/03	<1	<1	<1	**0.32 J**	**1.12**	<1	--	--	<1
	09/08/05	**0.4J**	<1	<1	<3	**2.3**	<1.00	<1.00	<25.0	<1.00
MW-202[6]	09/08/05	**0.4J**	<1.0	<1.0	<3.0	**2.2**	<1.00	<1.00	<25.0	<1.00
MW-103	11/24/03	<1	<1	<1	<1	**6.35**	<1	--	--	<1
MW-104	11/24/03	<1	<1	<1	<2	**9.77**	<1	--	--	<1
MW-110	07/08/05	<1	<1	<1	<3	<1	<1	<1	<25	<1
	09/08/05	<1.0	<1.0	<1.0	<3.0	<1.0	<1.00	<1.00	<25.0	<1.00
MW-111	07/08/05	<1	<1	<1	<3	**2.6**	<1	<1	<25	<1
	09/08/05	<1.0	<1.0	<1.0	<3.0	**11.2**	**0.43J**	<1.00	**41.1**	<1.00
Grab Groundwater										
HA-1	11/24/03	<1	<1	<1	<2	<1	<1	--	--	<1
HA-2	11/24/03	<100	**112**	**630**	**2890**	<100	<100	--	--	<100
HA-3	11/24/03	<1	<1	<1	<2	<1	<1	--	--	<1
HA-4	11/24/03	<1	<1	<1	<2	<1	<1	--	--	<1
HA-5	11/25/03	<1	<1	<1	<2	<1	<1	--	--	<1
HA-6	11/25/03	<1	<1	<1	<2	<1	<1	--	--	<1
HA-7	11/25/03	<1	<1	<1	<2	<1	<1	--	--	<1
HA-101	07/07/05	<1.0	<1.0	<1.0	<3.0	**2.9**	<1	<1	<25	<1
HA-102	07/07/05	<1.0	<1.0	<1.0	<3.0	**3.3**	<1	<1	<25	<1
HA-103	07/08/05	<1.0	<1.0	<1.0	<3.0	**41.4**	<1	<1	<25	<1

Abbreviations:
"BOLD" = Detected concentration
"<" = not detected above the reporting limit listed.
J = Results considered an estimate.
"--" = Not Analyzed
ND = Not Detcted

Notes:

[1] Volatile organic compounds including methyl tert-butyl ether (MTBE) analyzed by EPA Method 602 in 1991 and 1992, by EPA Method 8021 for samples collected in 1997, and by EPA Method 8260B for samples collected in 2003.

[2] Other volatile organic compounds that are not listed in this table are provided in Table 7.

[3] Well decomissioned.

[4] Well was not purged prior to sampling.

[5] DUP-2 is duplicate of MW-101.

[6] MW-202 is duplicate of MW-102.

TABLE 7

SUMMARY OF ADDITIONAL HISTORICAL GROUNDWATER ANALYTICAL RESULTS[1,2]

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Concentrations in micrograms per liter (ug/L)

Sample ID	Sample Date	1,2,4 - Trimethy-lbenzene	1,2-Dichloro-benzene	1,2-Dichloroethane	1,3,5 - Trimethyl-benzene	2-Butanone	Carbon Disulfide	1,3-Dichloro-benzene	1,4-Dichloro-benzene	4-Isopropyl-toluene	Acetone	Chloro-benzene	Chloro-methane	cis-1,2-Dichloro-ethene	Isopropyl-benzene	n-Propyl-benzene	Naphth-alene	n-Butyl-benzene	sec-Butyl-benzene	tert-Butyl-benzene	Tetra-chloroethene	Trichloro-fluoro-methane
Monitoring Wells																						
MW-1	03/19/03	**606**	<1	<1	**194**	<25	<1	<1	<1	**3.35**	<25	<1	<2	<1	**26.4**	**48.7**	**144**	<1	**5.69**	**1.42**	<1	<2
	11/25/03	**520**	**0.72 J**	<1	**216**	<25	<1	<1	<1	**3.59**	<25	<1	<2	<1	**46.2**	**85.9**	**225**	<1	<1	<1	<1	<2
	09/09/05	**164E**	**1.3**	<1	**17.4**	<25	<1	<1	<1	**1.2**	<25	<1	<2	<1	**30.8**	**67.9**	**98.2**	<1	**6.5**	<1	<1	<2
MW-2	03/19/03	**4480**	<100	<100	**1290**	<2500	<100	<100	<100	<100	<2500	<100	<200	<100	**102**	**258**	**1210**	<100	<100	<100	<100	<200
	11/25/03	**2,130**	**3.81**	**5820**	**610**	<25	<1	**0.33 J**	<1	**6.64**	<25	**3.73**	**5.14**	**1.95**	**92**	**243**	**668**	<1	<1	<1	<1	<2
MW-3	03/19/03	**209**	**4.54**	<1	**88.5**	<25	<1	<1	<1	**1.72**	<25	**1.25**	<2	**2.08**	**17.2**	**40.6**	**59**	<1	**2.64**	<1	<1	<2
	11/25/03	**189**	**2.24**	<1	**56.9**	<25	<1	**0.34 J**	**0.54 J**	**0.35 J**	<25	**1.55**	<2	**0.86 J**	**7.78**	**17.3**	**59.4**	<1	<1	<1	<1	<2
MW-4	03/19/03	**974**	<10	<10	**258**	<250	<10	<10	<10	<10	<250	<10	<20	<10	**54.9**	**118**	**248**	<10	<10	<10	<10	<20
	11/25/03	**537**	**0.54**	**1160**	**152**	**12.7 J**	<1	<1	<1	**1.6**	**34.3**	**0.84 J**	<2	<1	**29.7**	**50.4**	**194**	<1	<1	<1	<1	<2
MW-5	11/25/03[3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	03/19/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	09/08/05	**0.1J**	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-7	03/19/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	09/07/05	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-8	03/18/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	**2.71**
	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	**0.27 J**	**1.4 J**
	09/07/05	<1	<1	**1.2**	<1	<25	<1	<1	<1	<1	<25	**0.2J**	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-9	03/18/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	09/08/05	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-10	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	09/08/05	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-10-DUP	09/08/05	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-11	03/18/03	**1170**	<10	<10	**480**	<250	<10	<10	<10	<10	<250	<10	<20	<10	**81.2**	**178**	**378**	<10	**10.2**	<10	<10	<20
	11/24/03	**1,630**	<100	<100	**485**	<2500	<100	<100	<100	<100	<2500	<100	<200	<100	**97 J**	**193**	**483**	<100	<100	<100	<100	<200
	09/09/05	**1,020**	<100	<100	**270**	<2500	<100	<100	<100	<100	<2500	<100	<200	<100	**49.0J**	**101**	**249**	<100	<100	<100	<100	<200
MW-12	03/19/03	**374**	<1	<1	**91**	<25	<1	<1	<1	<1	<25	<1	<2	<1	**40.4**	**94.8**	**96**	<1	**7.2**	**1.17**	<1	<2
	11/24/03	**844**	<10	<10	**218**	<250	<10	<10	<10	**4.2 J**	<250	<10	<20	<10	**65.7**	**130**	**326**	<10	<10	<10	<10	<10
	09/09/05	**306**	<10	<10	**39.9**	<250	<10	<10	<10	**5.5J**	<250	<10	<20	<10	**62.3**	**154**	**250**	**15.6**	**10.6**	<10	<10	<10
MW-13	03/18/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	11/25/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
	09/09/05	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
DP-1	7/29/88[4]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DP-2	7/29/88[4]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DP-3	7/29/88[4]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DP-4	7/29/88[4]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-101	11/25/03	**1,600**	<100	<100	**506**	<2500	<100	<100	<100	<100	<2500	<100	<200	<100	**94 J**	**194**	**409**	<100	<100	<100	<100	<200
DUP-2[5]	11/25/03	**1,620**	<100	<100	**476**	<2500	<100	<100	<100	<100	<2500	<100	<200	<100	**96 J**	**201**	**404**	<100	<100	<100	<100	<200
MW-101	09/08/05	**2,870**	<100	<100	**786**	<2500	<100	<100	<100	**56**	<2500	<100	<200	<100	**150**	**393**	**603**	<100	**25J**	<100	<100	<200
MW-102	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	**0.29 J**	<2	**0.75 J**	<1	<1	<1	<1	<1	<1	<1	<2
	09/08/05	<1	**0.3J**	<1	<1	<25	<1	<1	<1	<1	<25	**0.4J**	<2	**3.4**	<1	<1	<1	<1	<1	<1	<1	<2
MW-202[6]	09/08/05	<1	**0.3J**	<1	<1	<25	<1	0.3J	<1	<1	<25	**0.4J**	<2	**3.3**	<1	<1	<1	<1	<1	<1	<1	<2
MW-103	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	**1.4 J**
MW-104	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-110	07/08/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	09/08/05	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
MW-111	07/08/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	09/08/05	<1	<1	<1	<1	<25	**0.7UJ**	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
Grab Groundwater																						
HA-1	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	**7.24 J**	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
HA-2	11/24/03	**2140**	<100	<100	**716**	<2500	<100	<100	<100	<100	<2500	<100	<200	<100	**118**	**307**	**314**	<100	<100	<100	<100	<200
HA-3	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
HA-4	11/24/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
HA-5	11/25/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
HA-6	11/25/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
HA-7	11/25/03	<1	<1	<1	<1	<25	<1	<1	<1	<1	<25	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<2
HA-101	07/07/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-102	07/07/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HA-103	07/08/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

[1] Only samples collected after 2003 were analyzed for the the compounds listed; Volatile organic compounds analyzed by EPA Method 8260B for samples collected in 2003 and 2005.

[2] Other volatile organic compounds that are not listed in this table were not detected at or above their respective laboratory reporting limits.

[3] Well decomissioned.

[4] Well was not purged prior to sampling.

[5] DUP-2 is duplicate of MW-101.

[6] MW-202 is duplicate of MW-102.

Abbreviatio--:
"BOLD" = Detected concentration
J = Results considered an estimate.
"--" = Not Analyzec

TABLE 8

SUMMARY OF HISTORICAL SURFACE WATER ANALYTICAL RESULTS[1]

Avis Rent A Car System, Inc. Facility
28 IBM Road
Poughkeepsie, New York

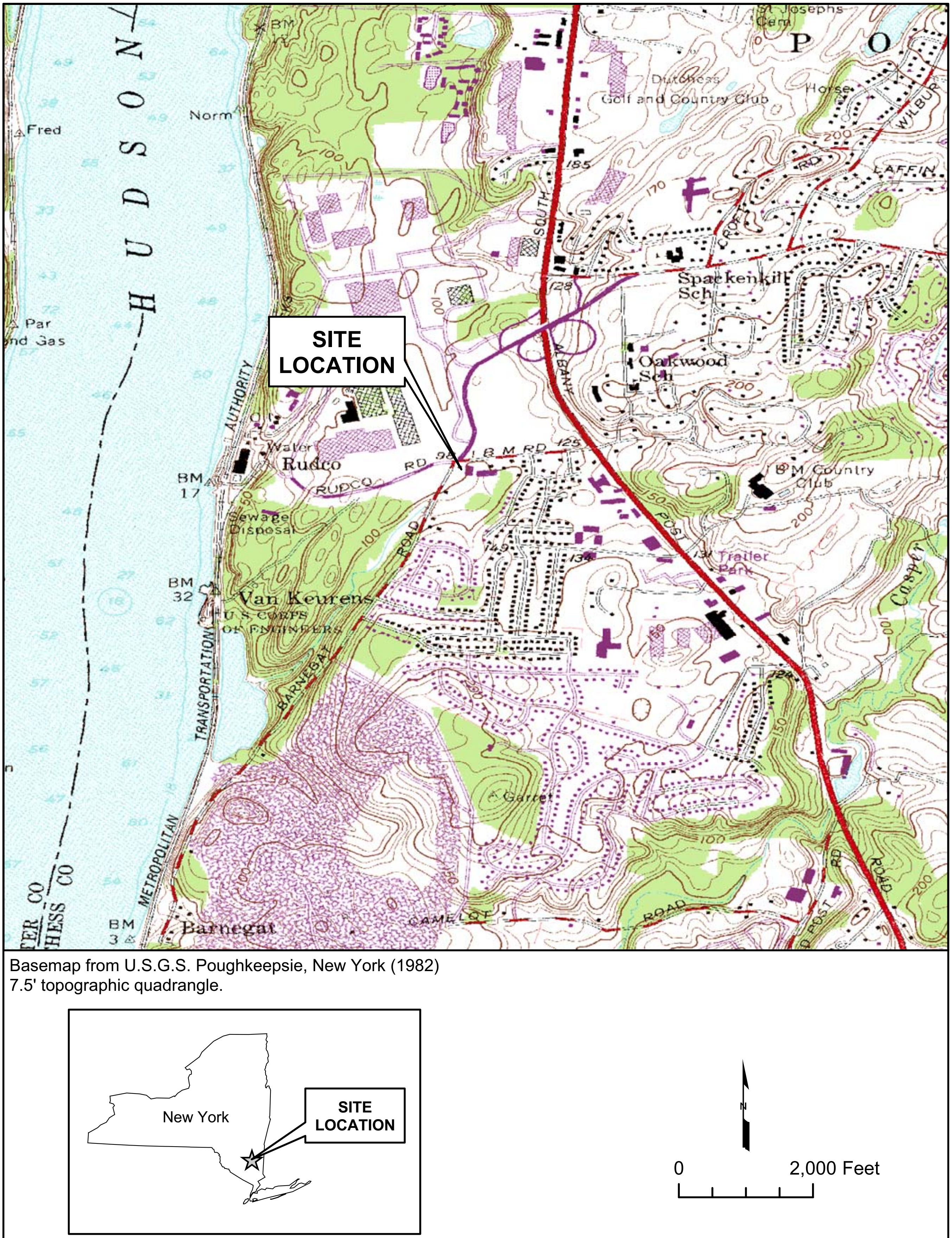
Concentrations in micrograms per liter (ug/L)

Sample ID	Sample Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	Reference[2]
Stream Locations						
Upstream	08/19/92	<1	**1**	<1	<2	NETC, 1992
Midstream	08/19/92	<1	<1	<1	<2	NETC, 1992
Downstream	08/19/92	<1	<1	<1	<2	NETC, 1992

Abbreviations:
"BOLD" = Detected concentration
ND = Not detected

Notes:
[1] Analyzed by EPA Method 602.
[2] References listed in report text.

FIGURES



Basemap from U.S.G.S. Poughkeepsie, New York (1982)
7.5' topographic quadrangle.

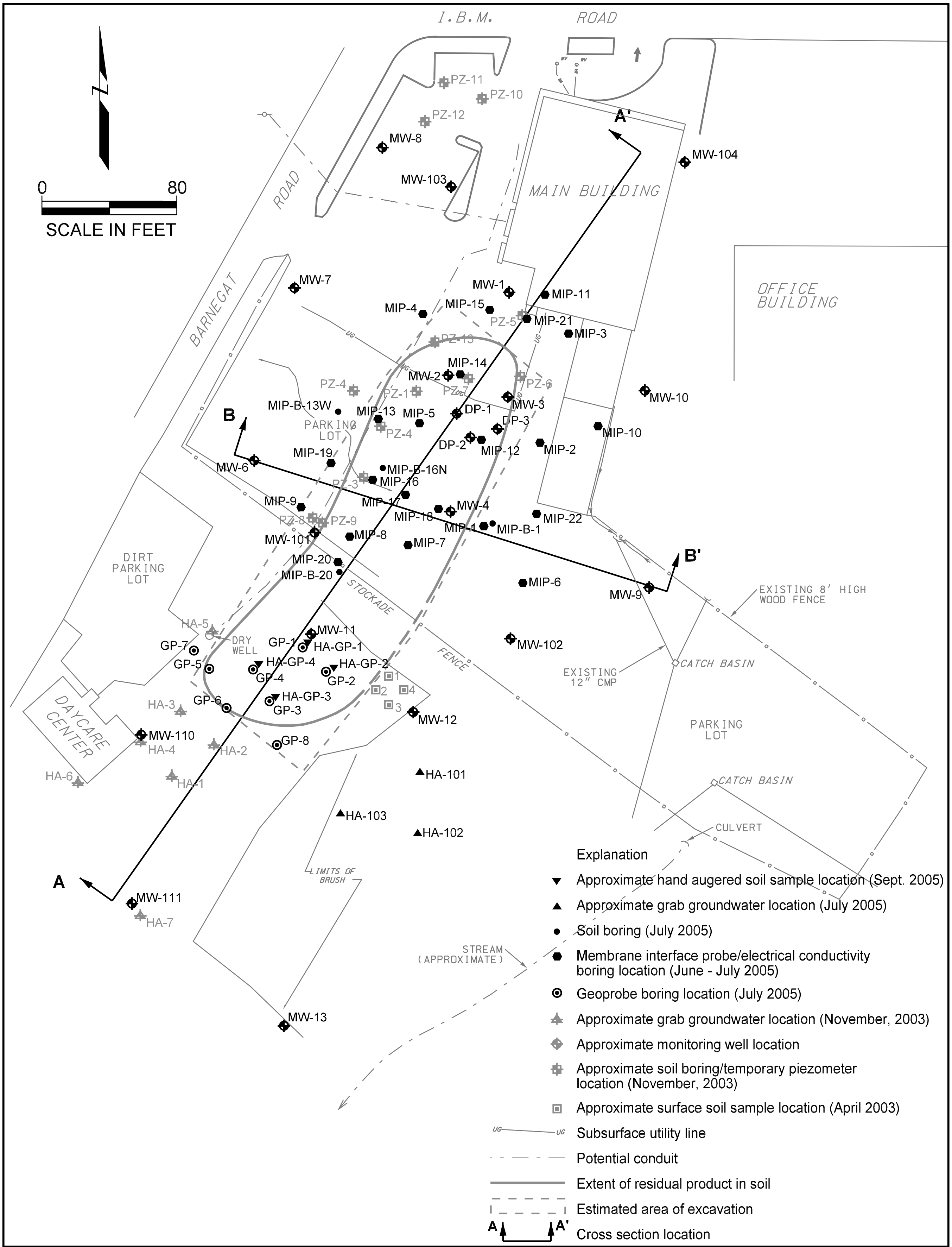
S:\9300\9328\9328.000\task_10105_0912_rir_fig_01.mxd

GEOMATRIX

SITE LOCATION MAP
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000

Figure
1



GEOMATRIX

SITE PLAN
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000

Figure
2

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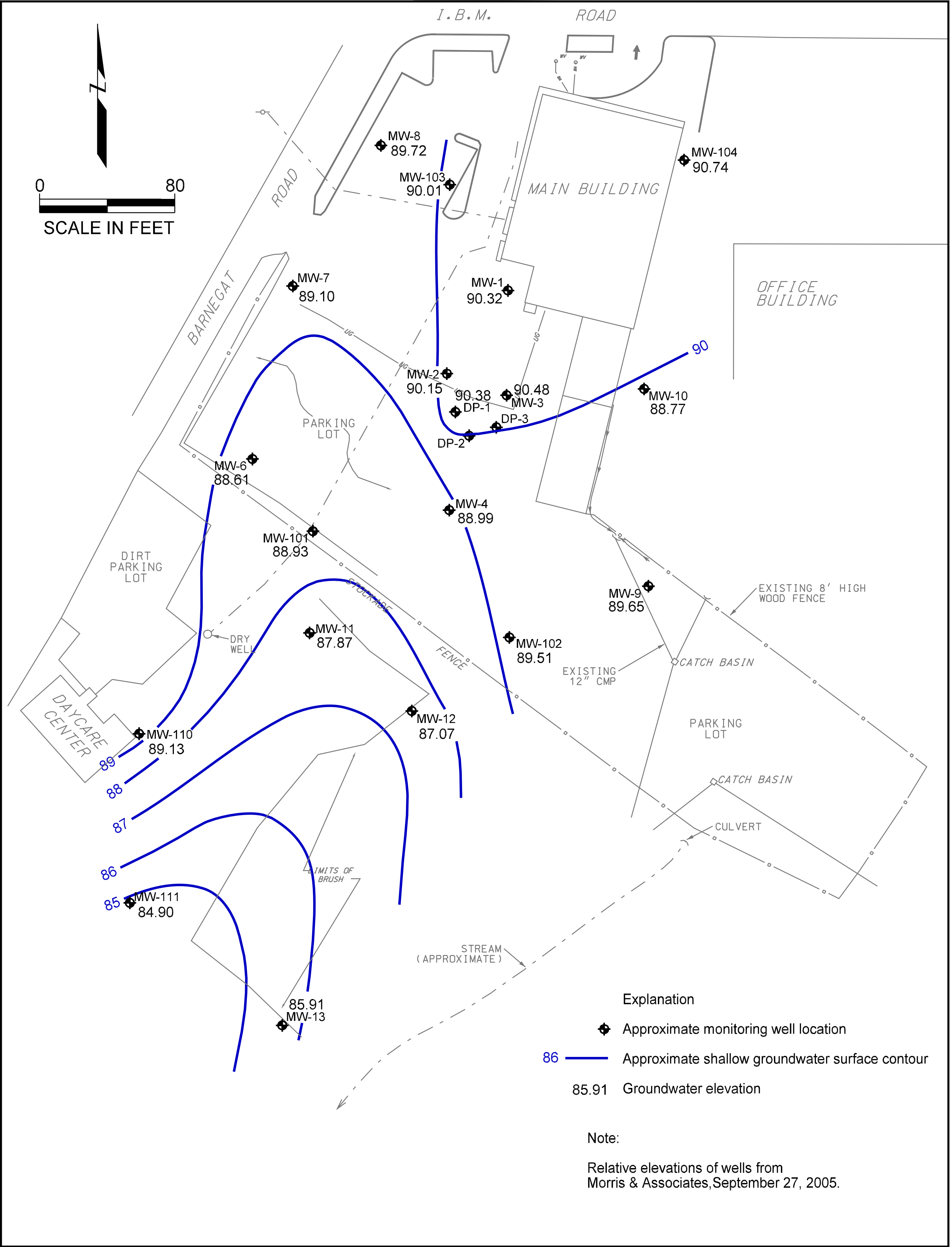

Explanation

Approximate monitoring well location

86 Approximate shallow groundwater surface contour

85.91 Groundwater elevation

Note:

Relative elevations of wells from
Morris & Associates,September 27, 2005.

GEOMATRIX

POTENTIOMETRIC SURFACE MAP
September 7, 2005
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000

Figure
3

31-OCT-2005 10:51 swessels
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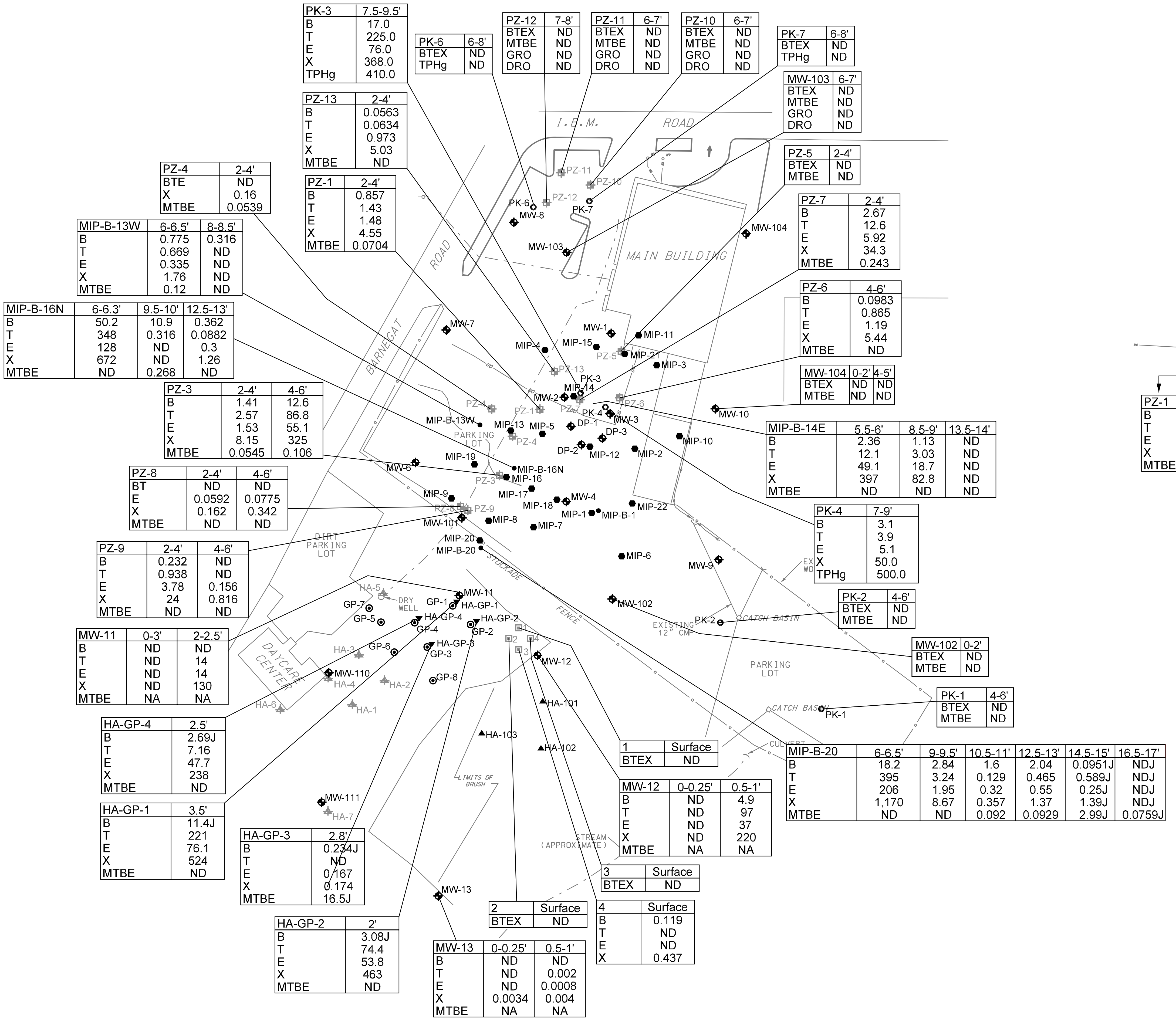


PK-3	7.5-9.5'
B	17.0
T	225.0
E	76.0
X	368.0
TPHg	410.0

PK-6	6-8'
BTEX	ND
TPHg	ND

PZ-12	7-8'
BTEX	ND
MTBE	ND
GRO	ND
DRO	ND

PZ-11	6-7'
BTEX	ND
MTBE	ND
GRO	ND
DRO	ND

PZ-10	6-7'
BTEX	ND
MTBE	ND
GRO	ND
DRO	ND

PK-7	6-8'
BTEX	ND
TPHg	ND

MW-103	6-7'
BTEX	ND
MTBE	ND
GRO	ND
DRO	ND

PZ-13	2-4'
B	0.0563
T	0.0634
E	0.973
X	5.03
MTBE	ND

PZ-5	2-4'
BTEX	ND
MTBE	ND

PZ-4	2-4'
BTE	ND
X	0.16
MTBE	0.0539

PZ-1	2-4'
B	0.857
T	1.43
E	1.48
X	4.55
MTBE	0.0704

PZ-7	2-4'
B	2.67
T	12.6
E	5.92
X	34.3
MTBE	0.243

MIP-B-13W	6-6.5'	8-8.5'
B	0.775	0.316
T	0.669	ND
E	0.335	ND
X	1.76	ND
MTBE	0.12	ND

PZ-6	4-6'
B	0.0983
T	0.865
E	1.19
X	5.44
MTBE	ND

MIP-B-16N	6-6.3'	9.5-10'	12.5-13'
B	50.2	10.9	0.362
T	348	0.316	0.0882
E	128	ND	0.3
X	672	ND	1.26
MTBE	ND	0.268	ND

MW-104	0-2'	4-5'
BTEX	ND	ND
MTBE	ND	ND

PZ-3	2-4'	4-6'
B	1.41	12.6
T	2.57	86.8
E	1.53	55.1
X	8.15	325
MTBE	0.0545	0.106

MIP-B-14E	5.5-6'	8.5-9'	13.5-14'
B	2.36	1.13	ND
T	12.1	3.03	ND
E	49.1	18.7	ND
X	397	82.8	ND
MTBE	ND	ND	ND

PZ-8	2-4'	4-6'
BT	ND	ND
E	0.0592	0.0775
X	0.162	0.342
MTBE	ND	ND

PK-4	7-9'
B	3.1
T	3.9
E	5.1
X	50.0
TPHg	500.0

PZ-9	2-4'	4-6'
B	0.232	ND
T	0.938	ND
E	3.78	0.156
X	24	0.816
MTBE	ND	ND

PK-2	4-6'
BTEX	ND
MTBE	ND

MW-11	0-3'	2-2.5'
B	ND	ND
T	ND	14
E	ND	14
X	ND	130
MTBE	NA	NA

MW-102	0-2'
BTEX	ND
MTBE	ND

PK-1	4-6'
BTEX	ND
MTBE	ND

HA-GP-4	2.5'
B	2.69J
T	7.16
E	47.7
X	238
MTBE	ND

1	Surface
BTEX	ND

MIP-B-20	6-6.5'	9-9.5'	10.5-11'	12.5-13'	14.5-15'	16.5-17'
B	18.2	2.84	1.6	2.04	0.0951J	NDJ
T	395	3.24	0.129	0.465	0.589J	NDJ
E	206	1.95	0.32	0.55	0.25J	NDJ
X	1,170	8.67	0.357	1.37	1.39J	NDJ
MTBE	ND	ND	0.092	0.0929	2.99J	0.0759J

MW-12	0-0.25'	0.5-1'
B	ND	4.9
T	ND	97
E	ND	37
X	ND	220
MTBE	NA	NA

HA-GP-1	3.5'
B	11.4J
T	221
E	76.1
X	524
MTBE	ND

HA-GP-3	2.8'
B	0.234J
T	ND
E	0.167
X	0.174
MTBE	16.5J

3	Surface
BTEX	ND

2	Surface
BTEX	ND

4	Surface
B	0.119
T	ND
E	ND
X	0.437

HA-GP-2	2'
B	3.08J
T	74.4
E	53.8
X	463
MTBE	ND

MW-13	0-0.25'	0.5-1'
B	ND	ND
T	ND	0.002
E	ND	0.0008
X	0.0034	0.004
MTBE	NA	NA

Explanation

- ○ Approximate hollow stem auger soil sample location (Dec. 1990)
- ▼ Approximate hand augered soil sample location (Sept. 2005)
- ▲ Approximate grab groundwater location (July 2005)
- • Soil boring (July 2005)
- ● Membrane interface probe/electrical conductivity boring location (June - July 2005)
- ⊙ Geoprobe boring location (July 2005)
- ▲ Approximate grab groundwater location (November, 2003)
- ⊕ Approximate monitoring well location
- ⊞ Approximate soil boring/temporary piezometer location (November, 2003)
- ▣ Approximate surface soil sample location (April 2003)
- — · — Subsurface utility line

Boring number

PZ-1	2-4'
B	0.857
T	1.43
E	1.48
X	4.55
MTBE	0.0704

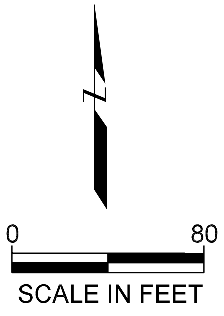
Approximate boring depth (feet below ground surface)

Constituents (results in milligrams per kilogram)

MTBE=methyl-tert butyl ether
BTEX=benzene, toluene, ethylbenzene, and xylenes
GRO=gasoline range organics
DRO=diesel range organics
TPHg=total petroleum hydrocarbons as gasoline
J=results considered an estimate
ND=contituents not detected above laboratory quantitation limit
NA=not analyzed

Note:

Additional analytical results listed in Tables 2, 3, 4.



APPROXIMATE AERIAL DISTRIBUTION OF VOLATILE ORGANIC COMPOUNDS IN SOIL

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

GEOMATRIX

Project No.	Figure
9328.000	4

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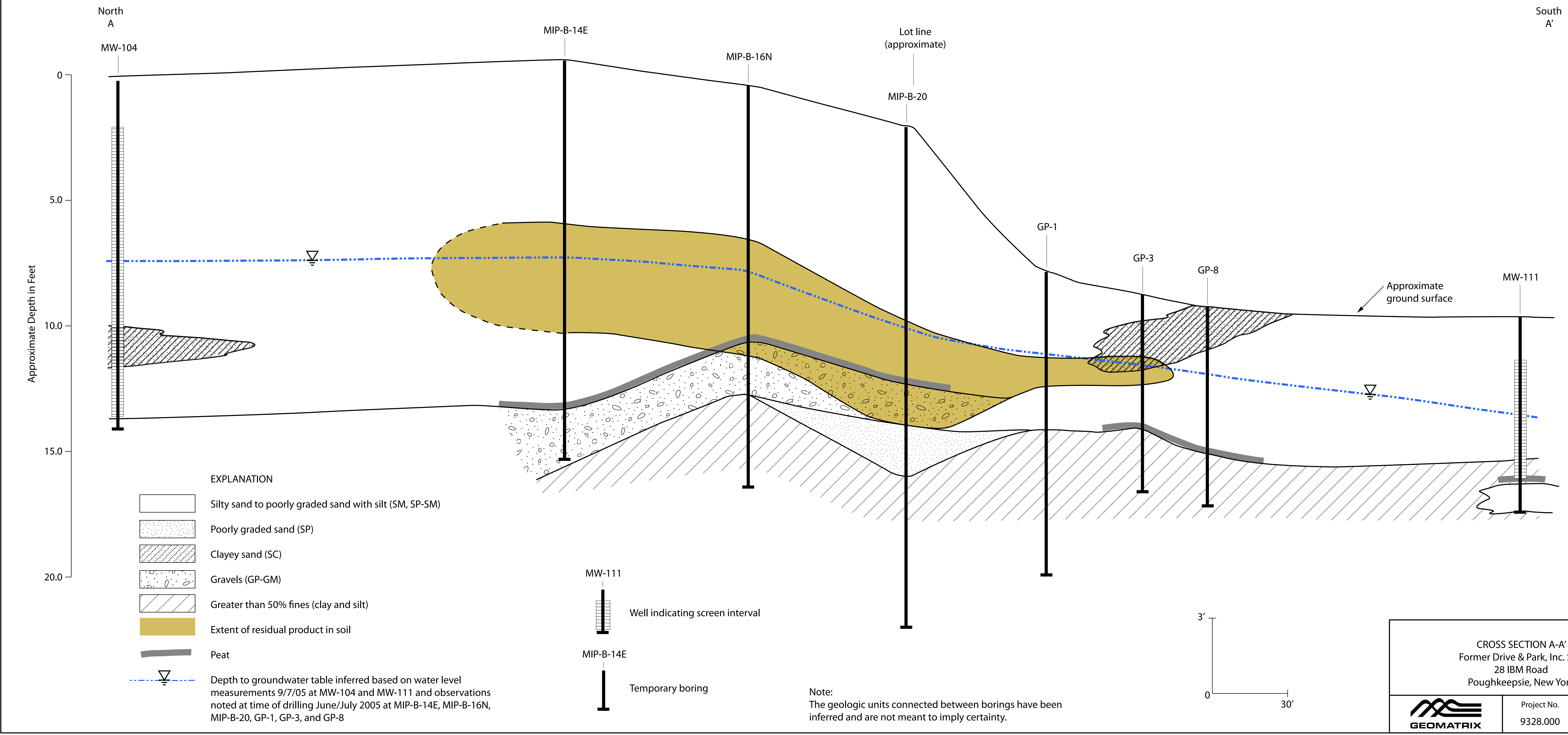

EXPLANATION

- ☐ Silty sand to poorly graded sand with silt (SM, SP-SM)
- ▨ Poorly graded sand (SP)
- ▨ Clayey sand (SC)
- ▨ Gravels (GP-GM)
- ▨ Greater than 50% fines (clay and silt)
- ■ Extent of residual product in soil
- ▬ Peat
- ▽ Depth to groundwater table inferred based on water level measurements 9/7/05 at MW-104 and MW-111 and observations noted at time of drilling June/July 2005 at MIP-B-14E, MIP-B-16N, MIP-B-20, GP-1, GP-3, and GP-8

MW-111 Well indicating screen interval

MIP-B-14E Temporary boring

Note:
The geologic units connected between borings have been inferred and are not meant to imply certainty.

CROSS SECTION A-A'
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

GEOMATRIX

Project No.	Figure
9328.000	5

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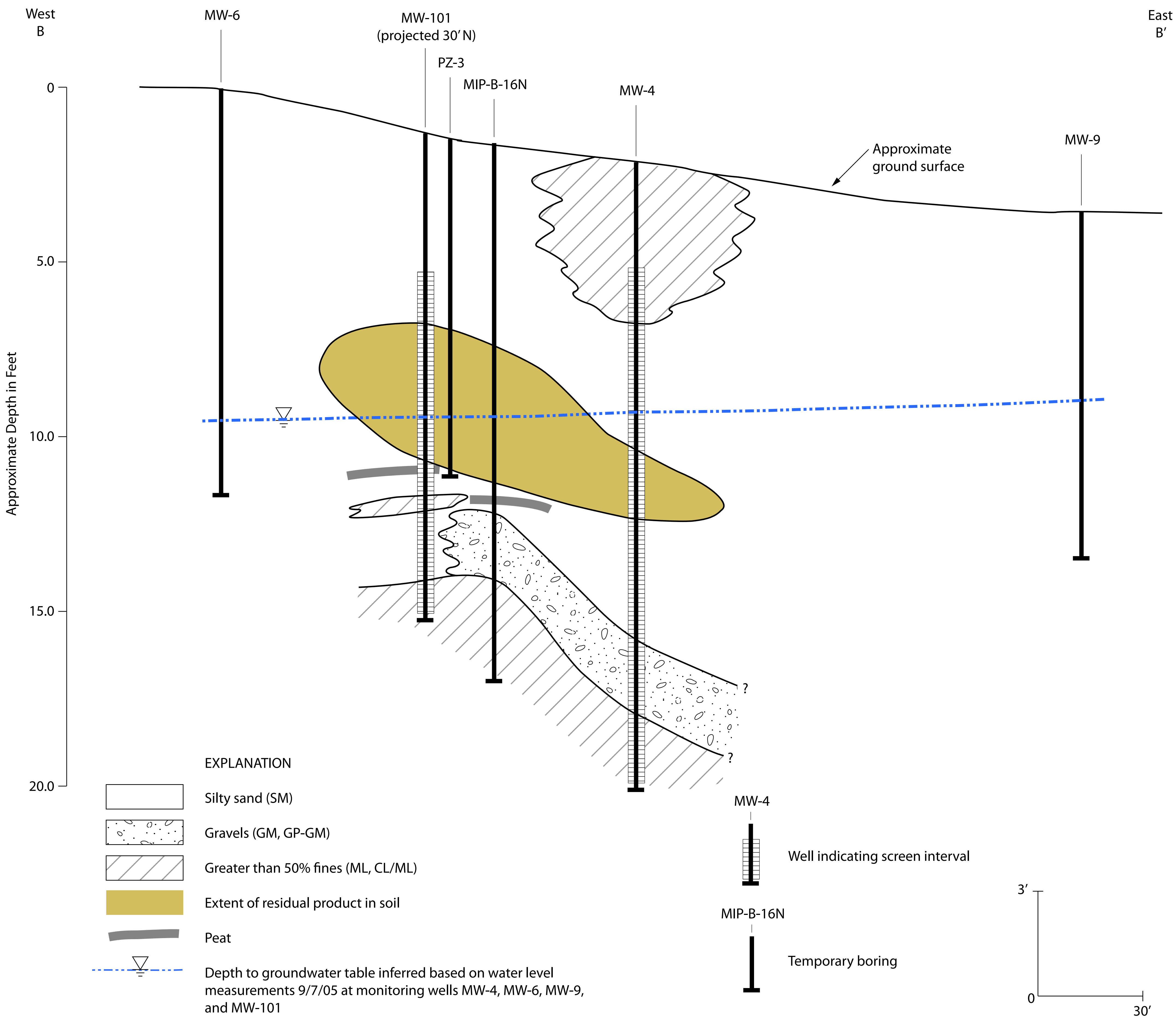

Notes:

1. Well completion and lithologic logs unavaiable for MW-6 and MW-9. Data for Figure derived from Figure 9A of NETC's "Final Phase II Hydrogeological Investigation," October 15, 1992.

2. The geologic units connected between borings have been inferred and are not meant to imply certainty.

CROSS SECTION B-B′
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

GEOMATRIX

Project No.	Figure
9328.000	6

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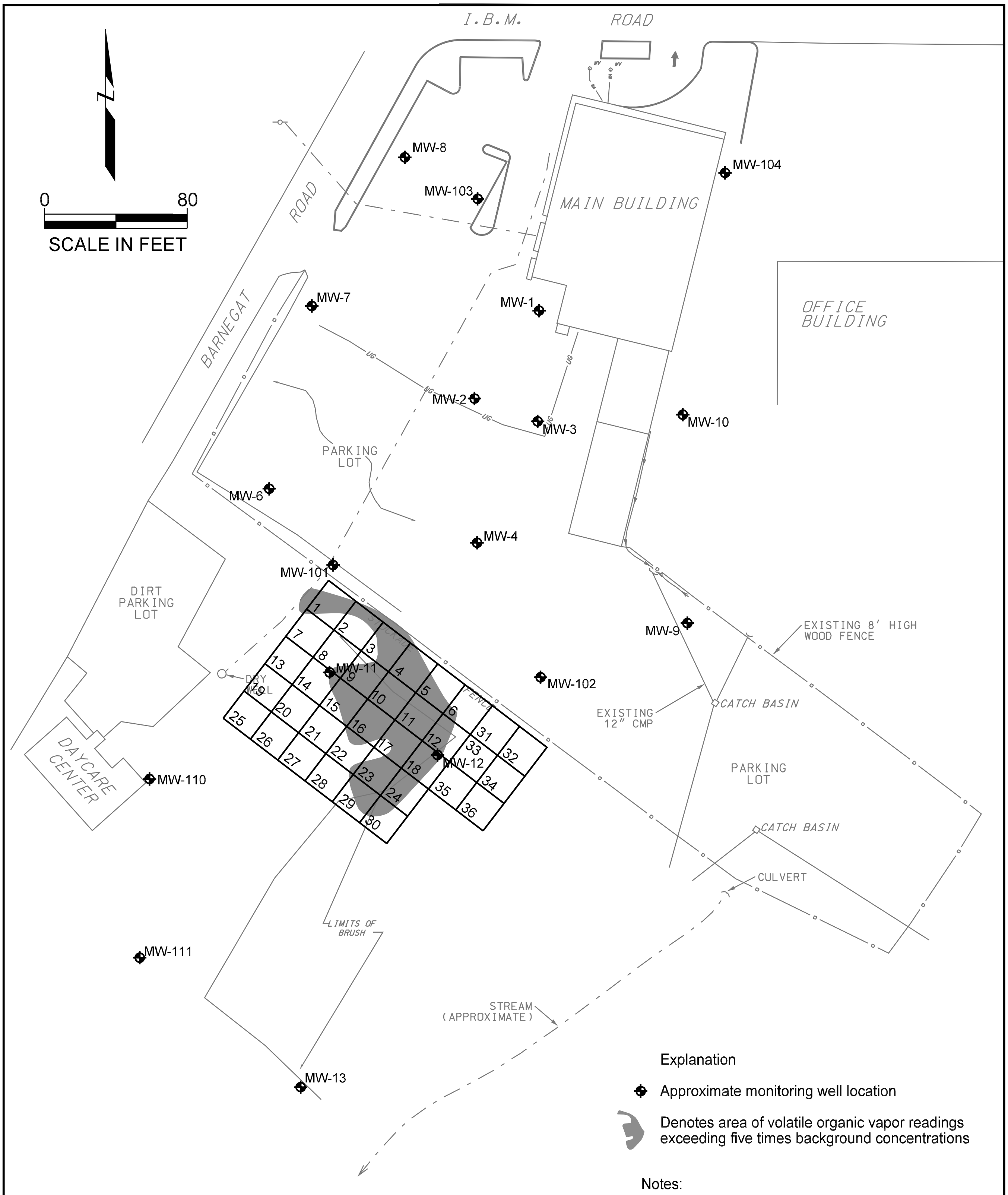

Explanation

⊕ Approximate monitoring well location

▨ Denotes area of volatile organic vapor readings exceeding five times background concentrations

Notes:

1. Adapted from "Final Phase II Hydrogeological Investigation, NETC, October 15, 1992".
2. Soil gas survey grid location is approximate.
3. Analytical results listed in Table 5.

GEOMATRIX

APPROXIMATE DISTRIBUTION OF
VOLATILE ORGANIC COMPOUNDS IN SOIL GAS
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000

Figure
7

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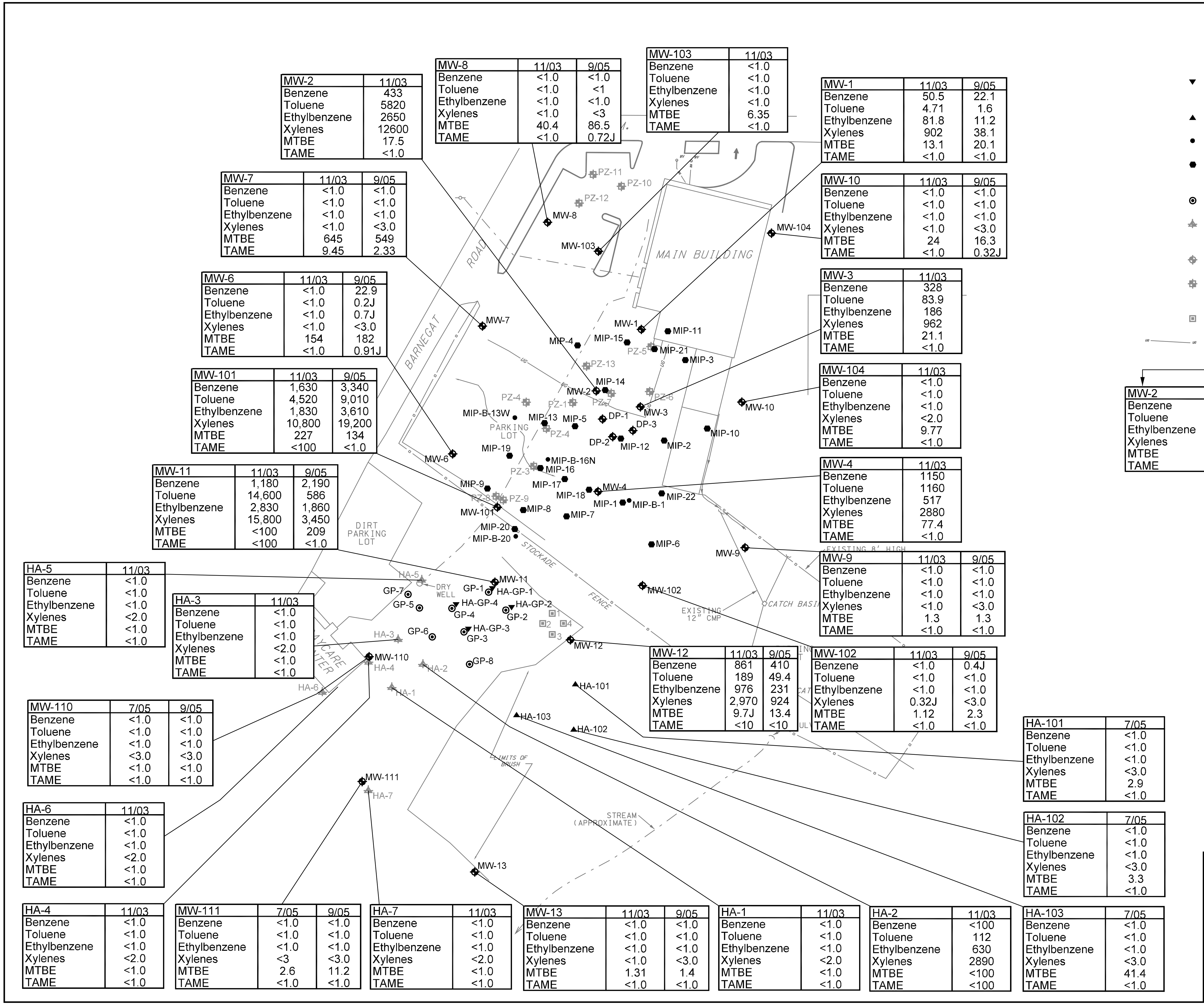

MW-2	11/03
Benzene	433
Toluene	5820
Ethylbenzene	2650
Xylenes	12600
MTBE	17.5
TAME	<1.0

MW-8	11/03	9/05
Benzene	<1.0	<1.0
Toluene	<1.0	<1
Ethylbenzene	<1.0	<1.0
Xylenes	<1.0	<3
MTBE	40.4	86.5
TAME	<1.0	0.72J

MW-103	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<1.0
MTBE	6.35
TAME	<1.0

MW-1	11/03	9/05
Benzene	50.5	22.1
Toluene	4.71	1.6
Ethylbenzene	81.8	11.2
Xylenes	902	38.1
MTBE	13.1	20.1
TAME	<1.0	<1.0

MW-7	11/03	9/05
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Xylenes	<1.0	<3.0
MTBE	645	549
TAME	9.45	2.33

MW-10	11/03	9/05
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Xylenes	<1.0	<3.0
MTBE	24	16.3
TAME	<1.0	0.32J

MW-6	11/03	9/05
Benzene	<1.0	22.9
Toluene	<1.0	0.2J
Ethylbenzene	<1.0	0.7J
Xylenes	<1.0	<3.0
MTBE	154	182
TAME	<1.0	0.91J

MW-3	11/03
Benzene	328
Toluene	83.9
Ethylbenzene	186
Xylenes	962
MTBE	21.1
TAME	<1.0

MW-101	11/03	9/05
Benzene	1,630	3,340
Toluene	4,520	9,010
Ethylbenzene	1,830	3,610
Xylenes	10,800	19,200
MTBE	227	134
TAME	<100	<1.0

MW-104	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<2.0
MTBE	9.77
TAME	<1.0

MW-11	11/03	9/05
Benzene	1,180	2,190
Toluene	14,600	586
Ethylbenzene	2,830	1,860
Xylenes	15,800	3,450
MTBE	<100	209
TAME	<100	<1.0

MW-4	11/03
Benzene	1150
Toluene	1160
Ethylbenzene	517
Xylenes	2880
MTBE	77.4
TAME	<1.0

MW-9	11/03	9/05
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Xylenes	<1.0	<3.0
MTBE	1.3	1.3
TAME	<1.0	<1.0

HA-5	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<2.0
MTBE	<1.0
TAME	<1.0

HA-3	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<2.0
MTBE	<1.0
TAME	<1.0

MW-12	11/03	9/05
Benzene	861	410
Toluene	189	49.4
Ethylbenzene	976	231
Xylenes	2,970	924
MTBE	9.7J	13.4
TAME	<10	<10

MW-102	11/03	9/05
Benzene	<1.0	0.4J
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Xylenes	0.32J	<3.0
MTBE	1.12	2.3
TAME	<1.0	<1.0

MW-110	7/05	9/05
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Xylenes	<3.0	<3.0
MTBE	<1.0	<1.0
TAME	<1.0	<1.0

HA-101	7/05
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<3.0
MTBE	2.9
TAME	<1.0

HA-6	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<2.0
MTBE	<1.0
TAME	<1.0

HA-102	7/05
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<3.0
MTBE	3.3
TAME	<1.0

HA-4	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<2.0
MTBE	<1.0
TAME	<1.0

MW-111	7/05	9/05
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Xylenes	<3	<3.0
MTBE	2.6	11.2
TAME	<1.0	<1.0

HA-7	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<2.0
MTBE	<1.0
TAME	<1.0

MW-13	11/03	9/05
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Xylenes	<1.0	<3.0
MTBE	1.31	1.4
TAME	<1.0	<1.0

HA-1	11/03
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<2.0
MTBE	<1.0
TAME	<1.0

HA-2	11/03
Benzene	<100
Toluene	112
Ethylbenzene	630
Xylenes	2890
MTBE	<100
TAME	<100

HA-103	7/05
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Xylenes	<3.0
MTBE	41.4
TAME	<1.0

Explanation

▼	Approximate hand augered soil sample location (Sept. 2005)
▲	Approximate grab groundwater location (July 2005)
•	Soil boring (July 2005)
⬣	Membrane interface probe/electrical conductivity boring location (June - July 2005)
⊙	Geoprobe boring location (July 2005)
▲	Approximate grab groundwater location (November, 2003)
⌖	Approximate monitoring well location
⌖	Approximate soil boring/temporary piezometer location (November, 2003)
▣	Approximate surface soil sample location (April 2003)
—	Subsurface utility line

Boring number

MW-2	11/03
Benzene	433
Toluene	5820
Ethylbenzene	2650
Xylenes	12600
MTBE	17.5
TAME	<1.0

Date of Sampling

Constituents (results in micrograms per liter)

MTBE=methyl-tert butyl ether
TAME=tertiary-amyl methyl either
J=Results considered an estimate
<=Analyte not detected above laboratory reporting limit indicated

Additional analytical results listed in Table 5.

APPROXIMATE AERIAL DISTRIBUTION OF
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

GEOMATRIX

Project No.
9328.000

Figure
8

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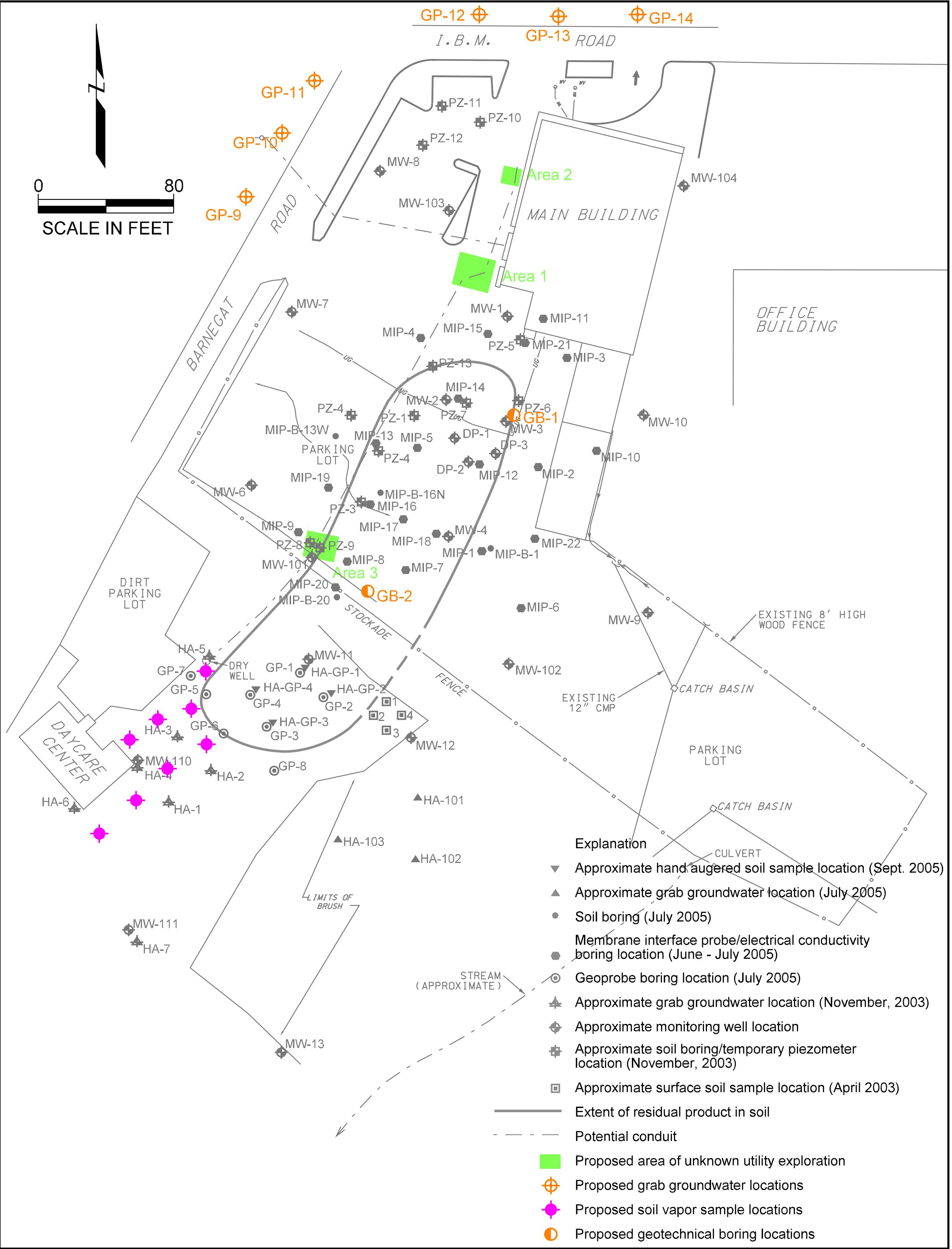

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GEOMATRIX

SAMPLING LOCATIONS FOR PROPOSED ADDITIONAL INVESTIGATIONS
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000

Figure
9

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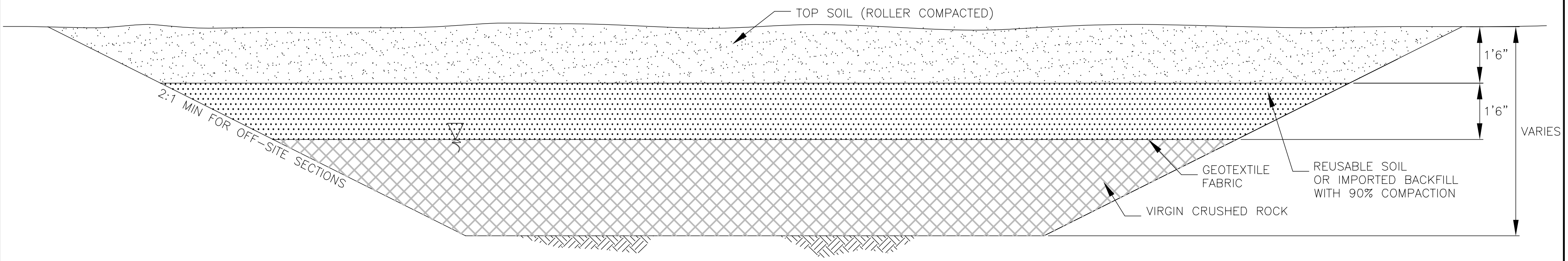
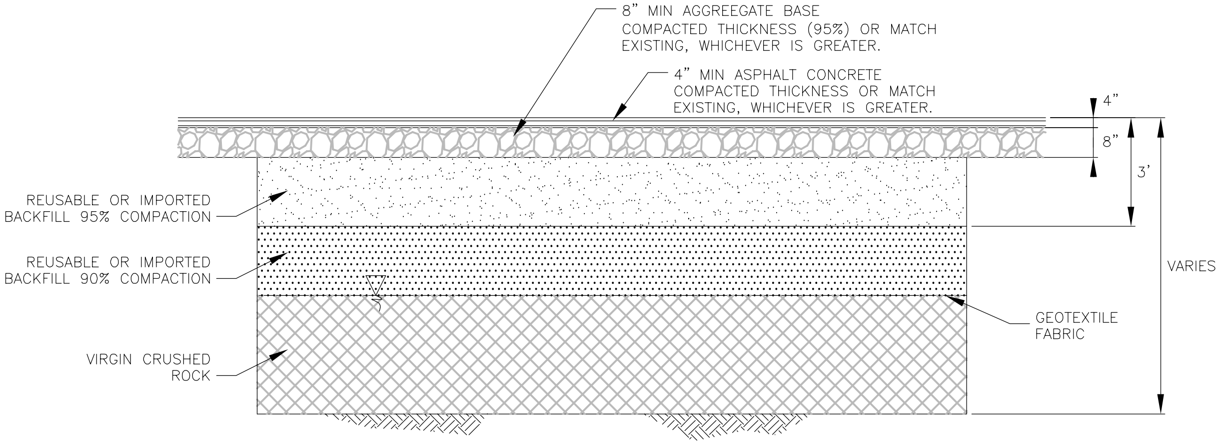


TYPICAL OFF-SITE BACKFILL SECTION



TYPICAL ON-SITE BACKFILL SECTION

NOTES:
1. FOR REVIEW NOT CONSTRUCTION
2. ON-SITE EXCAVATION TO BE SHORED
3. ORC TO BE ADDED TO BACKFILL

NOT TO SCALE

GEOMATRIX

TYPICAL EXCAVATION BACKFILL SECTION
Avis Poughkeepsie
Poughkeepsie, New York

Project No.
9328.000

Figure
10

APPENDIX A

Citizen Participation Plan

Citizen Participation Plan will be provided separately following approval by New York State Department of Environmental Conservation.

Appendix B

Soil Vapor Investigation Work Plan

Soil Vapor Investigation Work Plan

Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie
Dutchess County, New York

Prepared for:

Avis Rent A Car System, Inc.
6 Sylvan Way
Parsippany, New Jersey 07054

Prepared by:

Geomatrix Consultants, Inc.
90 B John Muir Drive, Ste. 104
Amherst, New York 14228
(716) 565-0624

November 2005

Project No. 9328.000

Geomatrix

Geomatrix

PROFESSIONAL CERTIFICATION

SOIL VAPOR INVESTIGATION WORK PLAN

Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie,
Dutchess County, New York

1 November 2005
Project 9328.000

This report was prepared by Geomatrix Engineering LLC, under the professional supervision of Kelly R. McIntosh. The findings, recommendations, specifications, and/or professional opinions presented in this report were prepared in accordance with generally accepted professional engineering practice, and within the scope of the project. There is no other warranty, either express or implied.

KELLY R. McINTOSH
No. 68079

11/1/05

Kelly R. McIntosh, Ph.D., P.E.
Senior Engineer

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TABLE OF CONTENTS

FIGURES

SOIL VAPOR INVESTIGATION WORK PLAN

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

1.0 INTRODUCTION

This Soil Vapor Investigation (SVI) Work Plan is part of the Interim Remedial Measure Work Plan (IRM Work Plan) developed by Geomatrix Consultants, Inc. (Geomatrix) for implementing an interim remedial measure, excavation, at the Former Drive & Park, Inc. Site located at 28 IBM Road in Poughkeepsie, New York (the site). The remedial activity at the site includes source removal through excavation from the two identified remediation areas, designated as the On-Site and Off-Site Excavation Areas. More complete information concerning the remediation activities and the site background can be found in the IRM Work Plan. The purpose of the investigation described in this SVI Work Plan is to identify current or potential human exposures to subsurface vapors associated with the site on the adjacent property, which includes a day care facility, to the south of the site. Previous soil and groundwater investigations have shown that neither the residual product in soil nor dissolved constituents in groundwater extend to the day care building. However, because the existing day care building is near a subsurface source of volatile chemicals, a soil vapor sampling investigation is requested by the New York State Department of Environmental Conservation (NYSDEC). This SVI Work Plan is being submitted in response to the request made by the NYSDEC in a letter dated August 24, 2005.

2.0 SCOPE OF WORK

This SVI Work Plan proposes and describes methods for collection of soil vapor samples in accordance with New York State Department of Health (NYSDOH) *Draft Guidance for Evaluating Soil Vapor Intrusion in the State of New York* - February 2005. The SVI Work Plan proposes to conduct the soil vapor investigation in two phases: pre- and post-interim remedial measure implementation. In the pre-interim remedial measure phase, it is proposed to collect eight soil vapor samples in the area south of the delineated extent of petroleum constituents in soil and north and east of the day care facility building located at 144 Barnegat Road in Poughkeepsie, New York (Figure B1). This is an area between the day care facility building and the delineated extent of the petroleum constituents in soil. The post-interim remedial measure implementation soil survey will be conducted at least one month after completion of the interim remedial measure implementation. The area of the investigation and sampling methodology will be the same as described in this SVI Work Plan; however, the number of samples and sample locations will be proposed and discussed with NYSDEC and NYSDOH after interim remedial measure implementation.

Because the soil vapor investigation area is near a building with no surrounding surface confining layer, the proposed sampling points will be advanced approximately 10 feet away from the building to avoid influence from the building operations. The depth of the sample locations will be at least 1 foot above the water table, and tracer gas will be used to verify the integrity of the soil vapor probe seal (water table in the area is less than 4 feet below grade). The minimum seal of 3 feet above the sampling zone, as specified in the NYSDOH guidance document, may not be feasible at some boring locations because of the high groundwater elevation in the area; however, an effort will be made to provide as much seal as reasonably possible. The actual sample locations may be modified in the field based on the physical conditions of the soil, site conditions, or access.

The tasks (pre-field activities, field activities, laboratory analysis, reporting, and schedule) proposed to complete the soil vapor assessment are described in the following sections.

3.0 FIELD ACTIVITIES PLAN

3.1 PRE-FIELD ACTIVITIES

The pre-field activities consist of a site visit, utility clearance, and update of the site-specific health and safety plan. Geomatrix will notify Dig Safely New York, a regional utility notification center, of the planned drilling activities and contact a private underground utility locating service to clear each proposed sample location for underground utilities. Drilling permits will not be required for soil vapor sampling activities. In addition, prior to beginning field work, Geomatrix will notify the owner of the adjacent property to the south of the site of the soil vapor sampling activities and will confirm that access to the proposed soil vapor sampling locations will be permitted.

Geomatrix will update the site-specific health and safety plan (HASP) for use during the field program. The HASP will identify site-specific hazards on the adjacent property to the south of the site, including expected soil and groundwater constituents, and will include measures for protecting personnel from exposure to these specific constituents during intrusive activities. All Geomatrix personnel and subcontractors will be required to have completed the OSHA 40-hour training session with the annual 8-hour refresher course.

The HASP will also address community health and safety issues relative to the proposed investigation. Monitoring of the work area and perimeter will be conducted in accordance with the Community Air Monitoring Plan described in the *Draft DER-10 Technical Guidance for Site Investigation and Remediation*, dated December 2002. Due to the use of direct-push technology, only small amounts of impacted soil will be brought to the surface, and potential volatile organic compound exposure will be minimized.

3.2 SOIL VAPOR SAMPLING

Geomatrix will retain a licensed subcontractor to conduct the drilling and sampling described in this work plan. To collect soil vapor samples, soil borings will be advanced using the direct-push coring method to the specified depth. At locations where access by direct-push equipment is limited or prohibited, borings will be hand-augered or pushed by hand to the specified depth to install a temporary sampling probe. The details of the necessary equipment, temporary soil probe installations, and soil vapor sample collection are presented below.

3.2.1 Equipment List

Temporary Soil Vapor Probe

The equipment required to install a temporary soil vapor probe is listed below:

- direct-push rig (e.g., PowerProbeTM, Geoprobe, etc.) equipped with interconnecting 4-foot lengths of 2.125-inch dual tube casing and 1.25-inch-diameter steel rods;
- expendable points and screens (one per sample);
- an expendable point holder, and appropriate twist-to-lock connector;
- photoionization detector (with a lamp of 11.7 eV);
- ¼-inch tubing (Teflon®, polyethylene, or similar);
- clean sand (or similar fill); and
- bentonite.

Soil Vapor Collection

The equipment required for soil vapor sample collection is listed below:

- 6-liter, stainless-steel SUMMA® canisters (at least two extra canisters will be available during sampling);

- flow controllers with in-line particulate filters and vacuum gauges. Flow controllers are pre-calibrated to specified sample duration (e.g., 60 minutes) or flow rate (e.g., 100 milliliters per minute [mL/min]). Confirm with the laboratory that flow controller comes with in-line particulate filter and pressure gauge (order at least one extra, if feasible);

- ¼-inch tubing (Teflon®, polyethylene, or similar);

- portable vacuum pump capable of producing very low flow rates (e.g., 100 mL/min);

- flow meter;

- helium gas canister;

- field helium detector;

- plastic sheeting;

- paper towels;

- photoionization detector (with a lamp of 11.7 eV);

- 9/16-inch open-end wrench;

- field camera;

- sample chain-of-custody forms;

- soil vapor sample collection log (a blank log is attached); and

- field notebook.

3.2.2 Installation and Sampling Procedures

Temporary Soil Vapor Probe Installation Procedures

1. An assembly consisting of interconnected lengths of decontaminated 2.125 dual-tube casing and 1.25-inch-diameter steel drive rods with an inner drive tip will be advanced to the desired sample depth. The 1.25-inch-diameter steel drive rods and inner drive tip will be retracted and an expendable pointer holder and expendable pointer will be attached. This assembly will then be lowered to the bottom of the desired sampling interval. The 2.125 dual-tube casing will be retracted and clean sand will be added to form a sampling zone 1 to 2 feet in length above the expendable pointer holder and pointer. The length of sampling zone may vary depending on the water table elevation. Effort will be taken to provide at least 1 to 2 feet of seal.

2. A sample collection tubing slightly (e.g., 1 to 2 feet) longer than the collection depth will be attach to a twist-to-lock connector. The connector will be lowered through the drive rods into the expendable pointer holder.

3. The sampling assembly will be hydraulically retracted approximately 6 inches, allowing the expendable point to fall off, and creating a void within the sand sampling zone for soil-vapor sample collection.

4. The annular space between the steel drive rod and the borehole wall will be filled with bentonite slurry to create a seal. In order for the bentonite slurry to properly seal, at least 24 hours must pass prior to sample collection.

5. The drive rods will be removed and the boring backfilled with cement grout following soil vapor sampling.

Soil Vapor Sample Collection and Shipment

1. The following information will be recorded in the field notebook and on the field sampling logs.

   - wind speed and direction;

   - ambient temperature;

   - barometric pressure; and

   - relative humidity.

2. A tracer gas compound (helium) will be used during the soil vapor sampling process to evaluate potential short circuit of atmospheric air. After the tubing has been connected with the SUMMA® canister and purging is completed, plastic sheeting will be placed around the borehole and helium will be added underneath the sheeting near the top of the boring. A field helium detector will be added to soil vapor probe to evaluate potential seal issues. If the high concentrations (> 20%) of helium gas are observed, the probe seal will be enhanced to reasonably reduce the infiltration of the ambient air.

3. Prior to sampling, the sampling assembly will be purged. A portable vacuum pump will purge two to three volumes of air from the vapor probe and sampling line at a rate of approximately 100 mL/min., and organic vapor levels will be measured with a photoionization detector. The purge volumes will be estimated using the following calculation:

Purge Volume = 1.5 π r2 h Equation (1)
Where:
Purge volume is in cubic feet,
π is 3.14159 (unit less),
r is radius of borehole (feet), and
h is height from bottom of borehole (feet).

4. To collect the soil vapor samples, sample collection tubing will be connected to the SUMMA® canister equipped with flow controller, in-line particulate filter, and vacuum gauge. The samples will be collected in SUMMA® canister at a rate between 100 and 200 mL/min.

5. Sample collection is complete when the vacuum in the SUMMA® canister is approximately 5 inches of mercury. By leaving a known vacuum in the canister, one can assess if the canister leaks in transit to the laboratory.

6. After sample collection, the flow controller with in-line particulate filter and vacuum gauge from the SUMMA® canister will be removed and packed in the shipping container supplied by the laboratory for return shipment to the laboratory. The SUMMA® canister does not require preservation with ice or refrigeration during shipment.

7. Appropriate forms (e.g., chain-of-custody) and sample labels will be properly completed and attached to each SUMMA® canister/shipment box. All containers will be shipped via an appropriate carrier, following established protocol for that carrier, and consistent with applicable shipping protocols.

3.2.3 Sampling Care

Care will be used during all aspects of vapor sample collection to ensure that sampling error is minimized and high-quality data are obtained. For example, care will be used to properly seal the soil vapor probe at the ground surface to prevent leakage of atmospheric air into the probe during purging and sampling. Also, the sampling team will avoid actions (e.g., fueling vehicles, using permanent marking pens, and wearing freshly dry-cleaned clothing or personal fragrances) that could potentially cause sample interference in the field.

3.2.4 Waste Management

Field personnel will collect and remove all investigation-derived waste materials (including disposable equipment) for proper disposal.

3.2.5 Data Recording and Management

Measurements will be recorded in the field logbook and field sampling logs at the time of measurement with notations of project name, sample date, sample start and finish time, sample location (e.g., GPS coordinates), canister serial number, flow controller serial number, initial vacuum reading, and final vacuum reading.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

Soil vapor sample analysis will be performed using United States Environmental Protection Agency (USEPA) TO-15 methodology. This method uses a quadrupole or ion-trap gas chromatograph/mass spectrometer (GC/MS) with a capillary column. The GC/MS system requires a 1-liter gas sample (which can easily be recovered from a 6-liter canister) to provide the specified detection limit. The 6-liter canister also provides several additional 1-liter samples in case subsequent re-analyses or dilutions are required. This system also offers the advantage of the MS detector, which confirms the identity of detected compounds by evaluating their mass spectra.

Quality assurance/quality control (QA/QC) samples for the sampling program will include one trip blank per shipment, and one ambient sample per day. Laboratory QA/QC analyses will include a method blank and laboratory control samples.

Trip Blanks

A trip blank sample will accompany field samples at a rate of one trip blank per shipment container. Trip blanks will originate at the analytical laboratory. Each trip blank will consist of a canister identical to those used for the sampling. Each trip blank canister will be provided as an evacuated canister, sent to the field with other canisters, and returned without being opened. The canister will be filled with humidified nitrogen (the same gas used for method blanks) upon return to the laboratory and will be analyzed. The trip blanks will accompany the sample containers throughout transport and sampling activities and will be returned to the laboratory with the field samples.

Ambient Samples

One ambient air sample per day will be collected during the investigation period. The ambient air samples will be collected in canisters that are identical to other investigative sample containers. The ambient sample will be given a sample identifier indicative of the day and time the sample was collected and noted in the field logbook.

Method Blank Samples

A method blank will be analyzed by the laboratory at a frequency of 1 per 20 (or fewer) analyses. The method blank (consisting of humidified nitrogen) will be carried through the entire analytical procedures.

Laboratory Control Samples

A laboratory control sample (LCS) will be analyzed by the laboratory at a frequency of 1 per 20 (or fewer) investigative samples or once per tune period for the mass spectrometer, whichever is more frequent. The LCS will consist of a known standard prepared from a different source than the supplier of the calibration standard. The LCS will be used to evaluate accuracy of the analytical system, based on consistency with the control limits listed below.

5.0 LABORATORY ANALYSIS

The soil vapor samples will be analyzed for volatile organic compounds using USEPA Method TO-15 at a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory. The primary chemicals of potential concern for this site, based on detection in soil or groundwater, include: benzene, toluene, ethylbenzene, xylenes, and methyl tert-butyl ether. However, in the first round of sampling, vapor samples will be analyzed for a broader range of volatile organic compounds that are associated with petroleum hydrocarbon contamination. Based on the initial sampling results, the subsequent soil vapor analyses will be reconsidered. Proposed method detection limits for volatile organic compounds are 0.1 micrograms per liter (µg/L) or lower.

6.0 SCHEDULE AND REPORTING

Geomatrix is prepared to commence field activities for soil vapor investigation before the start of the soil excavation, scheduled the last week of December 2005. Field work is expected to take 2 to 3 days to complete. Receipt of laboratory analysis of submitted soil vapor samples will take an additional three weeks from completion of field work. We expect to have the Soil Vapor Investigation Report available to the NYSDEC within 90 days of receipt of laboratory analytical data. The report will present the data collected during the field investigation and will include a description of the field activities, the scope of work, the methods of investigation, and findings of the field sampling investigation. Laboratory analytical reports will be provided as appendices to the Soil Vapor Investigation Report. The post-interim remedial measure implementation soil vapor investigation schedule will be provided at a later date.

7.0 REFERENCES

Geomatrix Consultants, 2005, *Interim Remedial Measure Work Plan*, 28 IBM Road, Poughkeepsie, New York, October.

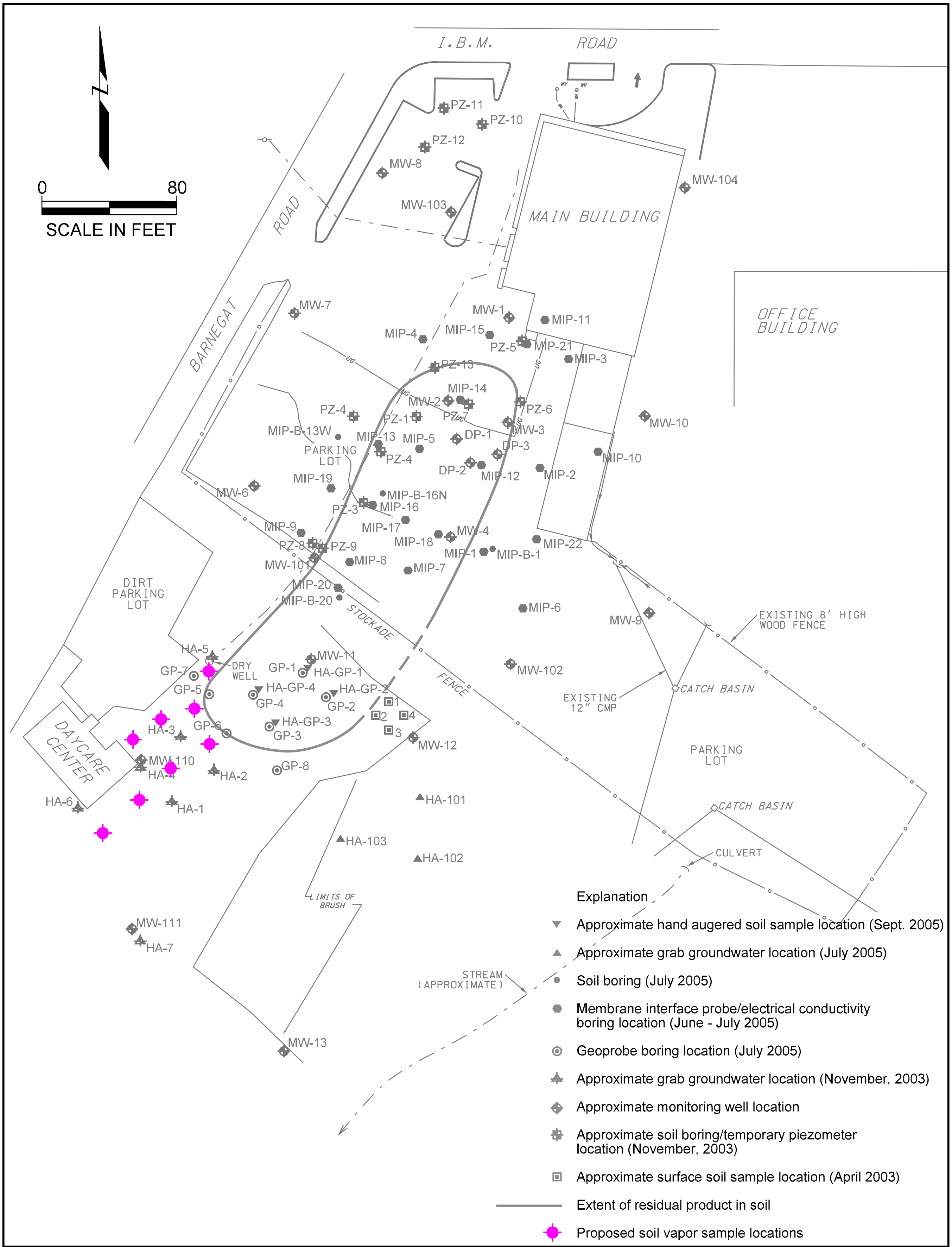
New York State Department of Environmental Conservation (NYSDEC), 2004, *Evaluating Potential for Vapor Intrusion at Past, Current, and Future Sites – DEC Program Policy*, November.

New York State Department of Environmental Conservation (NYSDEC), 2002, *Draft DER-10 Technical Guidance for Site Investigation and Remediation*, December 25.

New York State Department of Health (NYSDOH), 2005, *Guidance for Evaluating Soil Vapor Intrusion in the State of New York - Public Comment Draft*, February.

U.S. Environmental Protection Agency (USEPA), 2002, *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils* (Subsurface Vapor Intrusion Guidance).

FIGURES



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GEOMATRIX

PROPOSED SOIL VAPOR SAMPLING LOCATIONS
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000

Figure
B1

Appendix C

Chemical Health and Safety Plan

Chemical Health and Safety Plan

Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie
Dutchess County, New York

Prepared for:

Avis Rent A Car System, Inc.
6 Sylvan Way
Parsippany, New Jersey 07054

Prepared by:

Geomatrix Consultants, Inc.
90 B John Muir Drive, Ste. 104
Amherst, New York 14228
(716) 565-0624

November 2005

Project No. 9328.000

Geomatrix

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Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

1.0 INTRODUCTION

This Chemical Health & Safety Plan (HASP) was prepared by Geomatrix Consultants, Inc. (Geomatrix) on behalf of Avis Rent A Car System, Inc. (Avis) for the Former Drive & Park, Inc. Site at 28 IBM Road in Poughkeepsie, New York (the site) (Figure 1). The HASP is submitted to the New York State Department of Environmental Conservation (NYSDEC), as part of the Interim Remedial Measure (IRM) Work Plan (Geomatrix, 2005a).

This HASP presents health and safety requirements related to petroleum hydrocarbons found in subsurface soil and groundwater that are present due to a reported release in 1986 in the vicinity of two underground storage tanks that were used from approximately 1965 to 1986. The presented requirements are to be followed by contractors and workers performing remedial actions described in the IRM Work Plan for the site. The on-site and off-site remedial activities at the site include source removal through excavation from the identified remediation areas and are described in detail in the IRM Work Plan. This HASP is referred to as Appendix C in the IRM Work Plan.

Terms used in this HASP include the following:

- Owner—current property owner at any given time (term also applies to leaseholders)
- Contractor—party conducting on-site activities as engaged by the Owner or other parties
- Engineer—current engineer/consultant engaged by the Owner to assist in implementing this HASP.

In conjunction with the IRM Work Plan, another plan document has been prepared:

- An Air Monitoring Plan (AMP, referred to as Appendix D in the IRM Work Plan); prepared by Geomatrix, that provides information about the collection and analysis of real-time site perimeter air quality data (Geomatrix, 2005b).

2.0 GENERAL REQUIREMENTS AND SCOPE OF HASP

This section contains information about general health and safety program requirements and information about the scope, limitations, and modifications relevant to this HASP.

2.1 GENERAL HEALTH AND SAFETY PROGRAM REQUIREMENTS

The contractor shall be responsible for the health and safety conditions related to the work at the site. contractor employees, subcontractor employees, and any others who conduct IRM Work Plan activities must adhere to the provisions of the contractor's Heath and Safety program and the contractor's site-specific HASP, this HASP, the Site IRM, and the Site AMP.

All applicable federal, state, and local regulations and codes relating to health and safety shall be adhered to by the contractor, including OSHA regulations specified in Code Federal Regulations (CFR), Title 29 Section 1910.120, *Hazardous Waste Operations and Emergency Response Standards*. Applicable requirements may include but are not limited to the following:

- Injury and Illness Prevention Program
- Hazardous Waste Operations and Emergency Response
- Hazard Communication
- Personal Protective Equipment
- Respiratory Protective Equipment
- Control of Noise Exposure
- Excavations
- Fire Prevention and Suppression Procedures
- Portable Fire Extinguishers
- Cleaning, Repairing, Servicing and Adjusting Prime Movers, Machinery, and Equipment Lockout/Tagout
- Medical Services and First Aid.

2.2 HASP SCOPE, LIMITATIONS AND MODIFICATIONS

This HASP was developed exclusively to address chemical hazards posed by petroleum hydrocarbons including: BTEX (benzene, toluene, ethylbenzene, xylene) and MTBE in soil and groundwater; gasoline range organics (GRO) and diesel range organics (DRO) in soil; and tertiary-amyl methyl ether (TAME) in groundwater that may be encountered during excavation and sampling activities at the remediation areas described in detail in the IRM Work Plan. contractors and workers are responsible for following the requirements of this HASP at a minimum, and for supplementing it with their own policies and procedures covering other aspects of their work on site. contractors and workers are solely responsible for the health and safety of their employees and are required to independently develop their own health and safety plan. contractors and workers are responsible for complying with all applicable federal, state, and local regulations.

This HASP does NOT address health and safety issues related to any other hazards or activities at the site listed below. The contractor will prepare a HASP that addresses other physical, chemical, and biological hazards associated with the IRM Work Plan. Activities to be addressed in the contractor HASP include but are not limited to:

- exposure to chemicals other than BTEX, GRO, DRO, MTBE, and TAME in subsurface soil and/or groundwater
- trenching and shoring hazards
- hazards posed by subsurface and overhead utilities
- confined space entry
- hazards posed by use of equipment (e.g., backhoes, ladders, power tools)
- traffic hazards
- earthquake hazards
- biological hazards
- weather-related hazards (e.g., heat and cold stress, sun exposure)
- noise hazards
- other general hazards (e.g., trip/fall hazards)

This HASP was developed based on site data that were available at the time it was prepared and applicable regulations. It may be necessary to modify this HASP from time to time for any of several reasons, including:

- change in understanding of environmental conditions (e.g., newly identified chemicals)
- intrusive activity that is not addressed by this HASP;
- new chemical toxicity information for BTEX, GRO, DRO, MTBE, and TAME; or
- new legal requirements.

The Engineer is responsible for providing a modified HASP to appropriate parties when substantial changes to the assumptions or conditions documented in the HASP occur.

3.0 SITE BACKGROUND AND CURRENT CONDITIONS

The site is a former Drive & Park, Inc. located in the Town of Poughkeepsie, Dutchess County, New York, and is currently owned by Avis. The site background is described in detail in Section 1.1 of the IRM Work Plan.

4.0 ACTIVITIES COVERED BY HASP

This HASP is to be followed by parties involved in residual source removal through excavation from the remediation area as described in the IRM Work Plan, and has been developed to address hazards that may be associated with BTEX, GRO, DRO, MTBE, and TAME-affected soil and groundwater that may be encountered during remediation activities, including excavation and sampling. Removal activities are described in detail in Sections 5.0 and 6.0 of the IRM Work Plan.

5.0 HAZARD ASSESSMENT

The following sections present a hazard assessment for BTEX, GRO, DRO, MTBE, and TAME in soil and in groundwater.

The constituents of concern (COCs) in the soil at the site include residual petroleum hydrocarbons (e.g., BTEX, GRO, and DRO). COCs in the groundwater at this site include petroleum hydrocarbons, MTBE, and TAME. The presence of COCs in soil and groundwater at the site are presented in Table 1 below:

TABLE 1.

SITE PRESENCE OF CONSTITUENTS OF CONCERN

COCs	Soil	Groundwater
Benzene	X	X
Ethylbenzene	X	X
Toluene	X	X
Xylenes	X	X
sec-Butylbenzene	X	X
1,2-Dichlorobenzene	X	X
Isopropylbenzene	X	X
n-Propylbenzene	X	X
1,2,4-Trimethylbenzene	X	X
1,3,5-Trimethylbenzene	X	X
Naphthalene	X	X
MTBE	X	X
TAME	ND	X
Trichloroethene	X	ND

X=constituent detected in at least one sample
ND=constituent not detected in any samples
NA=constituent not analyzed for

Direct contact with soil, as well as airborne dust, is expected to be encountered in all areas where removal actions will be taking place, including excavation and traffic areas. Direct contact with groundwater does not pose as much of a threat but is possible, for example, during sampling or soil dewatering activities, and should be noted. Section 9.0 of this HASP describes personal protective equipment that could be utilized at this site. Air monitoring methods, action levels, and mitigation measures designed to protect personnel from excessive exposure to dust in air and direct exposure to vapors during remediation activities are discussed in the AMP (referred to as Appendix D in the IRM Work Plan).

5.1 PETROLEUM HYDROCARBONS IN SOIL AND GROUNDWATER

As shown in Table 1 above, BTEX and MTBE have been detected in soil and in groundwater. GRO and DRO were analyzed for in soil and not detected; however, the possibility of coming into contact with these during excavation should be considered. The COCs discussed so far are typically considered part of a larger class of organic compounds that readily volatilize in the atmosphere, known as volatile organic compounds (VOCs). The primary routes of exposure to these compounds for workers at the site are dermal absorption through direct soil contact, and through inhalation of vapors present in air. A discussion of acceptable exposure limits for inhalation of these COCs is given in the AMP, Section 3.0.

The most common symptoms of chronic overexposure to VOCs include headache, nausea, dizziness, drowsiness, fatigue, and irritation of the eyes, nose, throat, and skin. Chemical information sheets for VOCs expected to be encountered at the site during removal activities are included in Attachment A of this HASP.

6.0 ORGANIZATIONAL RESPONSIBILITIES

The following personnel are necessary to oversee compliance with the requirements of this HASP:

6.1 HASP Manager

The HASP Manager will be a qualified consulting company representative. The HASP Manager must meet the training requirements set forth in Section 7.0. The HASP Manager shall:

- Be familiar with the requirements of this HASP and the Site AMP.
- Inform workers and contractors of HASP and AMP requirements.
- Coordinate and monitor all tasks related to remediation activities at the site and oversee contractor/worker compliance with the HASP, AMP, and IRM Work Plan.
- Verify that workers exposed to subsurface soils and groundwater at the site have the required training.
- Conduct/oversee on-site airborne COC monitoring as required by the Site AMP.
- Conduct/oversee implementation of the Site IRM.
- Interface with government regulators and inspectors.
- Maintain communications with the Owner, if the HASP Manager is not the Owner.

6.2 OWNER EMPLOYEES

Employees of Avis who may potentially encounter or be exposed to contaminated soil or groundwater at the site must be made aware of the potential risk and must receive site-specific training. These employees shall:

- Comply with the requirements of this HASP.

6.3 CONTRACTOR'S PROJECT MANAGER

The contractor's Project Manager is responsible for:

- Overseeing the contractor's health and safety programs, including the requirements of this HASP and the contractor's HASP.
- Ensuring the contractor's health and safety programs are adequate and that they and the requirements of this HASP are implemented during on-site work.
- Serving as the primary point of contact for the Owner/HASP Manager.

6.4 CONTRACTOR'S ON-SITE HEALTH AND SAFETY OFFICER

The contractor's on-site Health and Safety Officer (HSO) is responsible for:

- Coordinating with the HASP Manager and contractor's Project Manager to implement overall compliance with the contractor's health and safety programs and procedures, and the requirements of this HASP, the Site AMP, and the Site IRM.
- Ensuring contractor employees have the required training for working on site.
- Advising other contractor employees on project-related health and safety issues.
- Overseeing or conducting personnel air sampling/monitoring as required by this HASP, the Site AMP, and the Site IRM.
- Determining personal protective equipment needs, if any, beyond the minimum outlined in this HASP and the Site AMP.
- Implementing and enforcing health and safety programs and procedures.
- Conducting regular site inspections.
- Conducting site-specific health and safety orientation training and periodic "tailgate" safety meetings.
- Coordinating emergency response activities.

- Restricting unauthorized visitors from work areas.

6.5 CONTRACTOR'S ON-SITE WORKERS

The contractor's workers at the site are responsible for:

- Complying with contractor health and safety programs and procedures and the requirements of this HASP, the Site AMP, and the Site IRM.
- Wearing personal protective equipment as required/directed by the HSO.

7.0 WORKER TRAINING REQUIREMENTS

Site employees, contractors, and other workers conducting subsurface work at the site where they may be exposed to VOC-affected soil and VOC-affected groundwater must have completed a 40-hour training course that complies with requirements of the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulation (OSHA regulations specified in 29 CFR 1910.120). These workers must also complete annual 8-hour refresher training and annual respiratory protection training and fit testing required by this regulation. In addition, all workers who may be exposed to VOC-affected soil and VOC-affected groundwater at the site must receive site-specific training that includes: information on VOC hazards, use of personal protective equipment, decontamination procedures, proper work practices to minimize risks, VOC hazards, and other requirements of this HASP, the Site AMP, and the Site IRM.

As part of the emergency response plan, at least one person currently certified in first aid and cardio-pulmonary resuscitation (CPR) must be present at the site whenever subsurface work is performed.

8.0 RESPIRATORY PROTECTION PROGRAM AND MEDICAL SURVEILLANCE

On-site workers who have received HAZWOPER training and who may be required to wear respiratory protection shall participate in their company's respiratory protection program. Workers who wear respiratory protection more than 30 days per year shall participate in a medical surveillance program. Medical examinations shall occur:

1. prior to performing subsurface work;
2. at least once every 12 months thereafter;
3. at termination of employment;

4. upon occurrence of possible overexposure; and
5. more frequently if deemed necessary by a physician.

9.0 PERSONAL PROTECTIVE EQUIPMENT

On-site workers who will be in contact with VOC-affected soil and VOC-affected groundwater shall use the following personal protective equipment:

- Rubber work boots that can be washed
- Disposable gloves (nitrile or vinyl)
- Disposable coveralls
- Hardhat
- Safety glasses
- For exposure to VOC-affected groundwater, half-face air purifying respirator equipped with organic vapor cartridges unless air monitoring has shown no VOC exposure over the action level for the work tasks being performed (see exposure limit and action level discussion Section 4.2 of the Site AMP).

10.0 AIR SAMPLING AND AIR MONITORING

The Site AMP (Appendix D of the IRM Work Plan) describes in detail air sampling and air monitoring that should be performed if workers will encounter VOC-affected soil and VOC- and TAME-affected groundwater.

11.0 SITE CONTROL

This section discusses delineation of work areas, dust suppression measures, decontamination procedures, sanitary facilities, and illumination.

11.1 WORK ZONES

Boundaries of the work areas where subsurface soil is being disturbed must be delineated using cones, barricades, and/or caution tape in order to prevent public access. Where work is extensive or if excavated areas will be left unattended overnight, the contractor shall secure the area to prevent public access (e.g., install trench plates, temporary fencing).

When earthwork activities occur, dust control measures shall be implemented to minimize dust generation, in accordance with the AMP guidelines. Typical dust minimization techniques can include but are not limited to the following:

- Sprinkle water to maintain soil moisture as needed during work activity;
- For trucks hauling affected soil within the site, cover the soil or maintain at least sufficient freeboard to minimize dust generation;
- Pave, apply water as needed, or apply soil stabilizers (non-toxic) on all unpaved roadways, parking areas, or staging areas;
- Sweep all paved access roads, parking areas and staging areas as needed;
- Sweep streets if visible soil material is carried onto adjacent public streets;
- Restrict non-essential traffic to compacted roadways and capped portions of the site;
- Limit vehicle speeds on unpaved portions of the site;
- Minimize drop heights while loading transportation vehicles; and
- Cover exposed impacted soil or stockpiles and secure with temporary fencing or other means.

No eating, drinking, or tobacco use is permitted inside the work area when active earthwork activities are occurring.

11.2 TRAFFIC CONTROL AND TRANSPORTATION PLAN

The contractor is responsible for implementing traffic control measures as required to minimize the risk of traffic-related accidents at the site. The Traffic Control and Transportation Plan will be submitted by the contractor prior to the beginning of work. The contractor’s traffic control and transportation plan will assess and summarize safe methods to transport excavated soil, to minimize potential health and safety issues, and to limit environmental risk associated with the removal activities.

11.3 PERSONNEL DECONTAMINATION PROCEDURES

Contractors engaged in significant soil-disturbing activities shall provide an area for personnel decontamination adjacent to the work area. This area shall include boot-washing and hand-washing facilities, toilet facilities, and receptacles for used protective clothing.

Decontamination procedures for on-site workers wearing personal protective equipment are as follows:

- Wash boots and gloves.
- Remove protective coveralls and gloves and place in plastic bags for disposal.
- Remove respirators, clean and dry as needed, and place in sealed plastic bags with individual identification.
- Wash hands and face with soap and water before eating, drinking, using tobacco, or leaving the work area.

Equipment contacting impacted soil will require appropriate decontamination prior to leaving the active area. All wash water and/or impacted sediments will be contained and disposed of appropriately.

11.4 SANITATION AND ILLUMINATION

If toilet and hand-washing facilities are not available in the immediate vicinity of the job site, temporary facilities shall be provided at the job site at the start of work.

If it is necessary to work at night or in low-light conditions, portable lights shall be used to provide sufficient illumination for working safely.

12.0 UNANTICIPATED SUBSURFACE CONDITIONS

Whenever unanticipated conditions are encountered (subsurface features, visibly stained or odorous soil), work will stop in that area, the work area will be secured, and the situation evaluated before any further action is taken. Further action may include removal or in-place abandonment of subsurface structures, or characterization and appropriate handling of soil potentially affected by chemicals. Further action will be taken in consultation with appropriate regulatory agencies.

13.0 ON-SITE EMERGENCY RESPONSE

In the event of an accident or emergency condition, the procedures specified below shall be followed.

13.1 MEDICAL EMERGENCIES

In the event of a medical emergency, the following procedures should be used.

1. Remove injured or exposed person(s) from immediate danger if possible.
2. Evacuate other on-site personnel to a safe place in an upwind direction until it is safe for work to resume.
3. If serious injury or life-threatening condition exists, call
    - 911—Paramedics, fire department, police
    - Hospital emergency room (see Figure 2 for a hospital location map)
    - Clearly describe location, injury, and conditions to dispatcher/hospital. Designate a person to direct emergency response vehicles to the injured person(s).
4. Provide first aid if trained and as necessary.
5. Immediately notify the Owner and HASP Manager.
6. Immediately implement steps to prevent recurrence of the accident.

13.2 ACCIDENTAL RELEASE OF HAZARDOUS MATERIALS OR WASTES

1. Evacuate all on-site personnel to a safe place in an upwind direction until the site safety officer determines that it is safe for work to resume.
2. Contain spill, if it is possible and it can be done safely.
3. Initiate cleanup.

13.3 TRAFFIC-RELATED EMERGENCIES

In the event of a traffic-related emergency, the local police/fire department shall be notified by calling **911.** On-site personnel are then to follow the applicable emergency-response procedures listed above (e.g., Medical Emergency in the event of a personal injury). For off-site traffic-related emergencies, personnel should refer to the Traffic Control and Transportation Plan.

13.4 GENERAL EMERGENCIES

In the case of general emergencies (e.g., fire, earthquake, explosion, or other hazard), work shall be halted and the local police/fire department shall be notified by calling **911**. All on-site personnel will be immediately evacuated to a safe place.

13.5 EMERGENCY CONTACTS

General emergency: **911**

Non-emergency contacts:

Rose Pelino, Cendant Car Rental Group, Inc.
HASP Manager: Shakeel Jogia, Geomatrix 510-301-9299 (mobile)
Contractor HASP Manager: To Be Determined

14.0 RECORD KEEPING

Contractors performing subsurface work at the site shall provide the following records to the Owner/HASP Manager:

- Copies of applicable Health and Safety Plans and Standard Operating Procedures
- Training documentation for on-site employees
- Medical clearance forms for on-site employees
- Daily log of personnel and visitors present at the worksite
- Sign-in sheets for safety tailgate meetings
- Air monitoring records
- Accident and injury reports.

All data, reports, and other documents related to environmental conditions at the site shall be preserved by the contractor/HASP Manager for a minimum of five years after the conclusion of activities. If the regulatory agency requests that some or all of these documents be preserved for a longer period of time, Owner shall either comply with that request or deliver the documents to the regulatory agency, or permit the regulatory agency to copy the documents prior to destruction. Contractor/HASP Manager shall notify the regulatory agency in writing, at least six months prior to destroying any documents and shall provide the regulatory agency with an opportunity to copy any documents.

15.0 REFERENCES

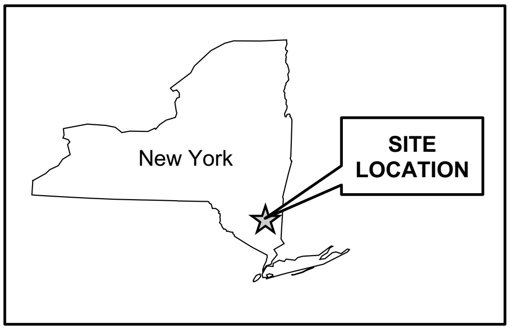
Code Federal Regulations (CFR), Title 29 Section 1910.120, *Hazardous Waste Operations and Emergency Response Standards.*

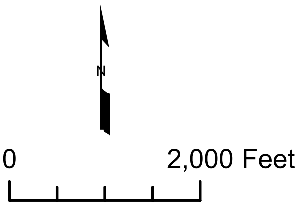
Geomatrix Consultants, Inc. (Geomatrix), 2005a, *Interim Remedial Measure Work Plan*, Avis Poughkeepsie, Poughkeepsie, New York, October 2005.

Geomatrix Consultants, Inc. (Geomatrix), 2005b, *Air Monitoring Plan*, Avis Poughkeepsie, Poughkeepsie, New York, October 2005.

FIGURES

Basemap from U.S.G.S. Poughkeepsie, New York (1982)
7.5' topographic quadrangle.





GEOMATRIX

SITE LOCATION MAP
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000
Figure
1

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Figure 2 – Hospital Location Map
Health and Safety Plan
Interim Remedial Measure
Avis Poughkeepsie Site
Poughkeepsie, New York

<u>Directions to Vassar Brothers Medical Center</u>

Start out going EAST on CR-48 / IBM RD toward SPACKENKILL RD

Turn LEFT onto US-9 N / SOUTH RD. Continue to follow US-9 N.

Take the COLUMBIA ST ramp toward RINALDI BLVD.

Turn RIGHT onto COLUMBIA ST.

Turn RIGHT onto YOUNG ST.

Turn RIGHT onto READE PL.

End at

Vassar Brothers Medical Center

45 Reade Pl
Poughkeepsie, NY 12601-3947

(845) 454-8500

(approximately 4 miles)

ATTACHMENT A

Chemical Information Sheets

MATERIAL SAFETY DATA SHEET

BENZENE (AMOCO/TOTAL)

MSDS No. 11697000 ANSI/ENGLISH

1.0 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BENZENE (AMOCO/TOTAL)

MANUFACTURER/SUPPLIER:

Amoco Oil Company
200 East Randolph Drive
Chicago, Illinois 60601 U.S.A.

EMERGENCY HEALTH INFORMATION:
1 (800) 447-8735

EMERGENCY SPILL INFORMATION:
1 (800) 424-9300 CHEMTREC (USA)

OTHER PRODUCT SAFETY INFORMATION:
(312) 856-3907

2.0 COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS#	Range % by Wt.
Benzene	71-43-2	99.80
Toluene	108-88-3	0.20

(See Section 8.0, "Exposure Controls/Personal Protection", for exposure guidelines)

3.0 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Danger! Extremely flammable. Causes eye and skin irritation. Inhalation causes headaches, dizziness, drowsiness, and nausea, and may lead to unconsciousness. Harmful or fatal if liquid is aspirated into lungs. Danger! Contains Benzene. Cancer hazard. Can cause blood disorders. Harmful when absorbed through the skin.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: Causes mild eye irritation.

SKIN CONTACT: Causes mild skin irritation. Causes skin irritation on prolonged or repeated contact. Harmful when absorbed through the skin.

INHALATION: Cancer hazard. Can cause blood disorders. Inhalation causes headaches, dizziness, drowsiness, and nausea, and may lead to unconsciousness. See "Toxicological Information" section (Section 11.0).

INGESTION: Harmful or fatal if liquid is aspirated into lungs. See "Toxicological Information" section (Section 11.0).

HMIS CODE: (Health:2) (Flammability:3) (Reactivity:0)

NFPA CODE: (Health:2) (Flammability:3) (Reactivity:0)

4.0 FIRST AID MEASURES

EYE: Flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN: Wash exposed skin with soap and water. Remove contaminated clothing, including shoes, and thoroughly clean and dry before reuse. Get medical attention if irritation develops.

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

INGESTION: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

5.0 FIRE FIGHTING MEASURES

FLASHPOINT: 12°F(-11°C)

UEL: 8.0%

LEL: 1.5%

AUTOIGNITION TEMPERATURE: 928°F (498°C)

FLAMMABILITY CLASSIFICATION: Extremely Flammable Liquid.

EXTINGUISHING MEDIA: Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, foam, steam) or water fog.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Extremely flammable liquid. Vapor may explode if ignited in enclosed area.

FIRE-FIGHTING EQUIPMENT: Firefighters should wear full bunker gear, including a positive pressure self-contained breathing apparatus.

PRECAUTIONS: Keep away from sources of ignition (e.g., heat and open flames). Keep container closed. Use with adequate ventilation.

HAZARDOUS COMBUSTION PRODUCTS: Incomplete burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

6.0 ACCIDENTAL RELEASE MEASURES

Remove or shut off all sources of ignition. Remove mechanically or contain on an absorbent material such as dry sand or earth. Increase ventilation if possible. Wear respirator and spray with water to disperse vapors. Keep out of sewers and waterways.

7.0 HANDLING AND STORAGE

HANDLING: Use with adequate ventilation. Do not breathe vapors. Keep away from ignition sources (e.g., heat, sparks, or open flames). Ground and bond containers when transferring materials. Wash thoroughly after handling. After this container has been emptied, it may contain flammable vapors; observe all warnings and precautions listed for this product.

STORAGE: Store in flammable liquids storage area. Store away from heat, ignition sources, and open flame in accordance with applicable regulations. Keep container closed. Outside storage is recommended.

8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

EYE: Do not get in eyes. Wear eye protection.

SKIN: Do not get on skin or clothing. Wear protective clothing and gloves.

INHALATION: Do not breathe mist or vapor. If heated and ventilation is inadequate, use supplied-air respirator approved by NIOSH/MSHA.

ENGINEERING CONTROLS: Control airborne concentrations below the exposure guidelines.

EXPOSURE GUIDELINES:

Component	CAS#	Exposure Limits

Benzene	71-43-2	OSHA PEL: 1 ppm OSHA STEL: 5 ppm ACGIH TLV-TWA: 10 ppm
Toluene	108-88-3	OSHA PEL: 100 ppm (1989); 200 ppm (1971) OSHA STEL: 150 ppm (1989); Not established. (1971) OSHA Ceiling: 300 ppm (1971) ACGIH TLV-TWA: 50 ppm (skin)

9.0 CHEMICAL AND PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Liquid. Colorless. Sweet odor.

pH: Not determined.

VAPOR PRESSURE: 74.6 mm Hg at 20 °C

VAPOR DENSITY: Not determined.

BOILING POINT: 176°F(80°C)

MELTING POINT: 42°F(6°C)

SOLUBILITY IN WATER: Slight, 0.1 to 1.0%.

SPECIFIC GRAVITY (WATER=1): 0.88

10.0 STABILITY AND REACTIVITY

STABILITY: Stable.

CONDITIONS TO AVOID: Keep away from ignition sources (e.g. heat, sparks, and open flames).

MATERIALS TO AVOID: Avoid chlorine, fluorine, and other strong oxidizers.

HAZARDOUS DECOMPOSITION: None identified.

HAZARDOUS POLYMERIZATION: Will not occur.

11.0 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY DATA:

EYE IRRITATION: Testing not conducted. See Other Toxicity Data.

SKIN IRRITATION: Testing not conducted. See Other Toxicity Data.

DERMAL LD50: Testing not conducted. See Other Toxicity Data.

ORAL LD50: 3.8 g/kg (rat).

INHALATION LC50: 10000 ppm (rat)

OTHER TOXICITY DATA: Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, or excitation. Exposure to very high levels can result in unconsciousness and death.

Long-term overexposure to benzene has been associated with certain types of leukemia in humans. In addition, the International Agency for Research on Cancer (IARC) and OSHA consider benzene to be a human carcinogen. Chronic exposures to benzene at levels of 100 ppm and below have been reported to cause adverse blood effects including anemia. Benzene exposure can occur by inhalation and absorption through the skin.

Inhalation and forced feeding studies of benzene in laboratory animals have produced a carcinogenic response in a variety of organs, including possibly leukemia, other adverse effects on the blood, chromosomal changes and some effects on the immune system. Exposure to benzene at levels up to 300 ppm did not produce birth defects in animal studies; however, exposure to the higher dosage levels (greater than 100 ppm) resulted in a reduction of body weight of the rat pups (fetotoxicity). Changes in the testes have been observed in mice exposed to benzene at 300 ppm, but reproductive performance was not altered in rats exposed to benzene at the same level.

Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Do not siphon by mouth.

12.0 ECOLOGICAL INFORMATION

Ecological testing has not been conducted on this product.

13.0 DISPOSAL INFORMATION

Disposal must be in accordance with applicable federal, state, or local regulations. Enclosed-controlled incineration is recommended unless directed otherwise by applicable ordinances. Residues and spilled material are hazardous waste due to ignitability.

14.0 TRANSPORTATION INFORMATION

U.S. DEPT OF TRANSPORTATION

Shipping Name	Benzene
Hazard Class	3
Identification Number	UN1114
Packing Group	II
RQ	RQ

INTERNATIONAL INFORMATION:

Sea (IMO/IMDG)

Shipping Name Not determined.

Air (ICAO/IATA)

Shipping Name Not determined.

European Road/Rail (ADR/RID)

Shipping Name Not determined.

Canadian Transportation of Dangerous Goods

Shipping Name Not determined.

15.0 REGULATORY INFORMATION

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR Part 302.4): This product is reportable under 40 CFR Part 302.4 because it contains the following substance(s):

Component/CAS Number	Weight %	Component Reportable Quantity (RQ)
Benzene 71-43-2	99.80	10 lbs.

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR Part 355): This product is not regulated under Section 302 of SARA and 40 CFR Part 355.

SARA TITLE III SECTIONS 311/312 HAZARDOUS CATEGORIZATION (40 CFR Part 370): This product is defined as hazardous by OSHA under 29 CFR Part 1910.1200(d).

SARA TITLE III SECTION 313 (40 CFR Part 372): This product contains the following substance (s), which is on the Toxic Chemicals List in 40 CFR Part 372:

Component/CAS Number	Weight Percent
Benzene 71-43-2	99.80

U.S. INVENTORY (TSCA): Listed on inventory.

OSHA HAZARD COMMUNICATION STANDARD: Flammable liquid. Carcinogen. Irritant. CNS Effects. Target organ effects.

EC INVENTORY (EINECS/ELINCS): In compliance.

JAPAN INVENTORY (MITI): Not determined.

AUSTRALIA INVENTORY (AICS): Not determined.

KOREA INVENTORY (ECL): Not determined.

CANADA INVENTORY (DSL): Not determined.

PHILIPPINE INVENTORY (PICCS): Not determined.

16.0 OTHER INFORMATION

Prepared by:

Environment, Health and Safety Department

Issued: November 14, 1995

This material Safety Data Sheet conforms to the requirements of ANSI Z400.1.

This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have reviewed any information contained in this data sheet which we received from sources outside our company. We believe that information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. No warranty is made, either express or implied.

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

ETHYLBENZENE
Ethylbenzol
Phenylethane
EB
$C_8H_{10}/C_6H_5\text{-}C_2H_5$
Molecular mass: 106.2

CAS # 100-41-4
RTECS # DA0700000
ICSC # 0268
UN # 1175
EC # 601-023-00-4

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
• **INHALATION**	Cough. Dizziness. Drowsiness. Headache.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
• **SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
• **EYES**	Redness. Pain. Blurred vision.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• **INGESTION**	(further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking liquid in covered containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer (extra personal protection: A filter respirator for	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-20 S: (2-)16-24/25-29 UN Hazard Class: 3

organic vapour).		UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0268 Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH AROMATIC ODOUR.

PHYSICAL DANGERS:
The vapour mixes well with air, explosive mixtures are easily formed.

CHEMICAL DANGERS:
Reacts with strong oxidants. Attacks plastic and rubber.

OCCUPATIONAL EXPOSURE LIMITS (OELs):
TLV (as TWA): 100 ppm; 434 mg/m^3; as STEL: 125 ppm; 543 mg/m^3 (ACGIH 1994-1995).
MAK: 100 ppm; 440 mg/m^3 (1994).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance irritates the eyes, the skin and the respiratory tract. Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous system. Exposure far above OEL could cause lowering of consciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis.

PHYSICAL PROPERTIES

Boiling point: 136°C
Melting point: -95°C
Relative density (water = 1): 0.9
Solubility in water, g/100 ml at 20°C: 0.015
Vapour pressure, kPa at 20°C: 0.9
Relative vapour density (air = 1): 3.7
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02
Flash point: 18°C c.c.
Auto-ignition temperature: 432°C
Explosive limits, vol% in air: 1.0-6.7
Octanol/water partition coefficient as log Pow: 3.2

ENVIRONMENTAL DATA

The substance is harmful to aquatic organisms.

NOTES

The odour warning when the exposure limit value is exceeded is insufficient.

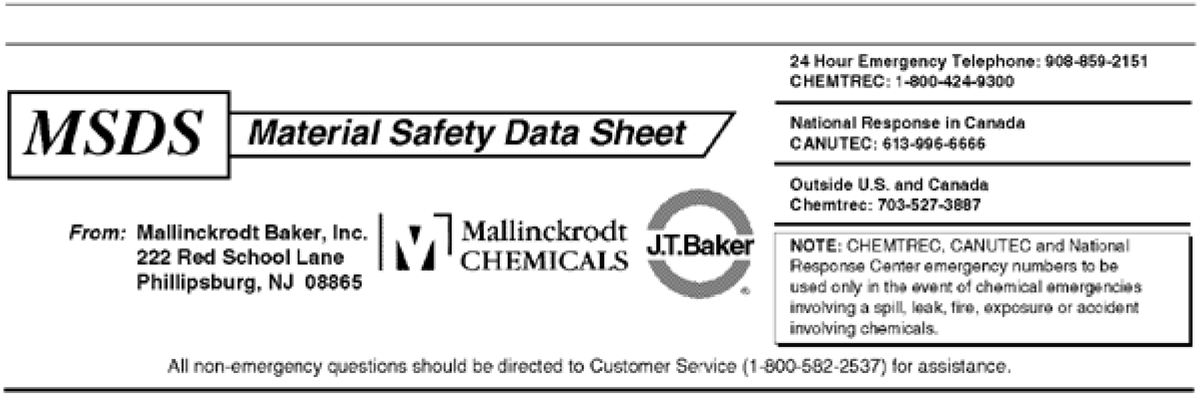
Transport Emergency Card: TEC (R)-522
NFPA Code: H2; F3; R0

ADDITIONAL INFORMATION

ICSC: 0268 **ETHYLBENZENE**

IMPORTANT LEGAL NOTICE:	

MSDS Number: **X2000** * * * * * *Effective Date:* ***04/01/03*** * * * * * *Supercedes:* ***03/15/02***



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS
J.T.Baker

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

XYLENES

1. Product Identification

Synonyms: Dimethyl benzene, xylol, methyltoluene
CAS No.: 1330-20-7
Molecular Weight: 106.17
Chemical Formula: $C_6H_4(CH_3)_2$
Product Codes:
J.T. Baker: 5377, 5810, 5813, 9483, 9489, 9490, 9493, 9494, 9499, 9516, X516
Mallinckrodt: 8664, 8668, 8671, 8672, 8685, 8802, V052

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
m-Xylene	108-38-3	40 - 65%	Yes
o-Xylene	95-47-6	15 - 20%	Yes
p-Xylene	106-42-3	< 20%	Yes
Ethyl Benzene	100-41-4	15 - 25%	Yes

3. Hazards Identification

Emergency Overview

DANGER! HARMFUL OR FATAL IF SWALLOWED. VAPOR HARMFUL. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES SEVERE EYE IRRITATION. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CHRONIC EXPOSURE CAN CAUSE ADVERSE LIVER, KIDNEY, AND BLOOD EFFECTS. FLAMMABLE LIQUID AND VAPOR.

SAF-T-DATA$^{(tm)}$ Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)
Flammability Rating: 2 - Moderate
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:
Inhalation of vapors may be irritating to the nose and throat. Inhalation of high concentrations may result in nausea, vomiting, headache, ringing in the ears, and severe breathing difficulties which may be delayed in onset. Substernal pain, cough, and hoarseness are also reported. High vapor concentrations are anesthetic and central nervous system depressants.

Ingestion:
Ingestion causes burning sensation in mouth and stomach, nausea, vomiting and salivation. Minute amounts aspirated into the lungs can produce a severe hemorrhagic pneumonitis with severe pulmonary injury or death.

Skin Contact:
Skin contact results in loss of natural oils and often results in a characteristic dermatitis. May be absorbed through the skin.

Eye Contact:
Vapors cause eye irritation. Splashes cause severe irritation, possible corneal burns and eye damage.

Chronic Exposure:
Chronic inhalation can cause headache, loss of appetite, nervousness and pale skin. Repeated or prolonged skin contact may cause a skin rash. Repeated exposure of the eyes to high concentrations of vapor may cause reversible eye damage. Repeated exposure can damage bone marrow, causing low blood cell count. May damage the liver and kidneys.

Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney, blood, or respiratory function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.
Ingestion:
Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately.
Skin Contact:
Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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5. Fire Fighting Measures

Fire:
Flash point: 29C (84F) CC
Autoignition temperature: 464C (867F)
Flammable limits in air % by volume:
lel: 1.0; uel: 7.0
Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Contact with strong oxidizers may cause fire. Sealed containers may rupture when heated. Sensitive to static discharge.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Vapors can flow along surfaces to distant ignition source and flash back.

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6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
-OSHA Permissible Exposure Limit (PEL):
100 ppm (TWA) xylene
100 ppm (TWA) ethylbenzene
-ACGIH Threshold Limit Value (TLV):
xylene: 100 ppm (TWA) 150 ppm (STEL), A4 - Not classifiable as a human carcinogen.
ethyl benzene: 100 ppm (TWA) 125 ppm (STEL), A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans.

Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details. Use explosion-proof equipment.

Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded and engineering controls are not feasible, a half-face organic vapor respirator may be worn for up to ten times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-

supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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9. Physical and Chemical Properties

The following physical data is for xylene.

Appearance:

Clear, colorless liquid.

Odor:

Characteristic odor.

Solubility:

Insoluble in water.

Specific Gravity:

0.86 @ 20C/4C

pH:

Not applicable.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

137 - 140C (279 - 284F)

Melting Point:

-25C (-13F)

Vapor Density (Air=1):

3.7

Vapor Pressure (mm Hg):

8 @ 20C (68F)

Evaporation Rate (BuAc=1):

0.7

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10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Involvement in a fire causes formation of carbon monoxide and unidentified organic components.

Hazardous Polymerization:

Will not occur.
Incompatibilities:
Strong oxidizing agents and strong acids.
Conditions to Avoid:
Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Toxicological Data:
Xylene: oral rat LD50: 4300 mg/kg; inhalation rat LC50: 5000 ppm/4H; skin rabbit LD50: > 1700 mg/kg; Irritation eye rabbit: 87 mg mild (Std. Draize); irritation skin rabbit 500 mg/24 moderate (Std. Draize); investigated as a tumorigen, mutagen, reproductive effector. Ethyl benzene: oral rat LD50: 3500 mg/kg; skin rabbit LD50: 17800 uL/kg; investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity:
May cause teratogenic effects.

--------\Cancer Lists\--

	---NTP Carcinogen---		
Ingredient	Known	Anticipated	IARC Category
m-Xylene (108-38-3)	No	No	3
o-Xylene (95-47-6)	No	No	3
p-Xylene (106-42-3)	No	No	3
Ethyl Benzene (100-41-4)	No	No	2B

12. Ecological Information

Environmental Fate:
Following data for xylene: When released into the soil, this material may evaporate to a moderate extent. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material may evaporate to a moderate extent. When released into water, this material may biodegrade to a moderate extent. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day. This material is not expected to significantly bioaccumulate. (mixed xylenes: octanol / water partition coefficient 3.1 - 3.2; bioconcentration factor = 1.3, eels)
Environmental Toxicity:
For xylene: This material is expected to be slightly toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: RQ, XYLENES
Hazard Class: 3
UN/NA: UN1307
Packing Group: III
Information reported for product/size: 398LB

International (Water, I.M.O.)

Proper Shipping Name: XYLENES
Hazard Class: 3
UN/NA: UN1307
Packing Group: III
Information reported for product/size: 398LB

---

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\---------------------------------

Ingredient	TSCA	EC	Japan	Australia
m-Xylene (108-38-3)	Yes	Yes	Yes	Yes
o-Xylene (95-47-6)	Yes	Yes	Yes	Yes
p-Xylene (106-42-3)	Yes	Yes	Yes	Yes
Ethyl Benzene (100-41-4)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\---------------------------------

		--Canada--		
Ingredient	Korea	DSL	NDSL	Phil.
m-Xylene (108-38-3)	Yes	Yes	No	Yes
o-Xylene (95-47-6)	Yes	Yes	No	Yes
p-Xylene (106-42-3)	Yes	Yes	No	Yes
Ethyl Benzene (100-41-4)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\----------------

	-SARA 302-		------SARA 313------	
Ingredient	RQ	TPQ	List	Chemical Catg.
m-Xylene (108-38-3)	No	No	Yes	No

o-Xylene (95-47-6)	No	No	Yes	No
p-Xylene (106-42-3)	No	No	Yes	No
Ethyl Benzene (100-41-4)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\----------------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
m-Xylene (108-38-3)	1000	No	No
o-Xylene (95-47-6)	1000	No	No
p-Xylene (106-42-3)	100	No	Yes
Ethyl Benzene (100-41-4)	1000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Mixture / Liquid)

Australian Hazchem Code: 3[Y]
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

16. Other Information

NFPA Ratings: Health: **2** Flammability: **3** Reactivity: **0**
Label Hazard Warning:
DANGER! HARMFUL OR FATAL IF SWALLOWED. VAPOR HARMFUL. AFFECTS CENTRAL NERVOUS SYSTEM. CAUSES SEVERE EYE IRRITATION. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. CHRONIC EXPOSURE CAN CAUSE ADVERSE LIVER, KIDNEY, AND BLOOD EFFECTS. FLAMMABLE LIQUID AND VAPOR.
Label Precautions:
Keep away from heat, sparks and flame.
Avoid contact with eyes, skin and clothing.
Keep container closed.
Use only with adequate ventilation.
Avoid breathing vapor.
Wash thoroughly after handling.
Label First Aid:
Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.
Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

****

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****

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

MATERIAL SAFETY DATA SHEET

TOLUENE (AMOCO/TOTAL)

MSDS No. 11699000 ANSI/ENGLISH

1.0 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: TOLUENE (AMOCO/TOTAL)

MANUFACTURER/SUPPLIER:

Amoco Chemical Company
200 East Randolph Drive
Chicago, Illinois 60601 U.S.A.

EMERGENCY HEALTH INFORMATION:
1 (800) 447-8735

EMERGENCY SPILL INFORMATION:
1 (800) 424-9300 CHEMTREC (USA)

OTHER PRODUCT SAFETY INFORMATION:
(312) 856-3907

2.0 COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS#	Range % by Wt.
Toluene	108-88-3	80
C9 Isoparaffins		9
C8 Isoparaffins		5
Benzene	71-43-2	2
Xylenes		2
Ethylbenzene	100-41-4	2

(See Section 8.0, "Exposure Controls/Personal Protection", for exposure guidelines)

3.0 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Warning! Flammable. Causes eye irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. Inhalation causes headaches, dizziness, drowsiness, nausea, and respiratory irritation. If swallowed, causes headaches, dizziness, drowsiness and nausea, and may lead to unconsciousness. Harmful or fatal if liquid is aspirated into lungs. Danger! Contains Benzene. Cancer hazard. Can cause blood disorders. Harmful when absorbed through the skin.

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: Causes mild eye irritation.

SKIN CONTACT: Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. Harmful when absorbed through the skin. Cancer hazard. Can cause blood disorders.

INHALATION: Inhalation causes headaches, dizziness, drowsiness, nausea, and respiratory irritation. See "Toxicological Information" section (Section 11.0).

INGESTION: If swallowed, causes headaches, dizziness, drowsiness and nausea, and may lead to unconsciousness. Harmful or fatal if liquid is aspirated into lungs.

HMIS CODE: (Health:2) (Flammability:3) (Reactivity:0)

NFPA CODE: (Health:2) (Flammability:3) (Reactivity:0)

4.0 FIRST AID MEASURES

EYE: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

SKIN: Wash exposed skin with soap and water. Remove contaminated clothing and thoroughly clean and dry before reuse.

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

INGESTION: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

5.0 FIRE FIGHTING MEASURES

FLASHPOINT: 40°F(4°C)

UEL: 6.8%

LEL: 1.3%

AUTOIGNITION TEMPERATURE: 997°F (536°C)

FLAMMABILITY CLASSIFICATION: Flammable Liquid.

EXTINGUISHING MEDIA: Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, foam, steam) or water fog.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Flammable liquid. Vapor may explode if ignited in enclosed area.

FIRE-FIGHTING EQUIPMENT: Firefighters should wear full bunker gear, including a positive pressure self-contained breathing apparatus.

PRECAUTIONS: Keep away from sources of ignition (e.g., heat and open flames). Use with adequate ventilation. Keep container closed.

HAZARDOUS COMBUSTION PRODUCTS: Incomplete burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

6.0 ACCIDENTAL RELEASE MEASURES

Remove or shut off all sources of ignition. Remove mechanically or contain on an absorbent material such as dry sand or earth. Keep out of sewers and waterways.

7.0 HANDLING AND STORAGE

HANDLING: Do not breathe vapors. Do not get in eyes. Do not get on skin or clothing.

STORAGE: Store in flammable liquids storage area. Store away from heat, ignition sources, and open flame in accordance with applicable regulations. Keep container closed.

8.0 EXPOSURE CONTROLS / PERSONAL PROTECTION

EYE: Do not get in eyes. Wear chemical goggles.

SKIN: Avoid skin contact. Wear protective clothing and gloves.

INHALATION: Do not breathe mist or vapor. Use with adequate ventilation. If ventilation is inadequate, use NIOSH certified respirator that will protect against organic vapor and dust/mist.

ENGINEERING CONTROLS: Control airborne concentrations below the exposure guidelines.

EXPOSURE GUIDELINES:

Component	CAS#	Exposure Limits
Toluene	108-88-3	OSHA PEL: 100 ppm (1989); 200 ppm (1971) OSHA STEL: 150 ppm (1989); Not established. (1971) OSHA Ceiling: 300 ppm (1971) ACGIH TLV-TWA: 50 ppm (skin)
C9 Isoparaffins		No exposure limit established
C8 Isoparaffins		No exposure limit established
Benzene	71-43-2	OSHA PEL: 1 ppm OSHA STEL: 5 ppm ACGIH TLV-TWA: 10 ppm
Xylenes		No exposure limit established
Ethylbenzene	100-41-4	OSHA PEL: 100 ppm (1989)(1971) OSHA STEL: 125 ppm(1989); Not established. (1971) ACGIH TLV-TWA: 100 ppm ACGIH TLV-STEL: 125 ppm

9.0 CHEMICAL AND PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Liquid. Clear. Colorless. Aromatic odor.

pH: Not determined.

VAPOR PRESSURE: 26 mm Hg at 25 °C

VAPOR DENSITY: 3.2

BOILING POINT: 231°F(111°C)

MELTING POINT: Not determined.

SOLUBILITY IN WATER: Negligible, below 0.1%.

SPECIFIC GRAVITY (WATER=1): 0.87

EVAPORATION RATE:

10.0 STABILITY AND REACTIVITY

STABILITY: Burning can be started easily.

CONDITIONS TO AVOID: Keep away from ignition sources (e.g. heat, sparks, and open flames).

MATERIALS TO AVOID: None identified.

HAZARDOUS DECOMPOSITION: Burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

HAZARDOUS POLYMERIZATION: Will not occur.

11.0 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY DATA:

EYE IRRITATION: Testing not conducted. See Other Toxicity Data.

SKIN IRRITATION: Testing not conducted. See Other Toxicity Data.

DERMAL LD50: Testing not conducted. See Other Toxicity Data.

ORAL LD50: Testing not conducted. See Other Toxicity Data.

INHALATION LC50: Testing not conducted. See Other Toxicity Data.

OTHER TOXICITY DATA: Specific toxicity tests have not been conducted on this product. Our hazard evaluation is based on information from similar products, the ingredients, technical literature, and/or professional experience.

This stream contains benzene, toluene, xylene and ethylbenzene.

Toluene: Toluene is readily absorbed via inhalation, ingestion, and somewhat through skin contact. In the liquid form, it causes mild skin irritation with a single exposure (PDIS: 4.8/8.0) and dermatitis following repeated exposures. Toluene also produces mild eye irritation (Draise score at 1.0 hour 13.7/110.0) which includes reversible corneal opacity and iritis. It is not a dermal sensitizer. Inhalation in humans has caused mild respiratory irritation (200 ppm), mild eye irritation (400 ppm), and lassitude and slight nausea (600 ppm). Drowsiness occurs at 800 ppm. Very high concentrations may result in paresthesia, dizziness, disturbances of vision, nausea, narcosis, and collapse. It does not induce the hematopoietic effects seen with benzene exposure. Rat oral LD50: 5000 mg/kg; rat inhalation LC50: 4000 ppm (4 hours).

Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, or excitation. Exposure to very high levels can result in unconsciousness and death.

Long-term overexposure to benzene has been associated with certain types of leukemia in humans. In addition, the International Agency for Research on Cancer (IARC) and OSHA consider benzene to be a human carcinogen. Chronic exposures to benzene at levels of 100 ppm and below have been reported to cause adverse blood effects including anemia. Benzene exposure can occur by inhalation and absorption through the skin.

Inhalation and forced feeding studies of benzene in laboratory animals have produced a carcinogenic response in a variety of organs, including possibly leukemia, other adverse effect

APPENDIX D

Air Monitoring Plan

Air Monitoring Plan

Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie
Dutchess County, New York

Prepared for:

Avis Rent A Car System, Inc.
6 Sylvan Way
Parsippany, New Jersey 07054

Prepared by:

Geomatrix Consultants, Inc.
90 B John Muir Drive, Ste. 104
Amherst, New York 14228
(716) 565-0624

November 2005

Project No. 9328.000

Geomatrix

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AIR MONITORING PLAN
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

1.0 INTRODUCTION

This Air Monitoring Plan (AMP) is part of the Interim Remedial Measure Work Plan (IRM Work Plan; Geomatrix, 2005) developed for implementing an interim remedial measure, excavation, at the Former Drive & Park, Inc. Site located at 28 IBM Road in Poughkeepsie, New York (the site; Figure 1). The on-site remedial activities at the site include source removal through excavation from the two identified remediation areas, designated as the On-Site and Off-Site excavation areas. More complete information concerning the on-site remediation activities can be found in the IRM Work Plan. This AMP addresses work zone and perimeter air monitoring for the proposed remedial activities at the site and is based on the guidance provided in the *Draft DER-10 Technical Guidance for Site Investigation and Remediation* (NYSDOH, 2002).

2.0 AIR MONITORING OVERVIEW

As required in the Chemical Health and Safety Plan (HASP), Appendix C to the IRM Work Plan, and in conjunction with soil remediation activities, this AMP provides a description of the protocol to collect real-time work zone and perimeter air quality data. The objectives of this AMP are to:

- Collect real-time air data using a photoionization detector (PID) to assess if modifications to engineering control practices and/or personal protective equipment (PPE) are necessary for a safe on-site working environment; and
- Collect real-time air data using a Mini-RAM and PID or similar device to assess if modifications to engineering control practices are necessary to prevent potential off-site migration of chemicals in fugitive dust emissions.

3.0 CHEMICALS OF INTEREST

The chemicals detected in the soil and groundwater during site investigations on and off site are listed in the table below. For the purpose of health and safety, these chemicals could potentially come in contact with the workers and should be monitored as required.

TABLE 1

CHEMICALS OF INTEREST

Chemical	Soil	Groundwater
Benzene	X	X
Ethylbenzene	X	X
Toluene	X	X
Xylenes	X	X
sec-Butylbenzene	X	X
1,2-Dichlorobenzene	X	X
Isopropylbenzene	X	X
n-Propylbenzene	X	X
1,2,4-Trimethylbenzene	X	X
1,3,5-Trimethylbenzene	X	X
Naphthalene	X	X
MTBE	X	X
TAME	ND	X
Trichloroethene	X	ND

X=constituent detected in at least one sample
ND=constituent not detected in any samples

4.0 REAL-TIME WORK ZONE AIR MONITORING

The objective of the real-time monitoring in the work zone will be to monitor airborne concentrations of dust, volatile organic compounds (VOCs), and particulate levels that on-site personnel could be exposed to. The workers most likely to be exposed to the highest airborne concentrations of dust will include heavy equipment operators and workers who are in the immediate vicinity of the excavation, shoring, stockpiling, sampling, and off-hauling of potentially affected soil.

4.1 AIR MONITORING

Real-time air monitoring data will be collected using both direct reading instruments and personal sampling pumps. A hand-held portable aerosol monitor will be used to monitor dust levels on a real-time basis during activities with the potential to generate dust. In addition, a PID will be used to measure airborne concentrations of VOCs during excavation work. Personal sampling pumps equipped with appropriate collection media will be used to collect worker exposure samples over the duration of a work shift. Sampling equipment and collection media will be available on site to collect airborne VOC samples should high PID readings or strong odors be encountered. The chain-of-custody and sampling handling procedures are discussed in Section 7.0. Table 2 presents a summary of the monitoring and sampling requirements for the work zone air monitoring program.

TABLE 2

WORK ZONE AIR MONITORING REQUIREMENTS

Contaminant and Equipment	Method (Method Detection Limit)	Frequency and Location
Particulates and Dust DataRAM, MiniRAM, or HAM portable aerosol monitor	Direct-reading instrument ($0.1\ mg/m^3$)	Periodically in the work zone during applicable work. Readings will be recorded in field notes at least once per hour.
VOCs PID	Direct-reading instrument (0.5 ppm)	Periodically in the work zone during applicable work and whenever odors or visibly affected soils are encountered.

Abbreviations:

mg/m^3 = milligrams per cubic meter.

4.2 ACTION LEVELS

Action levels for work zone air monitoring are based on OSHA permissible exposure limits (PELs) for various Chemicals of Concern (COCs) at the site. Calculations for dust action levels are shown in Attachment A to this plan for the COCs identified at the site. In order to select the action level in the excavation area, the lower of the following two were selected: lowest dust action level for the COCs; and OSHA limit of 15 milligrams per cubic meter (mg/m^3) for nuisance total dust in areas where workers may be exposed. Table 3 presents a summary of PELs and health hazards associated with the expected organic COCs identified at the site.

TABLE 3

PERMISSIBLE EXPOSURE LIMITS (PELs) FOR VOLATILE ORGANIC COCs

CHEMICAL	PEL		LEL (%)	HEALTH HAZARDS
	OSHA	ACGIH[1]		
Benzene (ppm)	1/S5	0.5/S2.5	1.2	Cancer (leukemia)
Ethyl benzene (ppm)	100	100/S125	0.8	Eye, skin, and upper respiratory irritation
Toluene (ppm)	200/C300	50	1.1	CNS Depression
Xylenes (total) (ppm)	100	100/S150	0.9	CNS Depression, respiratory and eye irritation
Trimethylbenzene (ppm)	None	25	0.8	Skin irritation, CNS depression, respiratory failure
Naphthalene (ppm)	10	10/S15	0.9	Hemolysis and eye irritation that causes cataracts
MTBE (ppm)	None	50		Reproductive; kidney
Trichloroethene (TCE) (ppm)	100/C200	50/S100	8	Potential for cancer, CNS effects; liver tumors in animals

Abbreviation:
ACGIH = American Conference of Governmental Industrial Hygienists

If not specified, the exposure limit is the PEL, an exposure limit preceded by an “S” designates a Short Term Exposure Limit, and an exposure limit preceded by a “C” is the Ceiling Limit. Table 4 presents a summary of action levels and responses to exceedances for on-site personnel safety.

TABLE 4

ACTION LEVELS FOR PERSONNEL SAFETY

Parameter and Equipment	**Action Level**	**Response to Exceedance**
Work Zone Particulates and Dust Portable aerosol monitor	15 mg/m^3 sustained for 15 minutes in work zone.	Upgrade PPE with half-face respirators and organic vapor cartridges. Implement dust controls to reduce concentration. Stop work and implement dust controls, such as water spray, slowing of work, etc., until dust levels drop below 15 mg/m^3. Work will stop until engineering controls are sufficient to bring the measured concentration below action level.
Work Zone Volatile Organic Compounds PID	Readings in work breathing zone sustained for 15 minutes. 1. 25 to 50 ppm 2. Over 50 ppm	Evaluate VOC air sampling results before resuming work. 1. Upgrade to level C PPE with half-face respirators and organic vapor cartridges. 2. Stop work and cover source of emissions with soil.

5.0 METEOROLOGICAL MONITORING

Meteorological data will be collected on site starting one week before remediation activities commence. The parameters that will be collected include wind speed and wind direction. These data will be collected through the use of a meteorological tower and data logger that will be erected at a height that is suitable for this remediation project. Measurements will be taken hourly and logged to the data logger. These data will be used to refine the present understanding of wind direction at the site. Wind speeds will be periodically reviewed during remedial activities to assess whether the wind is blowing greater than 25 mph. Wind speed in excess of this level may trigger immediate modification of work practices and institution of engineering controls if there is a potential to release dust into the air.

6.0 REAL-TIME PERIMETER AIR MONITORING

The purpose of the property perimeter air monitoring is to monitor and record the levels of particulates and potential COC in dust, and to prevent the off-site migration of significant levels of COCs by modifying work operations as appropriate.

6.1 AIR MONITORING

After soil remediation activities commence, site perimeter air monitoring will be conducted continuously during the soil excavation and grading. A hand-held portable aerosol monitor will be used to monitor dust levels, and a PID will be used to measure airborne concentrations of VOCs during excavation work. Equipment used for perimeter monitoring will be capable of calculating 15-minute average concentrations, and all readings will be recorded and available to the State of New York (New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH)).

TABLE 5

PERIMETER AIR MONITORING REQUIREMENTS

Contaminant and Equipment	Method (Method Detection Limit)	Frequency and Location
Particulates and Dust DataRAM, MiniRAM, or HAM portable aerosol monitor	Direct-reading instrument ($0.1\ mg/m^3$)	Continuously at the upwind and downwind perimeter during applicable work. Readings will be recorded in field notes at least once per hour.
VOCs PID	Direct-reading instrument (0.5 ppm)	At the start of each workday and continuously at the upwind and downwind perimeter during applicable work and whenever odors or visibly affected soils are encountered.

Abbreviations:
mg/m^3 = milligrams per cubic meter.

6.2 ACTION LEVELS

For perimeter air monitoring, a NYSDEC ambient air quality standard of $0.15\ mg/m^3$ above background concentrations for off-site dust emissions will be adopted. If particulate concentrations are detected at $0.10\ mg/m^3$ or more above background concentrations at the property boundaries, additional engineering controls will be implemented to further reduce dust concentrations (i.e., increased watering). Work may continue if downwind PM-10 concentrations do not exceed $0.15\ mg/m^3$ above background concentrations and no visible dust can be seen leaving the site. Work will stop if engineering controls cannot limit dust emissions to acceptable levels.

For perimeter air monitoring of VOCs, a NYSDOH ambient air response level of 5 ppm above background will be adopted. If the 15-minute averaging of total organic vapors exceeds 5 ppm, work activities must be temporarily halted. If the total organic vapor level readily decreases, work activities can resume with continued monitoring. If the total organic vapor level remains at levels between 5 ppm and 25 ppm over background, the source of vapors will be identified and corrective actions taken. The response will include collecting one air sample with an air sampling pump or summa canister. If the total organic vapor level 200 feet downwind of the work area or half the distance to the nearest receptor (residential or commercial structure) remains below 5 ppm over background, the work can continue. No site work will continue if the organic vapor level exceeds 25 ppm above background at the site perimeter.

Table 6 presents a summary of action levels and responses to exceedances for perimeter monitoring to protect the community.

TABLE 6

ACTION LEVELS FOR PERIMETER MONITORING

Parameter and Equipment	Action Level	Response to Exceedance
Perimeter Particulates and Dust Portable aerosol monitor	0.15 mg/m^3 above background concentrations.	Implement dust controls to reduce concentration. Stop work and implement dust controls, such as water spray, slowing of work, etc., until dust levels drop below 0.15 mg/m^3. Work will stop until engineering controls are sufficient to bring the measured concentration below action level
VOCs		
PID	5 ppm above background concentrations.	Work halted; work can resume if VOC concentrations decrease below 5 ppm or if downwind concentrations (200 ft downwind of perimeter or halfway to nearest receptor) remain below 5 ppm above background. One air sample will be collected if concentrations more than 5 ppm over background continue to be measured with the PID.

7.0 CHAIN-OF-CUSTODY

If an air sample is collected, a chain-of-custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody will be noted and signed by the receiving party. A copy of this record will be kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a Custody Seal.

The chain-of-custody record will contain (at the minimum) the following:

- Sample identification number
- Sample information
- Sample location
- Sample date
- Name(s) and signature(s) of sampler(s)

- Signature(s) of any individual(s) with control over samples

7.1 CUSTODY SEALS

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the samples will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal.

7.2 SAMPLE HANDLING AND SHIPMENT

Each of the samples will be sealed and labeled according to the following protocol. The samples will be placed in a container and the storage container will be secured with custody seals. Sample labels will contain all required information including: site name, sample number, time and date of collection, analysis requested, and preservative used (if any). All sample documents will accompany the samples to the laboratories.

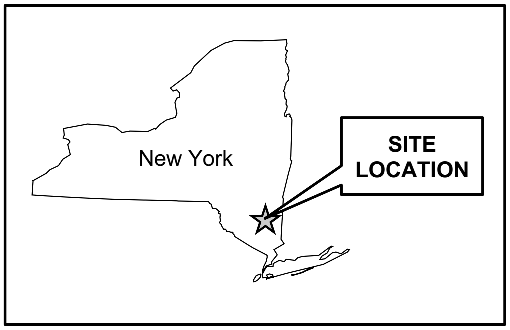
8.0 REFERENCES

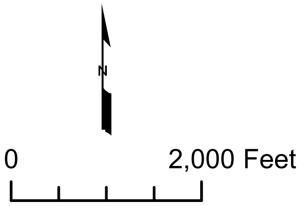
Geomatrix Consultants, Inc. (Geomatrix), 2005, *Interim Remedial Measure, 28 IBM Road*, *Poughkeepsie, New York*, October.

New York State Department of Health (NYSDOH), 2002, *Generic Community Air Monitoring Plan, Appendix 1A*, *Draft DER-10 Technical Guidance for Site Investigation and Remediation*, December 2002.

FIGURES

Basemap from U.S.G.S. Poughkeepsie, New York (1982)
7.5' topographic quadrangle.





GEOMATRIX

SITE LOCATION MAP
Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

Project No.
9328.000

Figure
1

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ATTACHMENT A

Calculations for Worker Dust Action Levels

ATTACHMENT A

CALCULATIONS FOR WORKER DUST ACTION LEVELS

$$\text{Total dust action level} = \frac{\text{Contaminant Action Level (mg/m}^3\text{)}}{\text{Contaminant Soil Concentration (mg/kg)}} \times 10^6$$

$$\text{For Benzene: dust action level} = \frac{3.2}{49} \times 10^6 = 6.53 \times 10^4 \text{ mg/m}^3$$

Action Levels for Worker Protection

Boring	**Date**	**Constituent**	**Maximum Concentration in Soil[1] (mg/kg)**	**Contaminant Action Level[2] (mg/m^3)**	**Total Dust Action Level (mg/m^3)**
PZ-3	11/19/2003	1,2,4 -Trimethylbenzene	149	--[3]	--
PZ-6	11/19/2003	1,2-Dichlorobenzene	0.104	300	2.88E+09
PZ-3	11/19/2003	1,3,5 -Trimethylbenzene	58.2	--[3]	--
PZ-3	11/19/2003	4-Isopropyltoluene	3.07	--[3]	--
MW-12	8/12/1992	Benzene	49	3.2	6.53E+04
MW-12	8/12/1992	Ethylbenzene	370	435	1.18E+06
PZ-3	11/19/2003	Isoporopylbenzene	7.55	245	3.25E+07
PZ-7	11/19/2003	Methyl-tert Butyl Ether	0.243	--[3]	--
PZ-3	11/19/2003	n-Propylbenzene	25.4	--[3]	--
MW-101	11/19/2003	Naphthalene	3.84	50	1.30E+07
PZ-3	11/19/2003	sec-Butylbenzene	3.56	--[3]	--
MW-12	8/12/1992	Toluene	970	750	7.73E+05
MW-104	11/20/2003	Trichloroethene	0.0829	536	6.47E+09
MW-12	8/12/1992	Total Xylenes	2200	435	1.98E+05
PK-4	12/18/1990	TPH	500	--[3]	--

[1] Highest concentration detected in the soil sitewide.

[2] OSHA PELS; 8-hr time weighted average exposure concentrations

[3] Not available.

Abbreviations

mg/kg=milligrams per kilogram

mg/m^3=milligrams per cubic meter

APPENDIX E

Sampling and Analysis Plan

Sampling and Analysis Plan

Former Drive & Park, Inc. Site
Brownfield Cleanup Program #314111
28 IBM Road
Town of Poughkeepsie
Dutchess County, New York

Prepared for:

Avis Rent A Car System, Inc.
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Parsippany, New Jersey 07054

Prepared by:

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November 2005

Project No. 9328.000

Geomatrix

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SAMPLING AND ANALYSIS PLAN

Former Drive & Park, Inc. Site
28 IBM Road
Poughkeepsie, New York

1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) was developed on behalf of Avis Rent A Car System, Inc. (Avis) for implementation of the interim remedial measure (IRM) at the Former Drive & Park, Inc. Site located at 28 IBM Road in Poughkeepsie, New York (the site). The IRM, as agreed upon by the New York State Department of Environmental Conservation (NYSDEC) and Avis at a September 27, 2005 meeting is the removal of soil impacted by residual petroleum hydrocarbons from on site and off site through excavation. The IRM is presented in detail in the IRM Work Plan for the site (Geomatrix, 2005), and this SAP is included in the IRM Work Plan as Appendix E.

The objectives of the SAP are to describe the following:

1. General sample collection and handling protocols;
2. Sampling methodology and analyses for excavation confirmation;
3. Sampling methodology and analyses for backfill import material characterization;
4. Sampling methodology and analysis for reuse of excavated soil as landfill cover;
5. Standard Geomatrix chain-of-custody procedures;
6. Quality assurance/quality control (QA/QC) methodology; and
7. Analytical reporting requirements.

2.0 GENERAL SAMPLE COLLECTION AND HANDLING PROTOCOLS

This protocol describes procedures to be followed for collecting soil samples for chemical analysis. The procedures presented herein are intended to be of general use. As the work progresses and if warranted, appropriate revisions will be made and approved by the Geomatrix project manager.

2.1 SAMPLE DESIGNATION

Each soil sample collected at the site will be labeled with the following information:

- sample identification number;
- sample location;
- date and time of collection;
- initials of person collecting samples;
- analyses requested; and
- any other information pertinent to the sample.

A unique identification number will be assigned to each sample. The sample-naming protocol for each type of sample collected during IRM activities is presented in Section 3.0 of this SAP.

2.2 SOIL SAMPLE COLLECTION, PRESERVATION, AND DOCUMENTATION

All samples will be collected and preserved as specified in “Test Methods for Evaluating Solid Waste” (SW-846) (USEPA, 1992), NYSDEC requirements, and local guidelines. Clean latex or solvex gloves will be worn by the sampler before touching the sample, and gloves will be changed between the collection of each sample. All information pertaining to a particular sample will be referenced by its identification number that is recorded on the sample container, in the sample control log, and on the sample chain-of-custody form.

All samples will be collected in 2”x6” brass liner sleeves. Soil samples will be collected in clean stainless steel liners that have been steam-cleaned or washed in a Alconox solution and rinsed with deionized water prior to use. The following general methodology will be used to collect soil samples:

1. Scrape away 3-6 inches of the surface soil to expose a fresh soil surface.

2. Force a single, clean brass liner sleeve into the soil to completely fill the container.
3. Immediately cover the ends of the liner with Teflon sheeting; cap the ends with plastic end caps, and seal with silicone tape.

The sealed brass liner is to be labeled as described in Section 2.1 of this SAP. Confirmation sampling naming methodology is described below.

Immediately following sample collection, label the sample in waterproof ink and secure the label to the sample container. All samples will be delivered to the laboratory in clean, insulated chests that contain ice as required for sample preservation.

2.3 GROUNDWATER SAMPLE COLLECTION, PRESERVATION, DOCUMENTATION

All samples will be collected and preserved as specified in "Test Methods for Evaluating Solid Waste" (SW-846), NYSDEC requirements, and local guidelines. Clean latex or solvex gloves will be worn by the sampler before touching the sample, and gloves will be changed between the collection of each sample. All information pertaining to a particular sample will be referenced by its identification number that is recorded on the sample container, in the sample control log, and on the sample chain-of-custody form.

Groundwater samples will be collected in required containers provided by the analytical laboratory. The following general methodology will be used to collect groundwater samples from the excavation:

1. Lower a new, plastic bailer into the excavation. Allow the bailer to slowly fill with water. Avoid collecting sediment or floating matter in the bailer. If repeated bailing is necessary to collect the required sample volume, attempt to lower the bailer in the same area of the excavation as before.
2. Use the appropriate bailer tip to fill the sample container. When collecting samples for VOC analyses, make sure that there are no bubbles in the filled VOA container.
3. Immediately cap the container.

Sample containers are to be labeled as described in Section 2.1 of this SAP. Naming methodology is described below.

Immediately following sample collection, label the sample in waterproof ink and secure the label to the sample container. All samples will be delivered to the laboratory in clean, insulated chests that contain ice as required for sample preservation.

2.4 WATER TREATMENT SYSTEM SAMPLE COLLECTION, PRESERVATION, DOCUMENTATION

All samples will be collected and preserved as specified in "Test Methods for Evaluating Solid Waste" (SW-846), NYSDEC requirements, and local guidelines. Clean latex or solvex gloves will be worn by the sampler before touching the sample, and gloves will be changed between the collection of each sample. All information pertaining to a particular sample will be referenced by its identification number that is recorded on the sample container, in the sample control log, and on the sample chain-of-custody form.

Water treatment system samples will be collected in required containers provided by the analytical laboratory. The following general methodology will be used to collect groundwater samples from the water treatment system:

1. Locate the appropriate sample port at the treatment system.

2. Place a 5-gallon bucket under the sample port. Open the sample port and allow water from the sample port to drain into the bucket for 15-20 seconds.

3. Fill the sample container. When collecting samples for VOC analyses, make sure that there are no bubbles in the filled VOA container.

4. Immediately cap the container.

Sample containers are to be labeled as described in Section 2.1 of this SAP. Naming methodology is described below.

Immediately following sample collection, label the sample in waterproof ink and secure the label to the sample container. All samples will be delivered to the laboratory in clean, insulated chests that contain ice as required for sample preservation.

2.5 CHAIN-OF-CUSTODY PROCEDURES

After samples have been collected and labeled, they will be maintained under chain-of-custody procedures. These procedures document the transfer of custody of samples from the field to the laboratory. A chain-of-custody record will be filled out for each sample sent to the laboratory for analysis. The field sampler will sign the Chain-of-Custody Record and will record the time and the date at the time of transfer to the laboratory or an intermediate person. A set of signatures is required for each relinquished/received transfer, including transfer within Geomatrix. The original imprint of the Chain-of-Custody Record will accompany the sample containers. A duplicate copy will be placed in the Geomatrix project files. Soil and groundwater samples for possible laboratory analysis will be submitted under Geomatrix chain-of-custody procedures to the selected laboratory.

2.6 SAMPLE ANALYSIS

All laboratory analyses will be performed by a New York State-certified analytical laboratory. Geomatrix personnel are to arrange for a laboratory courier for delivery of samples to the laboratory. Required turn-around-times for soil sampling are described in the following sections.

2.7 SOIL SCREENING USING THE PHOTOIONIZATION DETECTOR (PID)

In addition to visual observation, a PID will be used to screen for organic vapor in the air in the immediate vicinity of excavated soil. The PID should be calibrated according to the manufacturer's instructions daily prior to soil screening and more frequently as needed throughout the day if irregularities in the readings become apparent. Manufacturer-supplied calibration standard span gas will be used to calibrate the meter. Geomatrix personnel will maintain a daily record containing calibration data for each organic vapor meter, including the certified value of the calibration gas and the measured reading.

The soil will be screened before sampling while it is contained within the excavator bucket during excavation or while stockpiled after being excavated. The general procedure for screening soil using a PID is as follows:

1. Fill soil from the stockpile or excavator bucket into a prepared, clean, brass sleeve (the same type of sleeve that is used for soil sampling). Fill approximately half of the brass sleeve. One end of the brass tube should already be sealed with a plastic cap.

2. Cover the half-filled brass sleeve with a prepared plastic cap that has a 1-inch slit cut in the top.

3. Insert the PID probe tip into the closed brass tube through the slit in the plastic cap. Do not allow the PID probe tip to touch the soil in the sleeve.

4. Allow some time to pass, and record the PID reading in the daily field record. Note the name of the corresponding soil sample, if any, along with the PID reading on the daily field record.

Do not submit soil used for PID screening for laboratory analysis. Confirm that the PID returns to zero before the next reading.

3.0 SAMPLING AND ANALYSIS PLAN

3.1 EXCAVATION CONFIRMATION SAMPLING

As described in Section 5.0 of the IRM Work Plan, there are two primary excavation areas: the On-Site excavation area and the Off-Site excavation area. The horizontal and vertical extents of the On-Site excavation have been predetermined based on the results of previous site investigations, and the presence of excavation shoring makes sidewall sampling technically infeasible. As a result, no confirmation samples will be collected from the completed On-Site excavation.

Off-Site sidewall confirmation sample analytical results will be compared with recommended site cleanup goals presented in the NYSDEC Technical and Administrative Guidance Memorandum 4046 Guidance Document, *Determination of Soil Cleanup Objectives and Cleanup Levels* (TAGM 4046*)*. The TAGM 4046 recommended site cleanup goals have been included as Appendix A of this SAP. If the results of confirmation sampling are comparable to the TAGM 4046 cleanup levels, Geomatrix will request approval from the NYSDEC to end the Off-Site excavation.

3.1.1 Confirmation Sampling Frequency

During the Off-Site excavation, field observations, including visual observations and photoionization detector (PID) measurements, will be used to screen the excavated soil and to preliminarily determine the horizontal extents of the excavation. (See Section 2.4 for a description of field screening using the PID.)

When field observations indicate that the required horizontal extent of the Off-Site excavation has been reached, soil samples will be collected from the sidewalls of the excavation. Sampling frequency and analyses are described below. Off-Site excavation sidewall confirmation sampling frequency and required analyses are summarized on Table 1.

Per the requirements listed in NYSDEC DER-10, **one confirmation sidewall sample will be collected from the sidewall every 30 linear feet**. The confirmation sidewall sample will be collected at a depth corresponding to the groundwater/residual petroleum smear zone in the subsurface.

3.1.2 Confirmation Sampling Methodology

Confirmation samples will be collected from the bucket of the excavator or backhoe. Geomatrix personnel will direct the contractor to remove a full bucket from the excavation sidewall at the desired location. Prior to collecting the sidewall sample, a PID will be used to screen the sidewall soil in the excavator bucket as described in Section 3.4 of this SAP. The PID reading will be recorded in the daily field record.

Collect and label the confirmation sample as described in Section 2.0. A unique identification number will be assigned to each sample. Confirmation sample naming will follow the general strategy described below.

Off-Site Confirmation Sample Name: SW-[number]@[depth in feet bgs]-[mmddyy]

Example: **SW-15@7-123105** for sidewall sample #15 collected at 7 feet bgs on 12/31/2005

The locations of all Off-Site confirmation samples will be recorded by Geomatrix personnel on a site plan to be kept at the site. Sample information will also be recorded on the Confirmation Sample Control Log, a blank version of which has been included as Appendix B.

3.1.3 Confirmation Sampling Analyses

Off-Site confirmation sidewall samples will be analyzed for the following constituents:

- benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260;
- fuel oxygenates by EPA Method 8260;
- total petroleum hydrocarbons in the gasoline range (TPH-g) by EPA Method 8260; and
- total petroleum hydrocarbons in the diesel range (TPH-d) using EPA Method 8015.

Confirmatory sampling analyses are summarized in Table 1. Geomatrix personnel will arrange for a laboratory courier to pick up confirmation samples from the site. All confirmation samples will be analyzed on a 24-hour rush turn-around-time (TAT). Analytical results will be sent to Geomatrix personnel by fax and e-mail.

3.2 GROUNDWATER SAMPLING

3.2.1 Groundwater Sampling Frequency

Groundwater sampling frequency has yet to be determined based on field conditions and NYSDEC requirements.

3.2.2 Groundwater Sampling Methodology

Collect and label the sample as described in Section 2.0. A unique identification number will be assigned to each sample. Sample naming will follow the general strategy described below.

Groundwater Sample Name: GW-[number]-[mmddyy]

Example: **GW-1-123105** for groundwater sample #1 collected on 12/31/2005

The locations of any groundwater samples will be recorded by Geomatrix personnel on a site plan to be kept at the site. Sample information will also be recorded on the daily field record**.**

3.2.3 Groundwater Sampling Analyses

Groundwater samples will be analyzed for the following constituents:

- benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260;
- fuel oxygenates by EPA Method 8260;
- total petroleum hydrocarbons in the gasoline range (TPH-g) by EPA Method 8260; and
- total petroleum hydrocarbons in the diesel range (TPH-d) using EPA Method 8015.

Groundwater sampling analyses are summarized in Table 1. Geomatrix personnel will arrange for a laboratory courier to pick up confirmation samples from the site. Analytical results will be sent to Geomatrix personnel by fax and e-mail.

3.3 STOCKPILE SAMPLING

Composite samples will be collected from the excavated soil stockpiles to confirm that the excavated soil is suitable for reuse at a landfill as a cover material. Excavated soil will not be transported off site until stockpile sampling analytical results have been reviewed and approved by Geomatrix and the landfill.

3.3.1 Stockpile Sampling Frequency

One 4-point composite sample will be collected for every 250 cubic yards (CY) of stockpiled soil. To ease stockpile sampling, the contractor will be required to limit the size of excavated soil stockpiles to approximately 250 CY. Geomatrix personnel will collect four discrete samples; the discrete samples will be combined into a single composite sample by the laboratory.

3.3.2 Stockpile Sampling Methodology

Stockpile samples will be collected directly from each 250 CY stockpile. The four discrete samples are to be collected from physically distinct and separate areas of the stockpile. Prior to collecting the each sample, a PID will be used to screen the stockpile soil at each discrete sample location as described in Section 2.7 of this SAP. The PID reading will be recorded in the daily field record.

Collect and label the stockpile sample as described in Section 2.0. A unique identification number will be assigned to each sample. Stockpile sample naming will follow the general strategy described below.

Stockpile Sample Name: SP-[number]-[discrete sample #]-[mmddyy]

Example: **SP-2-4-123105** for the fourth of four samples collected from stockpile #2 on 12/31/2005.

Sample information will also be recorded on the Stockpile Sample Control Log, a blank version of which has been included as Appendix C.

3.3.3 Stockpile Sampling Analyses

The landfill requires the following analysis for characterizing excavated soil as reusable landfill cover:

- Total arsenic, cadmium, chromium, and lead by EPA Method 6010B;

- Total mercury by EPA Method 245.1;
- Total recoverable petroleum hydrocarbons by EPA Method 8100M;
- Polychlorinated biphenyls (PCB) by EPA Method 8082;
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270C;
- Volatile organic compounds (VOCs) by EPA Method 8260B;
- Fuel oxygenates by EPA Method 8260B;
- Total petroleum hydrocarbons in the gasoline range (TPH-g) by EPA Method 8260B; and
- Total petroleum hydrocarbons in the diesel range (TPH-d) using EPA Method 8015M.

Stockpile analyses are summarized on Table 1. The stockpile sample analyses shown above and in Table 1 are standard characterization analyses. The specific analyses may be adjusted after repeated sampling rounds indicate that some of the above analyses are not required to adequately characterize the excavated soil stockpile. The characterization analyses will only be adjusted upon approval by the landfill accepting the excavated soil. Geomatrix personnel will arrange for a laboratory courier to pick up confirmation samples from the site. All confirmation samples will be analyzed on a standard TAT. Analytical results will be sent to Geomatrix personnel by fax and e-mail.

3.4 WATER TREATMENT SYSTEM SAMPLING

3.4.1 Water Treatment System Sampling Frequency

Water treatment system sampling frequency has yet to be determined and will be based on discharge permit requirements.

3.4.2 Water Treatment System Sampling Methodology

Collect and label the sample as described in Section 2.0. A unique identification number will be assigned to each sample. Sample naming will follow the general strategy described below.

Water Treatment System Sample Name: TS-[type]-[mmddyy]

[Type] refers to the location of the sample along the treatment process path. The following designations will be used to note the type of sample:

Treatment System Influent: INF

Treatment System Midstream: MID

Treatment System Effluent: EFF

Example: **TS-EFF-123105** for the treatment system effluent sample collected on 12/31/2005

Water treatment system sample information will also be recorded on the daily field record**.**

3.4.3 Water Treatment System Sampling Analyses

Water treatment system sample analyses have yet to be determined and will be based on discharge permit requirements.

3.5 BACKFILL IMPORT MATERIAL SAMPLING

The excavation will be backfilled with crushed rock, previously excavated soil deemed reusable by Geomatrix, and aggregate base. The design drawings and technical specifications describe backfill material specifications and backfill methods in detail.

Prior to backfilling the excavation, a suitable, local source for crushed rock and aggregate base (hereafter referred to as "import material") will be identified by the contractor. Import material from the source will be sampled and will undergo chemical and physical analyses prior to approval by Geomatrix for use at the site.

3.5.1 Backfill Import Material Sampling Frequency

Twelve samples will be collected for the first 5,000 cubic yards of backfill material, plus one sample for each additional 1,000 cubic yards. **Based on an expected total excavation volume of approximately 9,200 cubic yards, Geomatrix anticipates collecting 16 backfill import material samples.**

3.5.2 Backfill Import Material Sampling Methodology

Chemical Samples

Collect separate samples of crushed rock and aggregate base at the source stockpile. Do not collect samples from bulk samples provided by the quarry. The sampling procedure at each source will consist of:

1. Collect soil from several locations within the stockpile with a clean shovel or trowel and filling a clean, "new" 5-gallon bucket. If the Class II aggregate base has segregated during stockpiling, you may consider having a loader operator mix the stockpile.
2. Homogenize the soil in the 5-gallon bucket.
3. Collect samples from the bucket using the method described in Section 2.0.

A unique identification number will be assigned to each sample. Import material naming will follow the general strategy described below.

Import Material Sample Name: [material (CR or AB)]-[number]-[mmddyy]

Example: **CR-1-123105** for the crushed rock sample collected from the first import material source on 12/31/2005. The abbreviation AB will be used for the aggregate base sample.

Record sample information on a daily field record. Arrange for a laboratory courier to pick up import material samples from the site or import material quarry.

Physical (Geotechnical) Samples

Cap the 5-gallon bucket used for collection of chemical samples. This volume will be sufficient for any physical test we may require.

Label the sample bucket as described in Section 3.0. Use the same sample name for the physical sample as that used for the corresponding chemical sample.

Arrange for a laboratory courier to pick up import material samples from the site or import material quarry. All import material samples will be analyzed on a standard TAT. Results will be sent to Geomatrix personnel by fax and e-mail.

3.5.3 Import Material Sampling Analysis

Chemical Analyses

Import material analyses will be based on the location of the fill material source; the recommended sampling frequency and compounds are shown in Appendix D. All the imported soil will be analyzed at a minimum for the following:

- benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260;
- fuel oxygenates by EPA Method 8260;
- total petroleum hydrocarbons in the gasoline range (TPH-g) by EPA Method 8260; and
- total petroleum hydrocarbons in the diesel range (TPH-d) using EPA Method 8015.

Samples will be analyzed on a standard TAT. Analytical results will be sent to Geomatrix personnel by fax and e-mail.

Physical (Geotechnical) Analyses

Import material samples should be analyzed for the following:

- Modified Proctor Compaction by ASTM D-1557
- Moisture content by ASTM D-2216

Samples will be analyzed on a standard TAT. Analytical results, including compaction curves, will be sent to Geomatrix personnel by fax or e-mail.

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

QA/QC protocols described in this SAP are in accordance with Section 2 of the NYSDEC-DER10, *Quality Assurance for Sampling and Laboratory Analysis* (NYSDEC, 2002). Geomatrix will identify a Quality Assurance Officer (QAO) for the IRM prior to the work. The QAO will have the qualifications required by Appendix 2A of the NYSDEC-DER10.

Duplicate and other QA/QC sample requirements described below are summarized in Table 2 of this SAP.

4.1 DATA QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

4.1.1 Data Quality Objectives

Data quality objectives (DQOs) are both qualitative and quantitative statements that define the type, quality, and quantity of environmental data appropriate for the intended application. The DQO process for the SAP will be consistent with the NYSDEC-DER10 and the NYSDEC TAGM SW 96-09, *Development and Review of Site Analytical Plans* (NYSDEC, 2001).

4.1.2 Method Performance Objectives

Analytical performance requirements for work performed are expressed in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity. The following subsections present a summary of each of these parameters and calculation equations as appropriate.

Precision

Precision is a measurement of the degree of agreement of replicate data, which is quantitatively assessed based on the relative percent difference or standard deviation.

Field Precision

Field precision can not be assessed for soil samples because field screening methods (visual observations, PID) are meant only as qualitative screening tools. As such, the precision of field screening techniques are not quantifiable.

Laboratory Precision

Laboratory precision accuracy is assessed through the calculation of relative percent differences (RPDs) for two replicate samples using the following equation:

$$\% RPD = \frac{S_1 - S_2}{S_{av}} x\ 100$$

where:

S_1 = first sample result (original value)

S_2 = second sample result (duplicate value)

S_{av} = average of sample and duplicate = $(S_1 + S_2)/2$

A general quality assurance goal for precision is that the RPD in the duplicate pair not exceed 30 percent. Typically RPD values are not meaningful if the reported concentrations detected in the primary and duplicate samples are less than 5 times the reporting limit for the respective analyte. The precision of the analysis can be inferred through the use of one of the following: laboratory control duplicate samples, matrix spike and matrix spike duplicate (MS/MSD) samples, and blind duplicate samples. The laboratory analyzes one or more of these duplicate samples at a minimum rate of one per batch of 20 investigative samples per matrix.

Laboratory control duplicate samples are prepared and analyzed by the laboratory to assess internal laboratory precision. The laboratory will create and analyze these duplicates at a minimum rate of one batch per 20 total samples.

The MS/MSD samples provide information about the effect of the sample matrix on extraction and measurement methodology. An MS/MSD pair will be collected during confirmation sampling at a minimum rate of one pair for every 20 confirmation samples.

Blind duplicate samples provide information about analytical precision by collecting and submitting separate samples collected from the same source for analysis for the same analytes under different sample names.

The precision of laboratory analyses will be assessed by calculating the RPD for each pair of duplicate samples (MS/MSD, laboratory control sample spike duplicates, blind duplicate samples) using the equation presented above.

Accuracy

Accuracy is the degree of agreement between a measurement or observation and an accepted value.

Field Accuracy

Field accuracy is assessed through the use of appropriate field equipment and achieved through adherence to all sampling handling, preservation, and holding time requirements. Accuracy of field instruments will be assessed by daily instrument calibration and calibration checks.

Laboratory Accuracy

Laboratory accuracy is assessed by the analysis of matrix spikes (MS) and laboratory control samples (LCS). The results are expressed as a percent recovery. Surrogate recoveries may also be used to assess accuracy. Method blanks are used to assess contamination resulting from laboratory procedures. Laboratory control samples, method blanks, and preparation blanks will be prepared and analyzed by the laboratory at least once with each analytical batch, with a minimum of one for every 20 samples.

The percent recovery (percent R) is calculated with the following equation:

$$\% R = \frac{A - B}{C} \, x \, 100$$

where:

A = The analyte concentration determined experimentally from the spiked sample.

B = The background level determined by a separate analysis of the unspiked sample.

C = The amount of the spike added.

Representativeness

Representativeness is a qualitative measure of the degree to which sample data accurately and precisely represent a characteristic environmental condition. Representativeness is a subjective parameter and is used to evaluate the efficacy of the sampling plan design. Representativeness is demonstrated by providing full descriptions of the sampling techniques and the rationale used for selecting sampling locations in the project planning documents. The measure of representativeness is answered during the preparation of the sampling and analysis approach and rationale, and then reassessed during the data usability process. There are no numerical goals that can be used to evaluate this subjective measure.

Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was planned to be obtained under normal conditions. Percent completeness is calculated with the following equation:

$$\%\,Completeness = \frac{Valid\ Data\ Obtained}{Total\ Data\ Planned} \text{ x } 100$$

Experience on similar projects has shown a reasonable goal considering combined historical field and laboratory performance is 90 percent completeness. If sufficient valid data are not obtained, corrective action will be initiated by the Project Manager or QA/QC Officer.

Comparability

Comparability expresses the confidence with which one data set can be compared with another data set obtained during parallel or previous investigations. Comparability can be related to precision and accuracy as these parameters are measures of data reliability.

Chemical samples from the same media are generally considered comparable if the same general procedures for collecting and analyzing the samples are used, if the samples comply with the same QA/QC procedures, and if the units of measurement are the same. Analytical data collected during the IRM will be considered comparable if the methods and analyses described in this SAP are carried out for all samples collected during the IRM.

Sensitivity

Sensitivity is the measure of the concentration at which an analytical method can positively identify and report analytical results. The sensitivity of a given method is commonly referred to as the detection limit. Although there is no single definition of this term, the following terms and definition of detection limits will be used:

Instrument detection limit (IDL) is the minimum concentration that can be measured from instrument background noise under ideal conditions.

Method detection limit (MDL) is a statistically determined concentration. It is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero as determined in the same or a similar matrix. Because of the lack of analytical precision at this range, sample results greater than the MDL but less than the reporting limit (RL) would be qualified as “estimated.”

Reporting limit (RL) is the concentration of the target analyte that the laboratory has demonstrated the ability to measure within specified limits of precision and accuracy during routine laboratory operating conditions. This value is variable and highly matrix dependent. It is the minimum concentration that will be reported as unqualified by the laboratory.

For sensitivity, the quality objective is to analyze data with a method that achieves RLs that are below or equal to the task-specific target analysis goals or concentrations.

4.2 QA/QC SAMPLING METHODOLOGY

Duplicate and MS/MSD samples, as described below, will be collected in the same manner as described in Section 2.0 of this SAP. When collecting a QA/QC sample, fill one additional sleeve from the same excavator bucket as the corresponding sample.

4.2.1 Blind Duplicate Sample Methodology

Collect the duplicate sample in a single, additional sleeve from the same excavator bucket as the corresponding sample, using the methodology described in Section 2.0 of this SAP.

Duplicate samples will be named identically to the corresponding sample, except that a zero (“0”) will be appended to the sample number. For example:

Sample: SW-13-123105

Duplicate Sample: SW-130-123105

The names of the duplicate sample and its corresponding sample will be recorded in the Confirmation Sampling Control Log.

4.2.2 Blind Duplicate Sample Analysis

Blind duplicates are to be analyzed by the same analytical methods as the corresponding sample.

4.2.3 MS/MSD Sample Methodology

Collect the MS/MSD sample in a single, additional sleeve from the same excavator bucket as the corresponding sample, using the methodology described in Section 2.0 of this SAP.

MS/MSD samples do not need to be renamed.

4.2.4 MS/MSD Sample Analysis

MS/MSD analysis is a separate analysis that is performed on the MS/MSD sample using the same analytical method(s) as the corresponding sample. As a result, MS/MSD must be noted, along with the required analytical methods, on the sample label, Sample Control Log, and chain-of-custody for all MS/MSD samples.

5.0 DATA VALIDATION

This section provides a description of the QA activities that will occur after the data collection phase of the project is completed. Implementation of this section will determine whether or not the data conform to the specified criteria, thus satisfying the project objectives.

5.1 DATA REVIEW AND VERIFICATION

Data validation is the process of reviewing data and accepting, qualifying, or rejecting data on the basis of sound criteria using established EPA guidelines. Laboratory data generated during field investigations will be reported by the laboratory. All of this data will be subjected to a limited data verification performed according to Geomatrix internal data quality control procedures as discussed below.

The data verification approach will consist of a systematic review of the analytical results, associated QC methods, and results. Best professional judgment in any area not specifically addressed by EPA guidelines will be utilized as necessary and described in the Usability Assessment portion of the data verification report.

Data will be verified according to applicable guidelines set forth in the following sources as appropriate:

"U.S. EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" ("National Functional Guidelines"), U.S. EPA, EPA540/R-01-008, July 2002 (USEPA, 2002);

"U.S. EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" ("National Functional Guidelines"), U.S. EPA, EPA540/R-99/008, October 1999 (USEPA, 1999).

Data verifications will include a data completeness check of each data package, a transcription check for sample results, and a thorough review of all laboratory reporting forms. Specifically, this review will include:

- Review of data package completeness;
- Review of the required reporting summary forms to determine if the QC requirements were met and to determine the effect of exceeded QC requirements on the precision, accuracy, and sensitivity of the data;
- Review of the overall data package to determine if contractual requirements were met (based upon National Functional Guidelines);
- Review of additional QA/QC parameters, such as laboratory duplicates and laboratory blank contamination, to determine technical usability of the data; and
- Application of standard data quality qualifiers to the data.

In addition, each data verification will include a comprehensive review of the following QA/QC parameters as indicated in the National Functional Guidelines:

- Holding times (to assess potential for degradation that will affect accuracy);
- Blanks (to assess contamination for all compounds);
- System Monitoring Compounds (to assess method accuracy);

- Matrix Spikes/Matrix Spike Duplicates or Laboratory Fortified Blanks (to assess accuracy of the methods and precision of the method relative to the specific sample matrix);
- Compound Quantitation Limits and Method Detection Limits (to assess sensitivity as compared to project-specific requirements); and
- Duplicate Relative Percent Differences (or RPDs, to assess precision of the method relative to field sampling techniques, the specific sample matrix, and representativeness of the sample aliquot to the area sampled).

The results of the data verification and any corrective actions implemented are recorded on a QA/QC worksheet. The data reviewer will initial and date the QA/QC worksheet. The QAO will provide secondary review of the QA/QC worksheet and will also initial and date the QA/QC worksheet. The initialed and dated QA/QC worksheet will be attached to the final analytical laboratory report that is retained in the project files.

6.0 SAP OVERSIGHT

A summary of assessment activities that will be conducted for the anticipated work include:

Assessment of field operations: To evaluate field operations performance, frequent review of sample collection documentation, chain-of-custody forms (COCs), and field notes and measurements.

Assessment of laboratory operations: The analytical laboratory will have a program of internal audits that are performed to assess the degree of adherence to their own policies and procedures. Additionally, the QAO will be in frequent contact with the analytical laboratory to assess progress in meeting DQOs and to identify problems requiring corrective action.

The following subsections identify the planned assessment and oversight activities to assure the objectives identified above are attained for field and laboratory operations. The QAO also may identify additional assessment activities to be performed during the course of the project based upon findings of the planned assessment activities described below.

6.1 ASSESSMENT OF FIELD OPERATIONS

In general, internal assessments of field operations will be conducted by the QAO and/or other designated members of the project team where appropriate. The assessment activities will evaluate field operations performance issues such as:

Are sampling operations being conducted in accordance with the SAP?

Are the sample labels being filled out completely and accurately?

Are the COC records complete and accurate?

Are the field records being filled out completely and accurately?

The results of any assessment activities will be reported to the Project Manager or QAO by the team member conducting the assessment activity. Assessment activity reports will include the findings and identification of any corrective actions taken or planned.

6.2 ASSESSMENT OF LABORATORY OPERATIONS

State-certified analytical laboratories are required to have an ongoing internal audit program implemented to monitor the degree of adherence to laboratory and state policies, procedures, and standards. A copy of the laboratory internal audit program will be provided to Geomatrix by the selected laboratory prior to the work.

The QAO will be in contact with the analytical laboratory on regular basis while samples collected during this investigation are being analyzed. This will allow assessment of progress in meeting DQOs and the identification of any problems requiring corrective actions early in the investigative process. The QAO will be responsible for working directly with the laboratory to assure the prompt resolution of any problems identified.

7.0 REFERENCES

Geomatrix Consultants, Inc. (Geomatrix), 2005, *Interim Remedial Measure, Avis Poughkeepsie Site*, Poughkeepsie, New York, October.

NYSDEC, 2002, *Draft DER-10 Technical Guidance for Site Investigation and Remediation*, December 25.

NYSDEC, 2001, *TAGM SW-96-09, Development and Review of Site Analytical Plans*, May 3.

U.S. Environmental Protection Agency (USEPA), 2002, *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, EPA540/R-01-008, July.

U.S. Environmental Protection Agency (USEPA), 1999, *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, EPA540/R-99/008, October.

U.S. Environmental Protection Agency (USEPA), 1992, Office of Solid Waste and Emergency Response, *Test Methods for Evaluating Solid Waste, SW-846,* Third Edition, July.

TABLES

Geomatrix

TABLE 1

REQUIRED SAMPLES AND ANALYSES

Former Drive & Park, Inc. Site
Poughkeepsie, New York

Sample Type	BTEX	Fuel Oxygenates	TPH-g	TPH-d	Total Arsenic, Cadmium, Chromium, Lead	Total Mercury	PCB	SVOC	VOC	Modified Proctor Compaction	Moisture Content
	EPA 8260B	EPA 8260B	EPA 8260B	EPA 8015M	EPA 6010B	EPA 245.1	EPA 8082	EPA 8270C	EPA 8260B	ASTM D-1557	ASTM D-2216
Off-Site Confirmation Sidewall	1 every 30'	1 every 30'	1 every 30'	1 every 30'	-	-	-	-	-	-	-
Stockpile	-	4-point composite every 250 CY	4-point composite every 250 CY	4-point composite every 250 CY	4-point composite every 250 CY	4-point composite every 250 CY	4-point composite every 250 CY	4-point composite every 250 CY	4-point composite every 250 CY	-	-
Import Material	16[1]	16[1]	16[1]	16[1]	-[2]	-[2]	-[2]	-[2]	-[2]	1 per source	1 per source
Groundwater	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Water Treatment System	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Abbreviations:

BTEX = benzene, toluene, ethylbenzene, total xylenes
Fuel Oxygenates = methyl tertiary-butyl ether (MTBE), tertiary-butyl alcohol (TBA), di-isopropyl ether (DIPE), ethyl tertiary-butyl ether (ETBE), tertiary-amyl methyl ether (TAME), ethanol
TPHg = total petroleum hydrocarbons quantified as gasoline
TPHd = total petroleum hydrocarbons quantified as diesel
PCB = poly chlorinated biphenyls
SVOC = semi-volatile organic compounds
VOC = volatile organic compounds (including BTEX)
CY = cubic yards
TBD = to be determined based on field conditions, regulatory direction, and/or discharge requirements

Notes:

[1] - 12 samples will be collected for the first 5000 cubic yards of backfill material, plus one sample for each additional 1000 cubic yards. Based on an expected backfill volume of 9200 CY. See Appendix D

[2] - Additional analytes may be required, depending on backfill source location. See Appendix D.

TABLE 2

QA/QC METHODS AND ACCEPTANCE CRITERIA
Interim Remedial Measure
Former Drive & Park, Inc. Site
Poughkeepsie, New York

Method Performance Objective	Type of Quality Control Sample	Frequency	Acceptance Criteria
Precision—Laboratory	Laboratory control samples (LCS) and laboratory control duplicate (LCSD) samples. Prepared by the laboratory.	1 per batch of 20 samples per matrix	RPD <30
	Matrix spike (MS) and matrix spike duplicate (MSD) samples	1 per batch of 20 or fewer investigative samples per matrix	RPD <30
	Blind duplicate samples	1 per batch of 20 samples per matrix	RPD <30
Accuracy—Laboratory	Matrix spike (MS) samples	1 per batch of 20 or fewer investigative samples per matrix	Percent recovery, %R, less than compound limit specified by analytical method, given on analytical report.
	Laboratory control samples (LCS)	At least once with each analytical batch, with a minimum of 1 for every 20 samples	%R less than compound limit specified by analytical method, given on analytical report.
	Method blanks	At least once with each analytical batch, with a minimum of 1 for every 20 samples	No compounds should be detected in laboratory method blanks
	Surrogates	At least once with each analytical batch, with a minimum of 1 for every 20 samples	%R less than compound limit specified by analytical method, given on analytical report
Representativeness	Not applicable	Not applicable	Numerical goals cannot be used to evaluate this subjective measure.
Completeness	Not applicable	Not applicable	90% completeness
Comparability	Not applicable	Not applicable	Comparable if the same procedures for collecting and analyzing the samples are used, if the samples comply with the same QA/QC procedures, and if the units of measurement are the same
Sensitivity	Not applicable	Not applicable	Reporting limits (RLs) below or equal to the task-specific target analysis goals or concentrations

APPENDIX A

NYSEC Site Cleanup Goals for Soil

APPENDIX A
NYSDEC TAGM 4046
Recommended Cleanup Objectives for Volatile Organic Compounds in Soil

from http://www.dec.state.ny.us/website/der/tagms/prtg4046b.html

Table 1
Recommended soil cleanup objectives (mg/kg or ppm)
Volatile Organic Contaminants

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm)		CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
					Carcin-ogens	Systemic Toxicants		
Acetone	2.2	50	0.0011	0.11	N/A	8,000	10	**0.2**
Benzene	83	0.7	0.0006	0.06	24	N/A	5	**0.06**
Benzoic Acid	54 *	50	0.027	2.7	N/A	300,000	5	**2.7**
2-Butanone	4.5 *	50	0.003	0.3	N/A	4,000	10	**0.3**
Carbon Disulfide	54 *	50	0.027	2.7	N/A	8,000	5	**2.7**
Carbon Tetrachloride	110 *	5	0.006	0.6	5.4	60	5	**0.6**
Chlorobenzene	330	5	0.017	1.7	N/A	2,000	5	**1.7**
Chloroethane	37 *	50	0.019	1.9	N/A	N/A	10	**1.9**
Chloroform	31	7	0.003	0.30	114	800	5	**0.3**
Dibromochloromethane	N/A	50	N/A	N/A	N/A	N/A	5	**N/A**
1,2-Dichlorobenzene	1,700	4.7	0.079	7.9	N/A	N/A	330	**7.9**
1,3-Dichlorobenzene	310 *	5	0.0155	1.55	N/A	N/A	330	**1.6**
1,4-Dichlorobenzene	1,700	5	0.085	8.5	N/A	N/A	330	**8.5**
1,1-Dichloroethane	30	5	0.002	0.2	N/A	N/A	5	**0.2**
1,2-Dichloroethane	14	5	0.001	0.1	7.7	N/A	5	**0.1**
1,1-Dichloroethene	65	5	0.004	0.4	12	700	5	**0.4**

APPENDIX A
NYSDEC TAGM 4046
Recommended Cleanup Objectives for Volatile Organic Compounds in Soil
from http://www.dec.state.ny.us/website/der/tagms/prtg4046b.html

1,2-Dichloroethene (trans)	59	5	0.003	0.3	N/A	2,000	5	**0.3**
1-3 dichloropropane	51	5	0.003	0.3	N/A	N/A	5	**0.3**
Ethylbenzene	1,100	5	0.055	5.5	N/A	8,000	5	**5.5**
113 Freon (1,1,2 Trichloro- 1,2,2 Trifluoroethane)	1,230 *	5	0.060	6.0	N/A	200,000	5	**6.0**
Methylene chloride	21	5	0.001	0.1	93	5,000	5	**0.1**
4-Methyl-2-Pentanone	19 *	50	0.01	1.0	N/A	N/A	10	**1.0**
Tetrachloroethene	277	5	0.014	1.4	14	800	5	**1.4**
1,1,1-Trichloroethane	152	5	0.0076	0.76	N/A	7,000	5	**0.8**
1,1,2,2-Tetrachloroethane	118	5	0.006	0.6	35	N/A	5	**0.6**
1,2,3-trichloropropane	68	5	0.0034	0.34	N/A	80	5	**0.4**
1,2,4-trichlorobenzene	670 *	5	0.034	3.4	N/A	N/A	330	**3.4**
Toluene	300	5	0.015	1.5	N/A	20,000	5	**1.5**
Trichloroethene	126	5	0.007	0.70	64	N/A	5	**0.7**
Vinyl chloride	57	2	0.0012	0.12	N/A	N/A	10	**0.2**
Xylenes	240	5	0.012	1.2	N/A	200,000	--	**1.2**

a. Allowable Soil Concentration Cs = f x Cw x Koc

b. Soil cleanup objective = Cs x Correction Factor (CF)

N/A is not available

* Partition coefficient is calculated by using the following equation:

log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.

All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX B

Confirmation Sample Control Log

CONFIRMATION SAMPLE CONTROL LOG

GEOMATRIX

Project Name: Avis, Poughkeepsie

Laboratory:

Project and Task No.: 9328

See Attached for Sample Locations

Page ____ of ____

Sampling Date	Sampling Time	Sample Number (ID)	C.O.C. Number	Analyses Requested	Notes, Comments, etc. (Duplicate, Blank info, etc.)	Date Sent to Lab	Date Results Due

APPENDIX C

Stockpile Sample Control Log

STOCKPILE SAMPLE CONTROL LOG

GEOMATRIX

Project Name: Avis, Poughkeepsie **Laboratory:**

Project and Task No.: 9328 Page ____ of ____

Sampling Date	Sampling Time	Sample Number (ID)	C.O.C. Number	Analyses Requested	Notes, Comments, etc. (Odor, Duplicate, Blank info, etc.)	Date Sent to Lab	TAT

APPENDIX D

Backfill Source Sampling Guidance

APPENDIX D

BACKFILL SOURCE SAMPLING GUIDANCE

Former Drive & Park, Inc. Site
Poughkeepsie, New York

Recommended Fill Material Sampling Schedule

Volume of Borrow Area Stockpile	Samples per Volume
Up to 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1,000 cubic yards +1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards +1 sample per each additional 1,000 cubic yards

Potential Contaminants Based on the Fill Source Area

Fill Source	Target Compounds
Land near to an existing freeway	Lead (EPA methods 6010B or 7471A), PAH (EPA 8310)
Land near a mining area or rock quarry	Heavy Metals (EPA 6010B and 7471A), asbestos (polarized light microscopy), pH
Agricultural land	Pesticides (Organochlorine Pesticides: EPA 8081A or 8080A; Organophosphate pesticides: EPA 8141A; Chlorinated Herbicides: EPA 8151A), heavy metals (EPA 6010B and 7471A)
Residential/acceptable commercial land	VOCs (EPA 8260B or 8021, as appropriate and combined with collection by EPA Method 5035), SVOC (EPA 8270C), TPH (EPA 8015M), PCB (EPA 8082 or 8080A), heavy metals including lead (EPA methods 6010B and 7471A), asbestos (OSHA method ID-191)