

REMEDIAL INVESTIGATION REPORT

for

PARAM PETROLEUM

BURLINGTON, NEW JERSEY

For submittal to

STATE OF NEW JERSEY

Department of Environmental Protection

Trenton, NJ

REMEDIAL INVESTIGATIONS AND REMEDIAL ACTION SELECTIONS TERM
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1.0 INTRODUCTION

The Louis Berger Group, Inc. (Berger) has prepared this Remedial Investigation Report (RIR) on behalf of the New Jersey Department of Environmental Protection (NJDEP) to document the findings of a Remedial Investigation conducted at the Param Petroleum Service Station (the "Site"). The Site is located at the intersection of Route 130 South and Wood Street in the City of Burlington, Burlington County, New Jersey (Figure 1). This RIR was completed by Berger as part of a statewide contract with the NJDEP to perform site-specific Remedial Investigations (RI) and Remedial Action Selections (RAS) at multiple sites throughout the state (RI/RAS Term Contract A-47449).

In December 1991 and January 1992, the NJDEP received several notifications of possible gasoline discharges detected by odors, following the delivery of gasoline to the Param facility. Free phase product was observed in November 1994 during underground storage tank (UST) replacement activities. During June 2000 and March 2001, the NJDEP completed two field efforts at the Site. Soil sampling and analysis indicated the presence of MTBE, Xylenes, and other gasoline-related constituents occurring in subsurface soils at levels in excess of the most stringent NJDEP SCC. Groundwater contamination was also identified at the Site. Subsequently, NJDEP contracted Berger to plan and implement this RI.

In 2003, as part of the NJDEP Division of Publicly Funded Remediation Program, Berger prepared an NJDEP approved Site Sampling and Investigation Plan (SSIP) (Berger, 2003) to address the following objectives:

- Identify continuing source(s);
- Identify contaminant migration pathway(s);
- Delineate soil and groundwater contamination; and
- Identify potential contaminant impacts to human and ecological receptors.

To accomplish these goals, the SSIP outlined the following investigative activities:

- Geophysical Survey
- Soil Sampling
- Shallow Monitoring Well Installation and Groundwater Sampling
- Surface Water Gauging
- Receptor Evaluation (including a Well Search and Baseline Ecological Evaluation (BEE))

Upon completion of these investigation activities in 2004, a Draft RIR was submitted in January 2005 and comments were provided by the NJDEP on March 3, 2005. One of the observations made during the 2004 RI activities was that surface water in a stream adjacent to the Site was below sea level. This placed the stream's surface water elevation below that of the nearby Delaware River. A possible explanation for this would be drawdown caused by local or regional pumping. As a result, based on the comments to the Draft RIR and subsequent discussions with NJDEP in October 2005 (including possible investigation of deeper groundwater to assess deeper migration groundwater contamination), the following tasks were agreed upon:

- Hydropunch[®] investigation with continuous sampling of groundwater to provide a vertical profile of the groundwater contamination
- Installation of three shallow monitoring wells for horizontal delineation purposes (two north of the Site, one west of the Site)
- Installation of one deep monitoring well near MW-1, with the depth of the well based on the findings of the Hydropunch investigation
- Collection of sediment and surface water samples from the stream adjacent to the Site
- Groundwater sampling of all nine monitoring wells

This RIR provides a summary of the historical and physical setting of the Site, a technical overview of the RI tasks, a discussion of the findings associated with each task, and conclusions and recommendations based on those findings.

2.0 BACKGROUND

The Param Petroleum Service Station has reportedly been operating as a retail gasoline/diesel service station since at least 1979, and currently remains active. The Site is approximately one acre in size, and is almost entirely paved with asphalt or concrete. There are two structures on the Site: one small building near the center of the Site, which houses the office and restroom; and a larger building that is leased to a car wash located on the eastern portion of the Site. A site plan showing the existing Site layout and neighboring facilities is provided (Figure 2).

A chronology of events for the Site is presented on Table 1. NJDEP has confirmed three documented discharges of gasoline product to the Site sanitary sewer, with one discharge resulting in free product accumulating in the City of Burlington Sewer Department's grit chamber. In December 1991 and January 1992, the NJDEP received several notifications of possible gasoline discharges detected by odors, following the delivery of gasoline to the Param facility. The odors were detected in a sanitary sewer collection system along Wood Street, and a kitchen floor drain at Santucci Caterers, a business located near the Site. NJDEP issued the site owner an NOV for these incidents and the owner was required to investigate and remediate the source of the vapors. In October of 1994, free product was found in the City of Burlington's sewer plant and sanitary sewer system. The NJDEP's Bureau of Emergency Response and the City of Burlington police and fire units traced the source back to the Site.

In late October and early November 1994, ten gasoline and three diesel USTs totaling 52,000 gallons capacity were removed and replaced with three new 12,000 gallon USTs of unknown construction. Figure 2 presents the location of the former and current USTs. Documentation regarding the routine integrity testing of these new USTs is presented in the Appendix A. During the tank removal activities, numerous one- and two-inch diameter holes were identified in many of the tanks and at least one empty tank was observed filling with groundwater. Groundwater was typically encountered between 5 and 10 feet below grade. Additionally, in one of the excavations, a five-inch thick layer of free product was observed. Post-excavation sampling during tank removal activities identified contamination in soils found both above and below the water table. No groundwater investigation was conducted during tank removal activities. The current Site owner proposed a number of RI activities, including a receptor evaluation, though none were completed.

During a January 1995 site visit, NJDEP personnel observed the release of approximately 300 gallons of petroleum-contaminated groundwater to the soil from a tanker truck at the rear of the Param Petroleum property. Soil staining and PID detections were later observed in the vicinity of the release.

In January 1996, NJDEP again received notification of odors in the sanitary sewer collection system along Wood Street and kitchen floor drain at Santucci Caterers. These odors were traced to the site and an incident report was generated. The NJDEP issued another NOV for the incident requiring the owner to investigate and remediate the source of the vapors.

In July 1998, a NOV and Offer of Settlement was issued to the Site owner for failure to submit a RI report and receptor evaluation. A Directive and Notice to Insurers directing cleanup and removal of discharges by implementing a RI and related RA, as well as an Administrative Consent Order (ACO) were issued.

During June 2000 and March 2001, the NJDEP completed two field efforts at the Site. During the two field events, a total of 32 soil samples, 27 groundwater samples, five sediment samples, and one surface water sample were collected from the Site and adjacent properties. At several locations, sample results indicated MTBE, Xylenes, and other gasoline-related constituents occurring in subsurface soils at levels in excess of the most stringent NJDEP SCC. The soil analytical results indicated the potential for residual source contamination in the areas of the former USTs. Groundwater samples also exhibited exceedances of the NJDEP GWQS at several locations.

Subsequent to these previous events and investigations, NJDEP contracted Berger to plan and implement this RI.

3.0 PHYSICAL SETTING

The Site is an approximately 1-acre lot located in an urban area of the City of Burlington, Burlington County (Figures 1 and 2). Since at least 1979, the Site has been operating as a retail gasoline station. Route 130 South forms the northern border, Wood Street borders the site to the west, retail business properties form the eastern border and an empty field is located immediately south of the Site. Additionally, just south of the empty field is a drainage canal that flows towards the northwest.

Land uses in the surrounding area include commercial, educational, recreational, and residential. Recreational fields currently under construction are located north of Route 130 southbound. Wilbur Watts High School is located adjacent to the fields. West of Wood Street, a small stream drains to the northwest into the lake located in John F. Kennedy Park. A small strip of commercial properties are located to the immediate northwest of the Site. Single-family residences are located south and southeast of the Site, on the south side of Route 130 northbound. Several commercial properties are located immediately to the east of the Site.

The following subsections provide a description of the physical setting of the Site, including details regarding site topography, regional climate, geology, groundwater, and nearby surface water.

3.1 Topography

Situated in the Coastal Plain Physiographic Province, the topography of the surrounding area is gently sloping towards the north and west, with elevations ranging from 5 to 85 feet above mean sea level (amsl). The Site is generally flat with elevations below 20 feet amsl.

3.2 Climate

This region is characterized by a humid and temperate climate. Typical monthly air temperatures range from a low of 22°F in January to a high of 87°F in July; the annual mean temperature is 63°F. Typically, precipitation in the area is nearly equally distributed throughout the year. July and August, however, average the heaviest rainfall amounts due to frequent shower and thunderstorm activity; October, December, and February are usually slightly drier months. The annual average precipitation amount is 44 inches (Markley, 1971).

3.3 Geology and Soils

The upper two geological formations that underlie the Site are the undifferentiated Raritan and Magothy Formation and the younger, overlying Cape May Formation. The Raritan and Magothy

Formation is described as a "light gray to white, cross-stratified, medium to coarse grained sand, arkosic in part and interbedded with discontinuous white to red and white variegated clays" (Rush 1968). Two distinct clay units have been identified: the more common whitish-yellow stiff clay and gray lignitic clay. The Cape May Formation unconformably overlies the Raritan Formation in this area of Burlington County. This formation is described as a "quartz sand, light colored, heterogeneous, clayey, pebbly formation" (Rush 1968). Beds generally strike north 55 degrees east and dip 0.1 to 1.0 degrees to the southeast.

3.4 Hydrogeology

The Cape May, a shallow unconfined aquifer, and Raritan–Magothy, a deeper semi-confined aquifer, underlie the Burlington County region. The aquifers in this area of Burlington County have been extensively developed with the undifferentiated Raritan and Magothy Formations being the primary source for groundwater. Between the two aquifers are discontinuous clay layers consisting of either stiff whitish-yellow clay or gray lignitic clay. Because the clay layer is discontinuous, it is expected that the unconfined and semi-confined aquifers are hydraulically connected. The shallow groundwater table beneath the Site is encountered at approximately ten feet below ground surface (bgs). During the RI, groundwater was found to flow northwest in the eastern portion of the site and southwest in the western portion of the Site, toward an unnamed tributary of the Delaware River.

The Raritan-Magothy aquifer is a part of the New Jersey Coastal Plain Aquifer System. This system is included in the United States Environmental Protection Agency's (USEPA) Sole-Source Aquifer (SSA) Protection Program. As a SSA, more than 50% of the drinking water to a specific area must be contributed from that aquifer.

3.5 Surface Water

The surface water bodies in the immediate area of the Site include the drainage channel that is immediately adjacent to the Site to the west, across Wood Street. Downstream the drainage channel, and approximately 0.25 miles to the northwest of the Site is the John F. Kennedy Park and Lake. The lake drains westerly and presumably discharges into the Delaware River. Delaware River (0.66 miles from the Site) and its tributaries (0.5 miles from the Site), as depicted on the 7.5-minute Bristol, New Jersey Quadrangle topographic map (USGS, 1976) are shown in Figure 1. The tributaries within this watershed are classified by the NJDEP as general fresh water/non-trout-producing water bodies (FW2-NT) (N.J.A.C. 7:9B).

4.0 TECHNICAL OVERVIEW AND FINDINGS

The field activities associated with the RI were carried out between June 2, 2004 and December 6, 2006. Activities addressing on-site contamination and outstanding data gaps identified during previous investigations, as well as the associated findings, are described in the following subsections.

All sampling and investigation activities were performed in accordance with the *New Jersey Technical Requirements for Site Remediation* (NJDEP, 1999), the *New Jersey Field Sampling Procedures Manual* (NJDEP, 1992) and, where applicable, other relevant or appropriate USEPA regulations and guidance for conducting investigations at uncontrolled hazardous contamination sites. The RIR is supplemented by information presented in the *Programmatic Quality Assurance Program Plan* (QAPP) (Berger, 1998), the *Programmatic Health and Safety Plan* (HASP) (Berger, 1998), the *Site-Specific Health and Safety Plan* (SSHASP) (Berger, 2002), and the SSIP (Berger, 2002). All samples collected during the RI were analyzed at Accutest Laboratories in Dayton, NJ (NJ Certification # 12129).

4.1 Geophysical Survey

A geophysical survey was conducted at the Site to determine the presence and location of subsurface structures (such as underground storage tanks, etc.), disturbed areas, and underground utilities for the purpose of clearing locations of obstructions or potential hazards posed to drilling activities. Several geophysical survey methods were employed to identify subsurface structures, buried utility lines, and piping runs, including electromagnetic (EM), ground-penetrating radar (GPR), and radio-frequency (RF) methods. EM methods were used to determine the presence of metal utilities or obstructions in the area of proposed boring locations; GPR and RF methods were used to locate electric lines that were in the vicinity of the proposed boring/well locations. Proposed boring/well locations were relocated as necessary to avoid any utilities and obstructions. The geophysical survey report is presented in Appendix B.

4.2 Soil Sampling

A soil boring and sampling program was implemented in the northern and eastern portions of the Site in order to complete the horizontal delineation of impacted soils. A total of twelve soil samples were collected from four soil borings (SB-01 through SB-04). The locations of the soil borings are presented on Figure 2 and a complete summary of soil samples is included in Table 2. Each boring was advanced using hollow-stem auger drilling techniques, split spoons were recovered, and the soil was lithologically classified according to the Burmister Soil Classification System (Burmister, 1949) and screened with a photoionization detector (PID). Each boring was completed to depths below the

water table (boring depths ranged from 6 to 8 feet bgs, typically encountering water at 4 to 7 feet bgs). Soil boring logs are presented in Appendix C. Free-phase product was not observed in soils recovered from any of the borings. Petroleum odors were noted during the completion of two borings (SB-03 and SB-04), with elevated PID readings ranging from 20 to 677 parts per million (ppm).

At each boring location, soil samples were collected from each discrete one-foot interval, as approved in the SSIP. The exact depth interval of each soil sample is shown on Table 2, and also indicated on the boring logs (Appendix C). Three of soil samples collected from each boring were analyzed, including: the sample from just above the water table, plus two additional samples based on PID readings. The remaining samples were also sent to the laboratory and archived for future analysis (if applicable). A total of twelve soil samples were analyzed for Target Compound List Volatile Organic Compounds (TCL VO+10 with MTBE and TBA), TPHC, and lead. Laboratory analysis also included one blind duplicate sample collected for Quality Assurance/Quality Control (QA/QC).

Soil analytical results were evaluated with respect to the Residential Direct Contact, Non-Residential Direct Contact, and Impact to Groundwater Soil Cleanup Criteria (NJDEP, last revised in May 1999). For each individual chemical compound, the most conservative of the three sets of criteria comprises the NJDEP's "Unrestricted Use" SCC. The analytical results of the twelve soil samples indicated that no analytes were present at concentrations above the SCC. A complete summary of the soil sampling results is provided in Table 3.

4.3 2004 Monitoring Well Installations

Five initial monitoring wells were installed at the Site in July 2004 (MW-1 thru MW-5). The location of each well is depicted on Figure 2. The purpose of these wells was to address the first groundwater interval present beneath the Site. Two of these wells were installed in the same locations as the soil borings (MW-3 in SB-1 and MW-4 in SB-4). The location and depth of each well was field-approved by on-site NJDEP personnel.

Each monitoring well was completed in the unconsolidated soils via hollow-stem auger drilling techniques to a depth of twelve feet bgs. The monitoring wells were constructed with 4-inch diameter, Schedule 40, polyvinyl chloride (PVC) riser and 0.02-inch slotted screen. Screened intervals were from 2 to 12 feet bgs to intersect the encountered water table. Each well screen was capped at the bottom. The annular space between the PVC screen and the wall of the well borings was filled with #2-size well gravel to a depth corresponding to at least 1 foot above the well screen, and # 00 size sand was then added above the well gravel. The remainder of the annulus was filled

with cement-bentonite grout. Locking well plugs were installed at the top of the PVC riser and each well was completed as a flush-mount with an 8-inch vault and cap set in a concrete pad at grade. All well logs, permits, records, and certification forms are provided in Appendix C.

Each well was developed until a near turbid-free discharge was achieved using a submersible pump. The monitoring wells were left undisturbed for a minimum of two weeks following development of the last well installed.

4.4 2004 Groundwater Sampling

Two standard purge groundwater sampling events were conducted at the Site during the course of the RI (July 2004 and October 2004). The events commenced with a round of water level measurements used to calculate the water level elevation at each well (Table 5). A standard purge technique using a submersible pump was then employed in accordance with *NJDEP Technical Regulations* (NJDEP, 1999b). A summary of groundwater samples collected is presented in Table 4 and purge logs are provided in Appendix D.

4.4.1 July 2004 Sampling Event

Four of the five wells on-Site were sampled in July 2004 (MW-01 through MW-04). A sample could not be collected from monitoring well MW-5 because a vehicle was parked over the well, making it inaccessible.

Groundwater contours generated from water level measurements indicate a west southwest flow; however, because MW-05 could not be accessed, it is believed that there is not sufficient data to capture the true flow, and contours from this event are not included. A round of water levels measurements from all five wells was collected on October 14, 2004 (Figure 4). The data collected on this date indicated a flow towards the west-northwest.

A total of four groundwater samples associated with this event were analyzed for TCL VO+10 with TBA and MTBE, TPHC, TCL SVOC+20 and TAL Metals. Laboratory analysis also included one duplicate sample, one field blank, and one trip blank for QA/QC. Analytical results indicate the presence of Benzene, MTBE, Tertiary Butyl Alcohol (TBA), Aluminum, Arsenic, Iron and Manganese above the GWQS (Table 6). Xylenes and TICs were also detected above GWQS. TIC levels are compared to the interim generic criteria for Synthetic Organic Chemicals of 100 ug/l per compound, 500 ug/l total for non-carcinogens (N.J.A.C. 7:9C, Table 2). Contaminant exceedances are presented on Figure 3.

4.4.2 October 2004 Sampling Event

During the October 2004 groundwater sampling event, two wells (MW-2 and MW-4) were not sampled due to the detection of free phase product during initial water level measurements.

Three groundwater samples (MW-1, MW-3 and MW-5) were collected and analyzed for TCL VOC+10 with TBA and MTBE by, TCL SVOC+20, TAL Metals and full TPHC, as appropriate. Laboratory analysis also included one duplicate sample, one field blank, and one trip blank for QA/QC. Analytical results (Table 7) indicate the presence of TBA, Aluminum, Arsenic, Iron, and Manganese above the GWQS. Contaminant exceedances are presented on Figure 5.

A synoptic round of water levels measurements from all five wells was collected on October 27, 2004 (Figure 5). Water level measurements and elevations are presented in Table 5. The data indicated groundwater flow towards the west northwest. Groundwater elevations were found to be below mean sea level during each of the 2004 sampling events, and as a result, the datum for monitoring well elevations was resurveyed. The results of the survey confirmed that the initial datum and groundwater monitoring well elevations were accurate.

Based on the results of the 2004 groundwater sampling, it was determined by Berger and the NJDEP that the presence of metals (with the exception of lead) was not likely attributable to an on-Site source. Therefore, lead was the only metal that was analyzed for during the subsequent groundwater sampling events in 2006.

4.5 Hydropunch[®]

A Hydropunch[®] investigation was conducted at the Site on August 7, 2006. Groundwater samples were collected from multiple discrete depth intervals at a single boring location, located adjacent to MW-01. The objective of the Hydropunch[®] investigation was to determine the appropriate screen interval for a deep permanent monitoring well for vertical delineation purposes.

Nine discrete groundwater samples were collected during advancement of the boring at five-foot intervals between 13 and 52 feet below ground surface (bgs). The exact sampling intervals are shown on Table 4. Groundwater sampling was conducted using the Hydropunch[®] method, which allows for discrete groundwater sampling at multiple depth intervals within a single boring (advanced via hollow stem auger drilling techniques). The sampling system was equipped with a stainless steel screen, sealed in place with a sacrificial tip. The Hydropunch[®] tool was advanced two feet below the terminus of the hollow stem auger. The outer cover was then retracted, exposing a discrete one-foot screen interval for sampling. Samples were collected using a disposable Teflon[®]

bailer. The Hydropunch[®] tool was then extracted and decontaminated for use at the next interval.

The groundwater samples collected by the Hydropunch[®] method were analyzed for VOCs. As shown on Table 8, the analytical results did not indicate any exceedances of the GWQS.

4.6 2006 Monitoring Well Installations

Four additional monitoring wells were installed at the Site in August 2006 (MW-6 thru MW-9). Three of the wells were installed for downgradient delineation purposes, with MW-06 located west of the Site beyond Wood Street, and MW-08 and MW-09 located north of the Site across Route 130. Similar to the construction of MW-1 through MW-5, these three shallow wells were completed via hollow-stem auger drilling techniques to a depth of twelve feet bgs.

MW-7 was installed as a deep well adjacent to MW-1. The purpose of the resulting well pair was to evaluate the vertical gradient in Site groundwater and to vertically delineate the contamination that had been identified throughout the Site during the 2004 sampling events. The deep well was installed adjacent to MW-01 and the previous hydropunch boring via hollow stem auger. Continuous split spoons were collected to obtain a lithologic profile. Clay was identified between 23.5 and 30 ft bgs. Per NJDEP guidance, MW-7 was set at a total depth of fifty two feet bgs. This deep well was also constructed as a 4-inch PVC well with a 10-foot screen. A copy of all well logs, well permits, well records and certification forms are provided in Appendix C.

Each of the four newly installed wells was developed until a near turbid-free discharge was achieved using a submersible pump. Prior to sampling, the monitoring wells were left undisturbed for a minimum of two weeks following development of the last well installed.

4.7 2006 Groundwater Sampling

Two low flow purge groundwater sampling events were conducted at the Site during the course of the RI (September 2006 and December 2006). The events commenced with a round of water level measurements used to calculate the water level elevation at each well (Table 5). Monitoring wells were purged and sampled using NJDEP approved low flow technologies utilizing stainless steel pumps bladder pumps with Teflon bladders and Teflon lined poly tubing. The sampling events were conducted in accordance with the NJDEP Field Sampling Procedure Manual (August 2005). A summary of the groundwater samples collected is included on Table 4.

4.7.1 September 2006 Sampling Event

All nine monitoring wells at the Site (MW-1 through MW-9) were sampled in September 2006. The

groundwater samples were analyzed for TCL VOC+10 with TBA and MTBE, TCL SVOC+20, lead and full TPHC, as appropriate. Laboratory analysis also included one duplicate sample, two field blanks, and two trip blanks for QA/QC. The groundwater sampling purge logs are provided in Appendix D. Analytical results (Table 9) indicated the presence of Benzene, MTBE, and TBA above the GWQS. VOC TICS were also detected above GWQS. Contaminant exceedances are presented on Figure 6.

The groundwater elevation data collected on September 11, 2006 (Figure 7) indicated a flow towards the northwest that turns southwest towards the unnamed tributary of the Delaware River to the west of the Site. The surface water elevation was measured via a surface water gauge in this unnamed tributary to determine the relationship between surface water and shallow groundwater (see section 4.9). Water level measurements and elevations are presented in Table 5. Vertical flow exchange between deep and shallow groundwater in MW-1 and MW-7 was determined to be minimal as indicated by a slight downward vertical gradient (Table 11).

4.7.2 December 2006 Sampling Event

A second round of low flow purge groundwater sampling was conducted on the nine wells in December 2006. The groundwater sampling purge logs are provided in Appendix D. The samples were analyzed for TCL VOC+10 with TBA and MTBE, TCL SVOC+20, lead, and TPHC. Laboratory analysis also included one duplicate sample, two field blanks, and two trip blanks for QA/QC. Analytical results (Table 10) indicated the presence of Benzene, Lead and TBA above the GWQS. VOC TICs and SVOC TICs were also detected above GWQS. Contaminant exceedances are presented on Figure 6.

The groundwater elevation data collected on December 5, 2006 (Figure 8) indicated a flow towards the northwest that turns southwest towards the unnamed tributary of the Delaware River to the west of the Site. Surface water elevations were measured via two surface water gauges in this unnamed tributary to determine the relationship between surface water and shallow groundwater (see section 4.9). Water level measurements and elevations are presented in Table 5. Vertical flow exchange between deep and shallow groundwater in MW-1 and MW-7 was determined to be minimal as indicated by a slight upward vertical gradient (Table 11).

4.8 Surface Water and Sediment Sampling

Two surface water gauges (SG-1 and SG-2) were installed at the unnamed tributary of the Delaware River to the west of the Site on August 7, 2006. Concurrently with monitoring well depth to water measurements, the water elevation at SG-1 was measured on December 5, 2006, and the water

elevation at SG-2 was measured on September 11, 2006 and December 5, 2006. The surface water elevations were then incorporated into the groundwater elevation contours (see Table 5 and Figures 7 and 8).

Surface water and sediment samples were collected at depositional locations along the unnamed tributary of the Delaware River on August 7, 2006. The surface water samples (SW101 and SW102) were collected from the water surface at each stream gauge location shown on Figure 2. Following collection of the surface water samples, sediment samples (SED101 and SED102) were obtained from the 0 to 6-inch depth interval of the stream bed. The analytical results of the surface water and sediment samples are summarized with respect to the *NJDEP Surface Water Quality Standards* (SWQS), October 2006, the *NJDEP Guidance for Surface Quality Evaluations*, November 1998, respectively in Table 12. Sediment sample SED101 exceeded the NJDEP Lowest Effects Level (LEL) for lead (31 mg/kg) and petroleum hydrocarbons (4 mg/kg) with concentrations of 55.3 mg/kg and 1110 mg/kg, respectively. Sediment sample SED102 exceeded the NJDEP LEL and Severe Effects Level (SEL) for lead (31 and 250 mg/kg) with a concentration of 345 mg/kg. SED102 also exceeded the petroleum hydrocarbon LEL with a concentration of 517 mg/kg. The surface sample SW101 (DUP101) and SW102 exceeded the human health SWQS (0.15 ppm) for benzene. No other exceedances of these criteria were identified in the surface water and sediment samples.

4.9 IDW Characterization

The majority of the soil and groundwater generated by drilling, well development, and groundwater sampling purging activities at the Site were containerized in 55-gallon steel drums as investigative derived waste (IDW). Purge water pumped during the first groundwater sampling event was spoiled on-site, as identified in the SSIP (Berger, 2003). Twelve 55-gallon drums of IDW (seven soil and five groundwater) were staged at the Site after the 2004 monitoring well installations. Fifteen additional 55-gallon drums of IDW (10 soil and 5 groundwater) were staged at the Site following the 2006 monitoring well installations. The containerized materials consisted of the following:

- Soil cuttings generated during drilling activities;
- Well development water pumped from MW-2 and MW-4, based on the PID screening results documented during soil sampling;
- Purge water pumped from all wells during the second groundwater sampling event, based on the results of the first event; and
- Well development water pumped from MW-6, MW-8, and MW-9, as those wells exist on the neighboring properties.

From the 12 drums that were staged on-site in 2004, four composite waste characterization samples were collected (two soil and two water). The analytical results are presented on Table 13. The 12 drums were removed from the Site on May 5, 2005 and disposed of as non-hazardous material at MXI Environmental Services, Inc in Abingdon, VA (see Appendix E for disposal documentation).

From the 15 drums that were staged on-site in 2006, four composite waste characterization samples were collected (two soil and two water). The analytical results are presented on Table 13. The 15 drums were removed from the Site on October 18, 2007 and disposed of as non-hazardous material at MXI Environmental Services, Inc in Abingdon, VA (see Appendix E for disposal documentation).

4.10 Site Survey and Mapping

A land survey was conducted at the Site by a New Jersey-licensed surveyor at the completion of the RI field investigation. All horizontal data on the plan were plotted in the New Jersey State Plane Coordinate System (NAD83). Topographic contours and spot elevations are shown in the North American Geodetic Vertical Datum (NAGVD88). The survey was conducted in accordance with standards described in the NJDEP *Geographic Information System Digital Data Standards* in accordance with the requirements set forth in the *New Jersey State Board of Professional Engineers and Land Surveyors Administrative Rules and Regulations*. The site plan includes the following pertinent topographic and structural features:

- Topography represented with 1 foot contour intervals and spot elevations;
- Locations of all existing buildings/permanent structures, adjacent roadways and parking lots;
- Full boundary lines of the site; and
- Locations and elevations of all site wells, soil borings, and surface water gauges.

4.11 Receptor Evaluation

In an effort to identify receptors that could be affected by potential off-site migration of contaminants, a receptor evaluation was performed as part of the RI. The evaluation included a well search and Baseline Ecological Evaluation (BEE).

4.11.1 Well Search

For the well search, the NJDEP Bureau of Water Allocation was contacted to identify any monitoring and domestic wells within one mile of the Site center-point; and a 5-mile computer radius search was completed for all industrial, public supply, and irrigation wells, or wells with water

allocation permits near the Site. Burlington County and Burlington City were also contacts to determine if there were municipal or domestic supply wells within 0.5-miles of the site, and if there were irrigation, industrial, public supply wells, or wells with Water Allocation permits within 1 mile of the Site.

The well search did not identify any domestic wells, public supply wells, or irrigation wells within one mile of the Site. The wells identified by the NJDEP Bureau of Water Allocation and the NJDEP Case Team are tabularized and provided in Appendix F. Further, email and letter responses from both Burlington City and Burlington County indicate that no wells were identified that meet the search criteria. These correspondences are also included in Appendix F.

It is noted that two points were identified by the computer radius search (numbers 50 and 73; see Appendix F); however, these points were determined to be intakes supplied by the Delaware River.

4.11.2 Baseline Ecological Evaluation

A Baseline Ecological Evaluation (BEE) was completed in 2005 and was summarized in Section 4.11.2 of the Draft RIR (January 2005). This evaluation was a qualitative BEE and was conducted prior to the surface water and sediment sampling. At that time, it appeared that no further ecological evaluations were required (the BEE was not revised during the preparation of the June 2007 RIR). The BEE has since been revised to include the sediment and surface water results, and a summary of the findings of the revised BEE is provided below.

Continued ecological investigations are only required whenever the baseline ecological evaluation indicates the co-occurrence of the following (N.J.A.C. 7:26E-3.11):

- Contaminants of ecological concern exist on-Site;
- An environmentally sensitive area exists on, or immediately adjacent to, the Site; and
- Potential contamination migration pathways to an environmentally sensitive area exist.

Contaminants of Ecological Concern

Contaminants of Ecological Concern related to gasoline products (MTBE, Benzene, Toluene, Ethylbenzene, Xylene, and lead) were previously identified in the Site groundwater and soils. However, the free product appears to be isolated, contaminant levels in down gradient wells decrease quickly, and contaminant levels have generally decreased over time. Two surface water gauges (SG-1 and SG-2) were installed in the unnamed tributary of the Delaware River between Wood

Street and Route 130. In August 2006, surface water (SW101 and SW102) and sediment samples (SED101 and SED102) were collected at depositional locations at each stream gauge location. The sediment samples were collected after the surface water samples. Sediment samples were collected from the 0 to 6-inch depth interval of the stream bed. Sediment samples were analyzed for VOC+10 (US EPA Method 625), TPH (EPA Method 418.1), and Lead (EPA Method 245). Surface water samples were analyzed for Lead (EPA Method 245), SVOC+20 (US EPA Method 625), TPH (EPA Method 418.1), VOC+10 (US EPA Method 625), and hardness.

The analytical results of the surface water and sediment samples were compared against the NJDEP Surface Water Quality Standards (SWQS), October 2006, and the NJDEP Guidance for Sediment Quality Evaluations, November 1998 (Tables 12). Very few of the sampled parameters were detected in the surface water and sediment samples. Only lead in the sediment exceeded ecological criteria. Sediment samples SED101 and SED102 both exceeded the LEL of 31 mg/kg for lead and SED102 also exceeded the lead SEL of 250 mg/kg. The surface sample SW101 (DUP101) and SW102 exceeded the human health SWQS (0.15 ppm) for benzene. No other exceedances of the ecological criteria were identified in the surface water and sediment samples.

Environmentally Sensitive Areas

Environmentally sensitive areas within the Site boundaries, as well as on adjacent and nearby properties, were evaluated during a Site inspection in the fall of 2004 and in February 2008 by Berger scientists experienced in the use of techniques and methodologies for conducting ecological risk assessments. No environmentally sensitive areas exist on, or immediately adjacent to, the Site. The nearest environmentally sensitive area is a drainage channel which appears to begin just west of Wood Street, draining water from the adjacent roads and impervious areas. The channel is shallow with steep banks and its edges were not heavily vegetated. The water within the channel was observed to be relatively clear, although a thin sheen was observed in areas of the channel near Wood Street. The channel flows northwest under Route 130 into a pond and, eventually, to the Delaware River.

Contaminant Migration Pathways

It is likely that surface water runoff from the paved Site (along with runoff from other nearby paved sites and roads) discharges to the only environmentally sensitive area located within the vicinity of the Site (the drainage channel located opposite the Site across Wood Street). It also is likely that a portion of the Site's groundwater flows towards the drainage channel. However, no pathways to the channel, such as seeps or discharges, were observed in 2004 or in February 2008 by Berger scientists. In addition, there were no signs of ecological stress observed in the drainage channel, and all

investigated vegetated areas appeared healthy. With the exception of a slight oil sheen observed on surface water near the culvert discharging from Wood Street to the channel, no discolored soil, sediment, or water were observed in this downgradient channel.

Conclusion

Based on a review of the available data and two site visits, continued ecological investigations are not warranted as the three criteria listed in Technical Requirements for Site Remediation do not co-occur. No environmentally sensitive areas exist on, or immediately adjacent to, the Site. Although contaminants of ecological concern are present in the nearby drainage channel, there is no direct contamination migration pathway from the Site to the channel. Surrounding roads and paved areas discharge to this channel. There were no signs of ecological stress observed in the drainage channel, and all investigated vegetated areas appeared healthy. Therefore, there is minimal ecological risk posed by the Site and no further ecological investigations are not recommended.

4.11.3 Vapor Intrusion Modeling

Vapor intrusion modeling was performed using the Johnson-Ettinger groundwater-based vapor intrusion model. Modeling was performed as a site-specific evaluation to quantify numerical health risks potentially attributable to indoor intrusion of the identified subsurface contaminants, and to determine whether guideline risk limits might be exceeded. Findings of the modeling suggest that vapor intrusion might pose significant health risks, especially at the central portion of the site where the facility building is located. However, since the assumptions that were used in the model were extremely conservative, it is expected that the risks are overstated. Although there are exceedances of established risk guidelines, it should be noted that the assumptions used are conservative and the uncertainties associated with the Johnson & Ettinger method are modeled conservatively, it is expected that the risks are greatly overstated. Such assumptions include:

- the highest documented detections are used;
- the highest detections are assumed to be directly beneath the structure in question;
- there is no dissipation, diffusion, attenuation or horizontal migration of contaminants; and
- the structure has a basement with existing pathways, such as cracked foundations.

Based on an assessment of the modeling results, it is believed at this time that there is no need for further vapor intrusion investigations at this Site. Modeling results, as well as all assumptions and conclusions, are included as Appendix G.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents conclusions and recommendations for the Site based on the findings of the RI activities. The conclusions pertain to the suspected source of contamination, interpreted migration pathways, and potential receptors. A preliminary introduction to the remedial alternative concepts is also presented below. A full evaluation of these concepts will be conducted in the subsequent Remedial Alternatives Selection (RAS) phase of the project.

5.1 Suspected Source

In 1994, ten gasoline and three diesel USTs, totaling 52,000 gallons in capacity, were removed from the Site. Many of the tanks were found to be in poor condition, with groundwater entering at least one of the tanks and free product was observed in one of the tank excavations. Investigation conducted by the NJDEP in 2000 and 2001 confirmed the presence of soil contamination at the Site. Limited soil sampling conducted at select locations during this RI did not exhibit and exceedances of the SCC.

Based on the groundwater elevation and analytical data from the monitoring wells, it is apparent that the groundwater contamination originates within the Site. TBA was found to be more prevalent in the western portion of the Site (and at depth), and benzene was found to be more prevalent in the eastern portion of the Site, indicating that there may be multiple sources (which would be a reasonable assumption considering the numerous USTs that were historically present at the Site). It should also be noted that contaminated soil associated with the former USTs may act as an ongoing residual source for the groundwater contamination.

5.2 Migration Pathways

Groundwater beneath the Site was generally found to flow northwest in the eastern portion of the site, and southwest in the western portion of the Site, towards an unnamed tributary of the Delaware River. Despite a minor exceedance of the lead GWQS in MW-08, the groundwater analytical results indicate that the contamination is mainly confined to the Site, as no exceedances of the GWQS were identified in upgradient wells MW-03 and MW-05, the sidegradient well MW-09, or the downgradient well MW-06. Groundwater samples collected from the deep well (MW-07) only showed exceedances of TBA, which was detected at concentrations one order of magnitude lower than the corresponding shallow well, MW-01. The screen interval of MW-07 is approximately 40 feet lower in elevation than that of MW-01, and no significant vertical gradient was found in the well pair.

There does appear to be a migration of contaminants from the groundwater onsite to the unnamed tributary across Wood Street. This is indicated by the groundwater flow direction discussed in Section 4.7 and the fact that there are minor exceedances of the applicable criteria for surface water and sediment samples collected from the unnamed tributary.

5.3 Potential Receptors

The potential receptors of site contamination are expected to be humans that may be exposed to groundwater from supply wells, humans that may be exposed to indoor air vapor associated with groundwater vapor intrusion, and biota associated with the nearby stream. The review of a well search obtained by the NJDEP Bureau of Water allocation indicated that there are no domestic wells present within 0.5 miles of the Site, and no supply wells within 1 mile of the Site. As public potable water is supplied in this area, there are no potential human receptors that would be impacted by site contaminants. An assessment of the potential for vapor intrusion in Site and nearby structures using the Johnson-Ettinger modeling indicates that there is potentially an unacceptable risk associated with vapor intrusion resulting from Site groundwater contamination. However, since assumptions used in the model were extremely conservative, it is expected that the risks are overstated. Such assumptions include:

- the highest documented detections are used;
- the highest detections are assumed to be directly beneath the structure in question;
- there is no dissipation, diffusion, attenuation or horizontal migration of contaminants; and
- the structure has a basement with existing pathways, such as cracked foundations.

Based on an assessment of the modeling results, it is believed at this time that there is no need for further vapor intrusion investigations at this Site. Finally, based on the results of the surface water and sediment sampling analysis, the biota associated with surface waters and wetlands of the unnamed tributary are potential receptors of contamination associated with the Site. It was concluded as a result of the BEE, however, that the unnamed tributary is not considered a sensitive ecological receptor.

5.4 Recommendations

This section presents recommendations for additional investigation work and remedial alternatives based on the findings of the RI. A review of the data gathered for this RI indicates that there are no immediate environmental concerns for human or other environmental receptors from Site contaminants. In addition, due to the presence of contaminants in excess of the NJDEP Class II-A GWQS, a Classification Exception Area (CEA) is required for the Site, in accordance with N.J.A.C. 7:26E-8.3. Due to the potential for a residual source at the site (i.e., soil contamination associated

with the three areas of the former USTs) removal or focused *in-situ* remediation of the source may be necessary. Due to the presence of MTBE in MW6, MW8 and MW9 and lead exceedance in MW8, routine monitoring of these off-site wells is recommended.

As this RIR has documented the presence of gasoline-related contaminants in groundwater, an introduction to potential remedial alternative concepts for source mitigation and exposure reduction is presented below. A full evaluation of these and other concepts will be performed as part of a Remedial Alternatives Selection Evaluation (RASE). The alternatives considered include no action, enhanced monitored natural attenuation, and active remediation.

5.4.1 No Action

The ‘No Action’ remedial alternative will be considered for the Site as per the New Jersey Technical Requirements for Site Remediation (NJDEP, 1999) and the NJDEP RI/RASE Statement of Work (SOW). No action relies on natural attenuation to achieve applicable remediation standards, using institutional controls (e.g., deed restrictions) to control exposure on site, and long-term monitoring to track attenuation effects and contaminant migration, and monitor exposure to potential receptors.

5.4.2 Enhanced Monitored Natural Attenuation

In situ bioremediation through the addition of oxygen or nutrients such as phosphorous, nitrogen, or sulfur is also a remedial concept recommended for consideration. These nutrients would be injected into the water table in the three areas of the former USTs to target any residual source of contamination. The nutrients would allow naturally occurring microorganisms to aerobically degrade the gasoline constituents. Contaminant degradation in the groundwater would be monitored through sampling and analysis of groundwater from monitoring wells. Based on the results of the initial application, additional applications may be considered.

5.4.3 Active Remediation

Active Remedial alternatives that may be recommended for the Site include pump and treat, air sparging/soil vapor extraction, and *in-situ* chemical oxidation. Pump and treat is a remedial alternative that is designed to limit migration of the gasoline-contaminated groundwater while at the same time reducing contaminant levels. Groundwater would be extracted through the existing observation wells to maintain a level of water in the UST excavation below the base of the adjacent fuel supply piping trench to eliminate overflow. This would be accomplished using appropriate pump settings and float switches. The gasoline-contaminated groundwater removed would be treated with an above ground treatment unit (e.g., carbon adsorption or air stripper) prior to discharge

to a sanitary sewer. Periodic sampling and analysis of the groundwater would be used to monitor contaminant degradation.

Air sparging is an in situ technology in which air is injected through a contaminated aquifer. Injected air traverses horizontally and vertically in channels through the soil column, creating an underground stripper that removes contaminants by volatilization. This injected air helps to flush (bubble) the contaminants up into the unsaturated zone where a soil vapor extraction system is usually implemented in conjunction with air sparging to remove the generated vapor phase contamination.

The *In-Situ* Chemical Oxidation remedial approach entails the use of chemical oxidizing agent such as RegenOx, which maximizes *in-situ* oxidation via use of a solid alkaline oxidant that employs a sodium percarbonate complex with a multi-part catalytic formula. The chemical consists of two parts (i.e., an oxidizer and activator) that are combined and injected into the subsurface. The RegenOx injection points would be located based on the Site's hydrogeological characteristics, groundwater elevations, and contamination conditions.

6.0 REFERENCES

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TABLES

Table 1
New Jersey Department of Environmental Protection
Param Petroleum
Burlington, New Jersey
Chronology of Events

DATE	PARTIES INVOLVED	DESCRIPTION
Dec-91	NJDEP	NJDEP received notification of a discharge detectable in the sanitary sewer and floor drains of a business located (Santucci Caterers) near the Param Petroleum Site. Odors were detected following the delivery of gasoline product to the Param facility. On December 12, 1991, following the delivery of additional product to the Param facility, odors were once again detected and mitigated by the NJDEP.
Jan-92	NJDEP	Following the delivery of additional product to the Param facility, odors were once again detected in the sanitary sewer and mitigated by the NJDEP.
May-93	NJDEP	UST closure approvals were issued to the Param facility for removal of thirteen (13) USTs. The NJDEP also issued a Notice of Violation (NOV) in response to the December, 1991 and January, 1992 vapor incidents. As part of the NOV, the Param facility was to conduct an investigation and remediation of the source(s) of the vapors.
Jun-94	Burlington County	Weights and Measures office condemned two (2) of the gasoline dispensers.
Jul-94	NJDEP	Letter requiring the Param Facility to conduct a Remedial Investigation (RI) issued.
Aug-94	NJDEP	Param Facility informs the NJDEP that the vapors are not the result of their facility activities. The NJDEP, during a visit to the area, detects odors in an adjacent business's floor drain.
Sep-94	NJDEP	The consultant for the Param Facility and the NJDEP discussed the source of the vapors and, it is reported that, the Param Facility's consultant agreed to a soil and groundwater investigation with a document due date of December 30, 1994.
Sep-94	Param Petroleum	The consultant for the Param Facility requests an extension for submission of the RI Report to a new due date of December 30, 1994.
Oct-94	NJDEP	Extension of document due date to December 30, 1994 approved.
Oct-94	NJDEP and Burlington City Sewer Dept. and Police/Fire Units	Gasoline product found in the sewer plant and sanitary sewer. The NJDEP's Bureau of Emergency Response and the Burlington City police and fire units trace source back to the Param Facility. Incident report numbers are logged.
Oct-94	Param Petroleum	The Param Facility completes tank tightness tests on nine (9) of the thirteen (13) tanks and their respective product lines. All tests are reported to have passed. UST Removal activities begin.
Oct-94	NJDEP	Floor with recent staining, a drain with gasoline odors, fresh Speedy-Dry in the drain and a transfer pump are discovered upon further investigation. During tank removal activities at the site the following observations were made by the DEP - free product in the excavations, numerous holes in the tanks removed and soil staining in the original tank backfill material and other soils excavated. A spill incident is reported.
Nov-94	NJDEP	During tank removal activities at the site the following observations were made by the DEP- free product in the excavations, numerous holes in the tanks removed and soil staining in the original tank backfill material and other soils excavated. PSE&G request that soil stockpiled on their right of-way be removed.
Dec-94	Param Petroleum	Proposed Schedule of events submitted. Schedule indicates installation of Monitoring wells by Feb-95 and RI Report submission mid May-95.
Jan-95	NJDEP	Observed the release of ~300 gallons of petroleum contaminated groundwater to the soil. Later, soil staining and PID detections were observed in the vicinity of the release.
Apr-95	NJDEP	During site inspection, approval given to install three new 12,000 gallon USTs. Manifests for the 4,031 tons of soil removed were produced and the owner was again informed of the requirement for a soil and groundwater RI with report.

Table 1
New Jersey Department of Environmental Protection
Param Petroleum
Burlington, New Jersey
Chronology of Events

DATE	PARTIES INVOLVED	DESCRIPTION
May-95	NJDEP	By letter, the Param facility is again informed of the need to complete soil and groundwater RI and propose remedial actions. Report submission within 90 days is set.
Jun-95	Param Petroleum	Remedial Activities schedule is submitted. Sensitive receptors search and monitoring well sampling is proposed for submission in Sept-95. RI Report proposed for submission Feb-96. Application made to the Hazardous Discharge Site Remediation Fund to complete groundwater investigation, monitoring well installation and sampling, removal of newly generated contaminated soil and submittal of RI Report.
Jan-96	NJDEP and Burlington City Police/Fire Units	NJDEP received notification of odors in the sanitary sewer and floor drains of a business (Santucci Caterers) located near Param Petroleum. These odors were traced to the Param facility. An incident report is generated.
Feb-96	NJDEP	A Notice of Violation (NOV) is issued in response to the Jan-96 vapor incidents. As part of the NOV, the Param facility was to conduct a soil, groundwater, and receptor investigation and remediation of the source(s) of the vapors. Report due Mar-96.
Feb-96	Param Petroleum	Remedial Action Schedule submitted proposing hydropunch groundwater sampling with Report to be submitted week of May 15, 1996.
Mar-96	Param Petroleum	Proposed Scope-of-Work (SOW) submitted through Param Petroleum's consultant. Proposal included submission of report 45 days after completion of all field activities.
Oct-96	NJEDA	Awards loan to Param Petroleum for \$75,020.00 based on NJDEP review and approval of schedule of events.
Nov-96	NJDEP	In a deficiency letter, it is requested that Param gain access to adjoining properties so as to conduct RI activities. Reiterate possible enforcement measures for non-compliance with previously established guidelines and timeframes.
Jan-97	Param Petroleum	SOW submitted to the NJDEP for same activities as listed in Mar-96 SOW.
Jul-98	NJDEP	NOV and Offer of Settlement issued to Param Petroleum for failure to submit RI report and receptor evaluation. A Directive and Notice to Insurers, directing cleanup and removal of discharges by implementing a RI and related RA, as well as an Administrative Consent Order (ACO) were issued.
Oct-98	Param Petroleum	ACO is signed by Param Petroleum.
Nov-98	NJDEP	ACO is executed by the NJDEP.
Dec-98	Param Petroleum	Request for meeting made.
Dec-98	NJDEP	Attempt to schedule meeting. RIW submission date moved to January 19, 1999.
Jan-99	NJDEP/Param Petroleum	Meeting to discuss the Site. NJDEP again outlines its requirements.
Mar-99	Param Petroleum	Request for hearing submitted (K. Roacki).
Apr-99	Param Petroleum	Request for hearing submitted (K. Roacki).
May-99	Param Petroleum	Request for hearing submitted (R. Yarinsky).
May-99	NJDEP	Letter of intent to revoke UST registration submitted to Param Petroleum.
Jun-99	Param Petroleum	Request for hearing submitted (R. Corcory).
Jul-99	NJDEP	Hearing Request granted.
Aug-99	NJDEP	Reminder sent to Param Petroleum that the ACO executed in Nov-98 specifically grants the NJDEP access to the site to complete required activities.
Sep-99	NJDEP	Case Transferred from BFCM to BSM - Publicly Funded Division.
Jan-00	Param Petroleum	Request for meeting to allow Param to submit Work Plan and begin remediation.

Table 1
New Jersey Department of Environmental Protection
Param Petroleum
Burlington, New Jersey
Chronology of Events

DATE	PARTIES INVOLVED	DESCRIPTION
Jan-00	NJDEP	SOW for first round prepared by BEERA and BGWPA and submitted to BSM.
Apr-00	NJDEP	Inter-Divisional Work Request and SOW submitted to BEMQA/EMS.
May-00	NJDEP	Reminder sent to Param Petroleum that the ACO executed in Nov-98 specifically grants the NJDEP access to the site to complete required activities. Start date projected as early Jun-00 with site visit May-00.
May-00	Param Petroleum	Request to allow Param to pay contractors directly to avoid treble damages as well as for Param to complete remediation activities.
Jun-00	NJDEP	First round of field work completed - Samples Collected include 19 soil; 12 groundwater; 3 sediment and 1 surface water sample. Results indicate exceedances of state criteria for 5 of the soil samples, all of the groundwater samples and 2 of the sediment samples.
Jun-00	Param Petroleum	Signed Affidavit certifying ability to fund Phase I investigation and requesting to be allowed to pay for the investigation.
Feb-01	NJDEP	SOW for second round prepared by BEERA and BGWPA and submitted to BSM
Feb-01	NJDEP	Access Agreements requested for Block 33 Lot 56; Block 34 Lot 52.01; Block 74 Lot 24 & 9; and Block 35.01 Lot 1.
Feb-01	NJDEP	Inter-Divisional Work Request and SOW submitted to BEMQA/EMS.
Mar-01	NJDEP	Reminder sent to Param Petroleum that the ACO executed in Nov-98 specifically grants the NJDEP access to the site to complete required activities. Start date projected as Mar-01.
Mar-01	NJDEP	Second round of field work completed - Samples Collected: 13 soil; 15 groundwater; and 2 sediment samples. Results indicate exceedances of state criteria for 4 of the soil samples, 12 of the groundwater samples and the 2 sediment samples.
May-01	NJDEP	Monitor Well (MW) SOW for third round prepared by BGWPA and submitted to BSM.
Jun-01	NJDEP	SOW for third round prepared by BEERA and submitted to BSM.
Aug-01	NJDEP	Revised MW SOW for third round prepared by BGWPA and submitted to BSM.
Oct-01	NJDEP	Funding Authorization Request Submitted.
Oct-01	NJDEP	Quality Assurance data validation of Mar-01 field work.
May-02	NJDEP	Purchase Order for RI/RAS Term Contract #X-47449 Issued to Berger for preparation of new RI SOW.
Aug-02	Berger	Conceptual Approach Report Submitted to NJDEP for review.
Sep-02	NJDEP	Meeting with Berger to discuss the Conceptual Approach Report prior to development of the SSIP.

Table 2
 New Jersey Department of Environmental Protection
Param Petroleum
Burlington, New Jersey
Soil Sample Summary

Location ID	Sample ID	Lab ID	Depth Interval	Analyses	Sampling Method	Date
SB-01	SB-01A	N71974-13	1.5 - 2.0	Archived	Split-Spoon	7/6/04
	SB-01B	N71974-14	2.5 - 3.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-01C	N71974-15	3.0 - 4.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-01D	N71974-16	4.0 - 4.5	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	DUPE-01	N71974-17	4.0 - 4.5	TPHC / Lead	Split-Spoon	7/6/04
SB-02	SB-02A	N71974-5	0.0 - 1.0	Archived	Split-Spoon	7/6/04
	SB-02B	N71974-6	1.0 - 2.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-02C	N71974-7	2.0 - 3.0	Archived	Split-Spoon	7/6/04
	SB-02D	N71974-8	3.0 - 4.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-02E	N71974-9	4.5 - 5.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
SB-03	SB-03A	N71974-10	1.0 - 2.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-03B	N71974-11	2.0 - 3.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-03C	N71974-12	3.0 - 3.5	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-04A	N71974-1	1.0 - 2.0	Archived	Split-Spoon	7/6/04
	SB-04B	N71974-2	2.0 - 3.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
SB-04	SB-04C	N71974-3	3.0 - 4.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04
	SB-04D	N71974-4	4.5 - 5.0	TCL VO+10 with MTBE and TBA / TPHC / Lead	Split-Spoon	7/6/04

Notes:

- Depth Interval is reported in feet below ground surface (feet bgs)
- TCL = Target Compound List by SW-846
- VO+10, MTBE, TBA by US EPA Method 8260.
- TPHC by US EPA Method 418.1.
- Lead by US EPA Method 6010.

Table 3
 New Jersey Department of Environmental Protection
 Param Petroleum
 Burlington, NJ
Soil Detection Table

FIELD SAMPLE ID				SB-01B	SB-01C	SB-01D	Dupe-01	SB-02B	SB-02D	SB-02E	SB-03A	SB-03B	SB-03C	SB-04B	SB-04C	SB-04D	
LAB ID				544535 / N71974-14	544536 / N71974-15	544537 / N71974-16	N71974-17	544527 / N71974-6	544529 / N71974-8	544530 / N71974-9	544531 / N71974-10	544532 / N71974-11	544533 / N71974-12	544523 / N71974-2	544524 / N71974-3	544525 / N71974-4	
SAMPLE INTERVAL (ft)				2.5 - 3.0	3.0 - 4.0	4.0 - 4.5	4.0 - 4.5	1.0 - 2.0	3.0 - 4.0	4.5 - 5.0	1.0 - 2.0	2.0 - 3.0	3.0 - 3.5	2.0 - 3.0	3.0 - 4.0	4.5 - 5.0	
DATE COLLECTED				07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	07/06/04	
ANALYTE	RDCSCC	NRDCSCC	IGWSCC														
VO +10																	
Toluene	1000	1000	500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18 J	ND	ND
Xylene (Total)	410	1000	67	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53 J	ND	ND
Total TICs	1000	1000	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	21.9 J	ND	ND	ND
Inorganic Compounds																	
TPHC	10000	NC	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	40.8	201	108	ND	83.2
Lead	400	600	Site Specific	238.0	20.8	8.7	11.6	23.3	92.2	8.6	9.3	61.6	73.8	10.5	3.3	3.7	

Notes:

- All results reported in parts per million (mg/kg), dry weight
- RDCSCC = Residential Direct Contact Soil Cleanup Criteria (N.J.A.C. 7:26D, revised 5/12/99)
- NRDCSCC = Non-Residential Direct Contact Soil Cleanup Criteria (N.J.A.C. 7:26D, revised 5/12/99)
- IGWSCC = Impact to Groundwater Soil Cleanup Criteria (N.J.A.C. 7:26D, revised 5/12/99)
- J = Estimated concentration
- NC = No Criteria established
- **Bolded values indicate positive detections**
- **Bolded and shaded values indicate that one or more Criteria have been exceeded**
- ND = No Detection

Table 4
 New Jersey Department of Environmental Protection
 Param Petroleum
 Burlington, NJ
Groundwater and SW/SED Sample Summary

Location ID	Sample ID	Lab ID	Depth	Analytical Parameters	Sampling Method	Date
GROUNDWATER						
MW-1	MW-1	N73626-1	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	7/28/2004
MW-2	MW-2	N73626-2	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	7/28/2004
MW-3	MW-3	N73626-3	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	7/28/2004
MW-4	MW-4	N73626-4	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	7/28/2004
	DUPE01	N73626-6	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	7/28/2004
MW-5	MW-5	NA	NA	No Sample Collected - Well Inaccessible		7/28/2004
FB01	FB01	N73626-5	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	7/28/2004
MW-1	MW-1	N81784-2	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	10/27/2004
MW-2	MW-2	NA	NA	No Sample Collected - Free-phase Product Present		10/27/2004
MW-3	MW-3	N81784-3	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	10/27/2004
MW-4	MW-4	NA	NA	No Sample Collected - Free-phase Product Present		10/27/2004
MW-5	MW-5	N81784-1	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	10/27/2004
	DUPE02	N81784-4	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	10/27/2004
FB02	FB02	N81784-5	NA	VOC+10*, SVOC+20, TPH, TAL Metals	Teflon Bailer	10/27/2004
MW-1	MW-1	J40756-3	7.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/11/2006
MW-2	MW-2	J40913-5	8.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/12/2006
MW-3	MW-3	J40913-2	6.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/12/2006
MW-4	MW-4	J40913-7	7.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/12/2006
MW-5	MW-5	J40756-6	10.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/11/2006
MW-6	MW-6	J40756-4	7.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/12/2006
	DUP01	J40756-5	7.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/11/2006
MW-7	MW-7D	J40756-1	48.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/11/2006
MW-8	MW-8	J40913-6	10.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/12/2006
MW-9	MW-9	J40913-3	10.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	9/12/2006
FB01	FB01	J40756-2	NA	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump	9/11/2006
FB02	FB02	J40756-1	NA	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump	9/12/2006
MW-1	MW-1	J48480-1	7.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/6/2006
MW-2	MW-2	J48480-8	8.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/6/2006
MW-3	MW-3	J48480-6	6.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/6/2006
MW-4	MW-4	J48480-9	7.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/6/2006
MW-5	MW-5	J48386-1	10.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/5/2006
MW-6	MW-6	J48480-5	7.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/6/2006
MW-7	MW-7	J48480-3	48.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/6/2006
	DUP01	J48480-2	48.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/6/2006
MW-8	MW-8	J48386-3	10.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/5/2006
MW-9	MW-9	J48386-2	10.00	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump / Disposable Teflon Lined Tubing	12/5/2006
FB01	FB01	J48386-4	NA	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump	12/5/2006
FB02	FB02	J48480-7	NA	LEAD, SVOC+20, TPH, VOC+10*	Bladder Pump	12/6/2006
HYDROPUNCH GROUNDWATER						
Param HP 13-14'		J37792-1	13-14	VOC+10	Hydropunch	8/7/2006
Param HP 18-19'		J37792-2	18-19	VOC+10	Hydropunch	8/7/2006
Param HP 23-24'		J37792-3	23-24	VOC+10	Hydropunch	8/7/2006
Param HP 28-29'		J37792-4	28-29	VOC+10	Hydropunch	8/7/2006
Param HP 33-34'		J37792-5	33-34	VOC+10	Hydropunch	8/7/2006
Param HP 38-39'		J37792-6	38-39	VOC+10	Hydropunch	8/7/2006
Param HP 43-44'		J37792-7	43-44	VOC+10	Hydropunch	8/7/2006
Param HP 46.5-47.5'		J37792-8	46.5-47.5	VOC+10	Hydropunch	8/7/2006
Param HP 51.5-52.5'		J37792-9	51.5-52.5	VOC+10	Hydropunch	8/7/2006
SEDIMENT and SURFACE WATER						
SED101	SED101	J37803-4	NA	VOC+10, TPH, LEAD	Grab	8/7/2006
SED102	SED102	J37803-5	NA	VOC+10, TPH, LEAD	Grab	8/7/2006
SW101	SW101	J37803-1	NA	LEAD, SVOC+20, TPH, VOC+10, HARDNESS	Grab	8/7/2006
	DUP01	J37803-3	NA	LEAD, SVOC+20, TPH, VOC+10, HARDNESS	Grab	8/7/2006
SW102	SW102	J37803-2	NA	LEAD, SVOC+20, TPH, VOC+10, HARDNESS	Grab	8/7/2006

Notes:

- For the 9/06 and 12/06 groundwater samples 'Depth' is the depth in feet below the top of casing that the pump was set at
- Hydropunch depths are in feet below ground surface
- VOC+10* = Volatile Organic Compounds - search for 10 non-targeted tentatively identified compounds and MTBE and TBA (US EPA Method 625)
- VOC+10 = Volatile Organic Compounds - search for 10 non-targeted tentatively identified compounds (US EPA Method 625)
- TOC = Total Organic Carbon
- SVOC+20 = Semi Volatile Organic Compounds - search for 20 non-targeted tentatively identified compounds (US EPA Method 625)
- TPH = Total Petroleum Hydrocarbons (EPA Method 418.1)
- Metals and Lead (EPA Method 200.7/245)

Table 5
 New Jersey Department of Environmental Protection
 Param Petroleum
 Burlington, New Jersey
 Groundwater Elevation Summary

Well ID	Ground Elevation ⁽¹⁾	Total Depth ⁽²⁾ (bgs)	TOC ⁽³⁾ Elevation	Well Screen Interval ⁽⁴⁾	Well Screen Interval Elevation (ft)	Depth to Water ⁽⁵⁾ 7/28/2004	Groundwater Elevation ⁽⁶⁾ 7/28/2004	Depth to Water ⁽⁵⁾ 10/14/2004	Groundwater Elevation ⁽⁶⁾ 10/14/2004	Depth to Water ⁽⁵⁾ 10/27/2004	Groundwater Elevation ⁽⁶⁾ 10/27/2004	Depth to Water ⁽⁵⁾ 1/6/2005	Groundwater Elevation ⁽⁶⁾ 1/6/2005	Depth to Water ⁽⁵⁾ 6/16/2005	Groundwater Elevation ⁽⁶⁾ 6/16/2005	Depth to Water ⁽⁵⁾ 9/11/2006	Groundwater Elevation ⁽⁶⁾ 9/11/2006	Depth to Water ⁽⁵⁾ 12/5/2006	Groundwater Elevation ⁽⁶⁾ 12/5/2006
MW-01	5.02	12.0	4.57	2 - 12	3.02 to -6.98	4.68	-0.11	5.43	-0.86	5.47	-0.90	4.85	-0.28	5.85	-1.28	5.38	-0.81	5.10	-0.53
MW-02	5.21	12.0	4.60	2 - 12	3.21 to -6.79	4.44	0.16	5.17	-0.57	5.25	-0.65	4.59	0.01	5.41	-0.81	5.10	-0.50	4.67	-0.07
MW-03	4.52	12.0	3.97	2 - 12	2.52 to -7.48	3.75	0.22	4.44	-0.47	4.5	-0.53	3.91	0.06	4.66	-0.69	4.35	-0.38	4.03	-0.06
MW-04	5.43	12.0	5.05	2 - 12	3.43 to -6.63	4.90	0.15	5.57	-0.52	5.64	-0.59	4.98	0.07	5.77	-0.72	5.46	-0.41	5.05	0.00
MW-05	4.06	12.0	3.56	2 - 12	2.06 to -7.94	NM	NM	3.79	-0.23	3.89	-0.33	3.21	0.35	4.02	-0.46	3.68	-0.12	3.26	0.30
MW-06	1.84	12.0	1.32	2 - 12	-0.16 to -10.16	WELLS DID NOT EXIST YET										2.39	-1.07	1.78	-0.46
MW-07	4.88	52.0	4.55	42-52	2.88 to -7.12											5.93	-1.38	4.99	-0.44
MW-08	4.12	12.0	3.58	2 - 12	2.12 to -7.88											4.45	-0.87	4.04	-0.46
MW-09	4.22	12.0	4.03	2 - 12	2.22 to -7.78											4.65	-0.62	4.25	-0.22
Stream Gauge			Elevation	STREAM GAUGES DID NOT EXIST YET												Water Level 9/11/06	Water Elevation 9/11/06	Water Level 12/5/06	Water Elevation 12/5/06
SG-1			-0.91											NM	NM	1.78	-2.69		
SG-2			-1.10											1.76	-2.86	1.73	-2.83		

Notes:
 (1) All Elevations are measured with respect to mean sea level.
 (2) Total well depth measured in feet below ground surface.
 (3) TOC = Top-of-PVC casing.
 (4) Well screen interval is measured in feet below the ground surface.
 (5) Depth to water measured from top of of PVC casing.
 (6) Top-of-PVC casing elevation minus depth to water = Groundwater Elevation.
 NM = Not Measured

Table 6
 New Jersey Department of Environmental Protection
 Param Petroleum
 Burlington, New Jersey
 Groundwater Results July 2004

SAMPLE LOCATION			MW-1	MW-2	MW-3	MW-4		MW-5	FB-01
FIELD SAMPLE ID			MW-1	MW-2	MW-3	MW-4	DUPE-01	MW-5	FB-01
LAB ID			N73626-1	N73626-2	N73626-3	N73626-4	N73626-6	Not Sampled	N73626-5
DATE COLLECTED			7/28/2004	7/28/2004	7/28/2004	7/28/2004	7/28/2004	-	7/28/2004
ANALYTE	NJGWQS	Interim NJGWQS							
Volatile Organic Compounds +10									
Acetone	700	NC	3.9 U	48	3.9 U	3.9 U	17.8	Not Sampled Well Inaccessible	3.9 U
Benzene	1	NC	0.65 J	1,290	0.33 U	268	194		0.33 U
Ethylbenzene	700	NC	0.22 U	403	0.22 U	172	131		0.22 U
Methyl Tert Butyl Ether	NC	70	59.7	208	1.8	13	13.5		0.41 U
Tertiary Butyl Alcohol	NC	100	284	10 U	10 U	10 U	10 U		10 U
Toluene	1,000	NC	0.23 J	315	0.11 U	803	635		0.11 U
Xylenes (Total)	40	1000	0.26 U	1,760	0.26 U	1,090	867		0.26 U
Semivolatile Organic Compounds +20									
2,4-Dimethylphenol	100	NC	1.0 U	3.0 J	1.0 U	1.0 U	9.0	Not Sampled Well Inaccessible	1.0 U
2-Methylnaphthalene	NC	100	10.4	7	0.72 U	3	4.7		0.72 U
2-Methylphenol	NC	NC	0.72 U	0.72 U	0.72 U	2.8	4.9		0.72 U
3&4-Methylphenol	NC	NC	0.70 U	0.70 U	0.70 U	1.2 J	1.8 J		0.70 U
bis(2-Ethylhexyl)phthalate	30	NC	0.74 U	0.74 U	0.74 U	2.1	1.8 J		0.74 U
Fluorene	300	NC	2	0.89 U	0.89 U	0.89 U	0.89 U		0.89 U
Naphthalene	NC	300	1.0 U	35.3	1.0 U	16.3	24		1.0 U
Total TICs (VOC+SYOC)									
Total TICs	NC	500	351.2	4161.8 J	43.3 J	1507.5 J	1677.4 J	NS	0
Inorganic Compounds									
Aluminum	200	NC	2,500	1,560	1,010	1,050	496	Not Sampled Well Inaccessible	200 U
Arsenic	8	NC	30	14.8	5 U	5 U	5 U		5 U
Calcium	NC	NC	13,100	11,300	21,200	6,890	6,550		5,000 U
Chromium	100	NC	16	10 U	10 U	10 U	10 U		10 U
Iron	300	NC	99,800	51,800	3,030	62,800	64,300		100 U
Lead	10	NC	3.8	3 U	3 U	3 U	3 U		3 U
Magnesium	NC	NC	10,200	9,240	21,400	5,640	5,700		5,000 U
Manganese	50	NC	1,560	2,530	971	1,040	1,060		15 U
Potassium	NC	NC	5,000 U	13,400	8,130	5,000 U	5,000 U		5,000 U
Sodium	50,000	NC	33,600	26,200	17,400	36,600	37,900		5,000 U
Zinc	5,000	NC	29.8	29.7	37.5	50.1	43.3	20 U	
Total Petroleum Hydrocarbons									
TPHC*	NC	NC	ND	1.9	ND	0.77	0.86	NS	ND

Notes:

All results reported in parts per billion (ug/L).
 * - Results reported in parts per million (mg/L).
 NJGWQS - New Jersey Ground Water Quality Standards (N.J.A.C. 7:9-6).
 NS - Not sampled
 ND - Not Detected
 NC - No criteria established.

U - Not detected above the Sample Quantification Limit (SQL).
 J - Estimated concentration.

Bold values indicate positive detections.
Bold and shaded values meet or exceed NJGWQS (N.J.A.C. 7:9-6).

Table 7
 New Jersey Department of Environmental Protection
 Param Petroleum
 Burlington, New Jersey
Groundwater Results October 2004

SAMPLE LOCATION			MW-1	MW-2	MW-3	MW-4	MW-5		FB-02
FIELD SAMPLE ID			MW-1	-	MW-3	-	MW-5	DUPE02	FB-02
LAB ID			N81784-2	-	N81784-3	-	N81784-1	N81784-4	N81784-5
DATE COLLECTED			10/27/2004	Not Sampled	10/27/2004	Not Sampled	10/27/2004	10/27/2004	10/27/2004
ANALYTE	NJGWQS	Interim NJGWQS							
Volatile Organic Compounds +10									
Ethylbenzene	700	NC	0.22 U	Not Sampled Product Present	1 U	Not Sampled Product Present	0.77 J	0.54 J	0.22 U
Methyl Tert Butyl Ether	NC	70	29.2		1 U		1.1	1.1	0.41 U
Tertiary Butyl Alcohol	NC	100	102		10 U		10 U	10 U	10 U
Semivolatile Organic Compounds +20									
Acenaphthene	400	NC	0.67 J	Not Sampled Product Present	0.30 U	Not Sampled Product Present	0.30 U	0.30 U	0.30 U
Dibenzofuran	NC	100	0.78 J		0.51 U		0.51 U	0.51 U	
2-Methylnaphthalene	NC	100	3.3		0.74 U		0.74 U	0.74 U	
bis(2-Ethylhexyl)phthalate	30	NC	0.76 U		2.4		0.76 U	0.76 U	0.76 U
Fluorene	300	NC	1.8 J		0.92 U		0.92 U	0.92 U	
Phenanthrene	NC	100	1.8 J		0.24 U		0.24	0.24	0.24 U
Total TICs (VOC+SVOC)									
Total TICs	NC	500	143.7 J	NS	0	NS	38.8 J	39 J	0
Inorganic Compounds									
Aluminum	200	NC	200 U	Not Sampled Product Present	1,290	Not Sampled Product Present	3,930	1,760	200 U
Arsenic	8	NC	28		5 U		22.8	26.3	5 U
Calcium	NC	NC	13,500		21,800		21,800	23,700	5000 U
Chromium	100	NC	10 U		10 U		37.4	17.7	10 U
Copper	1,000	NC	25 U		25 U		27	25 U	25 U
Iron	300	NC	113,000		4,680		58,700	55,400	100 U
Lead	10	NC	3 U		3 U		4	3 U	3 U
Magnesium	NC	NC	11,300		22,100		19,300	29,000	5000 U
Manganese	50	NC	2,030		1,030		2,380	2,660	15 U
Potassium	NC	NC	5000 U		8,340		11,200	10,300	5000 U
Sodium	50,000	NC	43,300	1,600	26,100	27,800	5000 U		
Zinc	5,000	NC	20 U	25.5	75	35	20 U		
Total Petroleum Hydrocarbons									
TPHC*	NC	NC	0.55 U	NS	0.51 U	NS	0.54 U	0.54 U	0.55 U

Notes:

- All results reported in parts per billion (ug/L).
- * - Results reported in parts per million (mg/L).
- NJGWQS - New Jersey Ground Water Quality Standards (N.J.A.C. 7:9-6).
- NS - Not sampled
- ND - Not Detected
- NC - No criteria established.
- U - Not detected above the Sample Quantification Limit (SQL).
- J - Estimated concentration.

Bold values indicate positive detections.

Bold and shaded values meet or exceed NJGWQS (N.J.A.C. 7:9-6).

Table 8
 New Jersey Department of Environmental Protection
Param Petroleum
Burlington, NJ
Hydropunch Results

Analyte	Sample ID	HP 13-14'	HP 18-19'	HP 23-24'	HP 28-29'	HP 33-34'	HP 38-39'	HP 43-44'	HP 46.5-47.5'	HP 51.5-52.5'
		Lab Sample ID	J37792-1	J37792-2	J37792-3	J37792-4	J37792-5	J37792-6	J37792-7	J37792-8
	Sample Date	8/7/2006	8/7/2006	8/7/2006	8/7/2006	8/7/2006	8/7/2006	8/7/2006	8/7/2006	8/7/2006
	2005 NJDEP GWQS									
Acetone	6000	5 U	5 U	5 U	5 U	5 U	5 U	10	5.2	5 U
Benzene	1	1 U	0.25 J	0.33 J	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	700	1 U	0.54 J	0.35 J	0.33 J	0.89 J	0.63 J	1 U	1 U	1 U
Total VOC TICs	500	42 J	28.8 J	9.5 J	10.5 J	0	0	12.6 J	37.6 J	22.4 J

- Notes:
- Results dry weight
 - All results reported in parts per million (mg/kg)
 - U = Not detected above the quantitation limit; the value presented is the sample quantitation limit
 - J = estimated concentration
 - NC = No Criteria established
 - NJDEP GWQS = New Jersey Groundwater Quality Standards N.J.A.C. 7: 9-6
 - **Bolded values indicate positive detections**
 - **Bolded and shaded values indicate that one or more Criteria have been exceeded**

Table 9
 New Jersey Department of Environmental Protection
Param Petroleum
Burlington, NJ
Groundwater Results September 2006

	Location ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6		MW-7	MW-8	MW-9	FB01	FB02	TB	TB
	Sample ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	DUP01	MW-7D	MW-8	MW-9	FB01	FB02	TB	TB
	Lab Sample ID	J40756-3	J40913-5	J40913-2	J40913-7	J40756-6	J40756-4	J40756-5	J40756-1	J40913-6	J40913-3	J40756-2	J40913-1	J40756-7	J40913-4
	Sample Date	9/11/2006	9/12/2006	9/12/2006	9/12/2006	9/11/2006	9/11/2006	9/11/2006	9/11/2006	9/12/2006	9/12/2006	9/11/2006	9/12/2006	9/11/2006	9/12/2006
VOCs		2005 NJDEP GWQS													
Acetone	6000	25 U	N/A	N/A	N/A	5 U	5 U	5 U	5 U	N/A	N/A	5 U	5 U	5 U	5 U
Benzene	1	23.3	642	1 U	122	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon Disulfide	700	5 U	N/A	N/A	N/A	1 U	1 U	1 U	2.0	N/A	N/A	1 U	1 U	1 U	1 U
Ethylbenzene	700	5 U	106	1 U	66.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Tert Butyl Ether	70	2140	137	1.1	17.8	1.1	0.61 J	0.60 J	20.8	10.7	1.9	1 U	1 U	1 U	1 U
Tert-Butyl Alcohol	100	9050	130 U	25 U	25 U	25 U	25 U	25 U	211	25 U	25 U	25 U	25 U	25 U	25 U
Toluene	1000	5 U	25.7	1 U	16.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylene (Total)	1000	5 U	51.4	1 U	41.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SVOCs															
Acenaphthene	400	0.46 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
bis(2-Ethylhexyl)Phthalate	3	2 U	2 U	2 U	1.3 J	2 U	1.3 J	2 U	2 U	1.0 J	2 U	2 U	2 U	2 U	2 U
Fluorene	300	0.80 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Naphthalene	300	2 U	6.0	2 U	5.9	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Phenol	2000	2 U	1.7 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total TICs (VOC+SVOC)															
Total TICs	500	100 J	1523.4 J	0	1948 J	21.3 J	0	0	10 J	0	0	140 J	0	0	0
Metals															
Lead	5	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	4.3	3 U	3 U	3 U	3 U	3 U

Notes:

- All results reported in parts per million (ug/L)
- U = Not detected above the quantitation limit; the value presented is the sample quantitation limit
- J = estimated concentration
- NC = No Criteria established
- NA = sample not tested for this analyte
- NJDEP GWQS = New Jersey Groundwater Quality Standards N.J.A.C. 7: 9-6
- **Bolded values indicate positive detections**
- **Bolded and shaded values indicate that one or more Criteria have been exceeded**

Table 10
 New Jersey Department of Environmental Protection
Param Petroleum
 Burlington, NJ
Groundwater Results December 2006

	Location ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7		MW-8	MW-9	FB01	FB02	TB	TB
	Sample ID	MW1	MW2	MW3	MW4	MW5	MW6	MW7	DUP01	MW8	MW9	FB01	FB02	TB	TB
	Lab Sample ID	J48480-1	J48480-8	J48480-6	J48480-9	J48386-1	J48480-5	J48480-3	J48480-2	J48386-3	J48386-2	J48386-4	J48480-7	J48386-5	J48480-4
	Sample Date	12/6/2006	12/6/2006	12/6/2006	12/6/2006	12/5/2006	12/6/2006	12/6/2006	12/6/2006	12/5/2006	12/5/2006	12/5/2006	12/6/2006	12/5/2006	12/6/2006
VOC	2005 NJDEP GWQC														
Benzene	1	1 U	483	1 U	151	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	700	1 U	80.9	1 U	69.9	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Tert Butyl Ether	70	28.3	65.0	1.3	10.4	0.75 J	0.39 J	14.4	14.9	1.7	0.86 J	1 U	1 U	1 U	1 U
Tertiary Butyl Alcohol	100	6870	50 U	25 U	25 U	25 U	25 U	261	276	25 U	25 U	25 U	25 U	25 U	25 U
Toluene	1000	1 U	24.8	1 U	33.1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	1000	1 U	84.1	1 U	110	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SVOC															
2-Methylnaphthalene	NC	2 U	0.84 J	2 U	1.2 J	N/A	2 U	2 U	2 U	N/A	N/A	2 U	2 U	NA	NA
bis(2-Ethylhexyl)phthalate	3	2 U	2 U	1.9 J	2 U	1.1 J	2 U	2 U	2 U	2.1 U	2.1 U	1.2 J	2 U	NA	NA
Dibenzofuran	NC	0.46 J	5 U	5 U	5 U	N/A	5 U	5 U	5 U	N/A	N/A	5 U	5 U	NA	NA
Fluorene	300	0.94 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.1 U	2.1 U	2 U	2 U	NA	NA
Naphthalene	300	2 U	2.5	2 U	5.1	2 U	2 U	2 U	2 U	2.1 U	2.1 U	2 U	2 U	NA	NA
Total TICs (VOC+SVOC)															
Total TICs	500	60 J	2401.2 J	82.1 J	1850.2	157.9 J	0	17.5 J	13 J	0	0	4.2 J	0	0	0
Other															
Lead	5	3 U	3 U	3 U	3 U	3 U	3 U	3 U	4.2	5.4	3 U	3 U	3 U	NA	NA
Petroleum Hydrocarbons	NC	0.51 U	1.0	0.51 U	1.5	0.51 U	0.51 U	0.51 U	0.51 U	0.52 U	0.52 U	0.51 U	0.52 U	NA	NA

- Notes:
- All results reported in parts per million (ug/L)
 - U = Not detected above the quantitation limit; the value presented is the sample quantitation limit
 - J = estimated concentration
 - NC = No Criteria established
 - NA = sample not tested for this analyte
 - NJDEP GWQS = New Jersey Groundwater Quality Standards N.J.A.C. 7: 9-6
 - **Bolded values indicate positive detections**
 - **Bolded and shaded values indicate that one or more Criteria have been exceeded**

Table 11
 New Jersey Department of Environmental Protection
Param Petroleum
Burlington, NJ
Vertical Gradient in Groundwater

Date	Well Pair	Elevation of Deep Screen	Deep Groundwater Elevation	Elevation of Shallow Screen	Shallow Groundwater Elevation	Vertical Gradient
9/11/2006	MW-1 & MW-7	-42.12	-1.38	-0.81	-0.81	-0.014
12/5/2006	MW-1 & MW-7	-42.12	-0.44	-0.53	-0.53	0.002

All elevations are measured with respect to mean sea level.
 Negative values represent downward flow potential groundwater, and positive values represent upward flow potential groundwater

Table 12
 New Jersey Department of Environmental Protection
Param Petroleum
Burlington, NJ
Surface Water and Sediment Results

Location ID				SW101		SW102
Sample ID				SW101	DUP101	SW102
Lab Sample ID				J37803-1	J37803-3	J37803-2
Sample Date				8/7/2006	8/7/2006	8/7/2006
analyte	Surface Water Quality Standards					
	Aquatic Acute	Aquatic Chronic	Human Health			
Chrysene	NC	NC	3.8	2.1 U	0.43 J	2 U
Benzene	NC	NC	0.15	1 U	0.22 J	0.2 J
Fluoranthene	NC	NC	130	2.1 U	0.61 J	2 U
Pyrene	NC	NC	830	2.1 U	0.6 J	2 U
Total VOC TICs	NC	NC	NC	0	3.8 J	4.2 J
Total SVOC TICs	NC	NC	NC	0	0	36 J
Lead	38	5.4	5	3.8	3 U	3 U
Hardness, Total as CaCO3	NC	NC	NC	154000	158000	158000

Sample ID			SED101	SED102
Lab Sample ID			J37803-4	J37803-5
Sample Date			8/7/2006	8/7/2006
analyte	LEL	SEL		
2-Butanone (MEK)	NC	NC	0.013 U	0.013
Acetone	NC	NC	0.013 U	0.0889
Carbon Disulfide	NC	NC	0.0066 U	0.0011 J
Total VOC TICs	NC	NC	0	239.5 J
Lead	31	250	55.3	345
Petroleum Hydrocarbons	4	10000	1110	517

Notes:

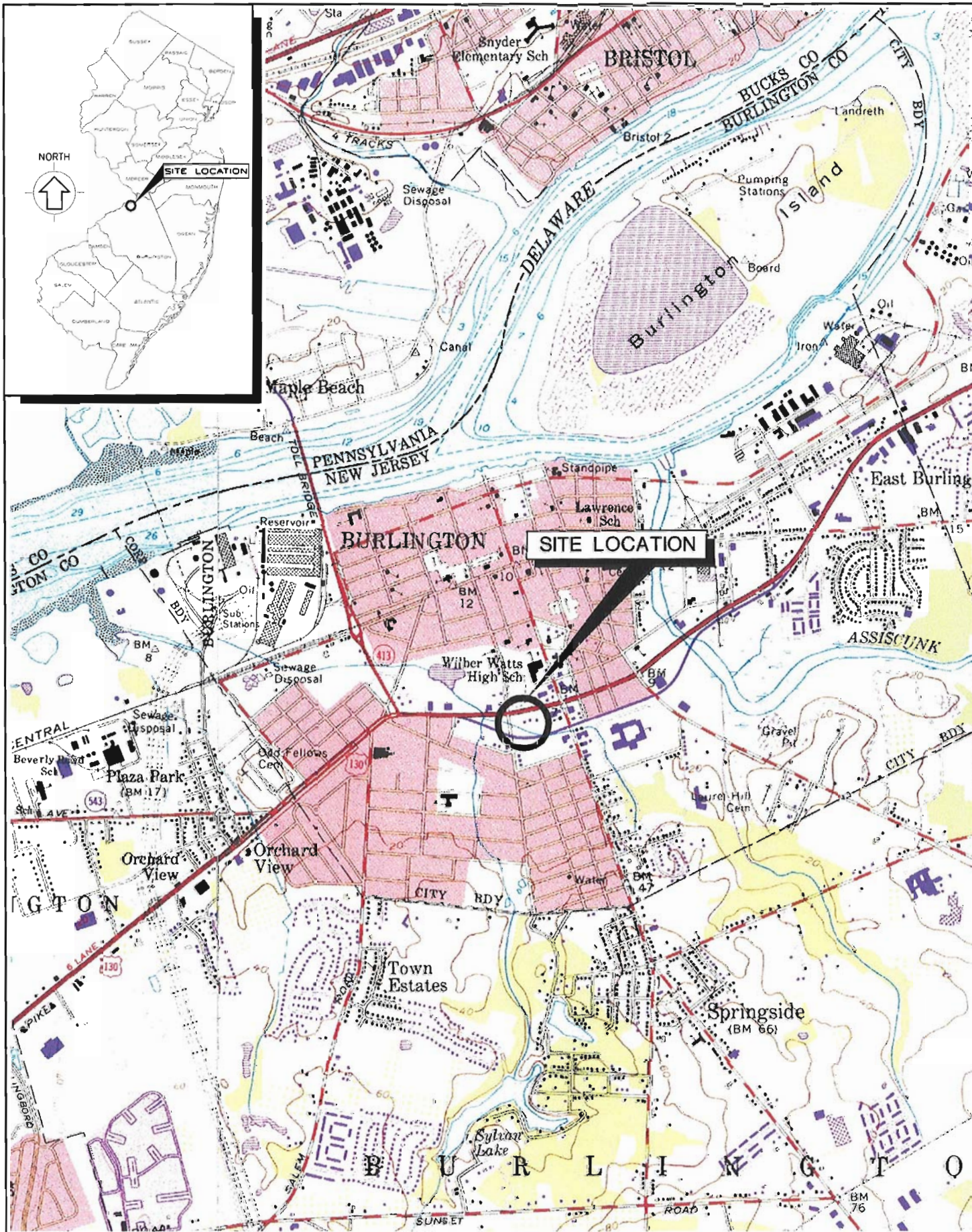
- Results dry weight
- Sediment results reported in parts per million (mg/kg)
- Surface water results reported in parts per million (ug/l)
- U = Not detected above the quantitation limit; the value presented is the sample quantitation limit
- J = estimated concentration
- NC = No Criteria established
- SWQS = NJDEP Surface Water Quality Standards / Criteria (N.J.A.C. 7:9B October 2006)
- SEL = Severe Effects Level
- **Bolded values indicate positive detections**
- **Bolded and shaded values indicate that one or more Criteria have been exceeded**

Table 13
New Jersey Department of Environmental Protection
Param Petroluem
Burlington, New Jersey
IDW Sampling Results

ANALYTE	SAMPLE LOCATION	FIELD SAMPLE ID	IDW-A	IDW-B	IDW-C	IDW-D	DS-1	DS-2	DW-1	DW-2
	LAB ID	DATE COLLECTED								
	MEDIA									
NJSCC										
Inorganic Compounds										
Cadmium		N80687-1	10/14/2004	Soil	0.0059	NA	NA	NA	NA	NA
Lead		N80687-2	10/14/2004	Soil	0.005 U	NA	NA	NA	NA	NA
		N80687-3	10/14/2004	Water	NA	NA	NA	NA	NA	NA
		N80687-4	10/14/2004	Water	NA	NA	NA	NA	NA	NA
		J40912-3	9/12/2006	Soil	500U	NA	NA	NA	NA	NA
		J40912-4	9/12/2006	Soil	500U	NA	NA	NA	NA	NA
		J40912-1	9/12/2006	Water	NA	NA	NA	NA	NA	NA
		J40912-2	9/12/2006	Water	NA	NA	NA	NA	NA	NA
2005 NJGWQS										
Volatile Organic Compounds										
Methyl Tert Butyl Ether			70	NA	NA	18.6	32.1	NA	1.8	16.4
Tert-Butyl Alcohol			100	NA	NA	NA	NA	NA	25U	221

Notes:
All results reported in parts per million (mg/L).
NJGWQS = New Jersey Ground Water Quality Standards (N.J.A.C. 7:9-6).
NJSCC = The Most Stringent of The Residential Direct, Non Residential Direct and Impact to Groundwater Soil Cleanup Criteria was chosen for each analyte
NS = Not sampled
NC = No criteria established.
U = Not detected above the Sample Quantitation Limit (SQL).
J = Estimated concentration.
Bold values indicate positive detections.
Bold and shaded values meet or exceed NJGWQS (N.J.A.C. 7:9-6).

FIGURES



Source: USGS 7.5 Min. Quadrangle, Beverly, N.J., Bristol, PA. - N.J.

Scale: 1" = 2000'



N.J. Department of Environmental Protection

PARAM PETROLEUM SITE, ROUTE 130 AND WOOD STREET
BURLINGTON CITY, BURLINGTON COUNTY, NEW JERSEY

SITE LOCATION MAP

NJDEP CONTRACT No. A-47449

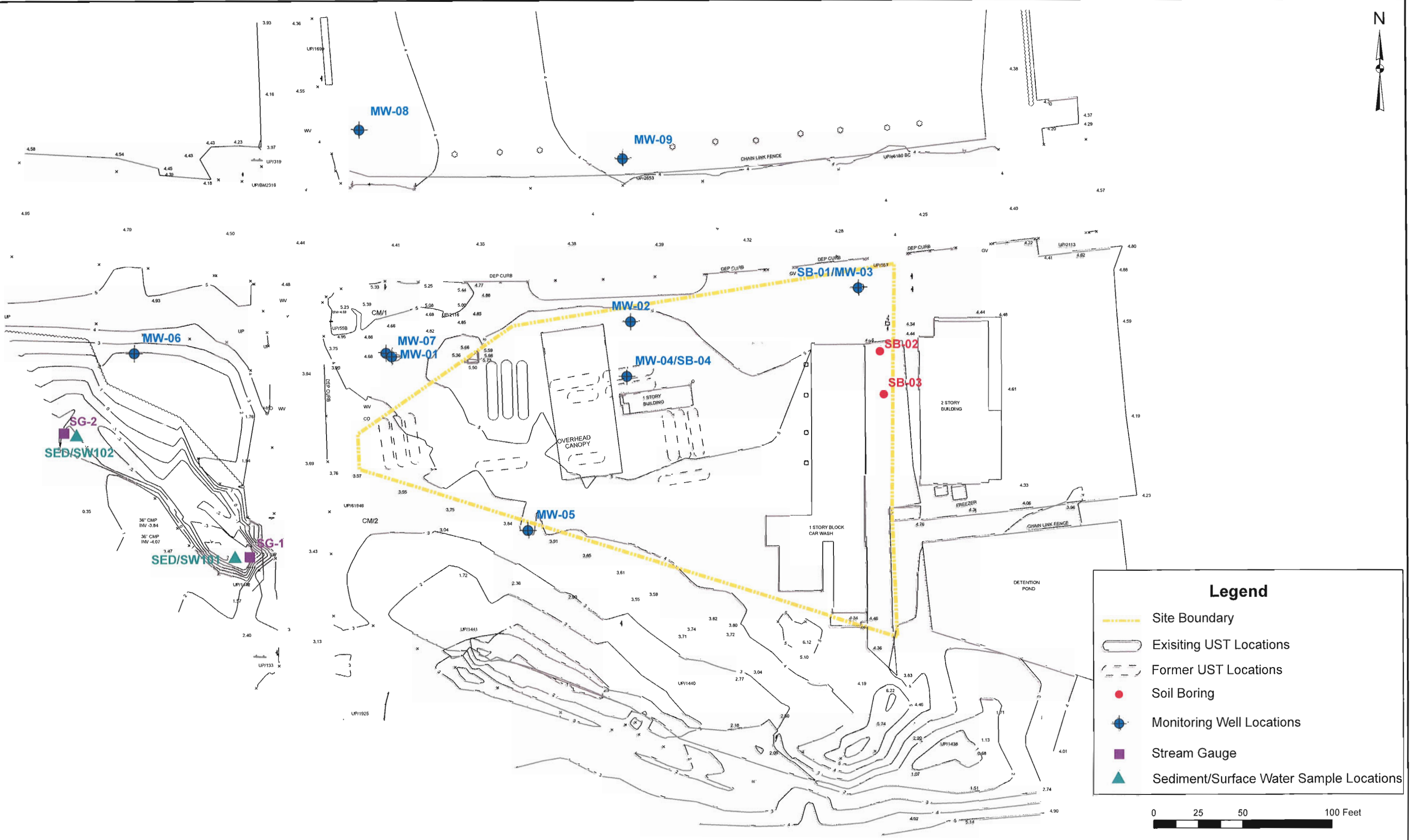


The Louis Berger Group, Inc.
412 Mt Kemble Ave.
Morristown, NJ

FIGURE 1

\DRAWINGS\GRAPHICS\CADDTEMP\NICEP2\PARAM\PPS-LOC-1.dwg Apr 20, 2009

FILE_PATH\NAME\10\JUN05





SAMPLE LOCATION DATE	MW-1	NJGWQS	Interim NJGWQS
7/28/2004			
Tertiary Butyl Alcohol (TBA)	284	NC	100
Aluminum	2,500	200	NC
Arsenic	30	8	NC
Iron	99,800	300	NC
Manganese	1,560	50	NC

SAMPLE LOCATION DATE	MW-2	NJGWQS	Interim NJGWQS
7/28/2004			
Benzene	1,290	1	NC
Methyl Tert Butyl Ether (MTBE)	208	NC	70
Xylenes (Total)	1,760	40	1,000
Aluminum	1,560	200	NC
Arsenic	14.8	8	NC
Iron	51,800	300	NC
Manganese	2,530	50	NC

LEGEND:

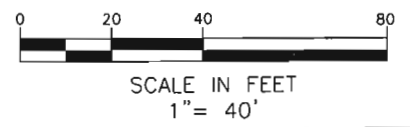
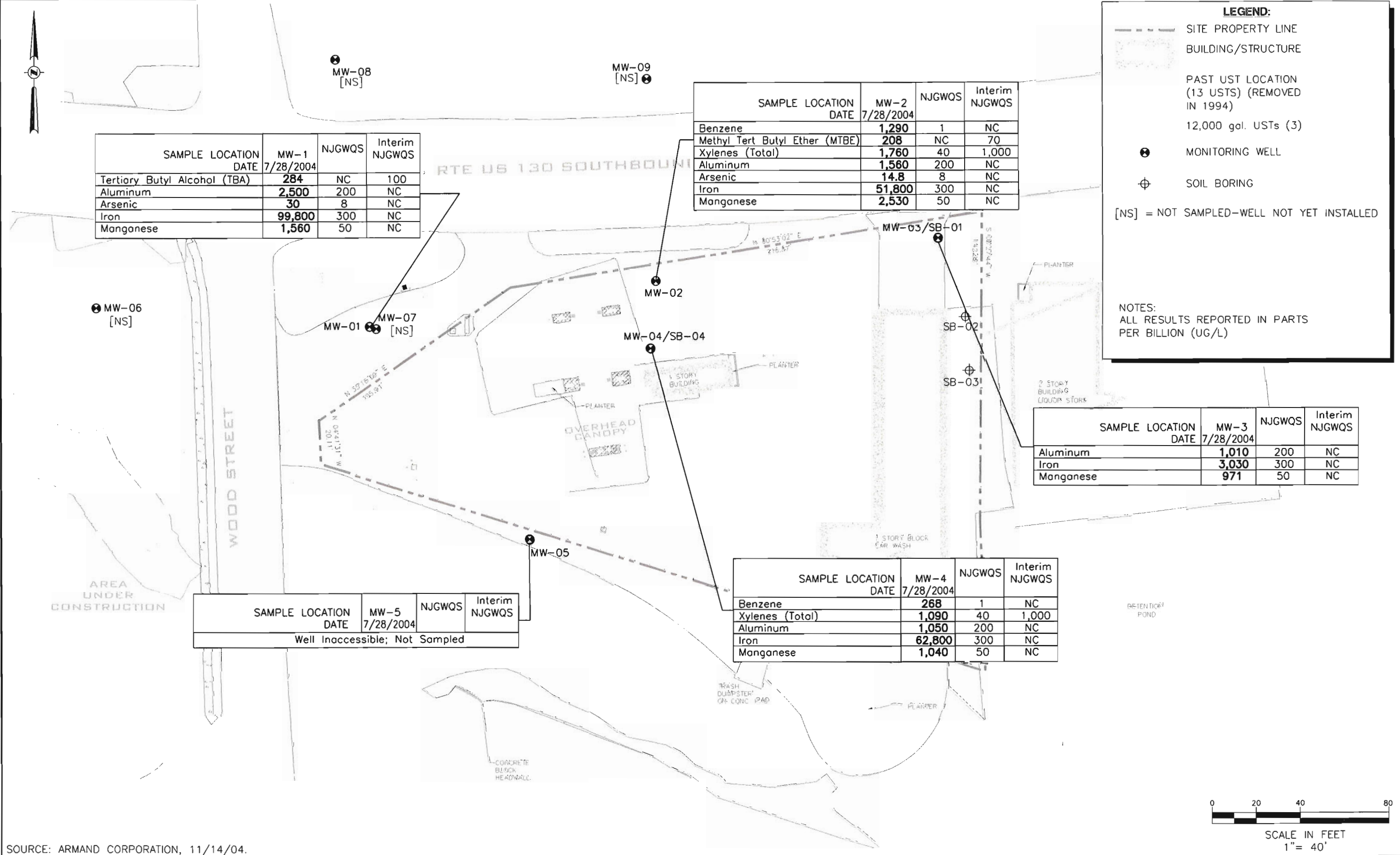
- SITE PROPERTY LINE
- ▭ BUILDING/STRUCTURE
- PAST UST LOCATION (13 USTs) (REMOVED IN 1994)
- 12,000 gal. USTs (3)
- ⊙ MONITORING WELL
- ⊕ SOIL BORING
- [NS] = NOT SAMPLED-WELL NOT YET INSTALLED

NOTES:
ALL RESULTS REPORTED IN PARTS PER BILLION (UG/L)

SAMPLE LOCATION DATE	MW-3	NJGWQS	Interim NJGWQS
7/28/2004			
Aluminum	1,010	200	NC
Iron	3,030	300	NC
Manganese	971	50	NC

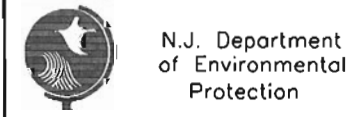
SAMPLE LOCATION DATE	MW-5	NJGWQS	Interim NJGWQS
7/28/2004			
Well Inaccessible; Not Sampled			

SAMPLE LOCATION DATE	MW-4	NJGWQS	Interim NJGWQS
7/28/2004			
Benzene	268	1	NC
Xylenes (Total)	1,090	40	1,000
Aluminum	1,050	200	NC
Iron	62,800	300	NC
Manganese	1,040	50	NC



SOURCE: ARMAND CORPORATION, 11/14/04.

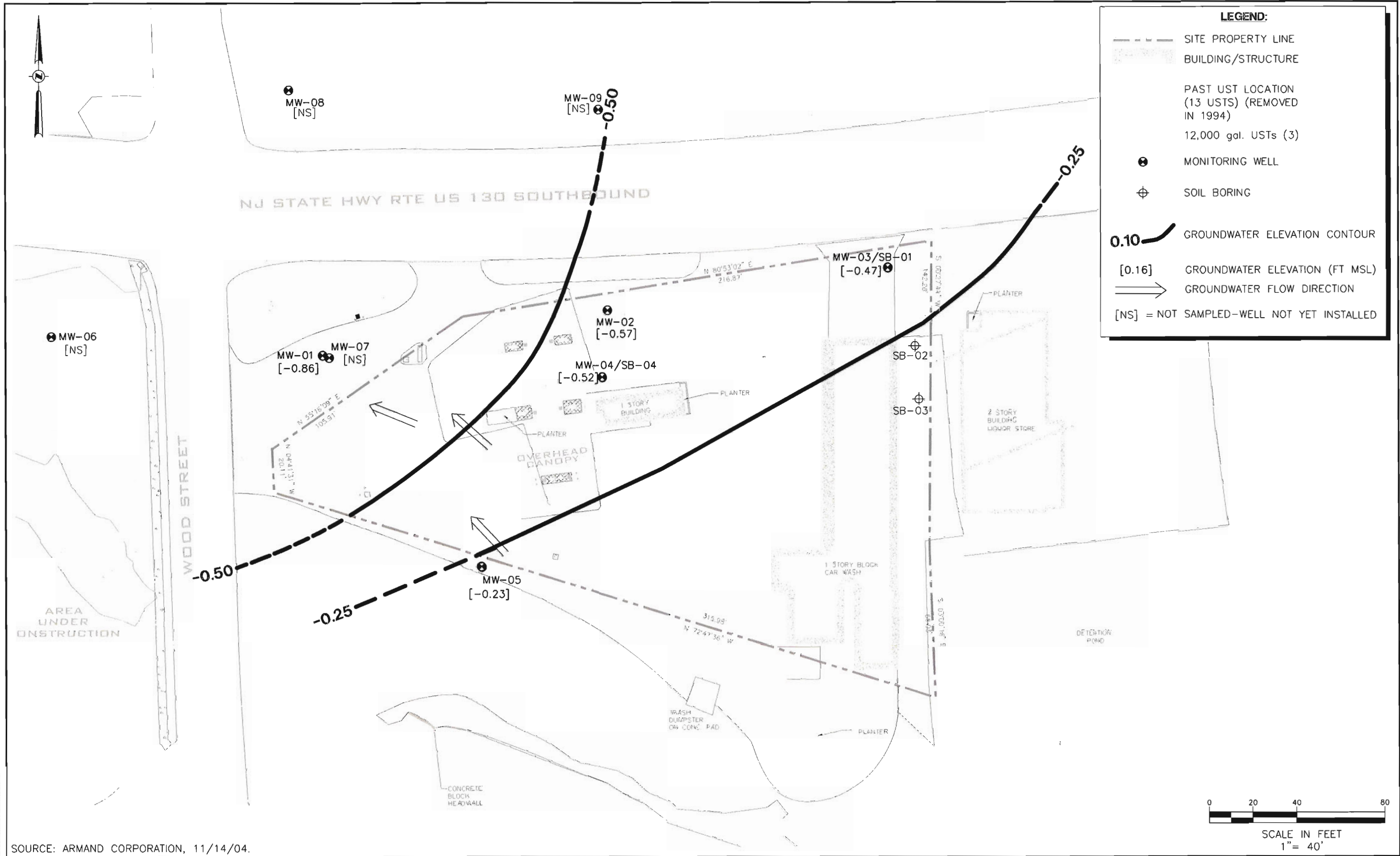
PARAM PETROLEUM, ROUTE 130 & WOOD STREET, BURLINGTON CITY, BURLINGTON COUNTY, NEW JERSEY
GROUNDWATER EXCEEDANCE TABLES - JULY 28, 2004
 NJDEP CONTRACT No. A-47449



The Louis Berger Group, Inc.
 412 Mt Kemble Ave.
 Morristown, NJ

FIGURE 3

PPS-SP1-1/07JAN05/U4



SOURCE: ARMAND CORPORATION, 11/14/04.

PARAM PETROLEUM, ROUTE 130 & WOOD STREET, BURLINGTON CITY, BURLINGTON COUNTY, NEW JERSEY

GROUNDWATER CONTOURS - OCTOBER 14, 2004

NJDEP CONTRACT No. A-47449

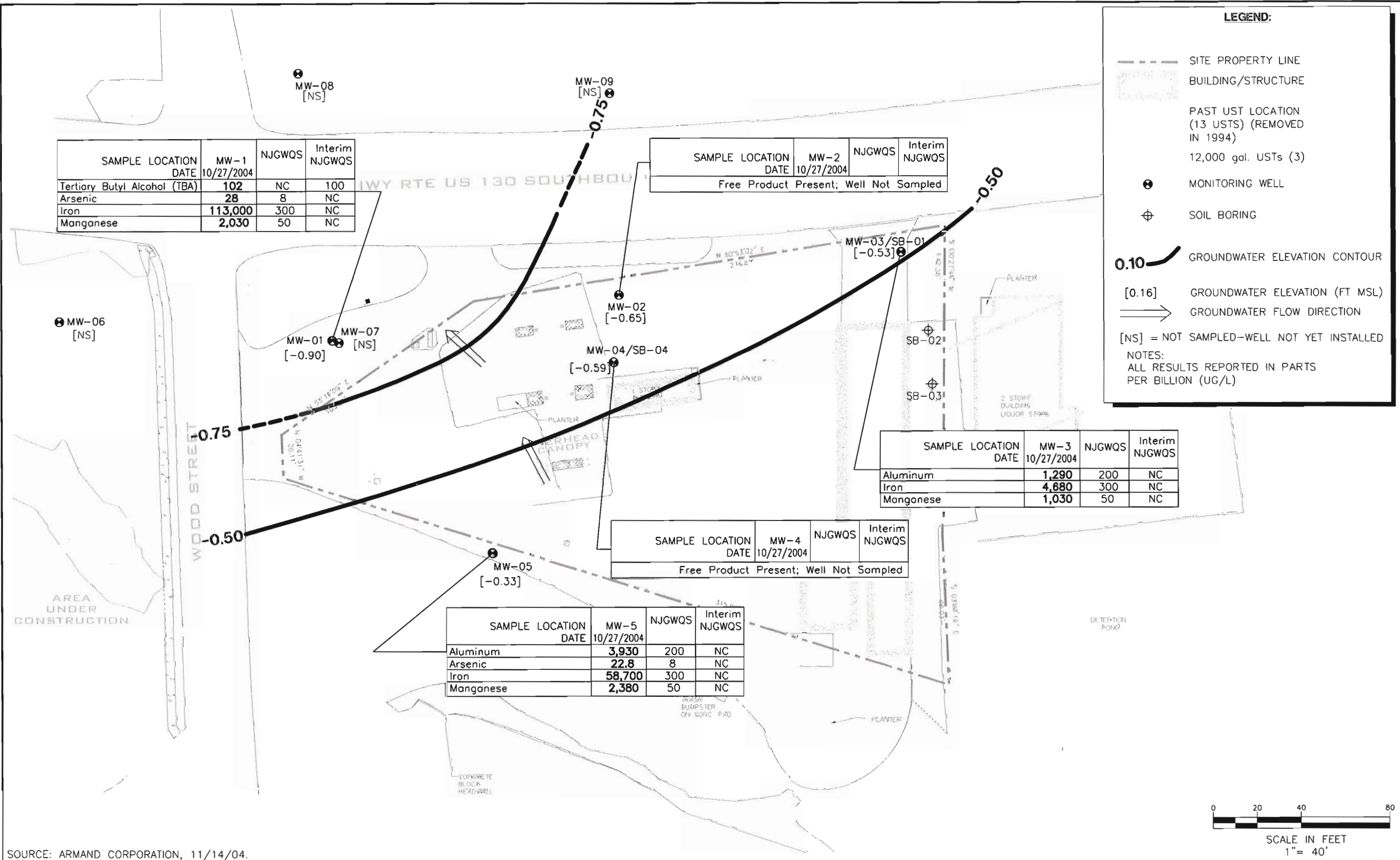


N.J. Department
of Environmental
Protection

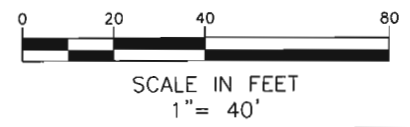
The Louis Berger Group, Inc.
412 Mt Kemble Ave.
Morristown, NJ

FIGURE 4

PPS-SPT-1/07JAN05/U4



SOURCE: ARMAND CORPORATION, 11/14/04.



PP9-SPI-1/07JAND5/U4



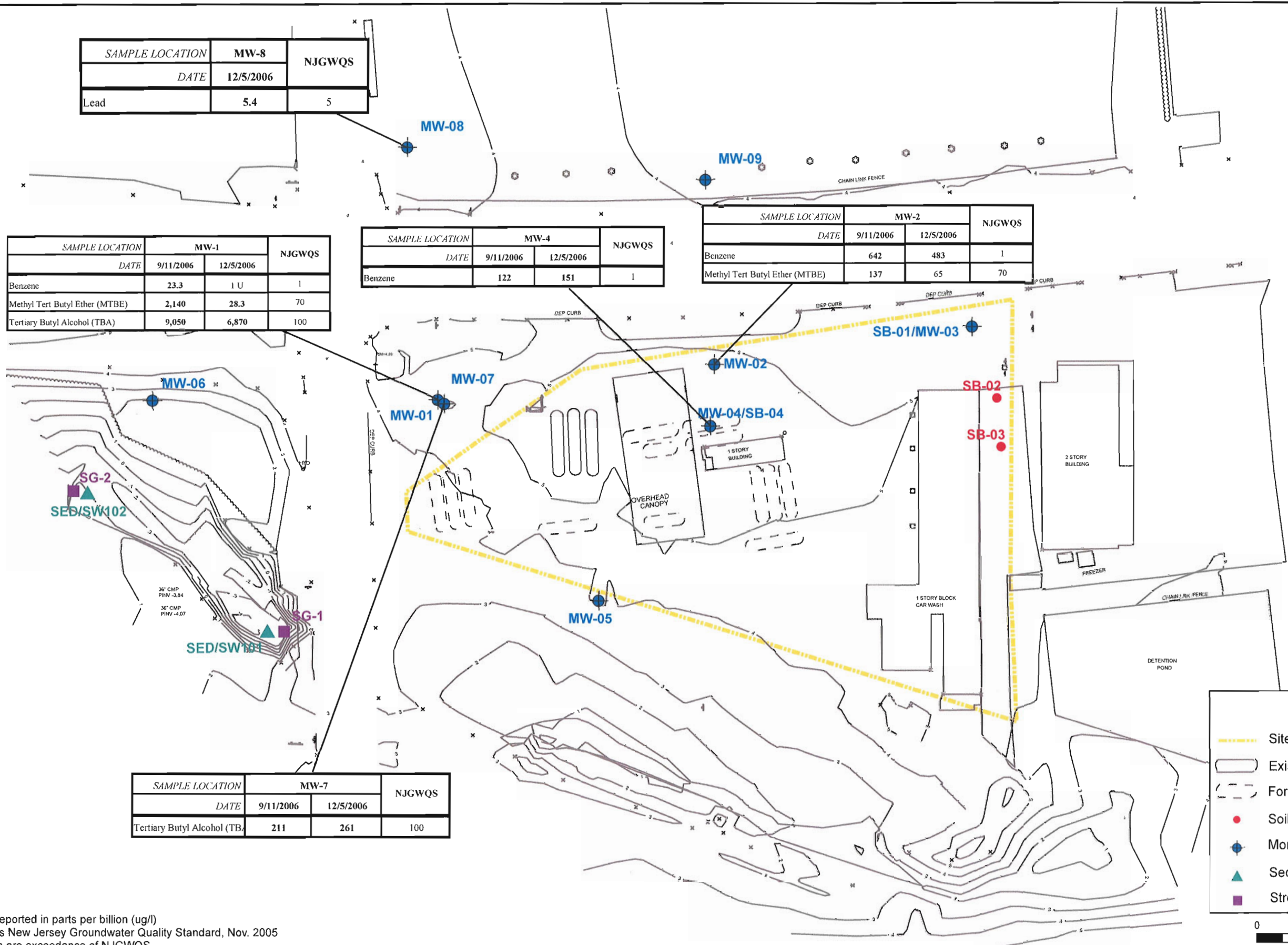
SAMPLE LOCATION	MW-8	NJGWQS
DATE	12/5/2006	
Lead	5.4	5

SAMPLE LOCATION	MW-1		NJGWQS
DATE	9/11/2006	12/5/2006	
Benzene	23.3	1 U	1
Methyl Tert Butyl Ether (MTBE)	2,140	28.3	70
Tertiary Butyl Alcohol (TBA)	9,050	6,870	100

SAMPLE LOCATION	MW-4		NJGWQS
DATE	9/11/2006	12/5/2006	
Benzene	122	151	1

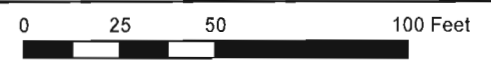
SAMPLE LOCATION	MW-2		NJGWQS
DATE	9/11/2006	12/5/2006	
Benzene	642	483	1
Methyl Tert Butyl Ether (MTBE)	137	65	70

SAMPLE LOCATION	MW-7		NJGWQS
DATE	9/11/2006	12/5/2006	
Tertiary Butyl Alcohol (TB)	211	261	100



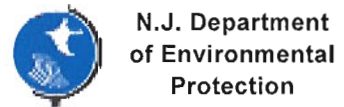
Legend

- - - Site Boundary
- Existing UST Locations
- Former UST Locations
- Soil Boring
- ⊕ Monitoring Well Location
- ▲ Sediment/Surface Water Sample Locations
- Stream Gauge



Note:
 1. All results reported in parts per billion (ug/l)
 2. NJGWQS is New Jersey Groundwater Quality Standard, Nov. 2005
 3. Bold results are exceedance of NJGWQS.

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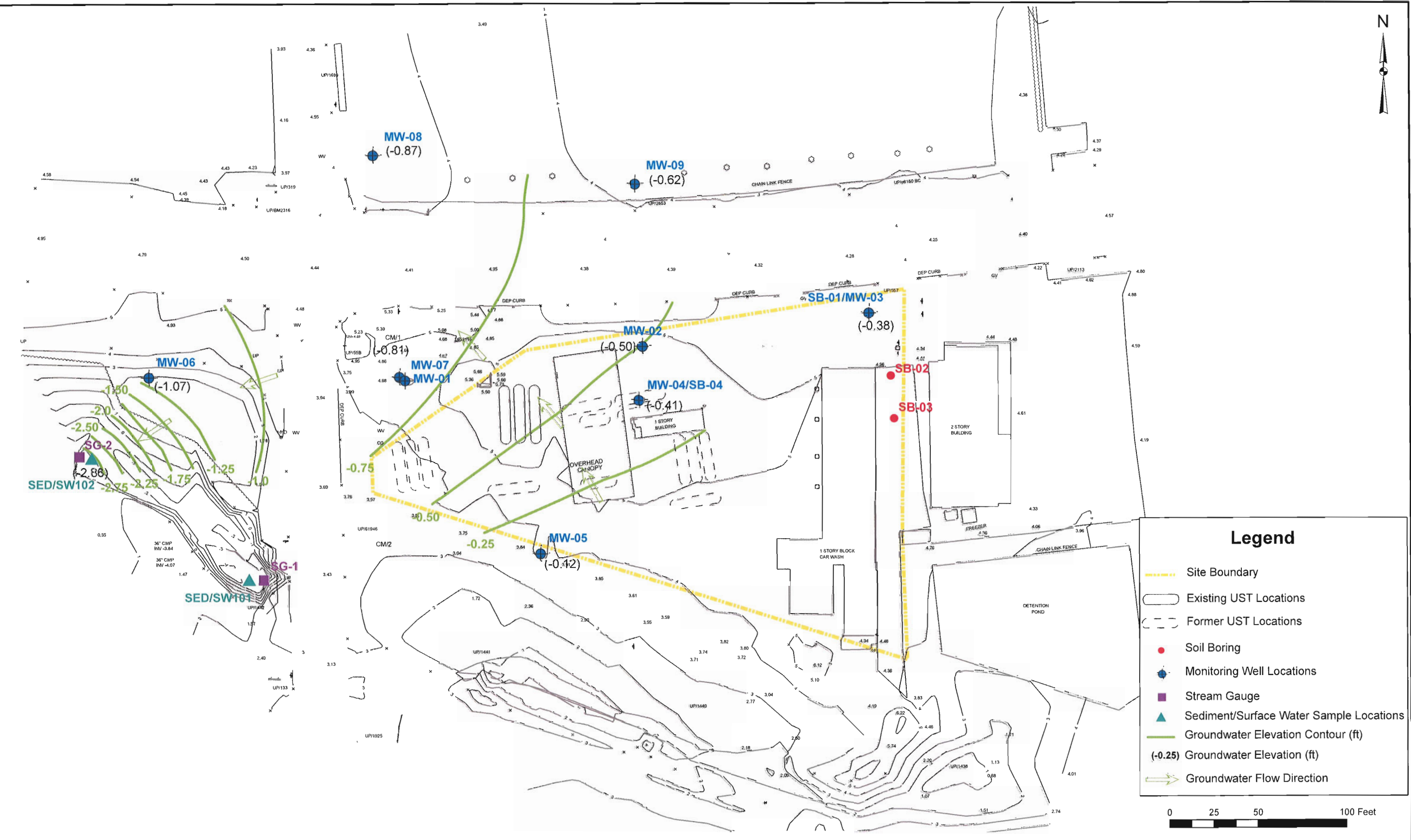


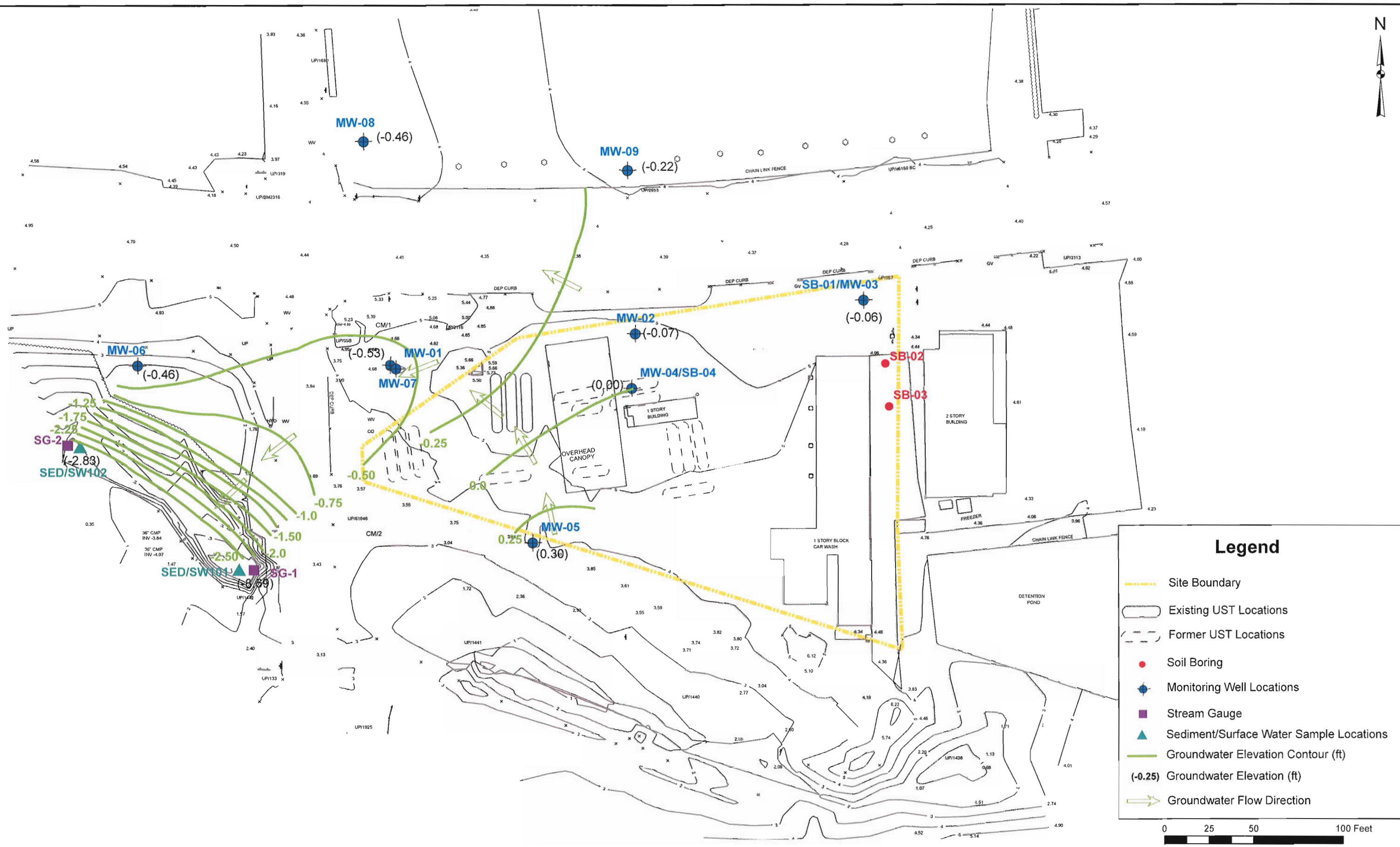
Param Site, Burlington County, New Jersey
GROUNDWATER EXCEEDANCE MAP - 2006
 NJDEP CONTRACT No. A-47449

The Louis Berger Group, Inc.
 30 Vreeland Road
 Florham Park, NJ

FIGURE 6

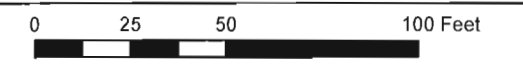
FILE_PATH\NAME\T0JUNGS





Legend

- Site Boundary
- Existing UST Locations
- Former UST Locations
- Soil Boring
- Monitoring Well Locations
- Stream Gauge
- ▲ Sediment/Surface Water Sample Locations
- Groundwater Elevation Contour (ft)
- (-0.25) Groundwater Elevation (ft)
- Groundwater Flow Direction



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APPENDIX A
UST Integrity Testing Results

GETTY PETROLEUM
RT. 130
BURLINGTON, NJ 08016
609-386-1918

10-15-07 8:00 AM

CSLD TEST RESULTS

10-15-07 8:00 AM

T 1: SUPER
PROBE SERIAL NUM 073237

0.2 GAL/HR TEST
PER: 10-14-07 PASS

T 2: NON-HIGHWAY DIESEL
PROBE SERIAL NUM 073239

0.2 GAL/HR TEST
PER: 10-14-07 PASS

T 3: KEROSENE
PROBE SERIAL NUM 068545

0.2 GAL/HR TEST
PER: 10-14-07 PASS

T 4: REGULAR SLAVE
PROBE SERIAL NUM 901470

0.2 GAL/HR TEST
PER: 10-15-07 PASS

T 5: REGULAR MASTER
PROBE SERIAL NUM 055476

0.2 GAL/HR TEST
PER: 10-15-07 PASS

T 6: DIESEL
PROBE SERIAL NUM 901475

0.2 GAL/HR TEST
PER: 10-14-07 PASS

GETTY PETROLEUM
RT. 130
BURLINGTON, NJ 08016
609-386-1918

10-15-07 8:00 AM

CSLD FULLEST LAST PASS

10-15-07 8:00 AM

T 1: SUPER
PROBE SERIAL NUM 073237

0.2 GAL/HR TEST
PER: 10-14-07

T 2: NON-HIGHWAY DIESEL
PROBE SERIAL NUM 073239

0.2 GAL/HR TEST
PER: 10-08-07

T 3: KEROSENE
PROBE SERIAL NUM 068545

0.2 GAL/HR TEST
PER: 10-01-07

T 4: REGULAR SLAVE
PROBE SERIAL NUM 901470

0.2 GAL/HR TEST
PER: 10-13-07

T 5: REGULAR MASTER
PROBE SERIAL NUM 055476

0.2 GAL/HR TEST
PER: 10-11-07

T 6: DIESEL
PROBE SERIAL NUM 901475

0.2 GAL/HR TEST
PER: 10-04-07

APPENDIX B
Geophysical Investigation Results



3 Mystic Lane
Malvern, PA19355
(610) 722-5500 (ph.)
(610) 722-0250 (fax)

June 18, 2004
Ref. No. 04-253-1

Mr. Jeff Farrell
The Louis Berger Group
30 Vreeland Road – Building A
Florham Park, New Jersey 07932

Subject: Geophysical Investigation Results
Param Petroleum Site
Burlington, New Jersey

Dear Mr. Farrell:

Advanced Geological Services (AGS) presents this letter report to The Louis Berger Group (Berger), of Florham Park, New Jersey detailing the methods and results of a geophysical investigation conducted at the Param Petroleum Site in Burlington, New Jersey. The survey included four investigation areas that were defined by Berger personnel in the initial Request for Proposal (RFP). The primary areas of investigation were located to the west, north, east, and south of the service station building. Soil borings and monitoring wells will be installed in these areas at a future date. The field activities for this investigation were completed by AGS on June 7, 2004.

Objectives

The geophysical investigation was conducted to locate buried utility lines, piping runs, or buried obstructions below proposed soil boring and monitoring well locations. It is important to avoid these objects during the drilling phase of the project to prevent personal injury, damage to equipment and the drilling rig, and damage to buried utility lines.

Each survey area was reviewed in the field with Berger personnel, and detailed maps were provided that showed the survey boundaries at each location, and potential buried targets. The geophysical data was analyzed closely for buried anomalies in all sections of the survey area. To meet the objective of the investigation, AGS used the electromagnetic (EM), ground-penetrating radar (GPR), and Radio-frequency (RF) methods.

Survey Grids

The EM and RF data were acquired in the scan mode at each proposed soil boring location, and in other important areas of the site. Using the scan mode, EM and RF measurements were collected and continuously monitored in accessible areas. The data was reviewed in digital format on the

polycorder and instrument panel, and in audible format using a set of headphones or speaker. All suspect EM and RF anomaly locations were marked in the field, and re-surveyed with the GPR equipment to refine the nature, orientation, depth and size of the object or objects that caused the anomaly. The GPR data was critical for target confirmation, and refinement of target characteristics. Reconnaissance GPR profiles were completed in various orientations and lengths to determine general characteristics of the subsurface.

Electromagnetic Methods

The electromagnetic (EM) method uses the principle of electromagnetic induction to measure the variability of electrical conductivity of subsurface materials and the presence of buried metal objects. Significant contrasts in the electrical properties between non-indigenous materials and surrounding soil enable accurate delineation of buried waste materials, fill, and air spaces. The large EM response to metal makes this technique particularly well suited to identifying buried metal objects such as metallic wastes, USTs, buried drums, pipelines, reinforced building foundations, or other metal components of buried structures. It is, however, equally sensitive to metal objects on the ground surface, and it is important to take careful field notes that indicate the position of surface metal to avoid misinterpretation.

The EM-31 ground conductivity meter by Geonics was used to measure the presence and location of subsurface utilities at the site. The EM-31 is a one-man, portable system that induces a sinusoidal, 9.8 kilohertz (kHz) signal into the ground. The transmitted signal induces eddy currents into the subsurface materials, which, in turn, generate a secondary magnetic field that is measured by the receiver coil. Two measurements are recorded at each station point; the in-phase response, which is measured in parts per thousand (ppt), and the quadrature response, which is measured in milliSeimens per meter (mS/m). For the interpretation of non-metallic, high-conductivity targets such as buried wastes, the quadrature response is more discriminative. Metal objects are better indicated with the in-phase response. The EM data can be viewed in contour or profile format, or the data can be acquired in a scan mode.

Ground Penetrating Radar (GPR) Method

The ground-penetrating radar (GPR) method was used to provide subsurface imaging information throughout the areas of investigation. The GPR method is based upon the transmission of repetitive, radio-frequency electromagnetic (EM) pulses into the subsurface. When the transmitted energy of down-going wave contacts an interface of dissimilar electrical character, part of the energy is returned to the surface in the form of a reflected signal. This reflected signal is detected by a receiving transducer and is displayed on the screen of the GPR unit as well as being recorded on the internal hard-drive. The received GPR response remains constant as long as the electrical contrast between media is present and constant. Lateral or vertical changes in the electrical properties of the subsurface result in equivalent changes in the GPR responses. The system records a continuous image of the subsurface by plotting two-way travel time of the

reflected EM pulse versus distance traveled along the ground surface. Two-way travel time values are then converted to depth using known soil velocity functions.

The GPR field procedures involved (1) instrument calibration, (2) test run completion, (3) production profile collection and recording, and (4) data storage for subsequent processing and analysis in the office. Each radar profile was examined for characteristic GPR signatures that may indicate the presence of buried targets. A Geophysical Survey System SIR System 2 and a 400 megahertz (MHz) antenna were used with a recording window of 60 nanoseconds (ns) to provide the required depth penetration and subsurface detail.

Results

AGS has enclosed a site sketch from the site showing the service station building, grass islands, cleared soil boring/monitoring well locations, and buried utilities near the borings and wells. The results of the geophysical survey are summarized below.

Soil Boring and Monitoring Well Clearances

AGS "cleared" 9 proposed monitoring well locations and 7 proposed soil-boring locations for this survey. These locations included a few "alternate" positions that may not be used for drilling purposes. Seven boring locations were cleared in the northeastern part of the survey area. Borings B-1, B-2, and B-3 are the original positions, and borings B-1A, B-4, B-5, and B-6 are alternate positions. Based on the geophysical data, AGS recommends that borings be placed at B-1, B-2, and B-3. AGS detected a storm drain line that runs north-to-south, very close to B-4, B-5, and B-6. Some boring locations had to be moved slightly due to the presence of potential buried obstructions.

The monitoring well locations were surveyed with the 3 instruments, and all appear to be clear. There was some interference near MW-01, however the data suggests that it is clear of obstructions. Some of the well locations had to be moved slightly, due to the possibility of buried objects. A rectangular, buried object was detected and marked out with spray paint near the soda machines next to MW-04. It has a flat upper surface, and is approximately 5 feet by 7 feet in dimension. AGS strongly recommends that no drilling be conducted here.

Each cleared boring and well location exhibited a very low or constant EM31 signal, a reflection-free GPR signature, and no RF responses. All cleared boring locations were marked out with spray paint on the ground.

Buried Utility Lines Near The Soil Borings and Monitoring Wells

AGS traced a water line from the service station to a manhole on the western part of the survey area, to a second manhole to the north, to a third manhole to the northeast, and finally to the east

Mr. Jeff Farrell
June 18, 2004
Page 4

below the grass island. Another manhole was detected that ran to the north from the service station out toward Route 130. Both lines are shown on Figure 1, and were marked in the field with blue spray paint.

Two electric lines were detected near the boring and well locations. In the western part of the site, a north-to-south line was found between two manholes. It appeared to extend to the south below the southern manhole. The second manhole extended from the service station to the north below the grass island. Both electric lines were marked in the field with red spray paint.

A storm drain was detected close to soil borings B-4, B-5, and B-6. It ran north-to-south from a manhole near Route 130. It was marked in the field with spray paint. No other lines were detected near the proposed soil borings or monitoring wells.

Data Quality

The data quality for this project was good. Typically, notable EM, RF, and GPR responses were detected at most anomaly locations, and the information correlated well with one another. It is important to note that some sites can be complicated in terms of past construction practices and miscellaneous activities. The interpretations presented in this report are based on observed geophysical responses, visual observations, and historical information.

If you have any questions, please contact me 610-722-5500. It was a pleasure working with you on this project, and look forward to conducting geophysical investigations for you in the future.

Sincerely,

Peter T. Miller Ph.D., P.G.
Senior Geophysicist, AGS

encl.: Figure 1 – Cleared Soil Boring Locations and Buried Utility Map

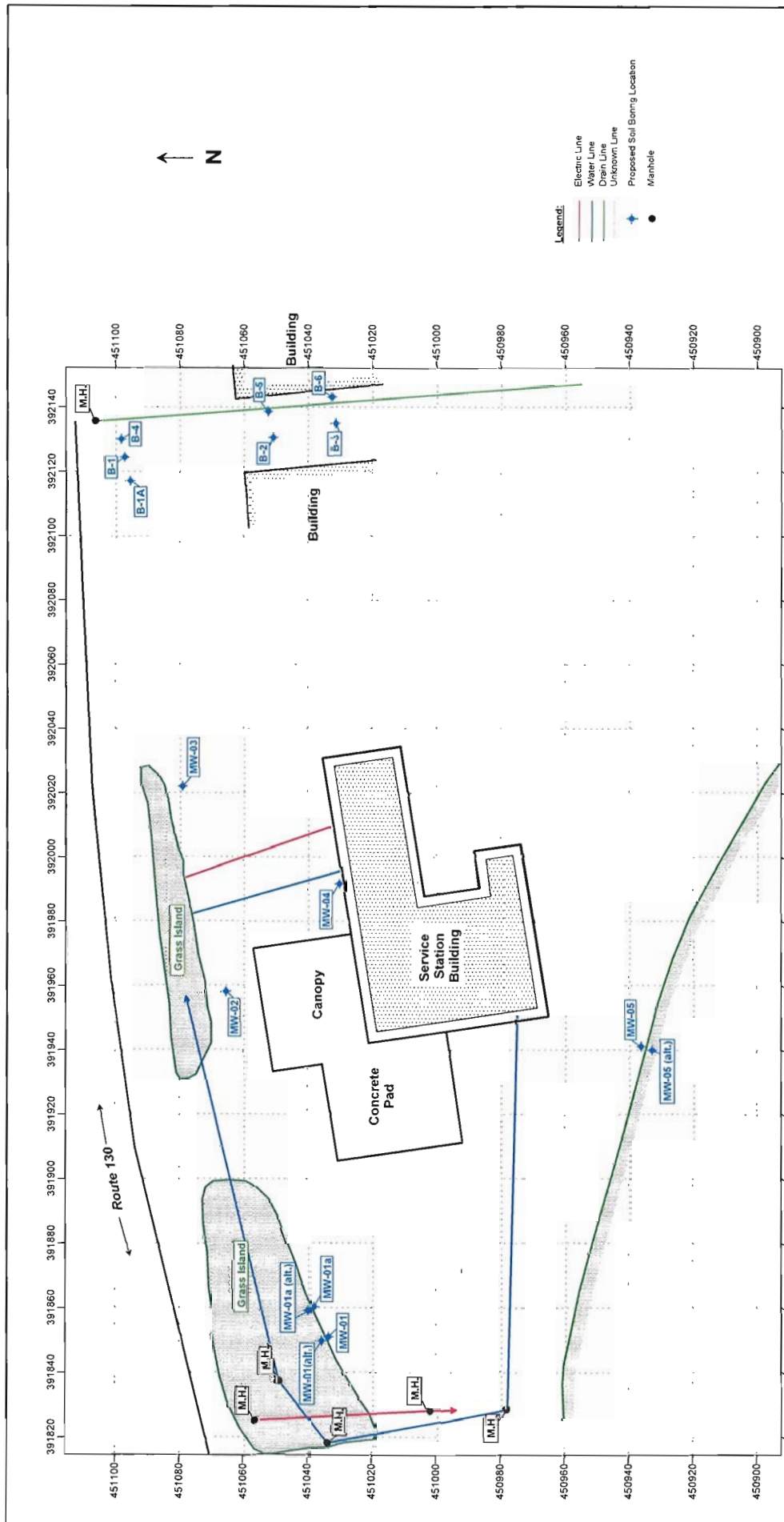


Figure 1
Cleared Soil Boring Locations
and Buried Utility Map
EM, GPR, and RF Survey

The Louis Berger Group, Inc.
 Param Petroleum Site
 Burlington, New Jersey

Date June 18, 2004
 AGS Reference 04-253-1/pm



Notes

- (1) An EM31 unit by Geonics, a SIR2 Ground Penetrating Radar System, and an RD400 radio-frequency instrument by RadioDetection, Inc. were used for the EM, GPR, and RF surveys. The EM and RF data were acquired in a radial pattern over proposed soil boring locations and important areas, and the GPR data was collected in a radial pattern about each proposed soil boring location and in important areas of the site.
- (2) Several buried pipelines were detected in the survey. Their locations and types are shown on the figure.
- (3) All monitoring well and soil boring locations (shown in blue) were surveyed and considered clear to drill. AGS recommends that Berger drill locations B-2 and B-3, rather than alternate locations B-5 and B-6.
- (4) The depth of investigation for the EM, GPR, and RF units are approximately 15 feet, 12 feet, and 4 feet bgs, respectively.
- (5) The reference system used for this survey was the UTM System, 18 North Zone, WGS 1984 Datum coordinates.

APPENDIX C

**Boring/Well Logs, Monitoring Well Records and Permits, Monitoring Well
Certification Forms (A and B)**



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

Page 1 of 1

BORING NO.: SB01

WELL NO.: MW03

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-2263

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 7/6/2004

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 7/6/2004

DRILLING METHOD: 8" ID Hollow Stem Auger

DRILLER: R. Logel

BOREHOLE DATA

WELL DATA

INSPECTOR: E. Mankoff

Diameter (in): 8

Completion: 4" PVC Flushmount

NORTHING: N/A

Total Depth (ft): 12.00

Total Depth (ft): 12

EASTING: N/A

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: N/A

Depth to Water (ft): 5

Depth to Water (ft): 5

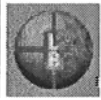
TOC ELEVATION: N/A

Depth to Rock (ft): N/A

Permit No.: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0	FILL	FILL	0.0 - 0.5	0.5	9	<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, trace Silt, trace fine Gravel; dry.	Sand (Fill)
	1					7	287		
	2	8	28.5	Medium dark gray (N4) to medium gray (N5) Clayey SILT, trace fine Sand; wet.					
	3	9			78.4	Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2) Clayey SILT, trace fine Sand; wet.			
	4	FILL	3	105			Moderate yellowish brown (10YR5/4) fine SAND, some Silt; wet.	Clayey Silt Collected SB01C from 3.0-4.0 ft. Collected SB01D from 4.0-4.5 ft. Water Level at 5 ft	
	5	2	68.4		Moderate yellowish brown (10YR5/4) fine SAND, some Silt; wet.				
	6	3		48.8		Moderate yellowish brown (10YR5/4) fine SAND, some Silt; wet.			
	7	4	78.7		Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.		Silty Sand		
	8	5		78.7		Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.			
	9	ML	2		78.7		Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.		
	10	3	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.					
	11	SM			7	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.	Sand	
12	SP	7	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.					



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

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BORING NO.: SB02

WELL NO.: N/A

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-2263

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 7/6/2004

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 7/6/2004

DRILLING METHOD: 8" ID Hollow Stem Auger

DRILLER: R. Logel

BOREHOLE DATA

WELL DATA

INSPECTOR: E. Mankoff

Diameter (in): 8

Completion: N/A

NORTHING: N/A

Total Depth (ft): 8.00

Total Depth (ft): N/A

EASTING: N/A

Sampler: Split Spoon

Screen Length (ft) /Slot (in): N/A

GROUND ELEVATION: N/A

Depth to Water (ft): 5.5

Depth to Water (ft): N/A

TOC ELEVATION: N/A

Depth to Rock (ft): N/A

Permit No.: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM			9	18	Moderate yellowish brown (10YR5/4) fine SAND, and Silt, trace fine Gravel; dry.	Silty Sand Collected SB02A from 0-1.0 ft.
	1					5			Collected SB02B from 1.0-2.0 ft.
	2		SP			9	1.3-7.4	Moderate yellowish brown (10YR5/4) to dark yellowish orange (10YR6/6) medium to fine SAND, trace Silt, trace fine Gravel; dry.	Sand Collected SB02C from 2.0-3.0 ft.
	3					2			Collected SB02D from 3.0-4.0 ft.
	4		SM			2	1.4	Moderate yellowish brown (10YR5/4) fine SAND, and Silt; wet.	Silty Sand Collected SB02E from 4.5-5.0 ft.
	5					2			Water Level at 5.5 ft
	6		SM			4	1.2	Moderate yellowish brown (10YR5/4) fine SAND, and Silt; wet.	
	7					4			
	8					3			End of Boring at 8 ft



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

Page 1 of 1

BORING NO.: MW02

WELL NO.: MW02

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-2263

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 7/7/2004

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 7/7/2004

DRILLING METHOD: 8" ID Hollow Stem Auger

DRILLER: R. Logel

BOREHOLE DATA

WELL DATA

Diameter (in): 8

Completion: 4" PVC Flushmount

INSPECTOR: E. Mankoff

Total Depth (ft): 12.00

Total Depth (ft): 12

NORTHING: N/A

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

EASTING: N/A

Depth to Water (ft): 7

Depth to Water (ft): 7

GROUND ELEVATION: N/A

Depth to Rock (ft): N/A

Permit No.: N/A

TOC ELEVATION: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				<1	Asphalt parking lot	Asphalt
	1		SM				<1	Pale brown (5YR5/2) to moderate yellowish brown (10YR5/4) fine SAND, and Silt, some coarse to fine Gravel; dry.	Gravelly Silty Sand
	2								
	3								
	4								
	5		SM			3	<1	Moderate yellowish brown (10YR5/4) fine SAND, some Silt, trace medium to fine Gravel; moist.	Silty Sand
	6					4			
	7					4			
	7					7			Water Level at 7 ft
	8		SM				3914	Dark greenish gray (5GY4/1) fine SAND, and Silt; wet.	Strong odor
	9								
	10		SP			4	<1	Light brown (5YR5/6) coarse to fine SAND, trace Silt, little medium to fine Gravel; wet.	Sand
	11					6			
	12					8			
	12					12			End of Boring at 12 ft



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

Page 1 of 1

BORING NO.: MW02

WELL NO.: MW02

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-2263

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 7/7/2004

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 7/7/2004

DRILLING METHOD: 8" ID Hollow Stem Auger

DRILLER: R. Logel

BOREHOLE DATA

WELL DATA

INSPECTOR: E. Mankoff

Diameter (in): 8

Completion: 4" PVC Flushmount

NORTHING: N/A

Total Depth (ft): 12.00

Total Depth (ft): 12

EASTING: N/A

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: N/A

Depth to Water (ft): 7

Depth to Water (ft): 7

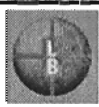
TOC ELEVATION: N/A

Depth to Rock (ft): N/A

Permit No.: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT				<1	Asphalt parking lot	Asphalt
	1		SM				<1	Pale brown (5YR5/2) to moderate yellowish brown (10YR5/4) fine SAND, and Silt, some coarse to fine Gravel; dry.	Gravelly Silty Sand
	2								
	3								
	4								
	5		SM			3	<1	Moderate yellowish brown (10YR5/4) fine SAND, some Silt, trace medium to fine Gravel; moist.	Silty Sand
	6					4			
	7					4			
	7					7			Water Level at 7 ft
	8		SM				3914	Dark greenish gray (5GY4/1) fine SAND, and Silt; wet.	Strong odor
	9								
	10		SP			4	<1	Light brown (5YR5/6) coarse to fine SAND, trace Silt, little medium to fine Gravel; wet.	Sand
	11					6			
	12					8			
	12					12			End of Boring at 12 ft



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

Page 1 of 1

BORING NO.: SB01

WELL NO.: MW03

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-2263

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 7/6/2004

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 7/6/2004

DRILLING METHOD: 8" ID Hollow Stem Auger

DRILLER: R. Logel

BOREHOLE DATA

WELL DATA

INSPECTOR: E. Mankoff

Diameter (in): 8

Completion: 4" PVC Flushmount

NORTHING: N/A

Total Depth (ft): 12.00

Total Depth (ft): 12

EASTING: N/A

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: N/A

Depth to Water (ft): 5

Depth to Water (ft): 5

TOC ELEVATION: N/A

Depth to Rock (ft): N/A

Permit No.: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0	FILL	FILL	0.0 - 0.5	0.0 - 0.5	9	<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, trace Silt, trace fine Gravel; dry.	Sand (Fill) Collected SB01A from 1.5-2.0 ft.
	7					7	287		
	1	8	28.5	Medium dark gray (N4) to medium gray (N5) Clayey SILT, trace fine Sand; wet.	Clayey Silt Collected SB01C from 3.0-4.0 ft.				
	2	9				78.4	Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2) Clayey SILT, trace fine Sand; wet.	Collected SB01D from 4.0-4.5 ft.	
	2	FILL	FILL	3	3				105
	3	2	2	68.4	Moderate yellowish brown (10YR5/4) fine SAND, some Silt; wet.	Silty Sand			
	3	ML	ML				3	3	48.8
	4	ML	ML	2	2	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.	Sand	
	5	5	5	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.				Sand
	6	SM	SM			3	3	78.7	
	7	2	2	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.	Sand			
	7	4	4				78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.	Sand
8	5	5	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.	Sand				
8	7	7				78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.	Sand	
10	SP	SP	7	7	78.7				Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.
11	8	8	78.7	Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.		Sand			
12	8	8			78.7		Dusky brown (5YR2/2) to moderate yellowish brown (10YR5/4) medium to fine SAND, trace Silt; wet.	Sand	



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

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BORING NO.: SB-04

WELL NO.: MW04

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-2263

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 7/6/2004

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 7/6/2004

DRILLING METHOD: 8" ID Hollow Stem Auger

DRILLER: R. Logel

BOREHOLE DATA

WELL DATA

INSPECTOR: E. Mankoff

Diameter (in): 8

Completion: 4" PVC Flushmount

NORTHING: N/A

Total Depth (ft): 13.0

Total Depth (ft): 12

EASTING: N/A

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: N/A

Depth to Water (ft): 5.5

Depth to Water (ft): 5.5

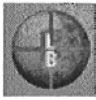
TOC ELEVATION: N/A

Depth to Rock (ft): N/A

Permit No.: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT			7		Asphalt parking lot	Asphalt
	1		SM			7	2.0	Moderate yellowish brown (10YR5/4) to dark yellowish orange (10YR6/6) coarse to fine SAND, some Silt&Clay, little coarse to fine Gravel; dry.	Silty Sand Collected SB04A from 1.0-2.0 ft. Collected SB04B from 2.0-3.0 ft. Collected SB04C from 3.0-4.0 ft. Collected SB04D from 4.5-5.0 ft.
	2		SM			6	5.6		
	3					8		Moderate yellowish brown (10YR5/4) to dark yellowish brown (10YR4/2) medium to fine SAND, some Silt, trace coarse to fine Gravel; dry.	Water Level at 5.5 ft
	4		SM			8	3.6		
	5					16		Moderate yellowish brown (10YR5/4) to black (N1) medium to fine SAND, some Silt, trace coarse to fine Gravel; wet.	Slight odor
	6		SM			17			
	7					8		Olive gray (5Y4/1) medium to fine SAND, some Silt; wet.	Slight odor
	8		SM			5			
	9					5		Olive gray (5Y4/1) medium to fine SAND, some Silt; wet.	Slight odor
	10		SM			6			
	11						677	Olive gray (5Y4/1) medium to fine SAND, some Silt; wet.	Slight odor
	12		SM						
	13						NM		End of Boring at 13 ft



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

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BORING NO.: MW05

WELL NO.: MW05

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-2263

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 7/7/2004

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 7/7/2004

DRILLING METHOD: 8" ID Hollow Stem Auger

DRILLER: R. Logel

BOREHOLE DATA

WELL DATA

INSPECTOR: E. Mankoff

Diameter (in): 8

Completion: 4" PVC Flushmount

NORTHING: N/A

Total Depth (ft): 12.00

Total Depth (ft): 12

EASTING: N/A

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: N/A

Depth to Water (ft): 6

Depth to Water (ft): 6

TOC ELEVATION: N/A

Depth to Rock (ft): N/A

Permit No.: N/A

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ASPHALT					Asphalt parking lot	Asphalt
	0		ML				10.9	Oliver gray (5Y4/1) Clayey SILT, trace fine Sand; dry.	Clayey Silt
	1								
	2								
	3								
	4								
	5		CL			1	<1	Olive gray (5Y4/1) to moderate yellowish brown (10YR5/4) Silty CLAY, trace fine Sand; wet.	Silty Clay, slight odor
	6					2			Water Level at 6 ft
	7					2			
	8					2			
	9								
	10		ML			1	<1	Olive gray (5Y4/1) Clayey SILT, and medium to fine Gravel; wet.	Gravelly Clayey Silt
	11					2			
	11		SC			3	<1	Grayish blue green (5BG5/2) coarse to fine SAND, some Clay, trace fine Gravel; wet.	Clayey Sand
	12					3			End of Boring at 12 ft



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

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BORING NO.: MW06

WELL NO.: MW06

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-8846

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 8/9/2006

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 8/9/2006

DRILLING METHOD: Hollow Stem Auger

DRILLER: C. Conner

BOREHOLE DATA

WELL DATA

INSPECTOR: J. McGarry

Diameter (in): 6 1/4

Completion: 4" PVC Flushmount

NORTHING: 450990

Total Depth (ft): 12.00

Total Depth (ft): 12

EASTING: 391710

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: 1.84

Depth to Water (ft): 6

Depth to Water (ft): 3.01

TOC ELEVATION: 1.32

Depth to Rock (ft): N/A

Permit No.: 2700017866

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ML			4	<1	Dark yellowish brown (10YR4/2) SILT, little medium to fine Sand, trace fine Gravel; dry.	Silt
	1		ML			7	<1	Dark yellowish brown (10YR4/2) SILT, some medium to fine Sand, trace fine Gravel; moist .	Sandy Silt
	2		ML			3	<1	Dark yellowish brown (10YR4/2) SILT, some medium to fine Sand, trace fine Gravel; moist .	
	3		ML						
	4		ML						
	5		SP-SM				<1	Greenish gray (5GY6/1) coarse to fine SAND, little Silt, trace fine Gravel; moist .	Sand



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

PROJECT NO.: JG-8846

BORING NO.: MW06

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WELL NO.: MW06

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	6		SP-SM			4	<1	Greenish gray (5GY6/1) coarse to fine SAND, little Silt, trace fine Gravel; saturated.	Σ Water Level at 6 ft. bgs.
	7								
	8		SP-SM			4	<1	Greenish gray (5GY6/1) coarse to fine SAND, little Silt, trace fine Gravel; saturated.	
	9		SP-SM				<1	Greenish gray (5GY6/1) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	
	10		SM			2	<1	Medium gray (N5) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	
	11								End of Boring at 12 ft.
	12								



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

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BORING NO.: MW07

WELL NO.: MW07

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-8846

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 8/9/2006

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 8/10/2006

DRILLING METHOD: Hollow Stem Auger

DRILLER: C. Conner

BOREHOLE DATA

WELL DATA

INSPECTOR: J. McGarry

Diameter (in): 6 1/4

Completion: 4" PVC Flushmount

NORTHING: 450990

Total Depth (ft): 52.00

Total Depth (ft): 52

EASTING: 391850

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: 4.88

Depth to Water (ft): 10

Depth to Water (ft): 5.93

TOC ELEVATION: 4.65

Depth to Rock (ft): N/A

Permit No.: 2700017865

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SP-SM				<1	Dusky yellowish brown (10YR2/2) coarse to fine SAND, little Silt, little medium to fine Gravel; dry.	Sand
	1		SM				<1	Dusky yellowish brown (10YR2/2) coarse to fine SAND, some Silt, little medium to fine Gravel; dry.	Silty Sand
	2		SM			19	<1	Dusky yellowish brown (10YR2/2) coarse to fine SAND, some Silt, little medium to fine Gravel; dry.	
	3		ML				<1	Dark yellowish brown (10YR4/2) SILT, some coarse to fine Sand, trace fine Gravel; moist.	Sandy Silt
	4		ML			2	124	Dark yellowish brown (10YR4/2) SILT, little coarse to fine Sand, trace fine Gravel; moist.	Silt. Mild petroleum odor
	5								
	6		ML			3	11.1	Dark yellowish brown (10YR4/2) SILT, little coarse to fine Sand, trace fine Gravel; moist.	Silt. Faint petroleum odor
	7		SP-SM				7.3	Medium gray (N5) coarse to fine SAND, little Silt, trace fine Gravel; moist.	Sand. Faint petroleum odor



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

PROJECT NO.: JG-8846

BORING NO.: MW07

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WELL NO.: MW07

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	8		SP-SM			4	19.2	Medium gray (N5) coarse to fine SAND, little Silt, trace fine Gravel; moist.	Faint petroleum odor
	9								
	10		SP-SM				<1	Light brown (5YR5/6) coarse to fine SAND, little Silt, trace fine Gravel; moist.	Water Level at 10 ft. bgs.
	11		SP-SM			3	<1	Grayish olive green (5GY3/2) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	
	12		SM			8	<1	Grayish olive green (5GY3/2) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	Gravelly Sand
	13		SP-SM				<1	Grayish olive green (5GY3/2) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	Sand
	14		SP			woh	<1	Dark yellowish brown (10YR4/2) coarse to fine SAND, trace Silt, trace fine Gravel; saturated.	
	15								
	16		SP			7	<1	Dark yellowish brown (10YR4/2) coarse to fine SAND, trace Silt, trace fine Gravel; saturated.	
	17		SM				<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	Gravelly Sand
	18		SP-SM			42	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	Sand
	19		SM				<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	Gravelly Sand



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30 Vreeland Road, Building A
Florham Park, NJ 07932

PROJECT NO.: JG-8846

BORING NO.: MW07

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WELL NO.: MW07

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	20		SM			11	<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	
	21								
	22		SM			14	<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	
	23								
	24		CL			6	<1	Medium dark gray (N4) CLAY, little Silt, trace coarse to fine Gravel; saturated.	Clay
	25		CL				<1	Medium dark gray (N4) CLAY, little Silt; saturated.	
	26		CL			7	<1	Medium dark gray (N4) CLAY, little Silt; saturated.	
	27								
	28		ML			4	<1	Medium dark gray (N4) Clayey SILT, some coarse to fine Sand; saturated.	Clayey Silt
	29		CL				<1	Medium dark gray (N4) CLAY, little Silt, trace coarse to fine Sand; saturated.	Clay
	30		ML			11	<1	Medium dark gray (N4) Clayey SILT, little coarse to fine Sand; saturated.	Clayey Silt
	31		SM				<1	Medium light gray (N6) coarse to fine SAND, some Silt; saturated.	Silty Sand



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

PROJECT NO.: JG-8846

BORING NO.: MW07

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WELL NO.: MW07

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
			SM			7	<1	Medium light gray (N6) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	
	45		ML				<1	Pale yellowish brown (10YR6/2) SILT, little coarse to fine Sand; saturated.	Silt
	46		ML				<1	Pale yellowish brown (10YR6/2) SILT, and coarse to fine Sand; saturated.	Sandy Silt
	47		SM			20	<1	Pale yellowish brown (10YR6/2) coarse to fine SAND, some Silt ; saturated.	Silty Sand
	48		SP-SM			36	<1	Medium light gray (N6) coarse to fine SAND, little Silt ; saturated.	Sand
	49								
	50								
	51								
	52								End of Boring at 52 ft.



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

Page 1 of 2

BORING NO.: MW08

WELL NO.: MW08

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-8846

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 8/8/2006

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 8/8/2006

DRILLING METHOD: Hollow Stem Auger

DRILLER: C. Conner

BOREHOLE DATA

WELL DATA

INSPECTOR: J. McGarry

Diameter (in): 6 1/4

Completion: 4" PVC Flushmount

NORTHING: 451120

Total Depth (ft): 14.00

Total Depth (ft): 12.0

EASTING: 391840

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: 4.12

Depth to Water (ft): 6

Depth to Water (ft): 5.05

TOC ELEVATION: 3.58

Depth to Rock (ft): N/A

Permit No.: 2700017868

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		ML			5	<1	Dark yellowish brown (10YR4/2) SILT, some medium to fine Sand, little medium to fine Gravel; dry.	Sandy Silt
	1		ML			3	<1	Moderate yellowish brown (10YR5/4) SILT, some medium to fine Sand, little medium to fine Gravel; moist .	
	2		ML			3	<1	Dark yellowish brown (10YR4/2) SILT, some medium to fine Sand, little medium to fine Gravel; moist .	
	3		ML			3	<1	Moderate yellowish brown (10YR5/4) medium to fine SAND, little Silt, trace fine Gravel; moist .	Sand
	4		SP-SM				<1		



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

PROJECT NO.: JG-8846

BORING NO.: MW08

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WELL NO.: MW08

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
Well	6	[Pattern]	SP-SM	[Cross-hatch]	[Diagonal]	3	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, trace fine Gravel; saturated.	∇ Water Level at 6 ft. bgs.
	7		SP-SM			5	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, trace fine Gravel; saturated.	
	8		SP-SM			3	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	
	9		SP-SM			3	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	
	10		SP-SM			3	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	
	11	[Pattern]	SM	[Cross-hatch]	[Diagonal]		<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, some Silt, trace fine Gravel; saturated.	Silty Sand
	12	[Pattern]	SM	[Cross-hatch]	[Diagonal]	27	<1	Dark yellowish orange (10YR6/6) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	Gravelly Sand
	13	[Pattern]		[Cross-hatch]	[Diagonal]				
	14	[Pattern]		[Cross-hatch]	[Diagonal]				End of Boring at 14 ft.



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

Drilling Log

Page 1 of 2

BORING NO.: MW09

WELL NO.: MW09

CLIENT: New Jersey Department of Environmental Protection

PROJECT NO.: JG-8846

PROJECT: Param Petroleum, Burlington, NJ

DATE STARTED: 8/8/2006

DRILLING CONTRACTOR: Advanced Drilling Co.

DATE FINISHED: 8/8/2006

DRILLING METHOD: Hollow Stem Auger

DRILLER: C. Conner

BOREHOLE DATA

WELL DATA

INSPECTOR: J. McGarry

Diameter (in): 6 1/4

Completion: 4" PVC Flushmount

NORTHING: 451100

Total Depth (ft): 14.00

Total Depth (ft): 12.0

EASTING: 391980

Sampler: Split Spoon

Screen Length (ft) /Slot (in): 10/0.020

GROUND ELEVATION: 4.22

Depth to Water (ft): 6

Depth to Water (ft): 5.28

TOC ELEVATION: 4.03

Depth to Rock (ft): N/A

Permit No.: 2700017867

NOTES:

Well Construction	Depth	Lithology	USCS	Sample Interval	Sample Recovery	Blows/6 in	PID (ppm)	Description	Remarks
	0		SM			4	<1	Dark yellowish brown (10YR4/2) medium to fine SAND, some Silt, little medium to fine Gravel; dry.	Silty Sand
	1					4	<1	Dark yellowish brown (10YR4/2) medium to fine SAND, some Silt, little medium to fine Gravel; dry.	Silty Sand
	2		ML			4	<1	Dark yellowish brown (10YR4/2) SILT, some medium to fine Sand, little medium to fine Gravel; dry.	Sandy Silt
	3					4	<1	Dark yellowish brown (10YR4/2) SILT, some medium to fine Sand, little medium to fine Gravel; dry.	Sandy Silt
	4		ML			1	<1	Dark yellowish brown (10YR4/2) SILT, some medium to fine Sand, little medium to fine Gravel; dry.	Sandy Silt
5		SM				<1	Dark yellowish brown (10YR4/2) medium to fine SAND, some Silt, trace fine Gravel; moist.	Silty Sand	



The Louis Berger Group, Inc.
30 Vreeland Road, Building A
Florham Park, NJ 07932

PROJECT NO.: JG-8846

BORING NO.: MW09

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WELL NO.: MW09

Well	Depth	Lith.	USCS	Interval	Rec.	Blows	PID	Description	Remarks
	6		SM			3	<1	Moderate yellowish brown (10YR5/4) medium to fine SAND, some Silt, trace fine Gravel; moist.	Water Level at 6 ft. bgs.
	7		SP-SM				<1	Moderate yellowish brown (10YR5/4) medium to fine SAND, little Silt, trace fine Gravel; saturated.	Sand
	8		SP-SM			4	<1	Moderate yellowish brown (10YR5/4) medium to fine SAND, little Silt, trace fine Gravel; saturated.	
	9								
	10		SP-SM			5	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, trace fine Gravel; saturated.	
	11								
	12		SP-SM			9	<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, trace fine Gravel; saturated.	End of Boring at 14 ft.
	13		SP-SM				<1	Moderate yellowish brown (10YR5/4) coarse to fine SAND, little Silt, some medium to fine Gravel; saturated.	
	14		SP-SM				<1	Light brown (5YR5/6) to dark yellowish orange (10YR6/6) coarse to fine SAND, little Silt, little medium to fine Gravel; saturated.	

MONITORING WELL RECORD



OWNER IDENTIFICATION RAJBHINDER BADESHA

Address 58 US HIGHWAY 130

City Burlington State New Jersey Zip Code 08016

WELL LOCATION - If not the same as owner please give address

Owner's Well No. MW-1

County Burlington Municipality Burlington City Lot No. 25 Block No. 74

Address 58 US HIGHWAY 130 PARAM PETROLEUM

WELL USE Monitoring

DATE WELL STARTED 7-7-04

DATE WELL COMPLETED 7-7-04

WELL CONSTRUCTION

Total Depth Drilled 12 ft.

Finished Well Depth 12 ft.

Borehole Diameter:

Top 10.25 in.

Bottom 10.25 in.

Well was finished: above grade
 flush mounted

If finished above grade, casing height (stick up) above land surface _____ ft.

Steel protective casing installed?

Yes No

Static Water Level after drilling 4 ft.

Water Level was Measured Using TAPE

Well was developed for _____ hours

at _____ gpm

Method of development _____

Pump Capacity _____ gpm

Pump Type _____

Drilling Fluid _____ Type of Rig Tairing

Health and Safety Plan Submitted? Yes No

Level of Protection used on site (circle one) None (D) C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company ADVANCED DRILLING INC

Well Driller (Print) ROGER LOGEL

Driller's Signature Roger Logel

Registration No. M1146 Date 8/4/04

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	2	12	4	PVC	40
Blank Casings (No. Used)					
Tail Piece	1	12	#	2 Sand	Filter
Gravel Pack	0.5	1	#	00 Sand	Seal
Grout	0	0.5		Neat Cement Bentonite <u>Slurry</u>	<u>50</u> lbs <u>10</u> lbs

Grouting Method Tremie

Drilling Method HSAuger

GEOLOGIC LOG	
Note each depth where water was encountered in consolidated formations	<u>3" asphalt 16" Stone</u>
	<u>4"-5"-Must Silt, F SAND + GRAVEL, little clay</u>
	<u>5"-12"-Must sand, gravel, SILT/CLAY</u>

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)	
NJ STATE PLANE COORDINATE IN US SURVEY FEET	
NORTHING: _____	EASTING: _____
OR	
LATITUDE: _____	LONGITUDE: _____
_____ ° _____ ' _____ "	

MONITORING WELL RECORD



OWNER IDENTIFICATION RAJBHINDER BADESHA

Address 58 US HIGHWAY 130

City Burlington State New Jersey Zip Code 08016

WELL LOCATION - If not the same as owner please give address

Owner's Well No. MW-2

County Burlington Municipality Burlington City Lot No. 25 Block No. 74

Address 58 US HIGHWAY 130 PARAM PETROLEUM

WELL USE Monitoring

DATE WELL STARTED 7-7-04

DATE WELL COMPLETED 7-7-04

WELL CONSTRUCTION

Total Depth Drilled 12 ft.

Finished Well Depth 12 ft.

Borehole Diameter:

Top 10.25 in.

Bottom 10.25 in.

Well was finished: above grade
 flush mounted

If finished above grade, casing height (stick up) above land surface _____ ft.

Steel protective casing installed?

Yes No

Static Water Level after drilling 5.5 ft.

Water Level was Measured Using TAPE

Well was developed for _____ hours

at _____ gpm

Method of development _____

Pump Capacity _____ gpm

Pump Type _____

Drilling Fluid _____ Type of Rig Tower

Health and Safety Plan Submitted? Yes No

Level of Protection used on site (circle one) None (D) C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company ADVANCED DRILLING INC

Well Driller (Print) Roger Logel

Driller's Signature Roger Logel

Registration No. ML46 Date 8/4/04

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	2	12	4	PVC	40
Blank Casings (No. Used)					
Tail Piece	1	12	#	2 sand	Filter
Gravel Pack	.5	1	#	00 sand	Seal
Grout	0	.5		Neat Cement Bentonite Bluing	50 lbs 70 lbs

Grouting Method Tremie

Drilling Method H8 Auger

GEOLOGIC LOG	
Note each depth where water was encountered in consolidated formations	<u>4" asphalt + 10" Stone</u>
	<u>14" - 5" - Moist Silt, Sand, Gravel</u>
	<u>5" - 12" - Moist Silt, F-Sand, Gravel</u>

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)	
NJ STATE PLANE COORDINATE IN US SURVEY FEET	
NORTHING: _____	EASTING: _____
OR	
LATITUDE: _____	LONGITUDE: _____
_____ ' _____ "	_____ ' _____ "

MONITORING WELL RECORD



OWNER IDENTIFICATION RAJBHINDER BADESHA

Address 58 US HIGHWAY 130

City Burlington State New Jersey

Zip Code 08016

WELL LOCATION - If not the same as owner please give address

Owner's Well No. MW-3

County Burlington Municipality Burlington City

Lot No. 25 Block No. 74

Address 58 US HIGHWAY 130 PARAM PETROLEUM

WELL USE Monitoring

DATE WELL STARTED 7-6-04

DATE WELL COMPLETED 7-6-04

WELL CONSTRUCTION

Total Depth Drilled 12 ft.

Finished Well Depth 12 ft.

Borehole Diameter:

Top 10.25 in.

Bottom 10.25 in.

Well was finished: above grade
 flush mounted

If finished above grade, casing height (stick up) above land surface _____ ft.

Steel protective casing installed?
 Yes No

Static Water Level after drilling 5 ft.

Water Level was Measured Using TAPE

Well was developed for _____ hours
at _____ gpm

Method of development _____

Pump Capacity _____ gpm

Pump Type _____

Drilling Fluid _____ Type of Rig Drilling

Health and Safety Plan Submitted? Yes No

Level of Protection used on site (circle one) None (D) C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company ADVANCED DRILLING INC

Well Driller (Print) ROGER LOGEL

Driller's Signature Roger Logel

Registration No. M1166 Date 8/14/04

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	<u>0</u>	<u>2</u>	<u>4</u>	<u>PVC</u>	<u>40</u>
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	<u>2</u>	<u>12</u>	<u>4</u>	<u>PVC</u>	<u>40</u>
Blank Casings (No. Used)					
Fail Piece	<u>1</u>	<u>12</u>	<u># 20 sand</u>	<u>Filter</u>	
Gravel Pack	<u>.5</u>	<u>1</u>	<u># 00 sand</u>	<u>Seal</u>	
Grout	<u>0</u>	<u>.5</u>		<u>Neat Cement Bentonite</u>	<u>50</u> lbs <u>10</u> lbs

Grouting Method Tremie

Drilling Method H8 Auger

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

3" Asphalt

3" - 12" Moist & Wet Silt, F-Sand & Gravel

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

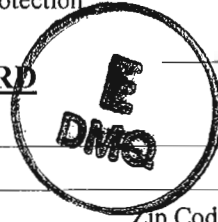
NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____

OR

LATITUDE: _____ LONGITUDE: _____

MONITORING WELL RECORD



OWNER IDENTIFICATION RAJBHINDER BADESHA

Address 58 US HIGHWAY 130

City Burlington State New Jersey Zip Code 08016

WELL LOCATION - If not the same as owner please give address

Owner's Well No. MW-4

County Burlington Municipality Burlington City Lot No. 25 Block No. 74

Address 58 US HIGHWAY 130 PARAM PETROLEUM

WELL USE Monitoring

DATE WELL STARTED 7-6-04
DATE WELL COMPLETED 7-6-04

WELL CONSTRUCTION

Total Depth Drilled 12 ft.

Finished Well Depth 12 ft.

Borehole Diameter:

Top 10.25 in.

Bottom 10.25 in.

Well was finished: above grade
 flush mounted

If finished above grade, casing height (stick up) above land surface _____ ft.

Steel protective casing installed?

Yes No

Static Water Level after drilling 5.5 ft.

Water Level was Measured Using TAPE

Well was developed for _____ hours

at _____ gpm

Method of development _____

Pump Capacity _____ gpm

Pump Type _____

Drilling Fluid _____ Type of Rig Tower

Health and Safety Plan Submitted? Yes No

Level of Protection used on site (circle one) None (D) C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company ADVANCED DRILLING INC

Well Driller (Print) ROGER LOGEL

Driller's Signature Roger Logel

Registration No. M1166 Date 8/4/04

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	2	12	4	PVC	40
Blank Casings (No. Used)					
Tank Pipe	1	12		# 2 Sand	Grilla
Gravel Pack	.5	1		# 00 Sand	Seal
Grout	0	.5		Neat Cement Bentonite Slurry	50 lbs 70 lbs

Grouting Method Tremie

Drilling Method H5 Auger

GEOLOGIC LOG
Note each depth where water was encountered in consolidated formations <u>3" asphalt + 3" Stone</u>
<u>6" - 10" - Moist Silty F-Sand + Gravel</u>
<u>10" - 12" - Moist Wet F-Sand + Silty</u>

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____
_____ ' _____ " _____ ' _____ "

MONITORING WELL RECORD



OWNER IDENTIFICATION RAJBHINDER BADESHA

Address 58 US HIGHWAY 130

City Burlington State New Jersey Zip Code 08016

WELL LOCATION - If not the same as owner please give address

Owner's Well No. MW-5

County Burlington Municipality Burlington City Lot No. 25 Block No. 74

Address 58 US HIGHWAY 130 PARAM PETROLEUM

WELL USE Monitoring

DATE WELL STARTED 7-7-04

DATE WELL COMPLETED 7-7-04

WELL CONSTRUCTION

Total Depth Drilled 12 ft.

Finished Well Depth 12 ft.

Borehole Diameter:

Top 10.25 in.

Bottom 10.25 in.

Well was finished: above grade
 flush mounted

If finished above grade, casing height (stick up) above land surface _____ ft.

Steel protective casing installed?

Yes No

Static Water Level after drilling 5.5 ft.

Water Level was Measured Using TAPE

Well was developed for _____ hours

at _____ gpm

Method of development _____

Pump Capacity _____ gpm

Pump Type _____

Drilling Fluid _____ Type of Rig Drilling

Health and Safety Plan Submitted? Yes No

Level of Protection used on site (circle one) None (D) C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company ADVANCED DRILLING INC

Well Driller (Print) Roger Lopez

Driller's Signature Roger Lopez

Registration No. M1166 Date 8/4/04

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	2	12	4	PVC	40
Blank Casings (No. Used)					
Tail Piece	1	12	# 2 Sand	Filter	
Gravel Pack	.5	1	# 00 Sand	Seal	
Grout	0	.5	Neat Cement Bentonite Slurry		50 lbs 70 lbs

Grouting Method Tremie

Drilling Method HSAuger

GEOLOGIC LOG
Note each depth where water was encountered in consolidated formations
<u>2" Asphalt & 6" Stone</u>
<u>8"-10"-Mant Silt, F-sand, little F-gravel & clay</u>

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____
_____ ° _____ ' _____ " _____ ° _____ ' _____ "

MONITORING WELL RECORD

OWNER IDENTIFICATION NJDEP

Address 401 EAST STATE ST.
City Trenton State New Jersey Zip Code 08625

WELL LOCATION - If not the same as owner please give address
County Burlington Municipality Burlington City Owner's Well No. MW-06
Lot No. 1 Block No. 35.01
Address WOOD ST. & RT. 130

WELL USE Monitoring DATE WELL STARTED 8-9-06
DATE WELL COMPLETED 8-9-06

WELL CONSTRUCTION

Total Depth Drilled 12 ft.
Finished Well Depth 12 ft.
Borehole Diameter:
Top 10.25 in.
Bottom 10.25 in.

Well was finished: above grade
 flush mounted
If finished above grade, casing height
(stick up) above land surface _____ ft.

Steel protective casing installed?
 Yes No

Static Water Level after drilling 6 ft.
Water Level was Measured Using TAPE

Well was developed for 1/2 hours
at 1.5 gpm

Method of development Pump
Pump Capacity _____ gpm
Pump Type _____

Drilling Fluid _____ Type of Rig Tricky
Health and Safety Plan Submitted? Yes No
Level of Protection used on site (circle one) None D C B A

I certify that I have constructed the above referenced well in
accordance with all well permit requirements and applicable State
rules and regulations.

Drilling Company ADVANCED DRILLING INC
Well Driller (Print) CRAIG CONNER
Driller's Signature Craig Conner
Registration No. 19515D Date 8/28/06

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>80</u>)	2	12	4	PVC	40
Blank Casings (No. Used)					
Tail Piece	1.5	12	#2 Sand	Delta	
Gravel Pack	1	1.5	#00 sand	Seal	
Grout	0	1	Neat Cement Bentonite Slurry		50 lbs 10 lbs

Grouting Method Tremie
Drilling Method HSAuger

GEOLOGIC LOG
Note each depth where water was encountered in consolidated formations
<u>4" top soil</u>
<u>4"-10"- Moist to Wet Silty F-Sand</u>
<u>10"-12"- Wet Silty Sand, little gravel</u>

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ " LONGITUDE: _____ "

New Jersey Department of Environmental Protection
 Bureau of Water Systems and Well Permitting
MONITORING WELL RECORD

Well Permit Number
 2700017865
 Atlas Sheet Coordinates
 2734873

OWNER IDENTIFICATION NJDEP

Address 401 EAST STATE ST.
 City Trenton State New Jersey Zip Code 08625

WELL LOCATION - If not the same as owner please give address
 County Burlington Municipality Burlington City Owner's Well No. MW-07
 Lot No. 25 Block No. 74
 Address RT 130 & WOOD ST.

WELL USE Monitoring DATE WELL STARTED 8-9-06
 DATE WELL COMPLETED 8-10-06

WELL CONSTRUCTION
 Total Depth Drilled 52 ft.
 Finished Well Depth 52 ft.
 Borehole Diameter:
 Top 10.25 in.
 Bottom 10.25 in.

Well was finished: above grade
 flush mounted
 Finished above grade, casing height
 (stick up) above land surface _____ ft.

Steel protective casing installed?
 Yes No

Static Water Level after drilling 23 ft.
 Water Level was Measured Using TAPE

Well was developed for 65 hours
1.5 gpm

Method of development Pump
 Pump Capacity _____ gpm
 Pump Type _____

Drilling Fluid _____ Type of Rig Tailer
 Health and Safety Plan Submitted? Yes No
 Level of Protection used on site (circle one) None D C B A

I certify that I have constructed the above referenced well in
 accordance with all well permit requirements and applicable State
 rules and regulations.

Drilling Company ADVANCED DRILLING INC
 Well Driller (Print) CRAIG CONNER
 Driller's Signature Craig Conner
 Registration No. 195150 Date 8/28/06

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	42	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	42	52	4	PVC	40
Blank Casings (No. Used _____)					
Fail Piece	40	52		# 2 sand	Feltn
Gravel Pack	38	40		# 00 sand	Seal
Grout	0	38		Neat Cement Bentonite Slurry	700 lbs 190 lbs

Grouting Method Tremie
 Drilling Method HS Auger

GEOLOGIC LOG	
Note each depth where water was encountered in consolidated formations	
2" - 18'	Asphalt
18' - 23'	Wet F-C Sand + Gravel
23' - 30'	Wet Silty Clay
30' - 38'	Wet Silty F-M Sand
38' - 47'	Wet Silty Sand
47' - 52'	Wet Gravel

AS-BUILT WELL LOCATION
 (NAD 83 HORIZONTAL DATUM)
 NJ STATE PLANE COORDINATE IN US SURVEY FEET
 NORTHING: _____ EASTING: _____
 OR
 LATITUDE: _____° _____' _____" LONGITUDE: _____° _____' _____"

MONITORING WELL RECORD

OWNER IDENTIFICATION NJDEP

Address 401 EAST STATE ST.
City Trenton State New Jersey Zip Code 08625

WELL LOCATION - If not the same as owner please give address
County Burlington Municipality Burlington City Lot No. 56 Block No. 33

Owner's Well No. MW-08

Address RT. 130 & WOOD ST. WILBUR WATTS H.S.

WELL USE Monitoring DATE WELL STARTED 8-8-06
DATE WELL COMPLETED 8-8-06

WELL CONSTRUCTION

Total Depth Drilled 14 ft.
Finished Well Depth 12 ft.
Borehole Diameter:
Top 10.25 in.
Bottom 10.25 in.

Well was finished: above grade
 flush mounted
If finished above grade, casing height (stick up) above land surface _____ ft.

Steel protective casing installed?
 Yes No

Static Water Level after drilling 6 ft.
Water Level was Measured Using TAPE
Well was developed for 1/2 hours
at 1.5 gpm
Method of development Pump

Pump Capacity _____ gpm
Pump Type _____
Drilling Fluid _____ Type of Rig Driley
Health and Safety Plan Submitted? Yes No
Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	2	12	4	PVC	40
Blank Casings (No. Used _____)					
Tail Piece	1.5	14	#2 sand	Felt	
Gravel Pack	1	1.5	#00 sand	Seal	
Grout	0	1	Neat Cement Bentonite <u>Slurry</u>		50 lbs 10 lbs

Grouting Method Tremie
Drilling Method HS Auger

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

6" top soil
6"-12" - Dry & wet silt sand
12"-14" - wet F-C sand, gravel

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company ADVANCED DRILLING INC
Well Driller (Print) CRAIG CORNER
Driller's Signature Craig Corner
Registration No. 195150 Date 8/28/06

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____

OR

LATITUDE: _____° _____' _____" LONGITUDE: _____° _____' _____"

New Jersey Department of Environmental Protection
 Bureau of Water Systems and Well Permitting
MONITORING WELL RECORD

Well Permit Number
 2700017867
 Atlas Sheet Coordinates
 2734873

OWNER IDENTIFICATION NJDEP

Address 401 EAST STATE ST.
 City Trenton State New Jersey Zip Code 08625

WELL LOCATION - If not the same as owner please give address
 Owner's Well No. MW-09
 County Burlington Municipality Burlington City Lot No. 56 Block No. 33
 Address RT. 130 & WOOD ST. WILBUR WATTS H.S.

WELL USE Monitoring DATE WELL STARTED 8-8-06
 DATE WELL COMPLETED 8-8-06

WELL CONSTRUCTION

Total Depth Drilled 14 ft.
 Finished Well Depth 12 ft.
 Borehole Diameter:
 Top 10.25 in.
 Bottom 10.25 in.

Well was finished: above grade
 flush mounted
 If finished above grade, casing height (stick up) above land surface _____ ft.

Steel protective casing installed?
 Yes No

Static Water Level after drilling 6 ft.
 Water Level was Measured Using TIAPPE

Well was developed for 1/2 hours
 at 1.5 gpm

Method of development Pumps

Pump Capacity _____ gpm

Pump Type _____

Drilling Fluid _____ Type of Rig Torque

Health and Safety Plan Submitted? Yes No

Level of Protection used on site (circle one) None C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company ADVANCED DRILLING INC
 Well Driller (Print) CRIC CORNER
 Driller's Signature Craig Corner
 Registration No. 195150 Date 8/28/06

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	2	4	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used <u>20</u>)	2	12	4	PVC	40
Blank Casings (No. Used)					
Tail Piece	1.5	14	#	2 Sand	Filter
Gravel Pack	1	1.5	#	00 Sand	Seal
Grout	0	2		Neat Cement Bentonite Slurry	100 lbs 20 lbs

Grouting Method Tremie
 Drilling Method HSAuger

GEOLOGIC LOG
Note each depth where water was encountered in consolidated formations
<u>4" top soil</u>
<u>4"-12" Dry to Wet Selly F-Sand</u>
<u>12"-14" Wet F-C Sand</u>

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

2700017157
Thru
270001716

MONITORING WELL PERMIT

Permit No. _____

Mail To:

VALID ONLY AFTER APPROVAL BY THE D.E.P.

NJDEP
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625-0426

COORD #: _____

27.34.8 73

Owner Rajbinder BADSHA

Driller Advanced Drilling Inc

Address 58 US HIGHWAY 130
BURLINGTON NJ 08016

Address 3 Colt Rd
Pittstown NJ 08867

Name of Facility PARAM PETROLEUM

Diameter of Well(s)	4	Inches	Proposed Depth of Well(s)	25	Feet
# of Wells Applied for (max. 10)	5		Will pumping equipment be utilized?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Type of Well (see reverse)	monitoring		If Yes, give pump capacity	cumulative GPM	

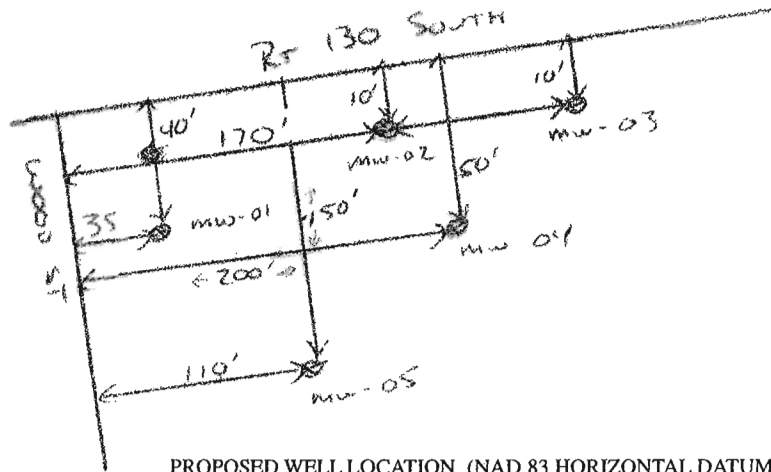
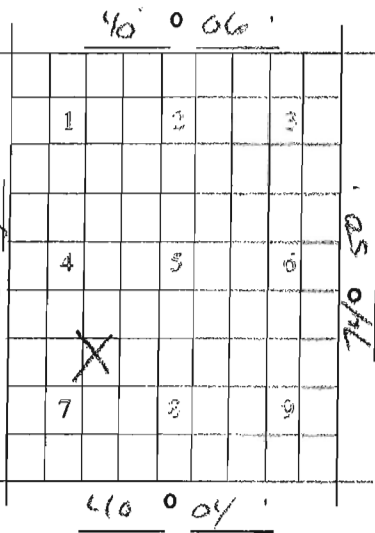
Address SAME

LOCATION OF WELL(S)

Lot # <u>25</u>	Block # <u>74</u>	Municipality <u>BURLINGTON</u>	County <u>BURLINGTON</u>
-----------------	-------------------	--------------------------------	--------------------------

Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.

State Atlas Map No. 27



PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

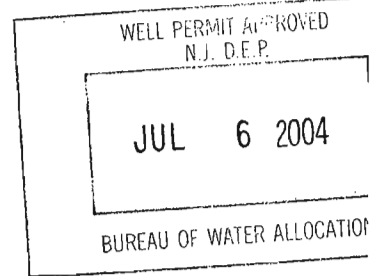
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT. PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- RCRA Site
- Underground Storage Tank Site
- Operational Ground Water Permit Site
- Pretreatment and Residuals Site
- Water and Hazardous Waste Enforcement Case
- Water Supply Aquifer Test Observation Well
- Other (explain) _____
- Spill Site
- ISRA Site
- CERCLA (Superfund) Site

CASE I.D. Number _____

This Space for Approval Stamp



FOR D.E.P. USE Issuance of this permit is subject to the conditions attached. (see next page) For monitoring purposes only

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A. 58:4A-14, application is made for a permit to drill a well as described above.

Date 6-8-04

Signature of Driller [Signature]

Registration No. M1578

Signature of Property Owner [Signature]

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

MONITORING WELL PERMIT

27 Jun 2006

Permit No. _____

Mail To:

VALID ONLY AFTER APPROVAL BY THE D.E.P.

NJDEP
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625-0426

COORD #: 08867

Owner NJDEP

Driller ADVANCED DRILLING INC

Address 401 EAST STATE ST
TRENTON, NJ

Address 3 COIT RD
PITTSFORD, NY 08867

Name of Facility PSEG

Diameter of Well(s)	4	Inches	Proposed Depth of Well(s)	25	Feet
# of Wells Applied for (max. 10)	1		Will pumping equipment be utilized?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Type of Well (see reverse)	monitoring		If Yes, give pump capacity		cumulative GPM

Address WOOD ST & RT 130

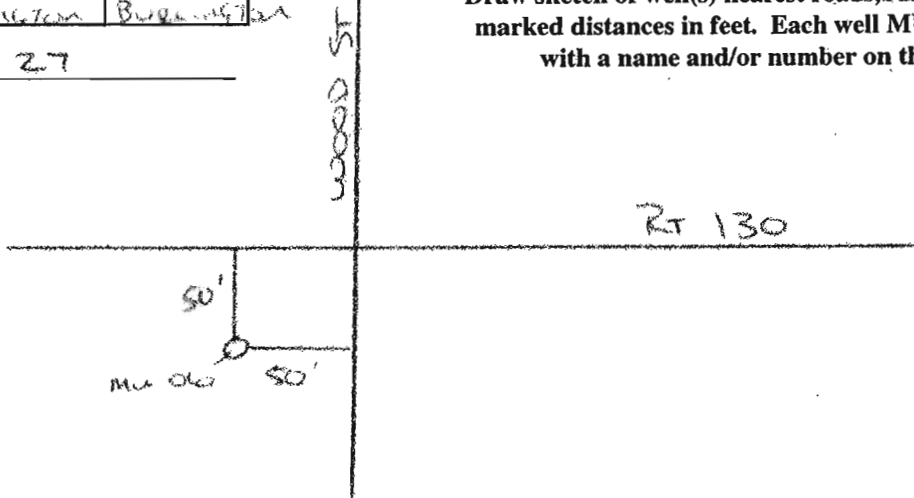
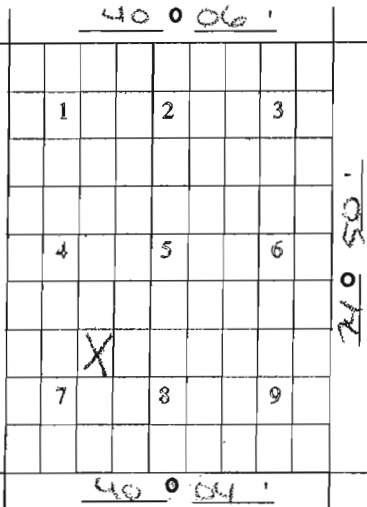
BURLINGTON, NJ 08016

LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
1	35.01	BURLINGTON	BURLINGTON

Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.

State Atlas Map No. 27



PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

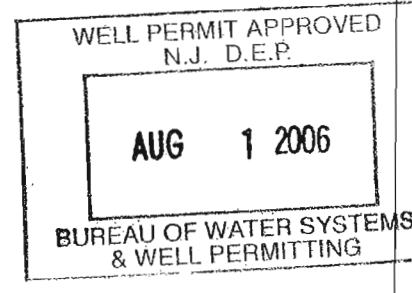
NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ LONGITUDE: _____

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- RCRA Site
- Underground Storage Tank Site
- Operational Ground Water Permit Site
- Pretreatment and Residuals Site
- Water and Hazardous Waste Enforcement Case
- Water Supply Aquifer Test Observation Well
- Other (explain) _____
- Spill Site
- ISRA Site
- CERCLA (Superfund) Site

CASE I.D. Number _____

This Space for Approval Stamp



FOR D.E.P. USE Issuance of this permit is subject to the conditions attached. (see next page) For monitoring purposes only

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A.58:4A-14, application is made for a permit to drill a well as described above.

Date 7-18-06 Signature of Driller [Signature] Registration No. 41578
Signature of Property Owner [Signature]

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

MONITORING WELL PERMIT

270017665
Permit No. _____

VALID ONLY AFTER APPROVAL BY THE D.E.P.

Mail To:

NJDEP
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625-0426

COORD #: 39.31.573

Owner NJDEP

Driller ADVANCED DRILLING INC

Address 401 EAST STATE ST
TRENTON, NJ 08611

Address 3 CAT RD
PARSONS, NJ 08867

Name of Facility PARSONS PERMITS
Address 72 BOY WOOD ST
BURLINGTON, NJ 08016

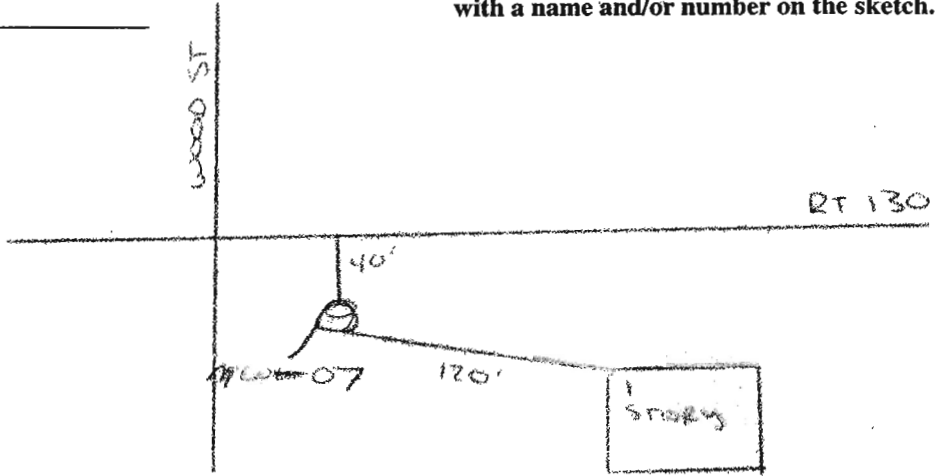
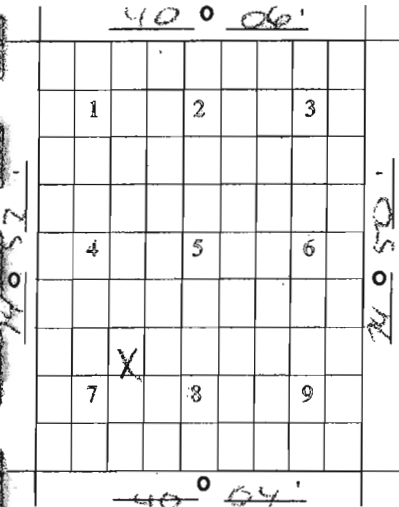
Diameter of Well(s)	4	Inches	Proposed Depth of Well(s)	25	Feet
# of Wells Applied for (max. 10)	1		Will pumping equipment be utilized?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Type of Well (see reverse)	monitoring		If Yes, give pump capacity		cumulative GPM

LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
25	74	Burlington	Burlington

State Atlas Map No. 27

Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.



PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____
 LATITUDE: _____ OR _____ LONGITUDE: _____

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- RCRA Site
- Underground Storage Tank Site
- Operational Ground Water Permit Site
- Pretreatment and Residuals Site
- Water and Hazardous Waste Enforcement Case
- Water Supply Aquifer Test Observation Well
- Other (explain) _____
- Spill Site
- ISRA Site
- CERCLA (Superfund) Site

CASE I.D. Number _____

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J. D.E.P.

AUG 1 2006

BUREAU OF WATER SYSTEMS
& WELL PERMITTING

FOR D.E.P. USE Issuance of this permit is subject to the conditions attached. (see next page) For monitoring purposes only

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A. 58:4A-14, application is made for a permit to drill a well as described above.

Date 7-18-06 Signature of Driller [Signature] Registration No. M15780
Signature of Property Owner [Signature]

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

2700-11567
2700-11566

MONITORING WELL PERMIT

Permit No. _____

Mail To:

VALID ONLY AFTER APPROVAL BY THE D.E.P.

NJDEP
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625-0426

COORD #: 27.11.073

Owner NJDEP

Driller ADVANCED DRILLING INC

Address 401 EAST STATE ST
TRENTON, NJ

Address 3 CALT RD
PITTSBURGH, PA 15201

Name of Facility WILBUR WATTS HS

Diameter of Well(s)	<u>4</u>	Inches	Proposed Depth of Well(s)	<u>25</u>	Feet
# of Wells Applied for (max. 10)	<u>2</u>		Will pumping equipment be utilized?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Type of Well (see reverse)	<u>monitoring</u>		If Yes, give pump capacity		cumulative GPM

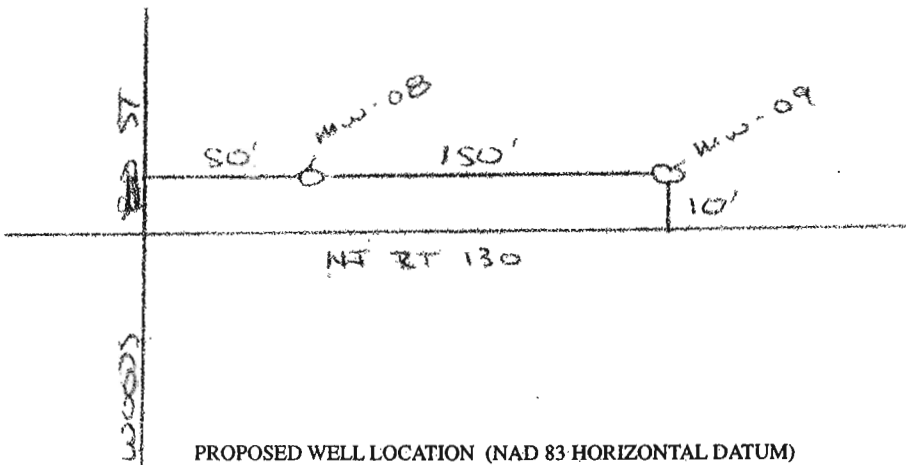
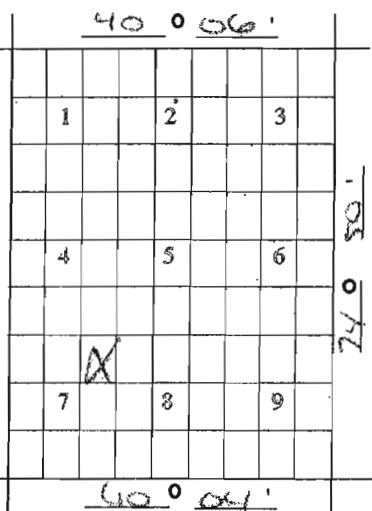
Address Rt 130 + WOOD ST
BURLINGTON, NJ 08016

LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
<u>56</u>	<u>33</u>	<u>Burlington</u>	<u>Burlington</u>

Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.

State Atlas Map No. 27



PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____
OR
LATITUDE: _____ " _____ " LONGITUDE: _____ " _____ "

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- RCRA Site
- Underground Storage Tank Site
- Operational Ground Water Permit Site
- Pretreatment and Residuals Site
- Water and Hazardous Waste Enforcement Case
- Water Supply Aquifer Test Observation Well
- Other (explain) _____
- Spill Site
- ISRA Site
- CERCLA (Superfund) Site

CASE I.D. Number _____

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J. D.E.P.

AUG 1 2006

BUREAU OF WATER SYSTEM
& WELL PERMITTING

FOR D.E.P. USE Issuance of this permit is subject to the conditions attached. (see next page) For monitoring purposes only

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A.58:4A-14, application is made for a permit to drill a well as described above.

Date 7-18-06

Signature of Driller [Signature]

Registration No. 11578

Signature of Property Owner [Signature]

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum Site.
Location: Route 130 South and Wood Street, Burlington, New Jersey
NJDEP Case Number: 91-12-10-1439

CERTIFICATION

Well Permit Number: <u>2700017157</u>	Owner's Well Number: <u>MW-1</u>
Well Completion Date: <u>7/07/04</u>	Lithologic Log: <u>Attached</u>
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	<u>0.45</u>
Total Depth of Well to the nearest 1/2 foot:	<u>12.45</u>
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	<u>2</u>
Screen Length (or length of open hole) in feet:	<u>10</u>
Screen or Slot Size:	<u>.020</u>
Screen or Slot Material:	<u>Sch. 40 PVC</u>
Casing Material: (PVC, Steel or Other-Specify)	<u>Sch. 40 PVC</u>
Casing Diameter (inches):	<u>4</u>
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	<u>6</u>
Yield (gallons per minute):	<u>1.5</u>
Development Technique (specify):	<u>Submersible Pump</u>
Length of Time Well is Developed/Pumped or Bailed:	<u>30 min</u>

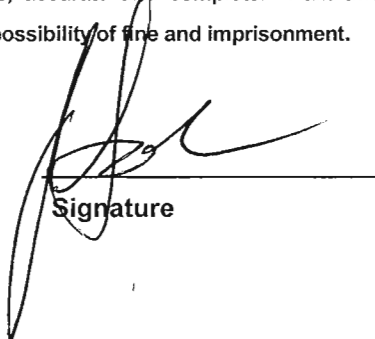
Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

JONATHAN B SECKLINGER

Name (Type or Print)


Signature

PG-00

Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum Site.
Location: Route 130 South and Wood Street, Burlington, New Jersey
NJDEP Case Number: 91-12-10-1439

CERTIFICATION

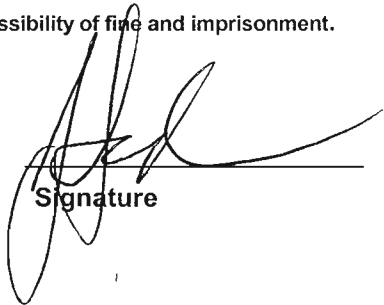
Well Permit Number: <u>2700017158</u>	Owner's Well Number: <u>MW-2</u>
Well Completion Date: <u>7/07/04</u>	Lithologic Log: <u>Attached</u>
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	<u>0.61</u>
Total Depth of Well to the nearest 1/2 foot:	<u>12.61</u>
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	<u>2</u>
Screen Length (or length of open hole) in feet:	<u>10</u>
Screen or Slot Size:	<u>.020</u>
Screen or Slot Material:	<u>Sch. 40 PVC</u>
Casing Material: (PVC, Steel or Other-Specify)	<u>Sch. 40 PVC</u>
Casing Diameter (inches):	<u>4</u>
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	<u>7</u>
Yield (gallons per minute):	<u>1.5</u>
Development Technique (specify):	<u>Submersible Pump</u>
Length of Time Well is Developed/Pumped or Bailed:	<u>30 min</u>

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

JONATHAN B SECUNGER
Name (Type or Print)


Signature

PG-003258-E
Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum Site.
Location: Route 130 South and Wood Street, Burlington, New Jersey
NJDEP Case Number: 91-12-10-1439

CERTIFICATION

Well Permit Number: <u>2700017159</u>	Owner's Well Number: <u>MW-3</u>
Well Completion Date: <u>7/06/04</u>	Lithologic Log: <u>Attached</u>
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	<u>0.55</u>
Total Depth of Well to the nearest 1/2 foot:	<u>12.55</u>
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	<u>2</u>
Screen Length (or length of open hole) in feet:	<u>10</u>
Screen or Slot Size:	<u>.020</u>
Screen or Slot Material:	<u>Sch. 40 PVC</u>
Casing Material: (PVC, Steel or Other-Specify)	<u>Sch. 40 PVC</u>
Casing Diameter (inches):	<u>4</u>
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	<u>5</u>
Yield (gallons per minute):	<u>1.5</u>
Development Technique (specify):	<u>Submersible Pump</u>
Length of Time Well is Developed/Pumped or Bailed:	<u>30 min</u>


Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

JONATHAN B SECILINGER

Name (Type or Print)


Signature

P6-003258-F

Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum Site.
Location: Route 130 South and Wood Street, Burlington, New Jersey
NJDEP Case Number: 91-12-10-1439

CERTIFICATION

Well Permit Number: <u>2700017160</u>	Owner's Well Number: <u>MW-4</u>
Well Completion Date: <u>7/06/04</u>	Lithologic Log: <u>Attached</u>
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	<u>0.38</u>
Total Depth of Well to the nearest 1/2 foot:	<u>12</u>
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	<u>2</u>
Screen Length (or length of open hole) in feet:	<u>10</u>
Screen or Slot Size:	<u>.020</u>
Screen or Slot Material:	<u>Sch. 40 PVC</u>
Casing Material: (PVC, Steel or Other-Specify)	<u>Sch. 40 PVC</u>
Casing Diameter (inches):	<u>4</u>
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	<u>5.5</u>
Yield (gallons per minute):	<u>1.5</u>
Development Technique (specify):	<u>Submersible Pump</u>
Length of Time Well is Developed/Pumped or Bailed:	<u>30 min</u>


Authentication

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Technical Certification:

JONATHAN B SECINGER

Name (Type or Print)


Signature

PG-003258-E

Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
 Name of Facility: Param Petroleum Site.
 Location: Route 130 South and Wood Street, Burlington, New Jersey
 NJDEP Case Number: 91-12-10-1439

CERTIFICATION

Well Permit Number: <u>2700017161</u>	Owner's Well Number: <u>MW-5</u>
Well Completion Date: <u>7/07/04</u>	Lithologic Log: <u>Attached</u>
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	<u>0.50</u>
Total Depth of Well to the nearest 1/2 foot:	<u>12</u>
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	<u>2</u>
Screen Length (or length of open hole) in feet:	<u>10</u>
Screen or Slot Size:	<u>.020</u>
Screen or Slot Material:	<u>Sch. 40 PVC</u>
Casing Material: (PVC, Steel or Other-Specify)	<u>Sch. 40 PVC</u>
Casing Diameter (inches):	<u>4</u>
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	<u>6</u>
Yield (gallons per minute):	<u>1.5</u>
Development Technique (specify):	<u>Submersible Pump</u>
Length of Time Well is Developed/Pumped or Bailed:	<u>30 min</u>

Authentication

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Technical Certification:

JONATHAN B SECKINGER

Name (Type or Print)



Signature

PG-003058-E

Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum
Location: Route 130 South and Wood Street, Burlington, New Jersey
UST Registration No.: 91-12-10-1439 BUST case No.: NA

CERTIFICATION

Well Permit Number: 2700017866 Owner's Well Number: MW-6

Well Completion Date: 8/9/06 Lithologic Log: Attach
Distance from Top of Casing (cap off) to
ground surface (one-hundredth of a foot): 0.52
Total Depth of Well to the nearest 1/2 foot: 12.0
Depth to Top of Screen (or Top of Open Hole)
From Top of Casing (one-hundredth of a foot): 1.48
Screen Length (or length of open hole) in feet: 10.0
Screen or Slot Size: .020
Screen or Slot Material: Sch. 40 PVC
Casing Material: (PVC, Steel or Other-Specify) Sch. 40 PVC
Casing Diameter (inches): 4
Static Water Level From Top of Casing at the Time
of Installation (one-hundredth of a foot): 3.01
Yield (gallons per minute): 1.5
Development Technique (specify): Submersible Pump
Length of Time Well is Developed/Pumped or Bailed: 30 minutes

Authentication

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Technical Certification:

Joseph Dempsey _____
Name (Type or Print) Signature

53

Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum
Location: Route 130 South and Wood Street, Burlington, New Jersey
UST Registration No.: 91-12-10-1439 BUST case No.: NA

CERTIFICATION

Well Permit Number: 2700017865 Owner's Well Number: MW-7

Well Completion Date: 8/10/06 Lithologic Log: Attach

Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot): 0.33

Total Depth of Well to the nearest 1/2 foot: 52.0

Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot): 41.67

Screen Length (or length of open hole) in feet: 10.0

Screen or Slot Size: .020

Screen or Slot Material: Sch. 40 PVC

Casing Material: (PVC, Steel or Other-Specify) Sch. 40 PVC

Casing Diameter (inches): 4

Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot): 3.03

Yield (gallons per minute): 1.5

Development Technique (specify): Submersible Pump

Length of Time Well is Developed/Pumped or Bailed: 90 minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Joseph Dempsey _____
Name (Type or Print) Signature

53
Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum
Location: Route 130 South and Wood Street, Burlington, New Jersey
UST Registration No.: 91-12-10-1439 BUST case No.: NA

CERTIFICATION

Well Permit Number: 2700017868 Owner's Well Number: MW-8
:
Well Completion Date: 8/8/06 Lithologic Log: Attach
Distance from Top of Casing (cap off) to
ground surface (one-hundredth of a foot): 0.54
Total Depth of Well to the nearest 1/2 foot: 12.0
Depth to Top of Screen (or Top of Open Hole)
From Top of Casing (one-hundredth of a foot): 1.46
Screen Length (or length of open hole) in feet: 10.0
Screen or Slot Size: .020
Screen or Slot Material: Sch. 40 PVC
Casing Material: (PVC, Steel or Other-Specify) Sch. 40 PVC
Casing Diameter (inches): 4
Static Water Level From Top of Casing at the Time
of Installation (one-hundredth of a foot): 5.28
Yield (gallons per minute): 1.5
Development Technique (specify): Submersible Pump
Length of Time Well is Developed/Pumped or Bailed: 30 minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Joseph Dempsey _____
Name (Type or Print) Signature

53
Certification or License No.

Seal

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection
Name of Facility: Param Petroleum
Location: Route 130 South and Wood Street, Burlington, New Jersey
UST Registration No.: 91-12-10-1439 BUST case No.: NA

CERTIFICATION

Well Permit Number: 2700017867 Owner's Well Number: MW-9
:
Well Completion Date: 8/8/06 Lithologic Log: Attach
Distance from Top of Casing (cap off) to
ground surface (one-hundredth of a foot): 0.19
Total Depth of Well to the nearest 1/2 foot: 12.0
Depth to Top of Screen (or Top of Open Hole)
From Top of Casing (one-hundredth of a foot): 1.81
Screen Length (or length of open hole) in feet: 10.0
Screen or Slot Size: .020
Screen or Slot Material: Sch. 40 PVC
Casing Material: (PVC, Steel or Other-Specify) Sch. 40 PVC
Casing Diameter (inches): 4
Static Water Level From Top of Casing at the Time
of Installation (one-hundredth of a foot): 5.05
Yield (gallons per minute): 1.5
Development Technique (specify): Submersible Pump
Length of Time Well is Developed/Pumped or Bailed: 30 minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Joseph Dempsey _____
Name (Type or Print) Signature

53

Certification or License No.

Seal

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection

Name of Facility: Param Petroleum Site

Location: Burlington County, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:

27-00017-157

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW-01

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West _____ Latitude: North _____

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 450989.10

East 391853.97

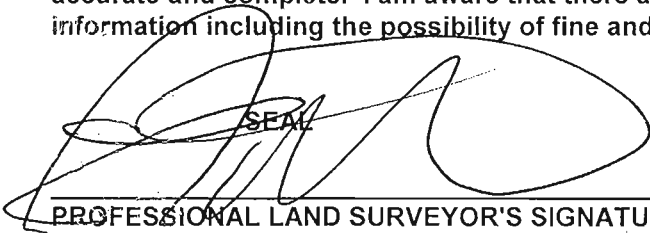
Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 4.57

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Significant observations and notes: _____

AUTHENTICATION

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PROFESSIONAL LAND SURVEYOR'S SIGNATURE

November 24, 2004
DATE

Edward A. Patalano PE-LS 23224
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

1815 Garden Avenue cherry Hill, New Jersey (856) 489 8200
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection

Name of Facility: Param Petroleum Site

Location: Burlington County, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:

27-00017-158

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW-02

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West _____ Latitude: North _____

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 451008.41

East 391988.38

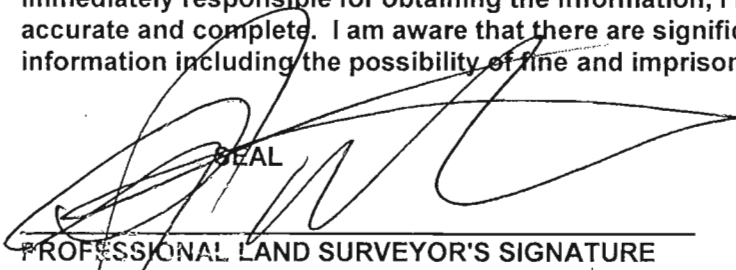
Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 4.60

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Significant observations and notes: _____

AUTHENTICATION

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November 24, 2004
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1815 Garden Avenue cherry Hill, New Jersey (856) 489 8200
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection

Name of Facility: Param Petroleum Site

Location: Burlington County, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:

27-00017-159

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans):

MW-03

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West _____

Latitude: North _____

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 451027.08

East 392116.50

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):

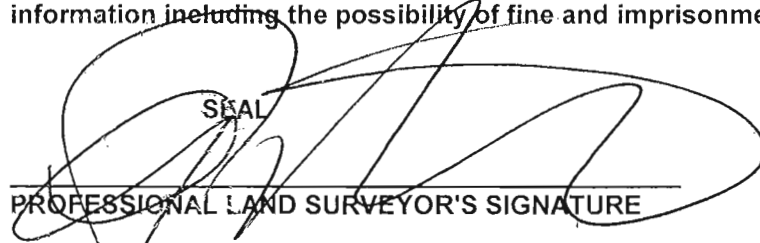
3.97

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Significant observations and notes: _____

AUTHENTICATION

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 SEAL

November 24, 2004

DATE

Edward A. Patalano PE-LS 23224

PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

(Please print or type)

1815 Garden Avenue cherry Hill, New Jersey (856) 489 8200

PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection

Name of Facility: Param Petroleum Site

Location: Burlington County, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:

27-00017-160

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW-04

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West _____ Latitude: North _____

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 450977.96 East 391986.38

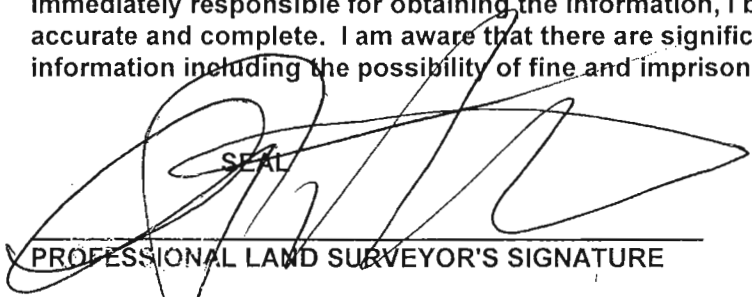
Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 5.05

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Significant observations and notes: _____

AUTHENTICATION

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 SEAL

 PROFESSIONAL LAND SURVEYOR'S SIGNATURE

November 24, 2004
 DATE

Edward A. Patalano PE-LS 23224
 PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
 (Please print or type)

1815 Garden Avenue cherry Hill, New Jersey (856) 489 8200
 PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: New Jersey Department of Environmental Protection

Name of Facility: Param Petroleum Site

Location: Burlington County, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:

27.00017.161

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans):

MW-05

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West _____ Latitude: North _____

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 450892.22 East 391930.88

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):

3.56

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Significant observations and notes: _____

AUTHENTICATION

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PROFESSIONAL LAND SURVEYOR'S SIGNATURE

November 24, 2004
DATE

Edward A. Patalano PE-LS 23224

PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

(Please print or type)

1815 Garden Avenue cherry Hill, New Jersey (856) 489 8200

PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner Name of Owner:

Name of Facility: Param Petroleum

Location: Burlington, New Jersey

Case Number(s): 91-12-10-1439 (UST#, ISRA#, Incident#, or EPA#)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: - -2700017866

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW6

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74°51'31.8' Latitude: North 40°04'15.7"

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 450990 East 391710

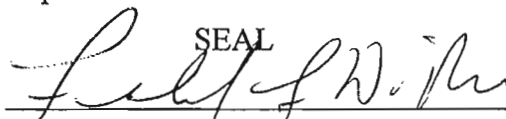
Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 1.32'

Source of elevation datum (benchmark, number/description and elevation.) Vertical datum based on NAVD-88

Significant observations and notes:

AUTHENTICATION

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 SEAL

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

1-2-07

DATE

Ferdinand F. DiRosa P.L.S. Number 20366

PROFESSIONAL LAND SURVEYORS NAME AND LICENSE NUMBER

4300 Haddenfield Road, suite 115, Pennsauken, NJ (856)488-6200

PROFESSIONAL LAND SURVEYORS ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner:

Name of Facility: Param Petroleum

Location: Burlington City, New Jersey

Case Number(s): 91-12-10-1439 (UST#, ISRA#, Incident#, or EPA#)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: - -2700017865

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW7

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74°51'30" Latitude: North 40°04'15.7"

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 450990 East 391850

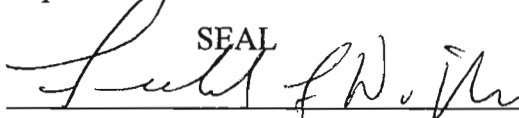
Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 4.55'

Source of elevation datum (benchmark, number/description and elevation.) Vertical datum based on NAVD-88

Significant observations and notes:

AUTHENTICATION

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 SEAL

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

1-2-07
DATE

Ferdinand F. DiRosa P.L.S. Number 20366

PROFESSIONAL LAND SURVEYORS NAME AND LICENSE NUMBER

4300 Haddenfield Road, suite 115, Pennsauken, NJ (856)488-6200

PROFESSIONAL LAND SURVEYORS ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner:

Name of Facility: Param Petroleum

Location: Burlington City, New Jersey

Case Number(s): 91-12-10-1439 (UST#, ISRA#, Incident#, or EPA#)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: - -2700017868

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW8

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74°51'30.2" Latitude: North 40°04'16.9"

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 451120 East 391840

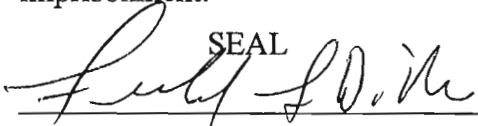
Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 3.58'

Source of elevation datum (benchmark, number/description and elevation.) Vertical datum based on NAVD-88

Significant observations and notes:

AUTHENTICATION

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PROFESSIONAL LAND SURVEYOR'S SIGNATURE

1-2-07

DATE

Ferdinand F. DiRosa P.L.S. Number 20366

PROFESSIONAL LAND SURVEYORS NAME AND LICENSE NUMBER

4300 Haddenfield Road, suite 115, Pennsauken, NJ (856)488-6200

PROFESSIONAL LAND SURVEYORS ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner:

Name of Facility: Param Petroleum

Location: Burlington, New Jersey

Case Number(s): 91-12-10-1439 (UST#, ISRA#, Incident#, or EPA#)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: - -2700017867

(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW9

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74°51'28.2" Latitude: North 40°04'16.8"

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 451100 East 391980

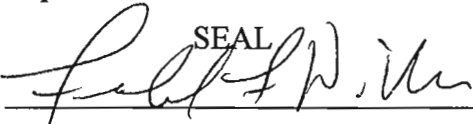
Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 4.03'

Source of elevation datum (benchmark, number/description and elevation.) Vertical datum based on NAVD-88

Significant observations and notes:

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

 SEAL

1-2-07

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

DATE

Ferdinand F. DiRosa P.L.S. Number 20366

PROFESSIONAL LAND SURVEYORS NAME AND LICENSE NUMBER

4300 Haddenfield Road, suite 115, Pennsauken, NJ (856)488-6200

PROFESSIONAL LAND SURVEYORS ADDRESS AND PHONE NUMBER

APPENDIX D
Field Sampling Purge Logs

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/11/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 70°, partly cloudy

MONITOR WELL #: MW-1 WELL DEPTH: 11.46'
 WELL PERMIT #: 2700017157 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.46-11.46'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 7.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.38 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1205	6.36	NA	0.597	NA	-72	NA	1.50	NA	78.1	NA	26.1	NA	125	5.52
1210	6.15	0.21	0.820	-0.223	-74	2	0.00	1.5	79.9	-1.8	25.9	0.2	350	5.59
1215	6.25	-0.1	1.660	-0.84	-97	23	0.00	0	73.7	6.2	25.7	0.2	350	5.59
1220	6.45	-0.2	1.900	-0.24	-128	31	0.00	0	62.8	10.9	25.6	0.1	350	5.59
1225	6.57	-0.12	1.810	0.09	-142	14	0.00	0	57.7	5.1	25.4	0.2	350	5.59
1230	6.64	-0.07	1.630	0.18	-150	8	0.00	0	43.2	14.5	25.1	0.3	350	5.59
1235	6.66	-0.02	1.470	0.16	-152	2	0.00	0	35.8	7.4	25.0	0.1	350	5.59
1240	6.61	0.05	1.320	0.15	-149	-3	0.00	0	27.0	8.8	24.7	0.3	350	5.60
1245	6.62	-0.01	1.210	0.11	-148	-1	0.00	0	22.2	4.8	24.8	-0.1	350	5.60
1250	6.63	-0.01	1.120	0.09	-148	0	0.00	0	20.5	1.7	24.6	0.2	350	5.60
1255	6.65	-0.02	0.980	0.14	-148	0	0.00	0	19.0	1.5	24.6	0	350	5.60
1300	6.63	0.02	0.994	-0.014	-146	-2	0.00	0	19.1	-0.1	24.6	0	350	5.60
1305	6.62	0.01	0.977	0.017	-145	-1	0.00	0	18.4	0.7	24.6	0	350	5.60

COMMENTS: Collect sample MW1 at 1315.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/12/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 60°, sunny

MONITOR WELL #: MW-3 WELL DEPTH: 12.20'
 WELL PERMIT #: 2700017159 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 2.20-12.20'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 6.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 4.35 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1005	5.76	NA	0.598	NA	64	NA	0.73	NA	44.6	NA	23.4	NA	375	4.47
1010	5.77	-0.01	0.476	0.122	53	11	0.00	0.73	57.8	-13.2	23.3	0.1	375	4.50
1015	5.78	-0.01	0.653	-0.177	55	-2	0.00	0	46.8	11	23.1	0.2	375	4.50
1020	5.79	-0.01	0.461	0.192	55	0	0.00	0	34.9	11.9	22.8	0.3	375	4.50
1025	5.80	-0.01	0.451	0.01	51	4	0.00	0	34.9	0	22.8	0	375	4.50
1030	5.77	0.03	0.457	-0.006	53	-2	0.00	0	34.3	0.6	22.7	0.1	375	4.50

COMMENTS: Collect sample MW3 at 1040.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/12/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 60°, sunny

MONITOR WELL #: MW-4 WELL DEPTH: 12.72'
 WELL PERMIT #: 2700017160 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 2.72-12.72'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 7.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.46 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1420	6.27	NA	0.790	NA	-122	NA	0.00	NA	1.6	NA	24.5	NA	325	5.70
1425	6.26	0.01	0.801	-0.011	-131	9	0.00	0	1.0	0.6	24.3	0.2	300	5.73
1430	6.40	-0.14	0.827	-0.026	-144	13	0.00	0	1.9	-0.9	24.0	0.3	300	5.79
1435	6.48	-0.08	0.865	-0.038	-152	8	0.00	0	0.8	1.1	23.8	0.2	300	5.79
1440	6.53	-0.05	0.915	-0.05	-157	5	0.00	0	1.0	-0.2	23.6	0.2	300	5.80
1445	6.52	0.01	0.957	-0.042	-157	0	0.00	0	2.9	-1.9	23.3	0.3	300	5.80
1450	6.49	0.03	0.960	-0.003	-152	-5	0.00	0	4.5	-1.6	23.1	0.2	300	5.80
1455	6.44	0.05	0.963	-0.003	-149	-3	0.00	0	4.3	0.2	22.8	0.3	300	5.80
1500	6.44	0	0.953	0.01	-143	-6	0.00	0	4.2	0.1	22.6	0.2	300	5.80

COMMENTS: Collect sample MW4 at 1510.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/11/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 75°, partly cloudy

MONITOR WELL #: MW-5 WELL DEPTH: 11.82'
 WELL PERMIT #: 2700017161 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.82-11.82'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 10.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 3.68 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1535	6.62	NA	0.655	NA	-96	NA	1.17	NA	142.0	NA	24.3	NA	175	3.85
1540	6.43	0.19	0.728	-0.073	-91	-5	0.01	1.16	107.0	35	23.6	0.7	175	3.90
1545	6.47	-0.04	0.896	-0.168	-99	8	0.00	0.01	79.3	27.7	23.5	0.1	175	4.37
1550	6.64	-0.17	1.570	-0.674	-114	15	0.00	0	65.1	14.2	23.3	0.2	175	4.40
1555	6.72	-0.08	2.210	-0.64	-119	5	0.00	0	57.9	7.2	23.0	0.3	175	4.44
1600	6.74	-0.02	2.340	-0.13	-123	4	0.00	0	49.2	8.7	22.9	0.1	175	4.44
1605	6.76	-0.02	2.270	0.07	-126	3	0.00	0	42.0	7.2	23.0	-0.1	175	4.45
1610	6.74	0.02	2.160	0.11	-129	3	0.00	0	39.2	2.8	22.8	0.2	175	4.46
1615	6.71	0.03	2.000	0.16	-128	-1	0.00	0	35.2	4	22.4	0.4	175	4.46
1620	6.69	0.02	1.850	0.15	-129	1	0.00	0	28.9	6.3	22.4	0	175	4.46
1625	6.67	0.02	1.720	0.13	-130	1	0.00	0	22.2	6.7	22.4	0	175	4.46
1630	6.63	0.04	1.590	0.13	-130	0	0.00	0	19.7	2.5	22.5	-0.1	175	4.46
1635	6.57	0.06	1.420	0.17	-128	-2	0.00	0	14.7	5	22.4	0.1	175	4.46
1640	6.52	0.05	1.270	0.15	-128	0	0.00	0	13.7	1	22.3	0.1	175	4.46
1645	6.49	0.03	1.130	0.14	-127	-1	0.00	0	11.9	1.8	22.4	-0.1	175	4.46
1650	6.46	0.03	1.000	0.13	-127	0	0.00	0	10.5	1.4	22.3	0.1	175	4.46
1655	6.44	0.02	0.910	0.09	-126	-1	0.00	0	10.1	0.4	22.4	-0.1	175	4.43
1700	6.42	0.02	0.900	0.01	-126	0	0.00	0	9.5	0.6	22.4	0	175	4.43
1705	6.41	0.01	0.905	-0.005	-125	-1	0.00	0	9.2	0.3	22.3	0.1	175	4.44

COMMENTS: Collect sample MW5 at 1715.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/11/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 75°, partly cloudy

MONITOR WELL #: MW-6 WELL DEPTH: 11.58'
 WELL PERMIT #: 2700017866 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.58-11.58'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 7.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 2.39 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1600	5.69	NA	0.592	NA	175	NA	2.89	NA	49.8	NA	19.96	NA	200	2.39
1605	5.47	0.22	0.614	-0.022	199	-24	0.97	1.92	27.2	22.6	19.62	0.34	200	2.48
1610	5.42	0.05	0.713	-0.099	207	-8	0.38	0.59	36.4	-9.2	19.40	0.22	200	2.48
1615	5.37	0.05	0.715	-0.002	211	-4	0.07	0.31	51.1	-14.7	19.15	0.25	200	2.49
1620	5.33	0.04	0.651	0.064	216	-5	0.00	0.07	70.6	-19.5	19.01	0.14	200	2.49
1625	5.31	0.02	0.627	0.024	216	0	0.00	0	89.1	-18.5	18.92	0.09	200	2.50
1630	5.30	0.01	0.532	0.095	211	5	0.00	0	103.0	-13.9	18.73	0.19	200	2.50
1635	5.30	0	0.471	0.061	206	5	0.00	0	89.6	13.4	18.62	0.11	200	2.50
1640	5.30	0	0.419	0.052	203	3	0.00	0	69.4	20.2	18.52	0.1	200	2.50
1645	5.30	0	0.349	0.07	201	2	0.00	0	55.3	14.1	18.42	0.1	200	2.50
1650	5.28	0.02	0.343	0.006	200	1	0.00	0	52.1	3.2	18.41	0.01	200	2.50
1655	5.28	0	0.347	-0.004	201	-1	0.00	0	51.5	0.6	18.38	0.03	200	2.50

COMMENTS: Collect sample MW6 at 1700.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/11/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 70°, partly cloudy

MONITOR WELL #: MW-7 WELL DEPTH: 51.70'
 WELL PERMIT #: 2700017865 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 41.70-51.70'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 48.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.93 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1105	7.32	NA	0.558	NA	-75	NA	4.34	NA	980.0	NA	19.11	NA	450	6.12
1110	7.57	-0.25	0.606	-0.048	-97	22	1.62	2.72	878.0	102	18.85	0.26	475	6.12
1115	7.51	0.06	0.759	-0.153	-97	0	0.85	0.77	702.0	176	18.76	0.09	450	6.12
1120	7.44	0.07	0.947	-0.188	-93	-4	0.43	0.42	414.0	288	18.66	0.1	450	6.12
1125	7.45	-0.01	1.080	-0.133	-91	-2	0.11	0.32	337.0	77	18.70	-0.04	450	6.12
1130	7.49	-0.04	1.270	-0.19	-93	2	0.00	0.11	254.0	83	18.83	-0.13	450	6.12
1135	7.52	-0.03	1.270	0	-92	-1	0.00	0	255.0	-1	18.65	0.18	450	6.12
1140	7.50	0.02	1.220	0.05	-92	0	0.00	0	248.0	7	18.72	-0.07	450	6.12

COMMENTS: Collect sample MW7D at 1150.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING
DATA SHEET

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/12/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 60°, sunny

MONITOR WELL #: MW-8 WELL DEPTH: 11.64'
 WELL PERMIT #: 2700017868 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.64-11.64'

PID READINGS (ppm):
 BACKGROUND: 0 PUMP INTAKE DEPTH: 10.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 4.45 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1240	6.70	NA	1.640	NA	19	NA	3.89	NA	66.0	NA	20.66	NA	300	4.45
1245	6.11	0.59	1.900	-0.26	70	-51	1.06	2.83	61.4	4.6	20.10	0.56	300	4.45
1250	6.05	0.06	1.960	-0.06	77	-7	0.79	0.27	61.2	0.2	20.07	0.03	300	4.45
1255	5.99	0.06	2.040	-0.08	86	-9	0.58	0.21	53.8	7.4	19.92	0.15	300	4.45
1300	5.95	0.04	2.070	-0.03	90	-4	0.40	0.18	33.1	20.7	19.93	-0.01	300	4.45
1305	5.94	0.01	2.080	-0.01	93	-3	0.36	0.04	28.0	5.1	19.96	-0.03	300	4.45
1310	5.92	0.02	2.080	0	95	-2	0.34	0.02	20.1	7.9	19.94	0.02	300	4.45
1315	5.91	0.01	2.090	-0.01	96	-1	0.28	0.06	18.8	1.3	19.84	0.1	300	4.45
1320	5.90	0.01	2.080	0.01	98	-2	0.24	0.04	17.3	1.5	19.84	0	300	4.45
1325	5.90	0	2.060	0.02	98	0	0.18	0.06	16.9	0.4	19.81	0.03	300	4.45
1330	5.89	0.01	2.050	0.01	99	-1	0.17	0.01	17.5	-0.6	19.79	0.02	300	4.45
1335	5.89	0	2.050	0	99	0	0.19	-0.02	15.9	1.6	19.78	0.01	300	4.45

COMMENTS: Collect sample MW8 at 1340.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 9/12/2006 FIELD PERSONNEL: J. McGarry, T. Sinisgalli
 WEATHER: 60°, sunny

MONITOR WELL #: MW-9 WELL DEPTH: 11.59'
 WELL PERMIT #: 2700017867 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.59-11.59'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 10.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 4.65 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
930	5.73	NA	0.609	NA	157	NA	4.25	NA	24.3	NA	20.10	NA	125	4.73
935	5.69	0.04	0.685	-0.076	161	-4	2.35	1.9	26.4	-2.1	20.07	0.03	250	4.78
940	5.62	0.07	0.756	-0.071	169	-8	1.50	0.85	36.0	-9.6	20.07	0	250	4.78
945	5.50	0.12	0.905	-0.149	180	-11	0.90	0.6	25.1	10.9	20.01	0.06	250	4.78
950	5.42	0.08	0.987	-0.082	188	-8	0.65	0.25	20.2	4.9	19.98	0.03	250	4.78
955	5.35	0.07	1.230	-0.243	196	-8	0.39	0.26	14.4	5.8	19.89	0.09	250	4.78
1000	5.30	0.05	1.320	-0.09	202	-6	0.25	0.14	12.8	1.6	19.92	-0.03	250	4.78
1005	5.26	0.04	1.330	-0.01	208	-6	0.19	0.06	10.9	1.9	19.97	-0.05	250	4.78
1010	5.24	0.02	1.350	-0.02	209	-1	0.14	0.05	8.0	2.9	19.99	-0.02	250	4.78
1015	5.27	-0.03	1.400	-0.05	206	3	0.11	0.03	7.5	0.5	20.04	-0.05	250	4.78
1020	5.27	0	1.410	-0.01	206	0	0.09	0.02	8.0	-0.5	20.07	-0.03	250	4.78
1025	5.26	0.01	1.400	0.01	208	-2	0.07	0.02	8.2	-0.2	20.07	0	250	4.78
1030	5.26	0	1.410	-0.01	210	-2	0.07	0	8.0	0.2	20.1	-0.01	250	4.78
1035	5.26	0	1.42	-0.01	211	-1	0.06	0.01	7.9	0.1	20.1	-0.01	250	4.78

COMMENTS: Collect sample MW9 at 1040.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 12/6/2006 FIELD PERSONNEL: J. McGarry, T. Teegarden
 WEATHER: 30°, sunny

MONITOR WELL #: MW-1 WELL DEPTH: 11.46'
 WELL PERMIT #: 2700017157 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.46-11.46'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 7.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.10 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
855	6.43	NA	0.590	NA	-75	NA	0.96	NA	143.0	NA	16.0	NA	200	5.20
900	6.64	-0.21	0.597	-0.007	-93	18	0.00	0.96	168.0	-25	17.2	-1.2	400	5.20
905	6.77	-0.13	0.590	0.007	-123	30	0.00	0	108.0	60	18.0	-0.8	350	5.29
910	6.77	0	0.590	0	-125	2	0.00	0	97.8	10.2	18.1	-0.1	350	5.30
915	6.77	0	0.587	0.003	-127	2	0.00	0	81.9	15.9	18.2	-0.1	350	5.30
920	6.76	0.01	0.587	0	-128	1	0.00	0	64.6	17.3	18.2	0	350	5.30
925	6.74	0.02	0.577	0.01	-128	0	0.00	0	57.0	7.6	18.3	-0.1	350	5.30
930	6.73	0.01	0.577	0	-129	1	0.00	0	46.8	10.2	18.3	0	350	5.30
935	6.72	0.01	0.571	0.006	-129	0	0.00	0	44.1	2.7	18.3	0	350	5.30
940	6.71	0.01	0.566	0.005	-128	-1	0.00	0	49.9	-5.8	18.3	0	350	5.30
945	6.70	0.01	0.565	0.001	-128	0	0.00	0	35.1	14.8	18.4	-0.1	350	5.30
950	6.70	0	0.561	0.004	-127	-1	0.00	0	24.9	10.2	18.4	0	350	5.30
955	6.68	0.02	0.556	0.005	-127	0	0.00	0	19.8	5.1	18.4	0	350	5.30
1000	6.68	0	0.556	0	-127	0	0.00	0	20.6	-0.8	18.5	-0.1	350	5.30
1005	6.67	0.01	0.555	0.001	-127	0	0.00	0	18.9	1.7	18.6	-0.1	350	5.30

COMMENTS: Collect sample MW1 at 1010.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING
DATA SHEET

SITE: Param
 DATE: 12/6/2006
 WEATHER: 30°, sunny

CONSULTING FIRM: The Louis Berger Group
 FIELD PERSONNEL: J. McGarry, T. Teegarden

MONITOR WELL #: MW-2 WELL DEPTH: 12.07
 WELL PERMIT #: 2700017158 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 2.07-12.07'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 8.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 208 DEPTH TO WATER BEFORE PUMP INSTALLATION: 4.67 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1415	6.57	NA	0.475	NA	-91	NA	0.00	NA	19.1	NA	16.14	NA	400	4.79
1420	6.63	-0.06	0.475	0	-99	8	0.00	0	26.8	-7.7	16.29	-0.15	400	4.81
1425	6.59	0.04	0.477	-0.002	-106	7	0.00	0	39.3	-12.5	16.38	-0.09	400	4.83
1430	6.61	-0.02	0.478	-0.001	-108	2	0.00	0	43.9	-4.6	16.39	-0.01	400	4.85
1435	6.67	-0.06	0.482	-0.004	-110	2	0.00	0	42.2	1.7	16.49	-0.1	400	4.87
1440	6.61	0.06	0.484	-0.002	-111	1	0.00	0	46.1	-3.9	16.63	-0.14	400	4.87

COMMENTS: Collect sample MW2 at 1450.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 12/6/2006 FIELD PERSONNEL: J. McGarry, T. Teegarden
 WEATHER: 30°, sunny

MONITOR WELL #: MW-4 WELL DEPTH: 12.72'
 WELL PERMIT #: 2700017160 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 2.72-12.72'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 7.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 260 DEPTH TO WATER BEFORE PUMP INSTALLATION: 5.05 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1400	6.61	NA	0.807	NA	-131	NA	1.04	NA	0.0	NA	16.3	NA	300	5.15
1405	6.79	-0.18	0.814	-0.007	-140	9	0.00	1.04	0.0	0	16.7	-0.4	300	5.19
1410	6.82	-0.03	0.816	-0.002	-144	4	0.00	0	0.0	0	16.8	-0.1	300	5.21
1415	6.81	0.01	0.819	-0.003	-144	0	0.00	0	0.0	0	16.6	0.2	300	5.25
1420	6.77	0.04	0.803	0.016	-140	-4	0.00	0	0.0	0	16.7	-0.1	300	5.25
1425	6.72	0.05	0.792	0.011	-135	-5	0.00	0	0.0	0	16.7	0	300	5.25
1430	6.69	0.03	0.781	0.011	-133	-2	0.00	0	0.0	0	16.7	0	300	5.25
1435	6.67	0.02	0.766	0.015	-131	-2	0.00	0	0.0	0	16.7	0	300	5.25
1440	6.65	0.02	0.766	0	-130	-1	0.00	0	0.0	0	16.8	-0.1	300	5.25
1445	6.62	0.03	0.752	0.014	-127	-3	0.00	0	0.0	0	16.9	-0.1	300	5.25
1450	6.60	0.02	0.747	0.005	-126	-1	0.00	0	0.0	0	17.0	-0.1	300	5.25
1455	6.60	0	0.748	-0.001	-126	0	0.00	0	0.0	0	16.9	0.1	300	5.25
1500	6.56	0.04	0.748	0	-126	0	0.00	0	0.0	0	17.1	-0.2	300	5.25

COMMENTS: Collect sample MW4 at 1505. Turbidity readings were flashing zeroes. Water had a strong petroleum odor.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 12/5/2006 FIELD PERSONNEL: J. McGarry, T. Teegarden
 WEATHER: 30°, sunny

MONITOR WELL #: MW-5 WELL DEPTH: 11.82'
 WELL PERMIT #: 2700017161 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.82-11.82'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 10.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 3.26 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1250	7.05	NA	0.648	NA	-55	NA	10.34	NA	114.0	NA	14.83	NA	500	3.76
1255	7.04	0.01	0.635	0.013	-58	3	6.53	3.81	713.0	-599	14.60	0.23	250	3.84
1300	7.07	-0.03	0.644	-0.009	-62	4	1.46	5.07	104.0	609	14.55	0.05	250	3.90
1305	7.05	0.02	0.655	-0.011	-63	1	2.06	-0.6	155.0	-51	14.67	-0.12	250	3.95
1310	6.95	0.1	0.670	-0.015	-64	1	1.22	0.84	151.0	4	14.87	-0.2	250	3.97
1315	6.92	0.03	0.671	-0.001	-63	-1	1.60	-0.38	648.0	-497	14.99	-0.12	250	3.98
1320	6.94	-0.02	0.658	0.013	-60	-3	1.19	0.41	105.0	543	15.14	-0.15	250	3.98
1325	6.89	0.05	0.675	-0.017	-56	-4	0.87	0.32	70.6	34.4	15.23	-0.09	250	3.98
1330	6.83	0.06	0.650	0.025	-53	-3	0.41	0.46	70.5	0.1	15.18	0.05	250	3.98
1335	6.82	0.01	0.632	0.018	-49	-4	0.48	-0.07	71.2	-0.7	15.18	0	250	3.98
1340	6.75	0.07	0.625	0.007	-49	0	0.44	0.04	65.9	5.3	15.25	-0.07	250	3.98

COMMENTS: Collect sample MW5 at 1345.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 12/6/2006 FIELD PERSONNEL: J. McGarry, T. Teegarden
 WEATHER: 30°, sunny

MONITOR WELL #: MW-6 WELL DEPTH: 11.58'
 WELL PERMIT #: 2700017866 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.58-11.58'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 7.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 1.78 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1100	5.56	NA	0.318	NA	174	NA	5.72	NA	23.1	NA	12.90	NA	300	2.07
1105	5.72	-0.16	0.296	0.022	183	-9	1.57	4.15	21.1	2	13.80	-0.9	300	2.07
1110	5.91	-0.19	0.295	0.001	187	-4	1.33	0.24	22.9	-1.8	13.90	-0.1	300	2.10
1115	5.95	-0.04	0.296	-0.001	194	-7	1.20	0.13	24.7	-1.8	14.00	-0.1	300	2.10
1120	5.93	0.02	0.296	0	204	-10	0.93	0.27	22.9	1.8	14.10	-0.1	300	2.10
1125	5.93	0	0.296	0	208	-4	0.88	0.05	20.0	2.9	14.20	-0.1	300	2.10
1130	5.91	0.02	0.297	-0.001	212	-4	0.70	0.18	19.5	0.5	14.20	0	300	2.10
1135	5.91	0	0.297	0	216	-4	0.59	0.11	12.8	6.7	14.20	0	300	2.10
1140	5.89	0.02	0.298	-0.001	219	-3	0.51	0.08	13.5	-0.7	14.20	0	300	2.10
1145	5.88	0.01	0.298	0	223	-4	0.35	0.16	9.8	3.7	14.40	-0.2	300	2.10
1150	5.87	0.01	0.298	0	225	-2	0.34	0.01	8.8	1	14.40	0	300	2.10
1155	5.88	-0.01	0.299	-0.001	226	-1	0.33	0.01	10.1	-1.3	14.30	0.1	300	2.10

COMMENTS: Collect sample MW6 at 1200.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

**LOW FLOW SAMPLING
DATA SHEET**

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 12/6/2006 FIELD PERSONNEL: J. McGarry, T. Teegarden
 WEATHER: 30°, sunny

MONITOR WELL #: MW-7 WELL DEPTH: 51.70'
 WELL PERMIT #: 2700017865 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 41.70-51.70'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 48.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 4.99 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
915	6.15	NA	2.250	NA	-22	NA	0.19	NA	874.0	NA	16.39	NA	450	5.18
920	6.22	-0.07	2.230	0.02	-19	-3	0.00	0.19	673.0	201	16.39	0	450	5.19
925	6.13	0.09	2.190	0.04	-13	-6	0.00	0	624.0	49	16.37	0.02	450	5.19
930	6.16	-0.03	2.190	0	-11	-2	0.00	0	466.0	158	16.44	-0.07	450	5.19
935	6.14	0.02	2.180	0.01	-12	1	0.00	0	344.0	122	16.34	0.1	450	5.19
940	6.19	-0.05	2.180	0	-12	0	0.00	0	312.0	32	16.37	-0.03	450	5.19
945	6.15	0.04	2.180	0	-13	1	0.00	0	250.0	62	16.32	0.05	450	5.19
950	6.14	0.01	2.180	0	-11	-2	0.00	0	215.0	35	16.42	-0.1	450	5.19
955	6.12	0.02	2.170	0.01	-12	1	0.00	0	211.0	4	16.42	0	450	5.19
1000	6.13	-0.01	2.170	0	-11	-1	0.00	0	199.0	12	16.39	0.03	450	5.19

COMMENTS: Collect sample MW7 and DUP01 at 1010.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

LOW FLOW SAMPLING
DATA SHEET

SITE: Param CONSULTING FIRM: The Louis Berger Group
 DATE: 12/5/2006 FIELD PERSONNEL: J. McGarry, T. Teegarden
 WEATHER: 30°, sunny

MONITOR WELL #: MW-9 WELL DEPTH: 11.59'
 WELL PERMIT #: 2700017867 WELL DIAMETER: 4" SCREENED/OPEN INTERVAL: 1.59-11.59'

PID READINGS (ppm) :
 BACKGROUND: 0 PUMP INTAKE DEPTH: 10.0 ft below TOC
 BENEATH OUTER CAP: 0
 BENEATH INNER CAP: 0 DEPTH TO WATER BEFORE PUMP INSTALLATION: 4.25 ft below TOC

TIME	pH (pH units)		SPECIFIC CONDUCTIVITY (Ms/cm)		REDOX POTENTIAL (mv)		DISSOLVED OXYGEN (mg/l)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE (ml/min)	DEPTH TO WATER (ft below TOC)
	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*	reading	change*		
1230	5.31	NA	1.020	NA	219	NA	2.48	NA	41.3	NA	15.03	NA	400	4.30
1235	5.38	-0.07	1.020	0	233	-14	0.63	1.85	40.5	0.8	15.60	-0.57	300	4.30
1240	5.35	0.03	1.020	0	243	-10	0.39	0.24	93.4	-52.9	15.70	-0.1	300	4.30
1245	5.33	0.02	1.020	0	250	-7	0.22	0.17	89.5	3.9	15.70	0	300	4.30
1250	5.31	0.02	1.020	0	253	-3	0.13	0.09	94.1	-4.6	15.80	-0.1	300	4.30
1255	5.30	0.01	1.030	-0.01	252	1	0.01	0.12	91.5	2.6	16.00	-0.2	300	4.30
1300	5.29	0.01	1.030	0	251	1	0.00	0.01	88.2	3.3	16.00	0	300	4.30
1305	5.29	0	1.030	0	251	0	0.00	0	82.7	5.5	16.00	0	300	4.30

COMMENTS: Collect sample MW9 at 1310.

*INDICATOR PARAMETERS HAVE STABILIZED WHEN 3 CONSECUTIVE READINGS ARE WITHIN: ±0.1 for pH; ±3% for Specific Conductivity and Temperature; ±10 mv for Redox Potential; and ±10% for Dissolved Oxygen and Turbidity

APPENDIX E
IDW Disposal Documentation

Environmental Industrial Services Corp. of New Jersey

Bill of Lading

Original: Not Negotiable
 Yellow: Shipping Order Copy
 Pink: Memorandum

Shipper No.: _____
 Date: 5-12-05

TO: Consignee: MXI Street: 26319 OLD TRAIL RD Destination: ABERDEEN VA Zip Code: 24210	FROM: Shipper: PARAM PETROLEUM Street: RT 130 + WOOD ST Origin: BURLINGTON VA Zip Code: J-4
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Date: 5-12-05 Job # 15-1561.2 Vehicle Number _____

Shipping Units	Kind of Packaging, Description of Articles Special Marks and Exceptions	Quantity	Units
7 DM	NON HAZARDOUS SOLID NON RCRA / NON DOT	3500	POUNDS
5 # DM	NON HAZARDOUS WATER NON RCRA / NON DOT	275	GALLONS

SHIPPER: Param Petroleum.	CARRIER: E. SCO - J
SIGNATURE: <i>[Signature]</i>	SIGNATURE: <i>[Signature]</i>
	DATE: 5-12-05

MXI ENVIRONMENTAL SERVICES, INC.

26319 Old Trail Road ~ ABINGDON, VA 24210

(276) 628-6636 FAX: 276-623-0599

MATERIAL PROFILE DATA SHEET

MATERIAL PROFILE NAME OF WASTE STREAM

BROKER USE ONLY: BROKER NAME: _____ BROKER ADDRESS: _____ P.O. OR REF # _____	
Generator Name: <u>PADAM DETROIT</u> Facility Address: <u>RT 130 + WOOD STREET</u> City: <u>QUANTON</u> County: _____ Zip Code: _____ State: _____ Generator Contact/Telephone: _____ EPA/State Id Number: _____	
Technical Contact: <u>JEFF INKOR</u> Title: <u>OPERATIONS MANAGER</u> Telephone: <u>(732) 9169-4888</u> Ext. _____ Billing Address: <u>900 PORT READING BLVD.</u> <u>SUITE: B-2</u> City: <u>PORT READING ST NJ ZIP 07064</u>	
Is sample Available upon Request? Yes _____ No _____	
Process Generating Waste: <u>DRAINAGE</u> DOT Shipping <u>NON HAZ SOLID</u> Rate of Generation: _____ Container Type/Size: <u>SS</u> EPA Waste No: _____ State Waste No: _____ 1. Does this waste contain spent solvents (F001 through F005)? Y _____ N _____ Materials listed under the California List Y _____ N _____ 2. Is this waste listed for Dioxin as defined in 40 CFR 262.31 (F020 - F023 and F026 - 28) Y _____ N _____ 3. Is this waste infectious? Y _____ N _____ Is it radioactive? Y _____ N _____ Does it contain PCB's > 50 ppm? Y _____ N _____ 4. If you answered yes to questions 2 or 3 ... DO NOT CONTINUE. Please contact you MXI Technical Sales Representative for assistance.	
Chemical Constituents (Must total 100%) <u>SOIL</u> _____ <u>100</u> _____ <u>- 100</u> _____	
Physical Characteristics at 70° Physical State: Liquid _____ Two _____ Semisolid _____ Solid <u>100</u> Layers: None _____ Precipitated Solids (%) _____ Multi-layer _____ Free Liquids (%) _____ Viscosity: Low _____ Medium _____ High _____ Is Material Pumpable? Yes _____ No _____ Polymerizable? Yes _____ No _____ Specific Weight (lbs./gal) _____ or Specific Gravity (g/cc) _____ Appearance: <u>BROWN SOLID</u> Ocor: _____ Flash Point (cc): Exact _____ <60°F _____ 61°F - 100°F _____ 101° - 140°F _____ 141° F - 200°F _____ >200°F _____ BTU/lb. _____ Ash (%) _____ Water (%) _____ pH (avg.) _____ Range <u>5</u> to <u>8</u>	
Please attach all MSDS's, analysis and other info.	
Metals (ppm) Total TCLP _____ As _____ Ag _____ Cd _____ Ba _____ Pb _____	Total TCLP _____ Cr (total) <u>BAL</u> Cr (HEX) _____ Hg _____ Se _____
Total _____ Si _____ Be _____ Ti _____ Sb _____ S _____ P _____	Total _____ Cu _____ Zn _____
Other: (Specify in ppm) Free Cyanide _____ Phenolics _____ Total Cyanide _____ Free Sulfide _____ Total Organic Halogen (TOH) _____ Fluorine _____ Bromine _____ Chlorine _____	
Information completed by: _____ Name: <u>J. P. ...</u> Title: <u>OPERATIONS</u> Date: <u>5-10-05</u> MRF use only: Approval Number: _____ EN: _____	
I certify that all information on this form is complete and factual (including attached information and is an accurate representation of the known and suspected hazards of the waste to be disposed. Generator's Signature: _____ Date: <u>5-12-05</u> Generator's Signature: _____ Date: _____	

MXI ENVIRONMENTAL SERVICES, INC.

26319 Old Trail Road - ARLINGTON, VA 22210
 (276) 628-6636 FAX: 276-623-0599

MATERIAL PROFILE DATA SHEET

MATERIAL PROFILE NAME OF WASTE STREAM

BROKER USE ONLY: BROKER NAME: ESCO-NT BROKER ADDRESS: _____ P.O. OR REF # _____

Generator Name: Jeff Ingrue Technical Contact: Jeff Ingrue Is sample Available upon Request? Yes No
 Facility Address: Port Reading Title: OPERATIONS MANAGER
 City: Port Reading State: NJ ZIP: 07064 Telephone: 732 9169-4888 Ext. _____ Billing Address: 900 Port Reading Ave. City: Port Reading State: NJ ZIP: 07064

Process Generating Waste: Paints DOT Shipping none Container Type/Size: 55 EPA Waste No: _____ State Waste No: _____
 Rate of Generation: _____ Materials listed under the California List Y N
 1. Does this waste contain spent solvents (F001 through F005)? Y N
 2. Is this waste listed for Dioxin as defined in 40 CFR 262.31 (F020 - F023 and F026 - 28) Y N
 3. Is this waste infectious? Y N Does it contain PCB's > 50 ppm? Y N
 4. If you answered yes to questions 2 or 3 ... DO NOT CONTINUE. Please contact you MXI Technical Sales Representative for assistance.

Physical Characteristics at 70°
 Physical State: Liquid Semisolid _____ Solid _____
 Layers: None _____ Two _____ Multi-layer _____
 Free Liquids (%) 100 Precipitated Solids (%) _____
 Viscosity: Low _____ Medium _____ High _____
 Is Material Pumpable? Yes No _____
 Specific Weight (lbs./gal) 100 Polymerizable? Yes _____ No _____
 Appearance: clear or Specific Gravity (g/cc) _____
 Flash Point (cc): Exact <60°F 101° - 140°F _____ 141° F - 200°F _____
 BTU/lb. _____ Ash (%) _____ Water (%) _____
 pH (avg.) _____ Range 6 to 8
 Reactivity (Reactive with) _____

Please attach all MSDS's, analysis and other info.

Metals (ppm)	Total	TCLP	Total	Total
As	<u>But</u>		Bc	Si
Ag			Ti	As
Cd			Sb	Ni
Ba			S	Cr
Pb			P	Zn

Other: (Specify in ppm) Phenolics _____ PCB's _____
 Free Cyanide _____
 Total Cyanide _____
 Total Organic Halogens (%) Free/Sulfide _____
 Fluorine _____ Bromine _____ Chlorine _____
 Information completed by: J. Ingrue
 Name: _____ Date: 5-10-05
 Title: OPERATIONS
 MRF use only: Approval Number: _____
 EN: _____

I certify that all information on this form is complete and factual (including attached information and in an accurate representation of the known and suspected hazards of the waste to be disposed.
 Generator's Signature: [Signature] Date: 5-12-05

116277

Environmental Industrial Services Corp. of New Jersey Bill of Lading

Shipper No: BR013612

Original: Not Negotiable
Yellow: Shipping Order Copy
Pink: Memorandum

Date: 5-12-05

TO:		FROM:	
Consignee	<u>MXI</u>	Shipper	<u>PARAM PETROLEUM</u>
Street	<u>26319 OLD TRAIL RD</u>	Street	<u>RT 130 + WOOD ST</u>
Destination	<u>ABANDON VT</u>	Origin	<u>BURLINGTON VT</u>
Zip Code	<u>05420</u>	Zip Code	

Date: 5-12-05 Job # 15-1561.2 Vehicle Number J-Y

Shipping Units	Kind of Packaging, Description of Articles Special Marks and Exceptions	Quantity	Units
<u>7 DM</u>	<u>NON HAZARDOUS SOIL NON RCRA / NON DOT PARAMNF-001-BR</u>	<u>3500</u>	<u>POUNDS</u>
<u>58 DM</u>	<u>NON HAZARDOUS WATER NON RCRA / NON DOT</u>	<u>275</u>	<u>GALLONS</u>
	<u>PARAMNF-002-SS (2)</u>		<u>WISCONSIN EXPRESS INC.</u>
			<u>3/12/05</u>

SHIPPER	<u>PARAM PETROLEUM</u>	CARRIER	<u>(1) EISCO-NS</u>
SIGNATURE	<u>[Signature]</u>	SIGNATURE	<u>[Signature]</u>
		DATE	<u>5-12-05</u>

Environmental Industrial Services Corp. of New Jersey

Bill of Lading

Original: Not Negotiable
 Yellow: Shipping Order Copy
 Pink: Memorandum

Shipper No.: _____
 Date: 10-18-07

TO: Consignee <u>MXI</u> Street <u>26319 OLD TRAIL RD.</u> Destination <u>ANDOVER VT</u> Zip Code _____	FROM: Shipper <u>PALAM PETROLEUM</u> Street <u>AT 130</u> Origin <u>BURLINGTON VT</u> Zip Code _____
--	---

Date: 10-18-07, Job # 2328, Vehicle Number J-4

Shipping Units	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Quantity	Units
DM	NON-RCRA / NON-DOT SOLID		POUNDS
DM	NON-RCRA / NON-DOT WATER		GAL

SHIPPER	CARRIER <u>F. SCO-NS</u>
SIGNATURE _____	SIGNATURE <u>[Signature]</u>
	DATE <u>10/18/07</u>

APPENDIX F
Well Search Results

Board of Chosen Freeholders Of The County of Burlington

OFFICE OF THE
BURLINGTON COUNTY FREEHOLDERS

Dawn Marie Addiego
Vincent R. Farias
Aubrey A. Fenton
William S. Haines, Jr.
James K. Wujcik

P.O. BOX 6000
MOUNT HOLLY, NEW JERSEY
08060-6000



Augustus M. Mosca
County Administrator /
Board Clerk
609-265-5020
Fax: 609-702-7000

August 6, 2008

Qi Li
The Louis Berger Group, Inc.
412 Mount Kemble Avenue
PO Box 1946
Morristown, NJ 07962-1946

Re: Records Request: Well Search
For Block 74, Lot 25, Burlington City

Dear Mr. Li:

Pursuant to your request, and to follow-up on our recent exchange of emails, this is to confirm that the Burlington County Health Department has searched for documents relative to wells, water allocation permits, etc., within a one-mile radius of the above-captioned property, using data supplied by you. The Department reports that its search has produced "no records."

This concludes our processing of your records request.

Sincerely,

RALPH M. SHROM
Custodian of Public Records

Vander Vliet, James

From: Li, Qi
Sent: Friday, May 02, 2008 9:18 AM
To: Vander Vliet, James
Subject: FW: Well Search for Block 74 Lot 25 in Burlington City

Jim,

Here is the final conclusion for Param well search.

Qi Li

The Louis Berger Group, Inc.
412 Mount Kemble Avenue
PO Box 1946
Morristown, NJ 07962-1946
Tel: 973 407 1387
Fax: 973 267 6468

From: Shrom, Ralph [mailto:rshrom@co.burlington.nj.us]
Sent: Thursday, May 01, 2008 5:48 PM
To: Li, Qi
Subject: FW: Well Search for Block 74 Lot 25 in Burlington City

Mr. Li:

I spoke with the Health Department. This concludes our search -- no records. However, they advise that you may also want to check with NJDEP's Bureau of Water Allocation. Phone number: 609-984-6831.

Ralph.

From: Shrom, Ralph
Sent: Thursday, May 01, 2008 11:57 AM
To: 'Li, Qi'
Subject: RE: Well Search for Block 74 Lot 25 in Burlington City

Mr. Li:

I received notification from the Health Department that this search turned up no files. Seems that most of these properties have public water and sewer. I do have a call into the HD to verify. But I didn't mean to keep you waiting for an answer.

Ralph.

From: Li, Qi [mailto:qli@louisberger.com]
Sent: Wednesday, April 23, 2008 10:05 AM
To: Shrom, Ralph
Subject: RE: Well Search for Block 74 Lot 25 in Burlington City

Hi, Ralph,

Attached is the blocks and lots list within a half mile radius. Could you please let me know what time you expect to complete this well search? Thanks. Let me know if any questions.

5/2/2008

Qi Li

The Louis Berger Group, Inc.
412 Mount Kemble Avenue
PO Box 1946
Morristown, NJ 07962-1946
Tel: 973 407 1387
Fax: 973 267 6468

From: Shrom, Ralph [mailto:rshrom@co.burlington.nj.us]
Sent: Monday, April 14, 2008 1:30 PM
To: Li, Qi
Subject: RE: Well Search for Block 74 Lot 25 in Burlington City

Actually, the Health Department needs a list of all blocks and lots that would fall within the radius. Our legal department asks that requestors supply such a list, rather than have our folks prepare it.

Ralph.

From: Li, Qi [mailto:qli@louisberger.com]
Sent: Monday, April 14, 2008 1:11 PM
To: Shrom, Ralph
Subject: Well Search for Block 74 Lot 25 in Burlington City

Hi, Ralph,

I received your fax attached. The Param site is Block 74 and Lot 25 on Sheet 25 of tax map. Let me know if further information needed. Thanks.

Qi Li

The Louis Berger Group, Inc.
412 Mount Kemble Avenue
PO Box 1946
Morristown, NJ 07962-1946
Tel: 973 407 1387
Fax: 973 267 6468

Vander Vliet, James

From: Li, Qi
Sent: Wednesday, June 18, 2008 10:42 AM
To: Vander Vliet, James
Subject: Param Well Search in Burlington City

Jim,

I sent a fax to Vincent in Burlington City regarding our well search. He called back and said there is no any domestic (private) potable wells within ½ mile and Irrigation, Industrial and Public Supply Wells, and Wells with a Water Allocation Permit within 1 mile. There is a closed water supply system in Burlington City. All water is taken from Delaware River.

In our block and lots list, some of the lots fall outside of Burlington City. Should we contact to the other townships associated within the radius?

Vincent R. Calisti
Public Works Department, Director
Licensed Water Superintendent
601 E. Pearl Street
Burlington, NJ 08016

Qi Li
The Louis Berger Group, Inc.
412 Mount Kemble Avenue
PO Box 1946
Morristown, NJ 07962-1946
Tel: 973 407 1387
Fax: 973 267 6468

Vander Vliet, James

From: Li, Qi
Sent: Thursday, April 10, 2008 10:54 AM
To: Vander Vliet, James
Subject: Param DEP Comments

Jim,

Regarding to Param site DEP comments for well search, I contact the following persons from Burlington City and Burling County:

1. Burlington City:

Vincent R. Calisti
Public Works Department, Director
Licensed Water Superintendent
601 E. Pearl Street
Burlington, NJ 08016
Tel: 609-386-0307

I talked to Vince and he said there is no municipal groundwater wells located within our well search radius, either in the whole Burlington City. They take surface water from Delaware River and use water treatment system by filtration, disinfection, etc. There is 100% surface water treat system for drinking water.

2. Burlington County

Public Information Dept
15 Pioneer Blvd
Westampton, NJ 08060
Tel: 609 265 5028

They will fax us the request form. After we submit the request, they will do the search and send us the records within one week.

Qi Li

The Louis Berger Group, Inc.
412 Mount Kemble Avenue
PO Box 1946
Morristown, NJ 07962-1946
Tel: 973 407 1387
Fax: 973 267 6468



State of New Jersey

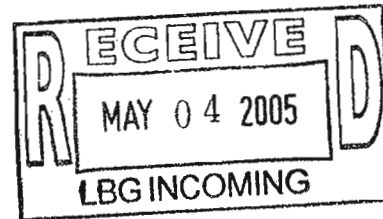
Department of Environmental Protection

WATER SUPPLY ADMINISTRATION
BUREAU OF WATER ALLOCATION
P.O. BOX 426
TRENTON, NEW JERSEY 08625-0426
TEL.# 609-292-2957
FAX.# 609-633-1495

Bradley M. Campbell
Commissioner

James E. McGreevey
Governor

Your recent request for a 5 mile computer radius search of our data base for large capacity diversion sources regulated by the Bureau of Water Allocation has been completed. The Bureau of Water Allocation is no longer providing information on nearby contaminated sites, as the information in our database is outdated. Please access the Department's web site at www.nj.gov/dep/gis/imapnj/imapnj.htm to obtain this information or contact the Department's Site Remediation Program.



Water Allocation Withdrawal Point and Monitoring Location Radius Map

The enclosed map includes Water Withdrawal Points permitted by the Bureau of Water Allocation. In addition, there may be a few regulated points which are monitored only for ambient conditions. Normally the data for this map is updated at least once per month, and the data is always subject to revision. The sequence numbers on the data printout correspond to the numbers next to the points on the map. (e.g., find point number 6 on the map and go to the corresponding row on the data printout for the details about that particular well or intake). There is a light gray line and shading that marks the one-mile and five-mile radius circles. The unlabeled dots on the map are other equipment that is regulated by Water Supply, typically the proposed locations of other wells not regulated as a water allocation withdrawal point. All coordinates provided are now in NJ State Plane coordinates in US Feet, NAD83, which is the standard by state law. The estimated absolute accuracy of each point is provided in feet from the noted location. The columns in the data printout are as follows:

Sequence Number: The number that corresponds with the same number on the map

PI ID Number (Preferred NJEMS ID): Water Allocation Facility Identification Number

PI Name: Facility Name

Activity Number: The current effective number for the Permit, Certification, Registration, Equivalency.
(Note that the PI ID Number + the Activity Number combination is unique)

SI Category Code: WSWL = Well, WSIN = Intake

SI Designation: State Well permit Number or Intake Number

SI Description: Source Local Name

Distance from XY Origin: Distance of the point to the center of the Map, in feet

County Code: See Attached Code Tables

Municipality Code: See Attached Code Tables

SPC83X, SPC83Y: NJ State Plane coordinates in US Feet, NAD83

XY Accuracy + Units Code: Estimated accuracy of the x and y coordinates

Dep to Top of Open Interval + Units (Dep to Btm of Open Interval + Units): For wells, the depth to the top and the bottom of the screen or open hole, in feet.

Z (Elevation): Elevation in feet above sea level of the ground surface of the point

Z Accuracy + Units Code: Estimated accuracy of the Z (Elevation) coordinate

Geologic Unit Code: See Attached Code Tables

Hydrogeologic Unit Code: See Attached Code Tables

Rated Pump Capacity + Units Code: Rated pump capacity of the source + rated pump capacity units

BRDGSUBJITEMID: Temporary mapping ID, ignore

Water Allocation Codes

COUNTY CODE	MUNICIPALITY CODE	COUNTY	MUNICIPALITY
01	01	Atlantic	Absecon City
01	02	Atlantic	Atlantic City
01	03	Atlantic	Brigantine City
01	04	Atlantic	Buena Boro
01	05	Atlantic	Buena Vista Twp
01	06	Atlantic	Corbin City
01	07	Atlantic	Egg Harbor City
01	08	Atlantic	Egg Harbor Twp
01	09	Atlantic	Estell Manor City
01	10	Atlantic	Folsom Boro
01	11	Atlantic	Galloway Twp
01	12	Atlantic	Hamilton Twp
01	13	Atlantic	Hammonton Town
01	14	Atlantic	Linwood City
01	15	Atlantic	Longport Boro
01	16	Atlantic	Margate City
01	17	Atlantic	Mullica Twp
01	18	Atlantic	Northfield City
01	19	Atlantic	Pleasantville City
01	20	Atlantic	Port Republic City
01	21	Atlantic	Somers Point City
01	22	Atlantic	Ventnor City
01	23	Atlantic	Weymouth Twp
02	01	Bergen	Allendale Boro
02	02	Bergen	Alpine Boro
02	03	Bergen	Bergenfield Boro
02	04	Bergen	Bogota Boro
02	05	Bergen	Carlstadt Boro
02	06	Bergen	Cliffside Park Boro
02	07	Bergen	Closter Boro
02	08	Bergen	Cresskill Boro
02	09	Bergen	Demarest Boro
02	10	Bergen	Dumont Boro
02	11	Bergen	Elmwood Park Boro
02	12	Bergen	East Rutherford Boro
02	13	Bergen	Edgewater Boro
02	14	Bergen	Emerson Boro
02	15	Bergen	Englewood City
02	16	Bergen	Englewood Cliffs Boro
02	17	Bergen	Fair Lawn Boro
02	18	Bergen	Fairview Boro
02	19	Bergen	Fort Lee Boro
02	20	Bergen	Franklin Lakes Boro
02	21	Bergen	Garfield City
02	22	Bergen	Glen Rock Boro
02	23	Bergen	Hackensack City
02	24	Bergen	Harrington Park Boro
02	25	Bergen	Hasbrouck Heights
02	26	Bergen	Haworth Boro
02	27	Bergen	Hillsdale Boro
02	28	Bergen	Hohokus Boro
02	29	Bergen	Leonia Boro
02	30	Bergen	Little Ferry Boro
02	31	Bergen	Lodi Boro
02	32	Bergen	Lyndhurst Twp
02	33	Bergen	Mahwah Twp
02	34	Bergen	Maywood Boro
02	35	Bergen	Midland Park Boro
02	36	Bergen	Montvale Boro
02	37	Bergen	Moonachie Boro
02	38	Bergen	New Milford Boro
02	39	Bergen	North Arlington Boro

02	40	Bergen	Northvale Boro
02	41	Bergen	Norwood Boro
02	42	Bergen	Oakland Boro
02	43	Bergen	Old Tappan Boro
02	44	Bergen	Oradell Boro
02	45	Bergen	Palisades Park Boro
02	46	Bergen	Paramus Boro
02	47	Bergen	Park Ridge Boro
02	48	Bergen	Ramsey Boro
02	49	Bergen	Ridgefield Boro
02	50	Bergen	Ridgefield Park Village
02	51	Bergen	Ridgewood Village
02	52	Bergen	River Edge Boro
02	53	Bergen	River Vale Twp
02	54	Bergen	Rochelle Park Twp
02	55	Bergen	Rockleigh Boro
02	56	Bergen	Rutherford Boro
02	57	Bergen	Saddle Brook Twp
02	58	Bergen	Saddle River Boro
02	59	Bergen	South Hackensack Twp
02	60	Bergen	Teaneck Twp
02	61	Bergen	Tenafly Boro
02	62	Bergen	Teterboro Boro
02	63	Bergen	Upper Saddle River
02	64	Bergen	Waldwick Boro
02	65	Bergen	Wallington Boro
02	66	Bergen	Washington Twp
02	67	Bergen	Westwood Boro
02	68	Bergen	Woodcliff Lake Boro
02	69	Bergen	Wood-Ridge Boro
02	70	Bergen	Wyckoff Twp
03	01	Burlington	Bass River Twp
03	02	Burlington	Beverly City
03	03	Burlington	Bordentown City
03	04	Burlington	Bordentown Twp
03	05	Burlington	Burlington City
03	06	Burlington	Burlington Twp
03	07	Burlington	Chesterfield Twp
03	08	Burlington	Cinnaminson Twp
03	09	Burlington	Delanco Twp
03	10	Burlington	Delran Twp
03	11	Burlington	Eastampton Twp
03	12	Burlington	Edgewater Park Twp
03	13	Burlington	Evesham Twp
03	14	Burlington	Fieldsboro Boro
03	15	Burlington	Florence Twp
03	16	Burlington	Hainesport Twp
03	17	Burlington	Lumberton Twp
03	18	Burlington	Mansfield Twp
03	19	Burlington	Maple Shade Twp
03	20	Burlington	Medford Twp
03	21	Burlington	Medford Lakes Boro
03	22	Burlington	Moorestown
03	23	Burlington	Mount Holly Twp
03	24	Burlington	Mount Laurel Twp
03	25	Burlington	New Hanover Twp
03	26	Burlington	North Hanover Twp
03	27	Burlington	Palmyra Boro
03	28	Burlington	Pemberton Boro
03	29	Burlington	Pemberton Twp
03	30	Burlington	Riverside Twp
03	31	Burlington	Riverton Boro
03	32	Burlington	Shamong Twp
03	33	Burlington	Southampton Twp

Water Allocation Codes

03	34	Burlington	Springfield Twp
03	35	Burlington	Tabernacle Twp
03	36	Burlington	Washington Twp
03	37	Burlington	Westampton Twp
03	38	Burlington	Willingboro Twp
03	39	Burlington	Woodland Twp
03	40	Burlington	Wrightstown Boro
04	01	Camden	Audubon Boro
04	02	Camden	Audubon Park Boro
04	03	Camden	Barrington Boro
04	04	Camden	Bellmawr Boro
04	05	Camden	Berlin Boro
04	06	Camden	Berlin Twp
04	07	Camden	Brooklawn Boro
04	08	Camden	Camden City
04	09	Camden	Cherry Hill Twp
04	10	Camden	Chesilhurst Boro
04	11	Camden	Clementon Boro
04	12	Camden	Collingswood Boro
04	13	Camden	Gibbsboro Boro
04	14	Camden	Gloucester City
04	15	Camden	Gloucester Twp
04	16	Camden	Haddon Twp
04	17	Camden	Haddonfield Boro
04	18	Camden	Haddon Heights Boro
04	19	Camden	Hi-Nella Boro
04	20	Camden	Laurel Springs Boro
04	21	Camden	Lawnside Boro
04	22	Camden	Lindenwold Boro
04	23	Camden	Magnolia Boro
04	24	Camden	Merchantville Boro
04	25	Camden	Mount Ephraim Boro
04	26	Camden	Oaklyn Boro
04	27	Camden	Pennsauken Twp
04	28	Camden	Pine Hill Boro
04	29	Camden	Pine Valley Boro
04	30	Camden	Runnemede Boro
04	31	Camden	Somerdale Boro
04	32	Camden	Stratford Boro
04	33	Camden	Tavistock Boro
04	34	Camden	Voorhees Twp
04	35	Camden	Waterford Twp
04	36	Camden	Winslow Twp
04	37	Camden	Woodlynne Boro
05	01	Cape May	Avalon Boro
05	02	Cape May	Cape May City
05	03	Cape May	Cape May Point Boro
05	04	Cape May	Dennis Twp
05	05	Cape May	Lower Twp
05	06	Cape May	Middle Twp
05	07	Cape May	North Wildwood City
05	08	Cape May	Ocean City
05	09	Cape May	Sea Isle City
05	10	Cape May	Stone Harbor Boro
05	11	Cape May	Upper Twp
05	12	Cape May	West Cape May Boro
05	13	Cape May	West Wildwood Boro
05	14	Cape May	Wildwood City
05	15	Cape May	Wildwood Crest Boro
05	16	Cape May	Woodbine Boro
06	01	Cumberland	Bridgeton City
06	02	Cumberland	Commercial Twp
06	03	Cumberland	Deerfield Twp
06	04	Cumberland	Downe Twp

06	05	Cumberland	Fairfield Twp
06	06	Cumberland	Greenwich Twp
06	07	Cumberland	Hopewell Twp
06	08	Cumberland	Lawrence Twp
06	09	Cumberland	Maurice River Twp
06	10	Cumberland	Millville City
06	11	Cumberland	Shiloh Boro
06	12	Cumberland	Stow Creek Twp
06	13	Cumberland	Upper Deerfield Twp
06	14	Cumberland	Vineland City
07	01	Essex	Belleville Town
07	02	Essex	Bloomfield Town
07	03	Essex	Caldwell Boro
07	04	Essex	Cedar Grove Twp
07	05	Essex	East Orange City
07	06	Essex	Essex Fells Boro
07	07	Essex	Fairfield Twp
07	08	Essex	Glen Ridge Boro Twp
07	09	Essex	Irvington Town
07	10	Essex	Livingston Twp
07	11	Essex	Maplewood Twp
07	12	Essex	Millburn Twp
07	13	Essex	Montclair Town
07	14	Essex	Newark
07	15	Essex	North Caldwell Boro
07	16	Essex	Nutley Town
07	17	Essex	Orange City
07	18	Essex	Roseland Boro
07	19	Essex	South Orange Village
07	20	Essex	Verona Boro
07	21	Essex	West Caldwell Twp
07	22	Essex	West Orange Town
08	01	Gloucester	Clayton Boro
08	02	Gloucester	Deptford Twp
08	03	Gloucester	East Greenwich Twp
08	04	Gloucester	Elk Twp
08	05	Gloucester	Franklin Twp
08	06	Gloucester	Glassboro Boro
08	07	Gloucester	Greenwich Twp
08	08	Gloucester	Harrison Twp
08	09	Gloucester	Logan Twp
08	10	Gloucester	Mantua Twp
08	11	Gloucester	Monroe Twp
08	12	Gloucester	National Park Boro
08	13	Gloucester	Newfield Boro
08	14	Gloucester	Paulsboro Boro
08	15	Gloucester	Pitman Boro
08	16	Gloucester	South Harrison Twp
08	17	Gloucester	Swedesboro Boro
08	18	Gloucester	Washington Twp
08	19	Gloucester	Wenonah Boro
08	20	Gloucester	West Deptford Twp
08	21	Gloucester	Westville Boro
08	22	Gloucester	Woodbury City
08	23	Gloucester	Woodbury Heights Boro
08	24	Gloucester	Woolwich Twp
09	01	Hudson	Bayonne City
09	02	Hudson	East Newark Boro
09	03	Hudson	Guttenberg Town
09	04	Hudson	Harrison Town
09	05	Hudson	Hoboken City
09	06	Hudson	Jersey City
09	07	Hudson	Kearny Town
09	08	Hudson	North Bergen Twp

Water Allocation Codes

09	09	Hudson	Secaucus Town
09	10	Hudson	Union City
09	11	Hudson	Weehawken Twp
09	12	Hudson	West New York Town
10	01	Hunterdon	Alexandria Twp
10	02	Hunterdon	Bethlehem Twp
10	03	Hunterdon	Bloomsbury Boro
10	04	Hunterdon	Califon Boro
10	05	Hunterdon	Clinton Town
10	06	Hunterdon	Clinton Twp
10	07	Hunterdon	Delaware Twp
10	08	Hunterdon	East Amwell Twp
10	09	Hunterdon	Flemington Boro
10	10	Hunterdon	Franklin Twp
10	11	Hunterdon	Frenchtown Boro
10	12	Hunterdon	Glen Gardner Boro
10	13	Hunterdon	Hampton Boro
10	14	Hunterdon	High Bridge Boro
10	15	Hunterdon	Holland Twp
10	16	Hunterdon	Kingwood Twp
10	17	Hunterdon	Lambertville City
10	18	Hunterdon	Lebanon Boro
10	19	Hunterdon	Lebanon Twp
10	20	Hunterdon	Milford Boro
10	21	Hunterdon	Raritan Twp
10	22	Hunterdon	Readington Twp
10	23	Hunterdon	Stockton Boro
10	24	Hunterdon	Tewksbury Twp
10	25	Hunterdon	Union Twp
10	26	Hunterdon	West Amwell Twp
11	01	Mercer	East Windsor Twp
11	02	Mercer	Ewing Twp
11	03	Mercer	Hamilton Twp
11	04	Mercer	Hightstown Boro
11	05	Mercer	Hopewell Boro
11	06	Mercer	Hopewell Twp
11	07	Mercer	Lawrence Twp
11	08	Mercer	Pennington Boro
11	09	Mercer	Princeton Boro
11	10	Mercer	Princeton Twp
11	11	Mercer	Trenton City
11	12	Mercer	Washington Twp
11	13	Mercer	West Windsor Twp
12	01	Middlesex	Carteret Boro
12	02	Middlesex	Cranbury Twp
12	03	Middlesex	Dunellen Boro
12	04	Middlesex	East Brunswick Twp
12	05	Middlesex	Edison Twp
12	06	Middlesex	Helmetta Boro
12	07	Middlesex	Highland Park Boro
12	08	Middlesex	Jamesburg Boro
12	09	Middlesex	Old Bridge Twp
12	10	Middlesex	Metuchen Boro
12	11	Middlesex	Middlesex Boro
12	12	Middlesex	Milltown Boro
12	13	Middlesex	Monroe Twp
12	14	Middlesex	New Brunswick City
12	15	Middlesex	North Brunswick Twp
12	16	Middlesex	Perth Amboy City
12	17	Middlesex	Piscataway Twp
12	18	Middlesex	Plainsboro
12	19	Middlesex	Sayreville Boro
12	20	Middlesex	South Amboy City
12	21	Middlesex	South Brunswick Twp

12	22	Middlesex	South Plainfield Boro
12	23	Middlesex	South River Boro
12	24	Middlesex	Spotswood Boro
12	25	Middlesex	Woodbridge Twp
13	01	Monmouth	Allenhurst Boro
13	02	Monmouth	Allentown Boro
13	03	Monmouth	Asbury Park City
13	04	Monmouth	Atl Highlands Boro
13	05	Monmouth	Avon-By-The-Sea-Boro
13	06	Monmouth	Belmar Boro
13	07	Monmouth	Bradley Beach Boro
13	08	Monmouth	Brielle Boro
13	09	Monmouth	Colts Neck Twp
13	10	Monmouth	Deal Boro
13	11	Monmouth	Eatontown Boro
13	12	Monmouth	Englishtown Boro
13	13	Monmouth	Fair Haven Boro
13	14	Monmouth	Farmingdale Boro
13	15	Monmouth	Freehold Boro
13	16	Monmouth	Freehold Twp
13	17	Monmouth	Highlands Boro
13	18	Monmouth	Holmdel Twp
13	19	Monmouth	Howell Twp
13	20	Monmouth	Interlaken Boro
13	21	Monmouth	Keansburg Boro
13	22	Monmouth	Keyport Boro
13	23	Monmouth	Little Silver Boro
13	24	Monmouth	Loch Arbour Village
13	25	Monmouth	Long Branch City
13	26	Monmouth	Manalapan Twp
13	27	Monmouth	Manasquan Boro
13	28	Monmouth	Marlboro Twp
13	29	Monmouth	Matawan Boro
13	30	Monmouth	Aberdeen Twp
13	31	Monmouth	Middletown Twp
13	32	Monmouth	Millstone Twp
13	33	Monmouth	Monmouth Beach Boro
13	34	Monmouth	Neptune Twp
13	35	Monmouth	Neptune City Boro
13	36	Monmouth	Tinton Falls Boro
13	37	Monmouth	Ocean Twp
13	38	Monmouth	Oceanport Boro
13	39	Monmouth	Hazlet Twp
13	40	Monmouth	Red Bank Boro
13	41	Monmouth	Roosevelt Boro
13	42	Monmouth	Rumson Boro
13	43	Monmouth	Sea Bright Boro
13	44	Monmouth	Sea Girt Boro
13	45	Monmouth	Shrewsbury Boro
13	46	Monmouth	Shrewsbury Twp
13	47	Monmouth	Lake Como Boro
13	48	Monmouth	Spring Lake Boro
13	49	Monmouth	Spring L Heights Boro
13	50	Monmouth	Union Beach Boro
13	51	Monmouth	Upper Freehold Twp
13	52	Monmouth	Wall Twp
13	53	Monmouth	West Long Branch Boro
14	01	Morris	Boonton Town
14	02	Morris	Boonton Twp
14	03	Morris	Butler Boro
14	04	Morris	Chatham Boro
14	05	Morris	Chatham Twp
14	06	Morris	Chester Boro
14	07	Morris	Chester Twp

Water Allocation Codes

14	08	Morris	Denville Twp
14	09	Morris	Dover Town
14	10	Morris	East Hanover Twp
14	11	Morris	Florham Park Boro
14	12	Morris	Hanover Twp
14	13	Morris	Harding Twp
14	14	Morris	Jefferson Twp
14	15	Morris	Kinnelon Boro
14	16	Morris	Lincoln Park Boro
14	17	Morris	Madison Boro
14	18	Morris	Mendham Boro
14	19	Morris	Mendham Twp
14	20	Morris	Mine Hill Twp
14	21	Morris	Montville Twp
14	22	Morris	Morris Twp
14	23	Morris	Morris Plains Boro
14	24	Morris	Morristown Town
14	25	Morris	Mountain Lakes Boro
14	26	Morris	Mount Arlington Boro
14	27	Morris	Mount Olive Twp
14	28	Morris	Netcong Boro
14	29	Morris	Parsippany Troy-Hills
14	30	Morris	Long Hill Twp
14	31	Morris	Pequannock Twp
14	32	Morris	Randolph Twp
14	33	Morris	Riverdale Boro
14	34	Morris	Rockaway Boro
14	35	Morris	Rockaway Twp
14	36	Morris	Roxbury Twp
14	37	Morris	Victory Gardens Boro
14	38	Morris	Washington Twp
14	39	Morris	Wharton Boro
15	01	Ocean	Barneget Light Boro
15	02	Ocean	Bay Head Boro
15	03	Ocean	Beach Haven Boro
15	04	Ocean	Beachwood Boro
15	05	Ocean	Berkeley Twp
15	06	Ocean	Brick Twp
15	07	Ocean	Dover Twp
15	08	Ocean	Eagleswood Twp
15	09	Ocean	Harvey Cedars Boro
15	10	Ocean	Island Heights Boro
15	11	Ocean	Jackson Twp
15	12	Ocean	Lacey Twp
15	13	Ocean	Lakehurst Boro
15	14	Ocean	Lakewood Twp
15	15	Ocean	Lavallette Boro
15	16	Ocean	Little Egg Harbor
15	17	Ocean	Long Beach Twp
15	18	Ocean	Manchester Twp
15	19	Ocean	Mantoloking Boro
15	20	Ocean	Ocean Twp
15	21	Ocean	Ocean Gate Boro
15	22	Ocean	Pine Beach Boro
15	23	Ocean	Plumsted Twp
15	24	Ocean	Point Pleasant Boro
15	25	Ocean	Point P Beach Boro
15	26	Ocean	Seaside Heights Boro
15	27	Ocean	Seaside Park Boro
15	28	Ocean	Ship Bottom Boro
15	29	Ocean	South Toms River Boro
15	30	Ocean	Stafford Twp
15	31	Ocean	Surf City Boro
15	32	Ocean	Tuckerton Boro

15	33	Ocean	Barneget Twp
16	01	Passaic	Bloomington Boro
16	02	Passaic	Clifton City
16	03	Passaic	Haledon Boro
16	04	Passaic	Hawthorne Boro
16	05	Passaic	Little Falls Twp
16	06	Passaic	North Haledon Boro
16	07	Passaic	Passaic City
16	08	Passaic	Paterson City
16	09	Passaic	Pompton Lakes Boro
16	10	Passaic	Prospect Park Boro
16	11	Passaic	Ringwood Boro
16	12	Passaic	Totowa Boro
16	13	Passaic	Wanaque Boro
16	14	Passaic	Wayne Twp
16	15	Passaic	West Milford Twp
16	16	Passaic	West Paterson Boro
17	01	Salem	Alloway Twp
17	02	Salem	Elmer Boro
17	03	Salem	Elsinboro Twp
17	04	Salem	Lower Alloways Creek
17	05	Salem	Mannington Twp
17	06	Salem	Oldmans Twp
17	07	Salem	Penns Grove Boro
17	08	Salem	Pennsville Twp
17	09	Salem	Pilesgrove Twp
17	10	Salem	Pittsgrove Twp
17	11	Salem	Quinton Twp
17	12	Salem	Salem City
17	13	Salem	Carneys Point Twp
17	14	Salem	Upper Pittsgrove Twp
17	15	Salem	Woodstown Boro
18	01	Somerset	Bedminster Twp
18	02	Somerset	Bernards Twp
18	03	Somerset	Bernardsville Boro
18	04	Somerset	Bound Brook Boro
18	05	Somerset	Branchburg Twp
18	06	Somerset	Bridgewater Twp
18	07	Somerset	Far Hills Boro
18	08	Somerset	Franklin Twp
18	09	Somerset	Green Brook Twp
18	10	Somerset	Hillsborough Twp
18	11	Somerset	Manville Boro
18	12	Somerset	Millstone Boro
18	13	Somerset	Montgomery Twp
18	14	Somerset	North Plainfield Boro
18	15	Somerset	Peapack-Gladstone
18	16	Somerset	Raritan Boro
18	17	Somerset	Rocky Hill Boro
18	18	Somerset	Somerville Boro
18	19	Somerset	So Bound Brook Boro
18	20	Somerset	Warren Twp
18	21	Somerset	Watchung Boro
19	01	Sussex	Andover Boro
19	02	Sussex	Andover Twp
19	03	Sussex	Branchville Boro
19	04	Sussex	Byram Twp
19	05	Sussex	Frankford Twp
19	06	Sussex	Franklin Boro
19	07	Sussex	Fredon Twp
19	08	Sussex	Green Twp
19	09	Sussex	Hamburg Boro
19	10	Sussex	Hampton Twp
19	11	Sussex	Hardyston Twp

Water Allocation Codes

19	12	Sussex	Hopatcong Boro
19	13	Sussex	Lafayette Twp
19	14	Sussex	Montague Twp
19	15	Sussex	Newton Town
19	16	Sussex	Ogdensburg Boro
19	17	Sussex	Sandyston Twp
19	18	Sussex	Sparta Twp
19	19	Sussex	Stanhope Boro
19	20	Sussex	Stillwater Twp
19	21	Sussex	Sussex Boro
19	22	Sussex	Vernon Twp
19	23	Sussex	Walpack Twp
19	24	Sussex	Wantage Twp
20	01	Union	Berkeley Heights Twp
20	02	Union	Clark Twp
20	03	Union	Cranford Twp
20	04	Union	Elizabeth City
20	05	Union	Fanwood Boro
20	06	Union	Garwood Boro
20	07	Union	Hillside Twp
20	08	Union	Kenilworth Boro
20	09	Union	Linden City
20	10	Union	Mountainside Boro
20	11	Union	New Providence Boro
20	12	Union	Plainfield City
20	13	Union	Rahway City
20	14	Union	Roselle Boro
20	15	Union	Roselle Park Boro
20	16	Union	Scotch Plains Twp
20	17	Union	Springfield Twp
20	18	Union	Summit City
20	19	Union	Union Twp
20	20	Union	Westfield Town
20	21	Union	Winfield Twp
21	01	Warren	Allamuchy Twp
21	02	Warren	Alpha Boro
21	03	Warren	Belvidere Town
21	04	Warren	Blairstown Twp
21	05	Warren	Franklin Twp
21	06	Warren	Frelinghuysen Twp
21	07	Warren	Greenwich Twp
21	08	Warren	Hackettstown Town
21	09	Warren	Hardwick Twp
21	10	Warren	Harmony Twp
21	11	Warren	Hope Twp
21	12	Warren	Independence Twp
21	13	Warren	Knowlton Twp
21	14	Warren	Liberty Twp
21	15	Warren	Lopatcong Twp
21	16	Warren	Mansfield Twp
21	17	Warren	Oxford Twp
21	19	Warren	Phillipsburg Town
21	20	Warren	Pohatcong Twp
21	21	Warren	Washington Boro
21	22	Warren	Washington Twp
21	23	Warren	White Twp

kx	kilometers
me	meters
mi	miles
BY	BGY (Billion Gallons per Year)
CM	cm (Centimetres)
GD	Gallons Per Day
MD	Million Gallons Per Day
MG	Million Gallons per minute
MM	Million Gallons Per Month
TD	Thousand Gallons Per Day
TM	Thousand Gallons per minute
WM	Million Gallons Per Year

HYDROGEOLOGIC UNIT CODE	HYDROGEOLOGIC UNIT DESC (The HYDROGEOLOGIC UNIT DESC is a concatenation of the map code and unit description)
30	non-glacial surficial material
40	gacu glacial aquifers and confining units
45	oc bedrock outcrop
79	undivided glacial deposits
110	ct or dt continous or discontinous till
116	m morainic deposits
120	l lake-bottom sediment
129	sg glacial sand and gravel
985	cpacu coastal plain aquifers and confining units
992	hb Holly Beach water-bearing zone
994	ec estuarine clay
996	es estuarine sand aquifer
999	cps coastal plain surficial aquifers
1448	cycu Cohansey confining unit
1449	cyac Cohansey aquifer
1451	kcas Kirkwood-Cohansey water-table aquifer system
1454	kac Atlantic City "800-foot" sand aquifer
1455	krgr Rio Grande water-bearing zone
1456	ppa Piney Point aquifer
1465	wbcu Wildwood-Belleplain confining unit
1525	ccu composite confining unit
1805	vta Vincentown aquifer
2151	rbs Red Bank sand
2355	mlwa Mount Laurel-Wenonah aquifer
2475	mawcu Marshalltown-Wenonah confining unit
2505	eas Englishtown aquifer system
2525	mewcu Merchantville-Woodbury confining unit
2660	prma Potomac-Raritan-Magothy aquifer system
2662	prmau upper Potomac-Raritan-Magothy aquifer
2664	prmam middle Potomac-Raritan-Magothy aquifer
2666	prmal lower Potomac-Raritan-Magothy aquifer
2802	prmcu Potomac-Raritan-Magothy confining unit
2905	prmpcu Potomac confining unit
3025	Fractured-rock aquifers of the Newark basin part of the Piedmont Province
3050	ba Brunswick aquifer
3199	bs basalt

UNITS CODE	UNITS DESC
cm	Cubic feet per minute
ft	Feet
gh	gal/hr
gm	gal/min
in	inches

Water Allocation Codes

3799	db diabase
5110	lf Lockatong Formation
5405	sf Stockton Formation
6050	Fractured-rock aquifers of the Valley & Ridge Province, Highlands Province, and Trenton and Manhattan Prongs of the Piedmont Province
6125	gpkm rocks of the Green Pond Mountain Region, Kittatinny Mountain, and Minisink Valley
8199	mfjs Martinsburg Formation and Jutland klippe sequence
8399	jikh Jacksonburg limestone, Kittatinny Supergroup and Hardyston quartzite
8999	imr igneous and metamorphic rocks

End Aquifer Codes

GEO FORMATION CODE	GEO FORMATION DESC (The GEO FORMATION DESC is concatenation of the NJGS Geo num, the geologic map code and the formation description)
10	100 Cz Cenozoic Era
20	102 Q Quaternary System
30	104 Qh Holocene Series
40	106 Qp Pleistocene
50	1000 T Tertiary System
60	1002 Tpl Pliocene Series
70	1004 Tpm Pliocene-Miocene Series
80	1006 Tm Miocene Series
90	1008 To Oligocene Series
100	1010 Te Eocene Series
110	1012 Tpa Paleocene Series
120	2000 M Mesozoic Era
130	2100 K Cretaceous System
140	3000 JTr Jurassic & Triassic Systems
150	3100 J Jurassic System
160	5000 Tr Triassic System
170	6000 Pal Paleozoic Era
180	6100 D Devonian System
190	7000 DS Devonian and Silurian Systems
200	7100 S Silurian System
210	8000 O Ordovician System
220	8500 OCu Ordovician & Cambrian Systems, undivided
230	8700 C Cambrian System
240	9000 Pc Precambrian
250	9100 Pz Proterozoic Eon
260	9200 Zu late Proterozoic rocks, unifferentiated
270	9300 Yu Middle Proterozoic rocks, unifferentiated
280	50 ebo Extensive bedrock outcrop (suficial sediment generally absent)
290	60 sbo Scattered bedrock outcrop
300	30 * Recent sediment
310	25 af Artificial fill
320	160 Qs Swamp and marsh deposits
330	136 x Non-glacial material
340	170 Qal Alluvium
350	172 Qalb Alluvium and boulder lag
360	174 Qalfp Floodplain deposits

370	176 Qalc Channel deposits
380	180 Qac Alluvium and colluvium
390	190 Qmm Estuarine deposits
400	200 Qaf Alluvial-fan deposits
410	210 Qst Stream-terrace deposits
420	220 Qta Talus
430	221 Qtl Lower-terrace deposits
440	223 Qtu Upper-terrace deposits
450	225 Qrt Raritan-terrace deposits
460	227 Qtf Fluvial deposits (pre-Illinoian)
470	230 Qe Eolian deposits
471	235 Qes Eolian deposits - sheet sand
472	240 Qed Eolian deposits - sand dunes
480	800 Qc Colluvium
490	810 Qcg Gneiss colluvium
500	820 Qcb Basalt colluvium
510	830 Qcd Diabase colluvium
520	840 Qcs Slate colluvium
530	850 Qcc Conglomerate colluvium
540	860 Qcq Quartzite colluvium
550	870 Qcsg Sand and gravel colluvium
560	880 Qcsl Sand and silt colluvium
570	885 Qccb Carbonate colluvium
580	890 Qct Till colluvium
590	900 Qw Weathered bedrock
600	910 Qwg Weathered gneiss
610	920 Qwb Weathered basalt
620	930 Qwd Weathered diabase
630	940 Qws Weathered slate
640	950 Qwc Weathered conglomerate
650	960 Qwcb Weathered carbonate
660	962 Qwcp Weathered coastal plain formation
670	970 Qwq Weathered quartzite
680	980 Qwsc Weathered schist
690	40 * Glacial aquifers and confining units
700	110 t Till
710	300 Qt Till (Quaternary)
720	310 Qtw Till (late Wisconsinan)
730	312 Qtwr Rahway till (late Wisconsinan)
740	314 Qtwn Netcong till (late Wisconsinan)
750	316 Qtwk Kittatinny Mountain till (late Wisconsinan)
760	318 Qtwqc Till derived from quartzite and conglomerate (late Wisconsinan)
770	320 Qtwc Till derived from carbonate rock (late Wisconsinan)
780	322 Qtwg Till derived from gneiss (late Wisconsinan)
790	324 Qtwss Till derived from gray slate (late Wisconsinan)
800	326 Qtwrs Till derived from red shale (late Wisconsinan)
810	328 Qtwb Till derived from basalt and diabase (late Wisconsinan)
820	350 Qti Till (Illinoian)
830	352 Qtif Flanders till (Illinoian)

Water Allocation Codes

840	354 Qtib Bergen till (Illinoian)
850	370 Qtj Till (Jerseyan)
860	112 ct Continuous till
870	114 dt Discontinuous till
880	305 Qtt Discontinuous till (generally less than 10 feet)
890	130 it Till (Illinoian age)
900	132 jt Till (Jerseyan age)
910	380 Qtl Tillstone lag
920	129 sg Sand and gravel
930	70 * Kames and kame terraces
931	71 Qk Kames
932	72 Qkt Kame terraces
940	77 * Outwash deposits
950	119 d Deltaic sediment
960	121 id Lacustrine-fan sediment (Illinoian age)
970	122 f Fluvial sediment
980	124 fl Fluvial over lacustrine sediment
990	126 if Fluvial sediment (Illinoian age)
1000	128 ic Ice-contact sediment
1010	134 js Sand and gravel (Jerseyan age)
1020	400 Qsd Stratified drift
1030	410 Qsdw Stratified drift (late Wisconsinan)
1040	450 Qsdi Stratified drift (Illinoian)
1050	500 Qsdj Stratified drift (Jerseyan)
1060	408 Qsdd Glaciolacustrine sand and gravel
1070	420 Qsdwd Glaciolacustrine sand and gravel (late Wisconsinan)
1080	460 Qsddid Glaciolacustrine sand and gravel (Illinoian)
1090	520 Qsdjd Glaciolacustrine sand and gravel (Jerseyan)
1100	406 Qsdde Glaciolacustrine deltaic deposits
1110	422 Qsdwde Deltaic deposits (late Wisconsinan)
1120	462 Qsdide Deltaic deposits (Illinoian)
1130	522 Qsdjde Deltaic deposits (Jerseyan)
1140	407 Qsdif Lacustrine-fan deposits
1150	424 Qsdwif Lacustrine-fan deposits (late Wisconsinan)
1160	464 Qsdifl Lacustrine-fan deposits (Illinoian)
1170	524 Qsdjfl Lacustrine-fan deposits (Jerseyan)
1180	409 Qsdf Glaciofluvial sand and gravel
1190	440 Qsdwf Glaciofluvial sand and gravel (late Wisconsinan)
1200	480 Qsdif Glaciofluvial sand and gravel (Illinoian)
1210	540 Qsdjfl Glaciofluvial sand and gravel (Jerseyan)
1220	404 Qsdvf Valley-outwash deposits
1230	442 Qsdwfv Valley-outwash deposits (late Wisconsinan)
1240	482 Qsdifv Valley-outwash deposits (Illinoian)
1250	542 Qsdjfv Valley-outwash deposits (Jerseyan)
1260	403 Qsdft Meltwater-terrace deposits
1270	444 Qsdwft Meltwater-terrace deposits (late Wisconsinan)
1280	484 Qsdift Meltwater-terrace deposits (Illinoian)
1290	544 Qsdjft Meltwater-terrace deposits (Jerseyan)
1300	120 l Lake-bottom sediment
1310	400 Qsd Stratified drift

1320	410 Qsdw Stratified drift (late Wisconsinan)
1330	450 Qsdi Stratified drift (Illinoian)
1340	500 Qsdj Stratified drift (Jerseyan)
1350	402 Qsdlb Glaciolacustrine lake-bottom deposits
1360	430 Qsdwlb Glaciolacustrine lake-bottom deposits (late Wisconsinan)
1370	470 Qsdilb Glaciolacustrine lake-bottom deposits (Illinoian)
1380	530 Qsdjlb Glaciolacustrine lake-bottom deposits (Jerseyan)
1390	116 m Morainic deposits
1400	700 Qm Morainic deposits
1410	710 Qmw Moraines (late Wisconsinan)
1420	720 Qmi Moraines (Illinoian)
1430	118 im Morainic deposits (Illinoian age)
1440	79 * Glacial deposits, undivided
1450	80 * Glacial lake deposits
1470	405 Qgls Glaciolacustrine sediment
1480	600 Qic Ice-contact deposits
1490	982 njcp New Jersey Coastal Plain Province
1500	999 * Surficial sediment (thicker than 50 feet overlying coastal plain aquifers and confining units)
1510	993 Qbs Beach sand
1520	1050 Tsg Sand and gravel near Cape May
1530	1090 Tpb Pensauken and Bridgeton Formations
1540	1100 Tp Pensauken Formation
1550	1200 Tb Bridgeton Formation
1560	1205 TQb Bridgeton Formation (arkosic phase)
1570	1210 TQbg Bridgeton Formation (glaucconitic phase)
1580	1250 Tg Upland gravel
1590	1300 Tbh Beacon Hill Formation
1600	990 Qcm Cape May Formation
1610	993 Qbs Beach sand
1620	990 Qcm Cape May Formation
1630	1390 Tc Unnamed Formation at Cape May
1640	990 Qcm Cape May Formation
1650	1390 Tc Unnamed Formation at Cape May
1660	1400 Tch Cohansey Formation
1670	1400 Tch Cohansey Formation
1680	1400 Tch Cohansey Formation
1690	1450 Tck Cohansey & Kirkwood Formations
1700	1500 Tk Kirkwood Formation
1710	1460 Tkb Kirkwood Formation - Belleplaine member
1720	1460 Tkb Kirkwood Formation - Belleplaine member
1730	1470 Tkw Kirkwood Formation - Wildwood member
1740	1500 Tk Kirkwood Formation
1750	1454 Tkls Kirkwood Formation - lower member (sand facies)
1760	1500 Tk Kirkwood Formation
1770	1480 Tks Kirkwood Formation - Shiloh Marl member
1780	1505 Tkal Kirkwood Formation - Alloway Clay member
1790	1530 Tsp Sewell Point Formation
1800	1540 Tai Absecon Inlet Formation

Water Allocation Codes

1810	1459 Tkl Kirkwood Formation - lower member (silt and clay facies)
1820	1550 TKsm Shark River Formation through Navesink Formations
1830	1600 Tsr Shark River Formation
1840	1700 Tmq Manasquan Formation
1850	1705 Tmqd Manasquan Formation - Deal member
1860	1690 Tmqvt Manasquan and Vincentown Formations
1870	1900 Tht Hornerstown Formation
1880	1790 Tvtht Vincentown and Hornerstown Formations
1890	2154 Krbsh Red Bank Formation - Sandy Hook member
1900	2200 Kt Tinton Formation
1910	2250 Kns Navesink Formation
1920	2260 Kc4 Kc4 cycle (subsurface equivalent of Red Bank and Navesink Formations)
1930	2460 Kc3 Kc3 cycle (subsurface equivalent of Marshalltown, Wenonoah, and Mount Laurel Formations)
1950	1605 Tsrtr Shark River Formation - Toms River member
1960	1452 Tac Atlantic City Formation
1970	1800 Tvt Vincentown Formation
1980	2150 Krb Red Bank Formation
1990	2152 Krbs Red Bank Formation - Shrewsbury member
2000	2260 Kc4 Kc4 cycle (subsurface equivalent of Red Bank and Navesink Formations)
2010	2300 Kml Mount Laurel Formation
2020	2350 Kmww Mount Laurel and Wenonah Formations
2030	2400 Kw Wenonah Formation
2040	2460 Kc3 Kc3 cycle (subsurface equivalent of Marshalltown, Wenonoah, and Mount Laurel Formations)
2050	2400 Kw Wenonah Formation
2060	2450 Kmt Marshalltown Formation
2070	2470 Kc2 Kc2 cycle
2080	2605 Kc1 Kc1 cycle (subsurface equivalent of Merchantville, Woodbury, and Englishtown Formations)
2090	2500 Ket Englishtown Formation
2100	2540 Kwbmw Woodbury and Merchantville Formations
2110	2530 Kwbsmc Woodbury, Merchantville, and Cheesquake Formations
2120	2550 Kwb Woodbury Formation
2130	2600 Kmv Merchantville Formation
2140	2605 Kc1 Kc1 cycle (subsurface equivalent of Merchantville, Woodbury, and Englishtown Formations)
2150	2610 Kcq Cheesquake Formation
2160	2704 Kmcb Magothy Formation - Cliffwood beds
2170	2706 Kmmb Magothy Formation - Morgan beds
2180	2710 Kmas Magothy Formation - Amboy Stoneware Clay member
2190	2650 Kmrp Magothy, Raritan, and Potomac Formations
2200	2700 Kmg Magothy Formation
2210	2720 Kmob Magothy Formation - Old Bridge Sand member

2220	2740 Kmss Magothy Formation - Sayerville Sand member
2230	2730 Kmsa Magothy Formation - South Amboy Fire Clay member
2240	2810 Krwc Raritan Formation - Woodbridge Clay member
2250	2815 Krbr Raritan Formation - Bass River Formation
2260	2800 Kr Raritan Formation
2270	2820 Krfs Raritan Formation - Farrington Sand member
2280	2900 Kp Potomac Formation
2290	2900 Kp Potomac Formation
2300	2901 Kp3 Potomac Formation, Unit 3 (upper subsurface)
2310	2902 Kp2 Potomac Formation, Unit 2 (middle subsurface)
2320	2903 Kp1 Potomac Formation, Unit 1 (lower subsurface)
2330	2997 njp New Jersey Piedmont Province
2340	3010 JTrns Newark Supergroup
2350	3200 Jbs Basalt
2360	3300 Jh Hook Mountain basalt
2370	3500 Jp Preakness basalt
2380	3550 Jps Preakness sandstone (between basalt flows)
2385	3555 Jpg Preakness gabbroid
2390	3700 Jo Orange Mountain basalt
2400	3800 Jd Diabase and granophyre [polygon label]
2410	3801 Jd Diabase dike [line label]
2420	3850 Jg Granophyre
2430	3030 JTrbg Brunswick Group (Passaic Formation through Boonton Formation)
2440	3070 Trb Brunswick Formation (superceded by Passaic, Feltville, Towaco, and Boonton Formations)
2450	2830 Krfc Raritan Formation - Raritan Fire Clay member
2460	3110 Jb Boonton Formation
2470	3400 Jt Towaco Formation
2480	3600 Jf Feltville Formation
2490	4000 JTrp Passaic Formation
2500	4100 Trpg Passaic Formation - gray bed [includes JTrpg labels on some maps]
2510	4150 Trpgh Passaic Formation - gray-bed hornfels [includes JTrpgh labels on some maps]
2520	4200 JTrph Passaic Formation - hornfels
2530	4500 JTrps Passaic Formation - sandstone
2540	4505 JTrpst Passaic Formation - siltstone and mudstone
2550	4510 JTrpms Passaic Formation - sandy mudstone
2560	4509 JTrpm Passaic Formation - mudstone
2570	3120 Jbc Boonton Formation - basalt-clast conglomerate
2580	3130 Jbcg Boonton Formation - gneiss-clast conglomerate
2590	3140 Jbcq Boonton Formation - quartzite-clast conglomerate
2600	3450 Jtc Towaco Formation - conglomerate
2610	3650 Jfc Feltville Formation - conglomerate
2620	3900 JTrc Conglomerate
2630	3925 JTrpc Cobble and pebble conglomerate

Water Allocation Codes

2640	3950 JTrcq Quartzite-clast conglomerate
2650	3960 JTrcsh Shale-clast conglomerate
2660	3970 JTrcl Limestone-clast conglomerate
2670	4250 JTrpcq Passaic Formation - quartzite-clast conglomerate
2680	4300 JTrpcl Passaic Formation - limestone-clast conglomerate
2690	4350 JTrpcsh Passaic Formation - shale-clast conglomerate
2700	4400 JTrpsc Passaic Formation - conglomeratic sandstone
2710	4450 JTrpsp Passaic Formation - conglomerate and pebbly-sandstone
2720	5100 Trl Lockatong Formation
2730	5150 Trlr Lockatong Formation - red bed
2740	5200 Trlh Lockatong Formation - hornfel
2750	5250 Trla Lockatong Formation - arkosic-sandstone
2760	5300 Trls Lockatong Formation - sandstone
2770	5305 Trlc Lockatong Formation - conglomerate
2780	5310 Trlscq Lockatong Formation - quartz-cobble conglomerate
2790	5350 Trlsc Lockatong Formation - sandstone and conglomerate
2800	5400 Trs Stockton Formation
2810	5425 Trsc Stockton Formation - conglomerate
2820	5450 Trss Stockton Formation - cobble conglomerate and sandstone [includes Trssc labels on some maps]
2830	5500 Trscq Stockton Formation - quartz-cobble conglomerate
2840	6025 njvr New Jersey Valley and Ridge Province
2850	6125 * Green Pond Mountain Region, Kittatinny Mountain, and Minisink Valley
2860	6130 gp Green Pond Mountain Region part of the New Jersey Highlands
2870	6150 Dsk Skunnemunk conglomerate
2880	6200 Dbv Bellvale sandstone
2890	6250 Dcw Cornwall shale
2900	6300 Dm Marcellus shale
2910	6350 Db Buttermilk Falls and Onondaga limestones, undivided
2920	6360 Don Onondaga limestone
2930	6400 Dkec Kanouse sandstone, Esopus Formation, and Connelly conglomerate, undivided
2940	6450 Dkn Kanouse sandstone
2950	6500 Ds Schoharie Formation
2960	6550 De Esopus Formation
2970	6600 Dcc Connelly conglomerate
2980	6650 Do Oriskany Group, undivided
2990	6720 Drs Ridgely sandstone
3000	6740 Dsc Shriver chert
3010	6760 Dg Glenarie Formation
3020	6800 Dh Helderberg Group, undivided
3030	6820 Dp Port Ewen shale
3040	6840 Dmn Minisink limestone and New Scotland Formation, undivided
3050	6860 Dmi Minisink limestone
3060	6880 Dn New Scotland Formation
3070	6881 Dnm New Scotland Formation - Maskenozha member
3080	6882 Dnf New Scotland Formation - Flatbrookville member

3090	6900 Dkc Kalberg Limestone, Coeymans limestone, Manlius limestone, and Coeymans Formation, undivided
3100	6885 Dc Coeymans Formation
3110	6901 Dcs Coeymans Formation - Stormville member
3120	6902 Dcsi Coeymans Formation - Shawnee Island member
3130	6903 Dcpv Coeymans Formation - Peters Valley member
3140	6904 Dcdl Coeymans Formation - Depue Limestone member
3150	6920 Dkl Kalkberg limestone
3160	6940 Dcl Coeymans limestone
3170	6960 Dmi Manlius limestone
3180	6961 Dmlr Manlius limestone - Ravena member
3190	6962 Dmlt Manlius limestone - Thacker member
3200	7150 Dsr Rondout Formation
3210	7151 Dsm Rondout Formation - Mashapacong member
3220	7152 DSrd Rondout Formation - Duttonville member
3230	7153 DSrwd Rondout Formation - Whiteport Dolomite member
3240	7200 DSrd Rondout and Decker Formations, undivided
3250	7250 Sd Decker Formation
3260	7300 Sbv Bossardville limestone
3270	7400 Sbv Berkshire Valley Formation
3280	7500 Sp Poxono Island Formation
3290	7550 Sbp Berkshire Valley and Poxono Island Formations, undivided [includes Spbv labels on some maps]
3300	7600 Sb Bloomsburg red beds
3310	7700 Sl Longwood shale
3320	7705 Shf High Falls Formation (Superceded by the Longwood shale and Bloomsbury red beds)
3330	7800 Sg Green Pond conglomerate [includes Sgp labels on some maps]
3340	7900 Ss Shawangunk Formation
3350	8100 SObu Beemerville Intrusive Suite
3360	8120 SObs Nepheline syenite [includes Obs labels on some maps]
3370	8140 SObl Lamprophyre, tinguaitite, bostonite, and malgnite, undifferentiated [includes Obt, Obp, Obb, Obn, Obl labels on some maps]
3380	8160 SObb Ouachitite breccia or volcanic breccia [includes Obo, Ovb, Oub, labels on some maps]
3390	8200 Om Martinsburg Formation, undivided
3400	8210 Omh Martinsburg Formation - High Point member [includes Omhp labels on some maps]
3405	8215 Omhs Martinsburg Formation - High Point member, sandstone facies
3410	8220 Omhph Martinsburg Formation - High Point member, hornfel
3420	8230 Omr Martinsburg Formation - Ramseyburg member
3425	8235 Ombr Martinsburg Formation - slate and graywacke facies
3430	8240 Omrh Martinsburg Formation - Ramseyburg member, hornfel
3440	8250 Omb Martinsburg Formation - Bushkill member
3450	8260 Ombh Martinsburg Formation - Bushkill member, hornfel

Water Allocation Codes

3460	8300 OCjt Jutland klippe sequence, undifferentiated [includes Ojt labels on some maps]
3470	8320 OCjtb Jutland klippe sequence, Unit B of Perissoratis and other (1979) [includes Ojtb labels on some maps]
3480	8340 OCjta Jutland klippe sequence, Unit A of Perissoratis and other (1979) [includes Ojta labels on some maps]
3490	8400 Oj Jacksonburg limestone
3500	8410 Oju Jacksonburg limestone, undivided
3510	8420 Ojr Jacksonburg limestone, cement rock facies
3520	8440 Ojl Jacksonburg limestone, cement limestone facies
3530	8450 Ojw Jacksonburg Limestone and sequence at Wantage
3540	8460 Ow Sequence at Wantage
3550	8490 Oj+ All Paleozoic units above Beekmantown Group, undivided
3560	8550 OCjk Jacksonburg limestone and Kittatinny Supergroup, undivided
3570	8575 OCjwb Jacksonburg limestone, sequence at Wantage, and Beekmantown Group, undivided
3580	8600 Ock Kittatinny Supergroup
3590	8602 Ocku Upper Kittatinny
3600	8604 Ockm Middle Kittatinny
3610	8606 Ockl Lower Kittatinny
3620	8610 Ob Beekmantown Group, undivided
3630	8620 Obu Beekmantown Group, upper part
3640	8630 Obl Beekmantown Group, lower part
3650	8640 Oo Ontelaunee Formation
3660	8642 Ooh Ontelaunee Formation - Harmonyvale member
3670	8644 Oobr Ontelaunee Formation - Beaver Run member
3680	8650 Oe Epler Formation
3690	8652 Oel Epler Formation - Lafayette member
3700	8654 Oebs Epler Formation - Big Springs member
3710	8656 Oebr Epler Formation - Branchville member
3720	8660 Or Rickenback dolomite
3730	8662 Orh Rickenback dolomite - Hope member
3740	8664 Orl Rickenback dolomite - lower member
3750	8670 Os Stonehenge Formation
3760	8750 OCa Allentown dolomite
3770	8752 OCau Allentown dolomite - upper member
3780	8754 OCaI Allentown dolomite - Limeport member
3790	8800 Cl Leithsville Formation
3800	8820 Clw Leithsville Formation - Walkill member
3810	8840 Clha Leithsville Formation - Hamburg member
3820	8860 Clc Leithsville Formation - Califon member
3830	8900 Clh Leithsville Formation and Hardyston quartzite, undivided
3840	8920 Ch Hardyston quartzite
3850	8930 Cc Chickies quartzite
3860	8999 * Igneous and metamorphic rocks
3870	9970 Yg Gneiss, granofels, and migmatite
3880	9210 * Schistose rocks
3890	9220 CZm Manhattan schist
3900	9240 CZs Serpentinite
3910	9250 CZw Wissahickon Formation
3920	9260 Zch Chestnut Hill Formation

3930	9340 * Granitic rocks
3940	9270 db Diabase dikes (unknown age)
3950	9280 Zd Diabase dikes
3960	9290 Zv Metabasalt (includes Metavolcanic rocks)
3970	9350 Ygm Mount Eve granite
3980	9400 Ybi Byram Intrusive Suite
3990	9420 Ybh Hornblende granite
4000	9440 Ybs Hornblende syenite
4010	9460 Ybb Biotite granite
4020	9480 Yba Microperthite alaskite
4030	9500 Ylh Lake Hopatcong Intrusive Suite
4040	9520 Ypg Pyroxene granite
4050	9540 Yps Pyroxene syenite
4060	9560 Ypa Pyroxene alaskite
4070	9800 Yl Losee Metamorphic Suite
4080	9840 Yla Albite-oligoclase granite
4090	9900 Yd Diorite
4100	9960 Yma Microantiperthite alaskite
4110	9980 Ygb Gabbro
4120	9875 Yun Rocks of uncertain origin
4130	9590 * Gneissic rocks
4140	9595 bg Baltimore gneiss [not present in New Jersey]
4150	9600 Ys Syenite gneiss
4160	9700 Yms Metasedimentary rocks
4170	9710 Yk Potassic-feldspar gneiss
4180	9720 Ym Microcline gneiss
4190	9730 Yb Biotite-quartz-feldspar gneiss
4200	9740 Ymh Hornblende-quartz-feldspar gneiss
4210	9750 Ymp Clinopyroxene-quartz-feldspar gneiss
4220	9760 Yp Pyroxene gneiss
4230	9762 Ypb Pyroxene gneiss with abundant biotite
4240	9764 Yph Pyroxene gneiss with abundant hornblende
4250	9766 Ypbh Pyroxene gneiss with abundant biotite and hornblende
4260	9770 Ype Pyroxene-epidote gneiss
4270	9790 Yq Quartzite
4280	9795 Ye Epidote gneiss
4290	9820 Ylo Quartz-oligoclase gneiss
4300	9860 Ylb Biotite-quartz-oligoclase gneiss
4310	9870 Ylh Hornblende-quartz-oligoclase gneiss
4320	9880 Yh Hypersthene-quartz-plagioclase gneiss
4330	9910 Ya Amphibolite
4340	9920 Yam Migmatite
4350	9930 Ymg Monazite gneiss
4360	9940 Yhp Hornblende-plagioclase gneiss
4370	9950 Ybp Biotite-plagioclase gneiss
4380	9780 Yf Franklin marble [includes Ymr labels on some maps]
4390	9785 Yfl Franklin limestone
4400	9788 Ywl Wildcat marble

1/2 Mile Monitoring and Domestic Wells around Param Site

Owner's Name	Owner's Address	Well NO.	Well Address	Atlas Sheet Coordinates	Well Permit	Date of Well	Total Depth (ft)	Length Of Casing (ft)	Static Water Depth (ft)	Well Finished	Use Code	Source of Other
hi, Arisfide	415 St Mary's Street, Burlington City	MW-1	Lot No. 60, Block No. 145, 415 St Mary's	27-34-857	27-16307	4/8/2002	16	6	10	Flushmounted	Monitoring	Environ
hi, Arisfide	416 St Mary's Street, Burlington City	MW-2	Lot No. 60, Block No. 145, 415 St Mary's	27-34-857	27-16308	4/8/2002	17	7	10.5	Flushmounted	Monitoring	Environ
inder Badesha	58 US Highway 130, Burlington City	MW-1	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017157	7/7/2004	12	2	4	Flushmounted	Monitoring	Berger
inder Badesha	58 US Highway 130, Burlington City	MW-2	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017158	7/7/2004	12	2	5.5	Flushmounted	Monitoring	Berger
inder Badesha	58 US Highway 130, Burlington City	MW-3	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017159	7/6/2004	12	2	5	Flushmounted	Monitoring	Berger
inder Badesha	58 US Highway 130, Burlington City	MW-4	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017160	7/6/2004	12	2	5.5	Flushmounted	Monitoring	Berger
inder Badesha	58 US Highway 130, Burlington City	MW-5	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017161	7/7/2004	12	2	5.5	Flushmounted	Monitoring	Berger
Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE1	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14741	6/29/1998	11	3.5	6	Flushmounted	Gas Vent	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE2	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14742	6/29/1998	11	3.5	6	Flushmounted	Gas Vent	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE3	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14743	6/29/1998	11	3.5	6	Flushmounted	Gas Vent	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP1	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14744	6/30/1998	16	10	6	Flushmounted	Injection	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP2	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14745	6/30/1998	16	10	6	Flushmounted	Injection	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP3	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14746	6/30/1998	16	10	6	Flushmounted	Injection	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW4	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-874	27-14235	6/12/1997	12	2	4	Flushmounted	Monitoring	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW5	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-874	27-14236	6/12/1997	12	2	4	Flushmounted	Monitoring	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW6	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-874	27-14237	6/12/1997	12	2	4	Flushmounted	Monitoring	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	4041 Market, Aston, PA	MW1	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13965	11/5/1996	7.5	2.5	5	Flushmounted	Monitoring	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	4041 Market, Aston, PA	MW2	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13966	11/5/1996	12	2	5	Flushmounted	Monitoring	RCC UST, Case: 96-92-60-8300-4
Company, Inc.	4041 Market, Aston, PA	MW3	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13967	11/5/1996	12	2	5	Flushmounted	Monitoring	RCC UST, Case: 96-92-60-8300-4
Klentzeris	30W State HWY 130, Burlington City	MW1	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15388	12/16/1999	12.5	2.5	3.2	Flushmounted	Monitoring	Owner investigation
Klentzeris	30W State HWY 130, Burlington City	MW2	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15389	12/16/1999	12.5	2.5	2.9	Flushmounted	Monitoring	Owner investigation
Klentzeris	30W State HWY 130, Burlington City	MW3	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15390	12/16/1999	12.5	2.5	2.9	Flushmounted	Monitoring	Owner investigation
Klentzeris	30W State HWY 130, Burlington City	MW4	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15391	12/16/1999	12.5	2.5	2.9	Flushmounted	Monitoring	Owner investigation
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-1	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15529	4/7/2000	14	4	3.75	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-2	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15530	4/7/2000	14	4	4.65	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15531	4/7/2000	14	4	6	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15532	4/7/2000	14	4	5.8	Flushmounted	Monitoring	09-44
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-5	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15533	4/7/2000	14	4	5.8	Flushmounted	Monitoring	09-44
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15534	4/7/2000	14	4	5.7	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-7	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15535	4/7/2000	14	4	4.9	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	B-1	Lot No. 9.01&1, Block 240.79, 1721 Main	27-34-876	27-15537	4/5/2000	N/A	N/A	5	N/A	Boring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-1R	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-15808	5/23/2001	14	4	6.08	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3R	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-15809	5/23/2001	14	4	6.4	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4R	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-15810	5/23/2001	14	4	6.08	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	B-1	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-15903	2/21/2001	46	NA	6	N/A	Boring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3R	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-16198	12/12/2001	15	5	8.31	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4R	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-16199	12/12/2001	17	7	10.35	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-5R	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-16200	12/13/2001	14	4	8.46	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6R (MW-E	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-16201	12/13/2001	17	7	10.65	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6D	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-16202	12/12/2001	27	17	10.7	Flushmounted	Monitoring	
ngton County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4D (MW-E	Lot No. 2 & 9.01, Block 240.79, 1721 Mai	27-34-876	27-16203	1/14/2002	14	4	8.46	Flushmounted	Monitoring	
orch Chevrolet	Route 30 South & Lawrence Str.	MW1	Lot No. 9, Block 162, Route 130 South &	127-34-876	2700017225	8/19/2004	20	5	6	Flushmounted	Monitoring	
orch Chevrolet	Route 30 South & Lawrence Str.	MW2	Lot No. 9, Block 162, Route 130 South &	127-34-876	2700017226	8/19/2004	19	4	6	Flushmounted	Monitoring	
orch Chevrolet	Route 30 South & Lawrence Str.	MW3	Lot No. 9, Block 162, Route 130 South &	127-34-876	2700017227	8/19/2004	19	4	6	Flushmounted	Monitoring	
ck Environmental & GE	215 Ridgedale Ave., Florham Park, NJ	B-1	Lot No. 11, Block 69, 215 Farmer Ave., B	27-34-878	27-15888	2/9/2001	N/A	N/A	6	N/A	Boring	
ngton City	601 E Pearl ST., Burlington City	MW-3	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15148	5/27/1999	13	3	5.5	Flushmounted	Monitoring	UST, Case: 97-02-27-234425
ngton City	601 E Pearl ST., Burlington City	MW-2	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15149	5/27/1999	13	3	5.5	Flushmounted	Monitoring	UST, Case: 97-02-27-234425
ngton City	601 E Pearl ST., Burlington City	MW-1	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15150	5/27/1999	13	3	5.5	Flushmounted	Monitoring	UST, Case: 97-02-27-234425
ngton City	601 E Pearl ST., Burlington City	MW-4	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15158	5/27/1999	13	3	5.5	Flushmounted	Monitoring	UST, Case: 97-02-27-2344-25
e, Jack & Kathleen	Mitchell Ave. & Rt 130, Burlington City	MW-1	Lot No. 1, Block 224, 505 Mitchell Ave. &	27-34-882	27-15415	1/6/2000	14.5	4.5	7.8	Stick Up	Monitoring	Owner investigation
ersey Transit	1 Penn Plaza, Newark, NJ	PB-13	Columbus St., Burlington City	27-34-883	27-15395	2/14/2000	N/A	N/A	10	N/A	N/A	
iles Papa Cristos	604 High Street, Burlington City	MW5	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15398	12/16/1999	12.5	2.5	2.8	Flushmounted	Monitoring	
iles Papa Cristos	604 High Street, Burlington City	MW6	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15399	12/16/1999	12.5	2.5	2.8	Flushmounted	Monitoring	
iles Papa Cristos	604 High Street, Burlington City	MW7	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15400	12/16/1999	12.5	2.5	2.8	Flushmounted	Monitoring	
iles Papa Cristos	604 High Street, Burlington City	MW8	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15401	12/16/1999	10.5	2.5	5.7	Flushmounted	Monitoring	
iles Papa Cristos	604 High Street, Burlington City	MW-9	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15402	12/16/1999	12.5	2.5	3.1	Flushmounted	Monitoring	
130 Property LLC	P.O. Box 1283, Burlington City	NA	Lot 57, Block 33, Rear 580 High Street, B	27-34-884	27-15645	6/23/2000	17	7	5.2	Flushmounted	Monitoring	Ransom Ei Case I.D.: 00-05-01-171123
Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-1	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016782	7/1/2003	13	3	6	Flushmounted	Monitoring	
Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-2	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016783	7/1/2003	13	3	6	Flushmounted	Monitoring	
Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-3	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016784	7/1/2003	13	3	6	Flushmounted	Monitoring	
iles Incorporated	Hercules Plaza, Wilmington, DE	Boring 1 thru 1	Lot No.2, Block No. 102, Glenwood Ave.,	27-44-211	27-15468	3/10/2000	N/A	N/A	28	N/A	Boring	
iles Incorporated	Hercules Plaza, Wilmington, DE	Boring 15 thru	Lot No.2.3.5, Block No. 102.03, Glenwooc	27-44-211	27-15469	3/10/2000	N/A	N/A	26	N/A	Boring	
rt Emery	162 Conawaga Trail, Medford, NJ	AS5	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16274	2/15/2002	12.5	12	N/A	Flushmounted	Gas Vent	RCC
rt Emery	162 Conawaga Trail, Medford, NJ	AS-6	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16275	2/15/2002	11.5	11.5	N/A	Flushmounted	Gas Vent	RCC
rt Emery	162 Conawaga Trail, Medford, NJ	AS-7	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16276	2/15/2002	7.5	7.5	N/A	Flushmounted	Gas Vent	RCC
rt Emery	162 Conawaga Trail, Medford, NJ	AS-8	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16277	2/15/2002	11.5	11.5	N/A	Flushmounted	Gas Vent	RCC
rt Emery	162 Conawaga Trail, Medford, NJ	MW-6	Lot No. 1142, Block No. 30029, 163 Mudj	27-44-215	27-16278	2/15/2002	15	5	10	Flushmounted	Monitoring	RCC

1/2 Mile Monitoring and Domestic Wells around Param Site

Well Owner's Name	Owner's Address	Well NO.	Well Address	Atlas Sheet Coordinates	Well Permit	Date of Well	Total Depth (ft)	Length Of Casing (ft)	Static Water Depth (ft)	Well Finished	Use Code	Source of	Other
Cecchi, Arisfide	415 St Mary's Street, Burlington City	MW-1	Lot No. 60, Block No. 145, 415 St Mary's	: 27-34-857	27-16307	4/8/2002	16	6		10 Flushmounted	Monitoring	Environ	
Cecchi, Arisfide	416 St Mary's Street, Burlington City	MW-2	Lot No. 60, Block No. 145, 415 St Mary's	: 27-34-857	27-16308	4/8/2002	17	7		10.5 Flushmounted	Monitoring	Environ	
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-1	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017157	7/7/2004	12	2		4 Flushmounted	Monitoring	Berger	
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-2	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017158	7/7/2004	12	2		5.5 Flushmounted	Monitoring	Berger	
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-3	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017159	7/6/2004	12	2		5 Flushmounted	Monitoring	Berger	
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-4	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017160	7/6/2004	12	2		5.5 Flushmounted	Monitoring	Berger	
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-5	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017161	7/7/2004	12	2		5.5 Flushmounted	Monitoring	Berger	
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE1	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14741	6/29/1998	11	3.5		6 Flushmounted	Gas Vent	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE2	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14742	6/29/1998	11	3.5		6 Flushmounted	Gas Vent	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE3	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14743	6/29/1998	11	3.5		6 Flushmounted	Gas Vent	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP1	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14744	6/30/1998	16	10		6 Flushmounted	Injection	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP2	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14745	6/30/1998	16	10		6 Flushmounted	Injection	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP3	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-875	27-14746	6/30/1998	16	10		6 Flushmounted	Injection	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW4	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-874	27-14235	6/12/1997	12	2		4 Flushmounted	Monitoring	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW5	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-874	27-14236	6/12/1997	12	2		4 Flushmounted	Monitoring	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW6	Lot No. 79, Block 66, Rt 130 & Mott Ave,	127-34-874	27-14237	6/12/1997	12	2		4 Flushmounted	Monitoring	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	4041 Market, Aston, PA	MW1	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13965	11/5/1996	7.5	2.5		5 Flushmounted	Monitoring	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	4041 Market, Aston, PA	MW2	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13966	11/5/1996	12	2		5 Flushmounted	Monitoring	RCC	UST, Case: 96-92-60-8300-4
Sun Company, Inc.	4041 Market, Aston, PA	MW3	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13967	11/5/1996	12	2		5 Flushmounted	Monitoring	RCC	UST, Case: 96-92-60-8300-4
Luke Klentzeris	30W State HWY 130, Burlington City	MW1	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15388	12/16/1999	12.5	2.5		3.2 Flushmounted	Monitoring		Owner investigation
Luke Klentzeris	30W State HWY 130, Burlington City	MW2	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15389	12/16/1999	12.5	2.5		2.9 Flushmounted	Monitoring		Owner investigation
Luke Klentzeris	30W State HWY 130, Burlington City	MW3	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15390	12/16/1999	12.5	2.5		2.9 Flushmounted	Monitoring		Owner investigation
Luke Klentzeris	30W State HWY 130, Burlington City	MW4	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15391	12/16/1999	12.5	2.5		2.9 Flushmounted	Monitoring		Owner investigation
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-1	Lot No. 9.01.2, Block 240.79, 1721 Main	: 27-34-876	27-15529	4/7/2000	14	4		3.75 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-2	Lot No. 9.01.2, Block 240.79, 1721 Main	: 27-34-876	27-15530	4/7/2000	14	4		4.65 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3	Lot No. 9.01.2, Block 240.79, 1721 Main	: 27-34-876	27-15531	4/7/2000	14	4		6 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4	Lot No. 9.01.2, Block 240.79, 1721 Main	: 27-34-876	27-15532	4/7/2000	14	4		5.8 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-5	Lot No. 9.01.2, Block 240.79, 1721 Main	: 27-34-876	27-15533	4/7/2000	14	4		5.8 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6	Lot No. 9.01.2, Block 240.79, 1721 Main	: 27-34-876	27-15534	4/7/2000	14	4		5.7 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-7	Lot No. 9.01.2, Block 240.79, 1721 Main	: 27-34-876	27-15535	4/7/2000	14	4		4.9 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	B-1	Lot No. 9.01&1, Block 240.79, 1721 Main	27-34-876	27-15537	4/5/2000	N/A	N/A		5 N/A	Boring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-1R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15808	5/23/2001	14	4		6.08 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15809	5/23/2001	14	4		6.4 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15810	5/23/2001	14	4		6.08 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	B-1	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15903	2/21/2001	46	NA		6 N/A	Boring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16198	12/12/2001	15	5		8.31 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16199	12/12/2001	17	7		10.35 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-5R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16200	12/13/2001	14	4		8.46 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6R (MW-E	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16201	12/13/2001	17	7		10.65 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6D	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16202	12/12/2001	27	17		10.7 Flushmounted	Monitoring		
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4D (MW-E	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16203	1/14/2002	14	4		8.46 Flushmounted	Monitoring		
Auerbrch Chevrolet	Route 30 South & Lawrence Str.	MW1	Lot No. 9, Block 162, Route 130 South & I	27-34-876	2700017225	8/19/2004	20	5		6 Flushmounted	Monitoring		
Auerbrch Chevrolet	Route 30 South & Lawrence Str.	MW2	Lot No. 9, Block 162, Route 130 South & I	27-34-876	2700017226	8/19/2004	19	4		6 Flushmounted	Monitoring		
Auerbrch Chevrolet	Route 30 South & Lawrence Str.	MW3	Lot No. 9, Block 162, Route 130 South & I	27-34-876	2700017227	8/19/2004	19	4		6 Flushmounted	Monitoring		
Matrix Environmental & GE	215 Ridgedale Ave., Florham Park, NJ	B-1	Lot No. 11, Block 69, 215 Farmer Ave., B	27-34-878	27-15888	2/9/2001	N/A	N/A		6 N/A	Boring		
Burlington City	601 E Pearl ST., Burlington City	MW-3	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15148	5/27/1999	13	3		5.5 Flushmounted	Monitoring		UST, Case: 97-02-27-234425
Burlington City	601 E Pearl ST., Burlington City	MW-2	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15149	5/27/1999	13	3		5.5 Flushmounted	Monitoring		UST, Case: 97-02-27-234425
Burlington City	601 E Pearl ST., Burlington City	MW-1	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15150	5/27/1999	13	3		5.5 Flushmounted	Monitoring		UST, Case: 97-02-27-234425
Burlington City	601 E Pearl ST., Burlington City	MW-4	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15158	5/27/1999	13	3		5.5 Flushmounted	Monitoring		UST, Case: 97-02-27-2344-25
Lance, Jack & Kathleen	Mitchell Ave. & Rt 130, Burlington City	MW-1	Lot No. 1, Block 224, 505 Mitchell Ave. &	27-34-882	27-15415	1/6/2000	14.5	4.5		7.8 Stick Up	Monitoring		Owner investigation
New Jersey Transit	1 Penn Plaza, Newark, NJ	PB-13	Columbus St., Burlington City	27-34-883	27-15395	2/14/2000	N/A	N/A		10 N/A	N/A		
Hercules Papa Cristos	604 High Street, Burlington City	MW5	Lot No. 1,2,7,10, Block 74, 6 West State I	27-34-884	27-15398	12/16/1999	12.5	2.5		2.8 Flushmounted	Monitoring		
Hercules Papa Cristos	604 High Street, Burlington City	MW6	Lot No. 1,2,7,10, Block 74, 6 West State I	27-34-884	27-15399	12/16/1999	12.5	2.5		2.8 Flushmounted	Monitoring		
Hercules Papa Cristos	604 High Street, Burlington City	MW7	Lot No. 1,2,7,10, Block 74, 6 West State I	27-34-884	27-15400	12/16/1999	12.5	2.5		2.8 Flushmounted	Monitoring		
Hercules Papa Cristos	604 High Street, Burlington City	MW8	Lot No. 1,2,7,10, Block 74, 6 West State I	27-34-884	27-15401	12/16/1999	10.5	2.5		5.7 Flushmounted	Monitoring		
Hercules Papa Cristos	604 High Street, Burlington City	MW-9	Lot No. 1,2,7,10, Block 74, 6 West State I	27-34-884	27-15402	12/16/1999	12.5	2.5		3.1 Flushmounted	Monitoring		
Route 130 Property LLC	P.O. Box 1283, Burlington City	NA	Lot 57, Block 33, Rear 580 High Street, B	27-34-884	27-15645	6/23/2000	17	7		5.2 Flushmounted	Monitoring	Ransom Ei	Case I.D.: 00-05-01-171123
SEV Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-1	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016782	7/1/2003	13	3		6 Flushmounted	Monitoring		
SEV Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-2	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016783	7/1/2003	13	3		6 Flushmounted	Monitoring		
SEV Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-3	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016784	7/1/2003	13	3		6 Flushmounted	Monitoring		
Hercules Incorporated	Hercules Plaza, Wilmington, DE	Boring 1 thru 1	Lot No.2, Block No. 102, Glenwood Ave.,	27-44-211	27-15468	3/10/2000	N/A	N/A		28 N/A	Boring		
Hercules Incorporated	Hercules Plaza, Wilmington, DE	Boring 15 thru	Lot No.2.3.5, Block No. 102.03, Glenwooc	27-44-211	27-15469	3/10/2000	N/A	N/A		26 N/A	Boring		
Robert Emery	162 Conawaga Trail, Medford, NJ	AS5	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16274	2/15/2002	12.5	12	N/A	Flushmounted	Gas Vent	RCC	
Robert Emery	162 Conawaga Trail, Medford, NJ	AS-6	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16275	2/15/2002	11.5	11.5	N/A	Flushmounted	Gas Vent	RCC	
Robert Emery	162 Conawaga Trail, Medford, NJ	AS-7	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16276	2/15/2002	7.5	7.5	N/A	Flushmounted	Gas Vent	RCC	
Robert Emery	162 Conawaga Trail, Medford, NJ	AS-8	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16277	2/15/2002	11.5	11.5	N/A	Flushmounted	Gas Vent	RCC	
Robert Emery	162 Conawaga Trail, Medford, NJ	MW-6	Lot No. 1142, Block No. 30029, 163 Mudji	27-44-215	27-16278	2/15/2002	15	5		10 Flushmounted	Monitoring	RCC	

Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City, BC1	Lot No.2, Block No. 102, Wedgewood Dr 27-44-212	27-7986A	7/1/1985	40	20	N/A	Flushmounted	Monitoring	
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City, BC2	Lot No.2, Block No. 102, Wedgewood Dr 27-44-212	27-7987	8/1/1985	14.5	4.5	N/A	Flushmounted	Monitoring	
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City, BC3	Lot No.2, Block No. 102, Wedgewood Dr 27-44-212	27-7988	7/2/1985	14	4	N/A	Flushmounted	Monitoring	
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City, BC4	Lot No.2, Block No. 102, Wedgewood Dr 27-44-212	27-7989	7/2/1985	14	4	N/A	Flushmounted	Monitoring	
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City, BC5	Lot No.2, Block No. 102, Wedgewood Dr 27-44-212	27-7990	7/2/1985	14	4	N/A	Flushmounted	Monitoring	
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City, BC6	Lot No.2, Block No. 102, Wedgewood Dr 27-44-212	27-7991	7/2/1985	12	2	N/A	Flushmounted	Monitoring	
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT1 Lot No. 11.02, Block No. 66, Burlington Ci 27-34-877	27-10835	7/3/1990	20	5		10 Flushmounted	Monitoring GTI	UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT02 Lot No. 11.02, Block No. 66, Burlington Ci 27-34-877	27-10836	7/3/1990	20	5		10 Flushmounted	Monitoring GTI	UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT03 Lot No. 11.02, Block No. 66, Burlington Ci 27-34-877	27-10837	7/3/1990	20	5		10 Flushmounted	Monitoring GTI	UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT04 Lot No. 11.02, Block No. 66, Burlington Ci 27-34-877	27-10838	7/3/1990	20	5		10 Flushmounted	Monitoring GTI	UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT05 Lot No. 11.02, Block No. 66, Burlington Ci 27-34-877	27-11236-5	7/16/1991	20	5		10 Flushmounted	Monitoring GTI	UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT06 Lot No. 11.02, Block No. 66, Burlington Ci 27-34-877	27-11236-3	7/16/1991	20	5		10 Flushmounted	Monitoring GTI	UST, Case I.D. 0008264
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 2S Lot No. 34-38, Block No. 160, Burlington, 27-34-881	27-11159	2/4/1991	15	5		7 Flushmounted	Monitoring Bell Enviro	UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 3S Lot No. 34-38, Block No. 160, Burlington, 27-34-881	27-11160	2/5/1991	15	5		6 Flushmounted	Monitoring Bell Enviro	UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 4S Lot No. 34-38, Block No. 160, Burlington, 27-34-881	27-11161	2/5/1991	15	5		6 Flushmounted	Monitoring Bell Enviro	UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 5S Lot No. 34-38, Block No. 160, Burlington, 27-34-881	27-11162	2/5/1991	15	5		6 Flushmounted	Monitoring Bell Enviro	UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 1S Lot No. 34-38, Block No. 160, Burlington, 27-34-881	27-11163	2/4/1991	15	5		6 Flushmounted	Monitoring Bell Enviro	UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	MW-1 Lot No. 34-38, Block No. 160, Burlington, 27-34-881	27-12075	8/4/1992	12	2		4.8 Flushmounted	Monitoring Bell Enviro	UST
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-1 Lot No. 12-13, 18, Block 160, 221 East Rt 27-34-884	27-11371	6/5/1991	17.5	2.5		7.8 Flushmounted	Monitoring	UST
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-2 Lot No. 12-13, 18, Block 160, 221 East Rt 27-34-884	27-11372	6/5/1991	19	4		7.3 Flushmounted	Monitoring	UST
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-3 Lot No. 12-13, 18, Block 160, 221 East Rt 27-34-884	27-11373	6/5/1991	18.5	3.5		7.5 Flushmounted	Monitoring	UST
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-4 Lot No. 12-13, 18, Block 160, 221 East Rt 27-34-884	27-11374	6/5/1991	20	5		7.5 Flushmounted	Monitoring	UST
PSE & G	70 Box 570, Newark, NJ	DC-1 Lot No. 5, A1, A2, Block 120, Burlington, I 27-34-873	27-11732	1/22/1992	14	4		0 Flushmounted	Monitoring Donn Geo	UST, Case ID 0041762
PSE & G	70 Box 570, Newark, NJ	DC-2 Lot No. 5, A1, A2, Block 120, Burlington, I 27-34-873	27-11733	1/22/1992	14	4		12 Flushmounted	Monitoring Donn Geo	UST, Case ID 0041762
Burlington City	437 High Street, Burlington, NJ	MW-1 Lot No. 40, Block 32, 432 High Street, Bu 27-34-873	27-11920	4/24/1992	16.77	6.77		8.58 Flushmounted	Monitoring	UST
Burlington City	437 High Street, Burlington, NJ	MW-2 Lot No. 40, Block 32, 432 High Street, Bu 27-34-873	27-11921	4/25/1992	17.19	7.19		8.2 Flushmounted	Monitoring	UST
Burlington City	437 High Street, Burlington, NJ	MW-3 Lot No. 40, Block 32, 432 High Street, Bu 27-34-873	27-11922	4/25/1992	17.15	7.15		7.97 Flushmounted	Monitoring	UST
Burlington Clay & Engineer	307 W. Broad Street, Burlington, NJ	MW-14 Lot No. 13, Block 104, Glenwood Ave., B 27-44-212	27-12635	1/10/1994	50	38		20.5 Stickup	Monitoring	
Exxon Co USA	1200 mith St., Houston, TX	PMW4 Lot No. 24.01 Block No. 23, 420 Keim Blv 27-34-881	27-13972	10/23/1996	14	4		5 Flushmounted	Monitoring	UST, Case ID 91-8-27-1109-44
Exxon Co USA	1200 mith St., Houston, TX	MW4 Lot No. 24.01 Block No. 23, 420 Keim Blv 27-34-881	27-13972	10/23/1996	14	4		5 Flushmounted	Monitoring	UST, Case ID 91-8-27-1109-44
Omniport Communications	400 Street Rd, Benselm, PA	TB-1 Lot No. 23, Block No. 07, 34 Rt 130 North 27-34-876	27-14525	1/22/1998 N/A	N/A		dry	Flushmounted	Boring Ambric	

1/2 Mile Monitoring and Domestic Wells around Param Site

Well Owner's Name	Owner's Address	Well NO.	Well Address	Atlas Sheet Coordinates	Well Permit	Date of Well (Total Depth (ft)	Length Of Casing (ft)	Static Water Depth (ft)	Well Finished	Use Code	Source of Other
Adam Gudas					27-01696		72			Domestic	
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 2S	Lot No. 34-38, Block No. 160, Burlington,	27-34-881	27-11159	2/4/1991	15	5	7	Flushmounted	Monitoring Bell Enviro UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 3S	Lot No. 34-38, Block No. 160, Burlington,	27-34-881	27-11160	2/5/1991	15	5	6	Flushmounted	Monitoring Bell Enviro UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 4S	Lot No. 34-38, Block No. 160, Burlington,	27-34-881	27-11161	2/5/1991	15	5	6	Flushmounted	Monitoring Bell Enviro UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 5S	Lot No. 34-38, Block No. 160, Burlington,	27-34-881	27-11162	2/5/1991	15	5	6	Flushmounted	Monitoring Bell Enviro UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	BEC 1S	Lot No. 34-38, Block No. 160, Burlington,	27-34-881	27-11163	2/4/1991	15	5	6	Flushmounted	Monitoring Bell Enviro UST, Case I.D. 90-07-26-1317
ATMA Singh	Rt 130 & Federal Street, Burlington, NJ	MW-1	Lot No. 34-38, Block No. 160, Burlington,	27-34-881	27-12075	8/4/1992	12	2	4.8	Flushmounted	Monitoring Bell Enviro UST
Auerbrch Chevrolet	Route 30 South & Lawrence Str.	MW1	Lot No. 9, Block 162, Route 130 South &	127-34-876	2700017225	8/19/2004	20	5	6	Flushmounted	Monitoring
Auerbrch Chevrolet	Route 30 South & Lawrence Str.	MW2	Lot No. 9, Block 162, Route 130 South &	127-34-876	2700017226	8/19/2004	19	4	6	Flushmounted	Monitoring
Auerbrch Chevrolet	Route 30 South & Lawrence Str.	MW3	Lot No. 9, Block 162, Route 130 South &	127-34-876	2700017227	8/19/2004	19	4	6	Flushmounted	Monitoring
Burlington City	601 E Pearl ST., Burlington City	MW-3	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15148	5/27/1999	13	3	5.5	Flushmounted	Monitoring UST, Case: 97-02-27-234425
Burlington City	601 E Pearl ST., Burlington City	MW-2	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15149	5/27/1999	13	3	5.5	Flushmounted	Monitoring UST, Case: 97-02-27-234425
Burlington City	601 E Pearl ST., Burlington City	MW-1	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15150	5/27/1999	13	3	5.5	Flushmounted	Monitoring UST, Case: 97-02-27-234425
Burlington City	601 E Pearl ST., Burlington City	MW-4	Lot No. 1, Block 198, 505 Mitchell Ave., B	27-34-881	27-15158	5/27/1999	13	3	5.5	Flushmounted	Monitoring UST, Case: 97-02-27-2344-25
Burlington City	437 High Street, Burlington, NJ	MW-1	Lot No. 40, Block 32, 432 High Street, Bui	27-34-873	27-11920	4/24/1992	16.77	6.77	8.58	Flushmounted	Monitoring UST
Burlington City	437 High Street, Burlington, NJ	MW-2	Lot No. 40, Block 32, 432 High Street, Bui	27-34-873	27-11921	4/25/1992	17.19	7.19	8.2	Flushmounted	Monitoring UST
Burlington City	437 High Street, Burlington, NJ	MW-3	Lot No. 40, Block 32, 432 High Street, Bui	27-34-873	27-11922	4/25/1992	17.15	7.15	7.97	Flushmounted	Monitoring UST
Burlington Clay & Engineer	307 W. Broad Street, Burlington, NJ	MW-14	Lot No. 13, Block 104, Glenwood Ave., Bu	27-44-212	27-12635	1/10/1994	50	38	20.5	Stickup	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-1	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15529	4/7/2000	14	4	3.75	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-2	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15530	4/7/2000	14	4	4.65	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15531	4/7/2000	14	4	6	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15532	4/7/2000	14	4	5.8	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-5	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15533	4/7/2000	14	4	5.8	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15534	4/7/2000	14	4	5.7	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-7	Lot No. 9.01.2, Block 240.79, 1721 Main	27-34-876	27-15535	4/7/2000	14	4	4.9	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	B-1	Lot No. 9.01&1, Block 240.79, 1721 Main	27-34-876	27-15537	4/5/2000	N/A	N/A	5	N/A	Boring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-1R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15808	5/23/2001	14	4	6.08	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15809	5/23/2001	14	4	6.4	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15810	5/23/2001	14	4	6.08	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	B-1	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-15903	2/21/2001	46	NA	6	N/A	Boring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-3R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16198	12/12/2001	15	5	8.31	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16199	12/12/2001	17	7	10.35	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-5R	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16200	12/13/2001	14	4	8.46	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6R (MW-6)	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16201	12/13/2001	17	7	10.65	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-6D	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16202	12/12/2001	27	17	10.7	Flushmounted	Monitoring
Burlington County Auto Servi	34 Route 130 & High Street, Burlington City	MW-4D (MW-4)	Lot No. 2 & 9.01, Block 240.79, 1721 Maii	27-34-876	27-16203	1/14/2002	14	4	8.46	Flushmounted	Monitoring
Cecchi, Arisfide	415 St Mary's Street, Burlington City	MW-1	Lot No. 60, Block No. 145, 415 St Mary's	:27-34-857	27-16307	4/8/2002	16	6	10	Flushmounted	Monitoring Environ
Cecchi, Arisfide	416 St Mary's Street, Burlington City	MW-2	Lot No. 60, Block No. 145, 415 St Mary's	:27-34-857	27-16308	4/8/2002	17	7	10.5	Flushmounted	Monitoring Environ
Chamberlain Corp					27-04750		47			Industrial	
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT1	Lot No. 11.02, Block No. 66, Burlington Ci	27-34-877	27-10835	7/3/1990	20	5	10	Flushmounted	Monitoring GTI UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT02	Lot No. 11.02, Block No. 66, Burlington Ci	27-34-877	27-10836	7/3/1990	20	5	10	Flushmounted	Monitoring GTI UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT03	Lot No. 11.02, Block No. 66, Burlington Ci	27-34-877	27-10837	7/3/1990	20	5	10	Flushmounted	Monitoring GTI UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT04	Lot No. 11.02, Block No. 66, Burlington Ci	27-34-877	27-10838	7/3/1990	20	5	10	Flushmounted	Monitoring GTI UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT05	Lot No. 11.02, Block No. 66, Burlington Ci	27-34-877	27-11236-5	7/16/1991	20	5	10	Flushmounted	Monitoring GTI UST, Case I.D. 0008264
Delaware Petroleum Co.	1473 Lambert Road, Trenton, NJ	GT06	Lot No. 11.02, Block No. 66, Burlington Ci	27-34-877	27-11236-3	7/16/1991	20	5	10	Flushmounted	Monitoring GTI UST, Case I.D. 0008264
Elmer Brown					27-05015		41			Domestic	
Exxon Co USA	1200 mith St., Houston, TX	PMW4	Lot No. 24.01 Block No. 23, 420 Keim Blv	27-34-881	27-13972	10/23/1996	14	4	5	Flushmounted	Monitoring UST, Case ID 91-8-27-1109-44
Exxon Co USA	1200 mith St., Houston, TX	MW4	Lot No. 24.01 Block No. 23, 420 Keim Blv	27-34-881	27-13972	10/23/1996	14	4	5	Flushmounted	Monitoring UST, Case ID 91-8-27-1109-44
Hercules Incorporated	Hercules Plaza, Wilmington, DE	Boring 1 thru 1	Lot No.2, Block No. 102, Glenwood Ave.,	27-44-211	27-15468	3/10/2000	N/A	N/A	28	N/A	Boring
Hercules Incorporated	Hercules Plaza, Wilmington, DE	Boring 15 thru	Lot No.2.3.5, Block No. 102.03, Glenwooc	27-44-211	27-15469	3/10/2000	N/A	N/A	26	N/A	Boring
Hercules Papa Cristos	604 High Street, Burlington City	MW5	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15398	12/16/1999	12.5	2.5	2.8	Flushmounted	Monitoring
Hercules Papa Cristos	604 High Street, Burlington City	MW6	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15399	12/16/1999	12.5	2.5	2.8	Flushmounted	Monitoring
Hercules Papa Cristos	604 High Street, Burlington City	MW7	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15400	12/16/1999	12.5	2.5	2.8	Flushmounted	Monitoring
Hercules Papa Cristos	604 High Street, Burlington City	MW8	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15401	12/16/1999	10.5	2.5	5.7	Flushmounted	Monitoring
Hercules Papa Cristos	604 High Street, Burlington City	MW-9	Lot No. 1,2,7,10, Block 74, 6 West State	127-34-884	27-15402	12/16/1999	12.5	2.5	3.1	Flushmounted	Monitoring
John Diamanti					27-12548		100			Irrigation	
Lance, Jack & Kathleen	Mitchell Ave. & Rt 130, Burlington City	MW-1	Lot No. 1, Block 224, 505 Mitchell Ave. &	27-34-882	27-15415	1/6/2000	14.5	4.5	7.8	Stick Up	Monitoring Owner investigation
Luke Klentzeris	30W State HWY 130, Burlington City	MW1	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15388	12/16/1999	12.5	2.5	3.2	Flushmounted	Monitoring Owner investigation
Luke Klentzeris	30W State HWY 130, Burlington City	MW2	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15389	12/16/1999	12.5	2.5	2.9	Flushmounted	Monitoring Owner investigation
Luke Klentzeris	30W State HWY 130, Burlington City	MW3	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15390	12/16/1999	12.5	2.5	2.9	Flushmounted	Monitoring Owner investigation
Luke Klentzeris	30W State HWY 130, Burlington City	MW4	Lot No. 13-17, Block 74, 30W, State HWY	27-34-876	27-15391	12/16/1999	12.5	2.5	2.9	Flushmounted	Monitoring Owner investigation
Masonic Home & Charity Foundation					27-01117		220			Domestic	
Masonic Home of NJ					27-12676		180			Irrigation	
Matrix Environmental & GE	215 Ridgedale Ave., Florham Park, NJ	B-1	Lot No. 11, Block 69, 215 Farmer Ave., Bi	27-34-878	27-15888	2/9/2001	N/A	N/A	6	N/A	Boring
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City,	BC1	Lot No.2, Block No. 102, Wedgewoodd Dr	27-44-212	27-7986A	7/1/1985	40	20	N/A	Flushmounted	Monitoring
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City,	BC2	Lot No.2, Block No. 102, Wedgewoodd Dr	27-44-212	27-7987	8/1/1985	14.5	4.5	N/A	Flushmounted	Monitoring
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City,	BC3	Lot No.2, Block No. 102, Wedgewoodd Dr	27-44-212	27-7988	7/2/1985	14	4	N/A	Flushmounted	Monitoring

1/2 Mile Monitoring and Domestic Wells around Param Site

Well Owner's Name	Owner's Address	Well NO.	Well Address	Atlas Sheet Coordinates	Well Permit	Date of Well (Total Depth (ft)	Length Of Casing (ft)	Static Water Depth (ft)	Well Finished	Use Code	Source of Other
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City,	BC4	Lot No.2, Block No. 102, Wedgewood Dr	27-44-212	27-7989	7/2/1985	14	4 N/A	Flushmounted	Monitoring	
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City,	BC5	Lot No.2, Block No. 102, Wedgewood Dr	27-44-212	27-7990	7/2/1985	14	4 N/A	Flushmounted	Monitoring	
Neville Enterprises Corp.	Wedgewood Drive & Mt. Holly RD, Burlington City,	BC6	Lot No.2, Block No. 102, Wedgewood Dr	27-44-212	27-7991	7/2/1985	12	2 N/A	Flushmounted	Monitoring	
New Jersey Transit	1 Penn Plaza, Newark, NJ	PB-13	Columbus St., Burlington City	27-34-883	27-15395	2/14/2000	N/A	N/A	10 N/A	N/A	
Newlin Stevens					27-08171		62			PNC	
Omniport Communications	400 Street Rd, Benselm, PA	TB-1	Lot No. 23, Block No. 07, 34 Rt 130 North	27-34-876	27-14525	1/22/1998	N/A		dry	Flushmounted	Boring Ambric
PSE & G	70 Box 570, Newark, NJ	DC-1	Lot No. 5, A1, A2, Block 120, Burlington, I	27-34-873	27-11732	1/22/1992	14	4	0	Flushmounted	Monitoring Donn Geo UST, Case ID 0041762
PSE & G	70 Box 570, Newark, NJ	DC-2	Lot No. 5, A1, A2, Block 120, Burlington, I	27-34-873	27-11733	1/22/1992	14	4	12	Flushmounted	Monitoring Donn Geo UST, Case ID 0041762
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-1	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017157	7/7/2004	12	2	4	Flushmounted	Monitoring Berger
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-2	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017158	7/7/2004	12	2	5.5	Flushmounted	Monitoring Berger
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-3	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017159	7/6/2004	12	2	5	Flushmounted	Monitoring Berger
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-4	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017160	7/6/2004	12	2	5.5	Flushmounted	Monitoring Berger
Rajbhinder Badesha	58 US Highway 130, Burlington City	MW-5	Lot No. 25, Block 74, 58 US Highway 130	27-34-873	2700017161	7/7/2004	12	2	5.5	Flushmounted	Monitoring Berger
Robert Emery	162 Conawaga Trail, Medford, NJ	AS5	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16274	2/15/2002	12.5	12 N/A		Flushmounted	Gas Vent RCC
Robert Emery	162 Conawaga Trail, Medford, NJ	AS-6	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16275	2/15/2002	11.5	11.5 N/A		Flushmounted	Gas Vent RCC
Robert Emery	162 Conawaga Trail, Medford, NJ	AS-7	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16276	2/15/2002	7.5	7.5 N/A		Flushmounted	Gas Vent RCC
Robert Emery	162 Conawaga Trail, Medford, NJ	AS-8	Lot No. 1110, Block No. 30029, 162 Cona	27-44-215	27-16277	2/15/2002	11.5	11.5 N/A		Flushmounted	Gas Vent RCC
Robert Emery	162 Conawaga Trail, Medford, NJ	MW-6	Lot No. 1142, Block No. 30029, 163 Mudj	27-44-215	27-16278	2/15/2002	15	5	10	Flushmounted	Monitoring RCC
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-1	Lot No. 12-13, 18, Block 160, 221 East Rt	27-34-884	27-11371	6/5/1991	17.5	2.5	7.8	Flushmounted	Monitoring UST
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-2	Lot No. 12-13, 18, Block 160, 221 East Rt	27-34-884	27-11372	6/5/1991	19	4	7.3	Flushmounted	Monitoring UST
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-3	Lot No. 12-13, 18, Block 160, 221 East Rt	27-34-884	27-11373	6/5/1991	18.5	3.5	7.5	Flushmounted	Monitoring UST
Robert Sadowski	221 East Rt 130, Burlington, NJ	MW-4	Lot No. 12-13, 18, Block 160, 221 East Rt	27-34-884	27-11374	6/5/1991	20	5	7.5	Flushmounted	Monitoring UST
Route 130 Property LLC	P.O. Box 1283, Burlington City	NA	Lot 57, Block 33, Rear 580 High Street, Br	27-34-884	27-15645	6/23/2000	17	7	5.2	Flushmounted	Monitoring Ransom E Case I.D.: 00-05-01-171123
SEV Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-1	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016782	7/1/2003	13	3	6	Flushmounted	Monitoring
SEV Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-2	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016783	7/1/2003	13	3	6	Flushmounted	Monitoring
SEV Corp	1807 Augusta Circle, Mount Laurel, NJ	MW-3	Lot No. 7, Block 163, 581 High Street, Bui	27-34-884	2700016784	7/1/2003	13	3	6	Flushmounted	Monitoring
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE1	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-875	27-14741	6/29/1998	11	3.5	6	Flushmounted	Gas Vent RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE2	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-875	27-14742	6/29/1998	11	3.5	6	Flushmounted	Gas Vent RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	VE3	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-875	27-14743	6/29/1998	11	3.5	6	Flushmounted	Gas Vent RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP1	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-875	27-14744	6/30/1998	16	10	6	Flushmounted	Injection RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP2	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-875	27-14745	6/30/1998	16	10	6	Flushmounted	Injection RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	10 Penn Center, 1801 Market, Philadelphia, PA	SP3	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-875	27-14746	6/30/1998	16	10	6	Flushmounted	Injection RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW4	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-874	27-14235	6/12/1997	12	2	4	Flushmounted	Monitoring RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW5	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-874	27-14236	6/12/1997	12	2	4	Flushmounted	Monitoring RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	9/11 Penn Center, 1801 Market, Philadelphia, PA	MW6	Lot No. 79, Block 66, Rt 130 & Mott Ave, I	27-34-874	27-14237	6/12/1997	12	2	4	Flushmounted	Monitoring RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	4041 Market, Aston, PA	MW1	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13965	11/5/1996	7.5	2.5	5	Flushmounted	Monitoring RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	4041 Market, Aston, PA	MW2	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13966	11/5/1996	12	2	5	Flushmounted	Monitoring RCC UST, Case: 96-92-60-8300-4
Sun Company, Inc.	4041 Market, Aston, PA	MW3	Lot No. 79, Block No. 66, Rt 130 & Mott A	27-34-874	27-13967	11/5/1996	12	2	5	Flushmounted	Monitoring RCC UST, Case: 96-92-60-8300-4
Willis Motor Co					27-02733		49			Domestic	

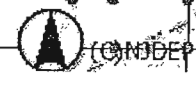
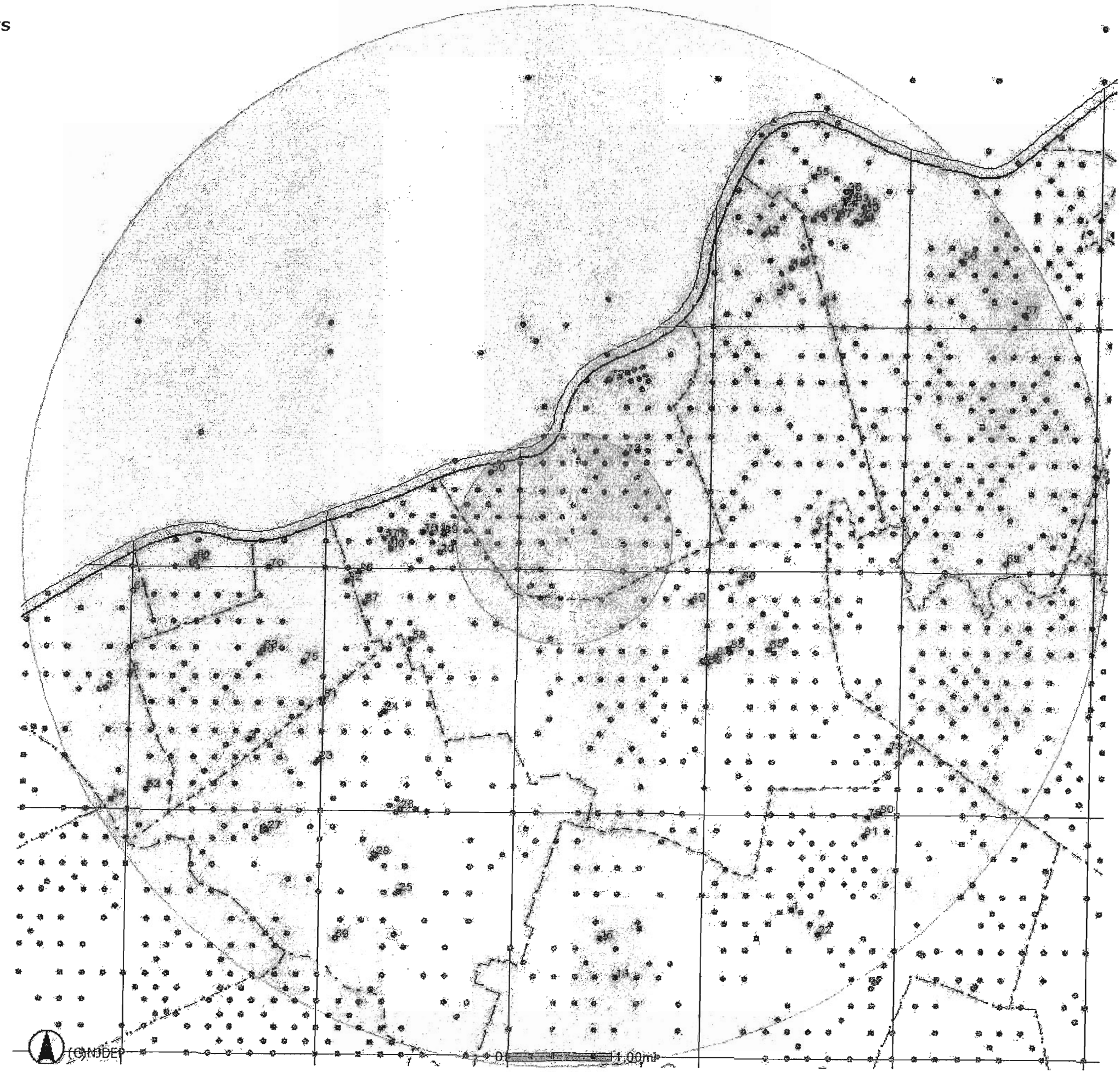
100,000 GPD WATER WITHDRAWAL POINTS
(50,000 GPD IN HIGHLANDS) WITHIN 5
MILES OF NJ STATE PLANE NAD83 US FEET:
: 391925
: 451019

Legend
◆ Subject Items
▭ Municipalities
▭ Counties
▭ Grid 2X2 M

SCALE : 1 : 63,360

MAP PRODUCED BY :
NJ DEP
DIVISION OF WATER SUPPLY
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625
DATE : 5/3/2005

SUBJECT TO REVISION



0 1.00mi

Withdrawal Points Tabular Data

Sequence Number	PI ID Number (Preferred NJEMS ID)	PI Name	Activity Number	SI Category Code	SI Designation	SI Description	Distance From XY Origin	County Code	Municipality Code	SPC83X	SPC83Y	XY Accuracy + Units Code	Dep to Top of Open Interval + Units	Dep To Btm of Open Interval + Units	Z (Elevation)	Z Accuracy + Units Code	Geologic Unit Code	Hydrogeologic Unit Code	Rated Pump Capacity + Units Code	BRDGSUBJITEMI
1	10398W	BURLINGTON SPECIAL SERVICES SCHOOL	WUR940001	WSWL	2700007805	WELL 1	21661.44	03	37	403162.74	432500.63	500ft	203ft	213ft	60	10Feet	2190	2660	120gm	40008
2	BU0047	JAMES VARSACI & SONS	AGC010001	WSWL	2700001065	WELL 1	18235.70	03	12	376750.77	440905.74	500ft					2190	2660	500gm	46347
3	BU0047	JAMES VARSACI & SONS	AGC010001	WSIN	POND 1		18235.70	03	12	376750.77	440905.74	500ft							500gm	52559
4	BU0047	JAMES VARSACI & SONS	AGC010001	WSIN	POND 2		23412.12	03	12	369763.95	443468.63	500ft							500gm	52559
5	BU0047	JAMES VARSACI & SONS	AGC010001	WSIN	POND 3		21974.51			371012.07	444271.99	0							550gm	52559
6	2208P	COLORITE POLYMERS	WAP040001	WSWL	2700006854	WELL 8	8753.01	03	06	383172.14	450995.08	100ft			10	10Feet	2190	2660	800gm	72884
7	2208P	COLORITE POLYMERS	WAP040001	WSWL	2700004379	WELL 4	6891.32	03	06	385039.15	451290.52	100ft	82ft	112ft	14	10Feet	2190	2660	800gm	72916
8	2208P	COLORITE POLYMERS	WAP040001	WSWL	2700003817	WELL 1	5878.17	03	06	386049.30	451185.02	100ft	97ft	122ft	14	10Feet	2190	2660	800gm	72916
9	2208P	COLORITE POLYMERS	WAP040001	WSWL	2700007612	WELL 10	8460.94	03	06	383480.88	450487.81	100ft	72ft	112ft	20	10Feet	2190	2660	1050gm	73069
10	2208P	COLORITE POLYMERS	WAP040001	WSWL	2700016301	WELL 7	6080.88	03	06	385889.94	450275.06	100ft	100ft	130ft	16	10Feet	2190	2660	1000gm	73085
11	2208P	COLORITE POLYMERS	WAP040001	WSWL	2700003816	WELL 2	6458.83	03	06	385470.00	451238.00	100ft	86ft	116ft	20	10Feet	2190	2660	800gm	73194
12	2208P	COLORITE POLYMERS	WAP040001	WSWL	2700006855	WELL 9	8286.60	03	06	383638.56	450993.04	100ft	70ft	105ft	14	10Feet	2190	2660	600gm	732371
13	10634W	BURL CO WASTE MGMT & COMPOSTING PLANT	WUR920001	WSWL	2800020539	WELL 1	25891.81	03	15	417619.91	454207.18	1000ft	194ft	220ft	86	1Feet	2190	2660	70gm	770905
14	10114W	INDUCTOTHERM INDUSTRIES	WUR940001	WSWL	2700012461	WELL 2	22108.08	03	23	394747.43	429091.90	1000ft	320ft	360ft			2190	2660	196gm	777271
15	10114W	INDUCTOTHERM INDUSTRIES	WUR940001	WSWL	2700003617	WELL 1	20106.70	03	23	393976.93	431017.36	1000ft	414ft	444ft			2190	2660	196gm	778096
16	2208P	COLORITE POLYMERS	WAP920001	WSWL	2700004379	WELL 4	6891.32	03	06	385039.15	451290.52		82ft	112ft	14		2190	2660	800gm	814958
17	2208P	COLORITE POLYMERS	WAP920001	WSWL	2700006854	WELL 8	8753.01	03	06	383172.14	450995.08				10		2190	2660	800gm	815273
18	2208P	COLORITE POLYMERS	WAP920001	WSWL	2700006855	WELL 9	8286.60	03	06	383638.56	450993.04		70ft	105ft	14		2190	2660	600gm	815274
19	2208P	COLORITE POLYMERS	WAP920001	WSWL	2700003817	WELL 1	5878.17	03	06	386049.30	451185.02		97ft	122ft	14		2190	2660	800gm	815404
20	2208P	COLORITE POLYMERS	WAP920001	WSWL	2700007612	WELL 10	8460.94	03	06	383480.88	450487.81	1000ft	72ft	112ft	20		2190	2660	1050gm	816877
21	2208P	COLORITE POLYMERS	WAP920001	WSWL	2700005458	WELL 7	6080.88	03	06	385889.94	450275.06		100ft	130ft	16		2190	2660	1200gm	818593
22	2451P	DEERWOOD COUNTRY CLUB	WAP020001	WSWL	PROPOSED	WELL 3	23392.55	03	37	404480.99	431281.79				50	10Feet	2090	2505	75gm	851413
23	5175	WILLINGBORO TWP MUA	WAP040001	WSWL	2700001615	WELL 1	16233.95	03	38	380123.21	439872.07	100ft	147ft	199ft	25	10Feet	2270	2664	1400gm	877331

51	10245W	USS CAR WASH INC	WUR950001	WSWL	2700004659	WELL 1	14205.27	03	12	380259.48	442913.39	500ft	123ft	138ft	30	10Feet	2190	2660	100gm	10763
52	BU0023	SUTTON FARM	AGC010001	WSIN	RANCOCAS	STREAM 1	23721.42	03	09	371839.08	438399.40	500ft							500gm	10835
53	BU0023	SUTTON FARM	AGC010001	WSIN	POND	RANCOCAS	23721.42	03	09	371839.08	438399.40	500ft			3				500gm	10869
54	BU0084	RUSS FARM/ NURSEY	AGC970001	WSIN	RANCOCAS CREEK	STREAM 1	25441.82	03	09	370125.50	437901.81	500ft							100gm	10962
55	11086W	TWP OF FLORENCE	WUR000001	WSWL	2700015344	BALLFIELD	21419.61	03	15	403681.21	468924.23	1000ft	100ft	120ft	30	10Feet	2260	2664	50gm	11627
56	11086W	TWP OF FLORENCE	WUR000001	WSWL	2700015340	WHITESSELL	23475.81	03	15	410892.34	464852.33	1000ft	155ft	195ft	30	10Feet	2260	2664	50gm	11628
57	11086W	TWP OF FLORENCE	WUR000001	WSWL	2700015342	SCH SITE	24742.95	03	15	413991.83	462211.67	1000ft	70ft	110ft	30	10Feet	2260	2664	50gm	11631
58	BU020R	ALBERET HEISLER FARM	AGR010001	WSWL	2700000196	WELL 1	8960.92	03	06	384549.56	445929.97	1000ft	212ft	252ft			2190	2660	600gm	11677
59	10717W	RANCOCAS GOLF CLUB	WUR970001	WSWL	2700010750	WELL 2	22802.79	03	38	381061.68	430970.34	500ft	190ft	240ft	70	10Feet	2190	2660	520gm	11681
60	10717W	RANCOCAS GOLF CLUB	WUR970001	WSIN	POND #9		22802.79	03	38	381061.68	430970.34	500ft			70	10Feet			800gm	117341
61	5188X	NJ AMERICAN WATER WESTERN DIV	WAP040007	WSWL	2700001528	BEVERLY 16	17903.47	03	02	374054.25	449939.18	40ft	39ft	51ft	20	10Feet	2260	2660	800gm	125192
62	5188X	NJ AMERICAN WATER WESTERN DIV	WAP040007	WSWL	2700000356	BEVERLY 15	17935.96	03	02	374030.52	449801.85	40ft	46ft	57ft	21	10Feet	2260	2660	750gm	125194
63	5188X	NJ AMERICAN WATER WESTERN DIV	WAP040007	WSWL	2700005315	COOPER ST 32	15616.89	03	12	377357.56	445391.18	40ft	135ft	167ft	40	10Feet	2260	2660	700gm	125201
64	10877W	MASONIC CHARITY FOUNDATION OF NJ	WUR950001	WSWL	2700012676	WELL 2	21067.09	03	06	371031.76	448319.21	500ft	168ft	180ft	40	10Feet	2190	2660	30gm	126706
65	10877W	MASONIC CHARITY FOUNDATION OF NJ	WUR950001	WSWL	4700000009	#1/P-411	11361.20	03	06	401887.49	445557.59	500ft					2190	2660	350gm	126706
66	10877W	MASONIC CHARITY FOUNDATION OF NJ	WUR950001	WSWL	2700001117	WELL 1	8832.64	03	06	400500.20	448901.66	1000ft	193ft	220ft	70	10Feet	2190	2660	70gm	126854
67	BU0114	SPECCA FARMS	AGC950001	WSIN	BARKERS BROOK	STREAM #1	21436.87	03	34	413331.15	449869.57	500ft							1000gm	127558
68	BU0114	SPECCA FARMS	AGC950001	WSIN	POND 1		21436.87	03	34	413331.15	449869.57	500ft							600gm	127622
69	BU0114	SPECCA FARMS	AGC950001	WSIN	POND 2		21436.87	03	34	413331.15	449869.57	500ft							600gm	127727
70	BU073R	CHANT FARM	AGR960001	WSWL	2700004480	WELL 1	14436.97	03	09	377568.04	449502.48	500ft					2190	2660	300gm	129196
71	BU0075	SUTTON FARMS	AGC000001	WSIN	ASSICUNK CREEK	STREAM 1	12089.11	03	15	404007.63	451418.54	500ft							1000gm	132792
72	5122	BURLINGTON CITY WATER DEPT	WAP960001	WSIN	BURLINGTON ISLAND DEL R.	INTAKE 2	8193.80	03	05	394009.20	458943.42	500ft							1388gm	1404362
* 73	5122	BURLINGTON CITY WATER DEPT	WAP960001	WSIN	DELAWARE RIVER	INTAKE 3	5182.57	03	05	394849.80	455297.56	500ft							1388gm	1407487
74	5188X	NJ AMERICAN WATER WESTERN DIV	WAP880001	WSWL	2700001528	BEVERLY 16	18083.03	03	02	373884.40	449782.81	100ft	39ft	51ft	20		2190	2660	800gm	1454296
75	5188X	NJ AMERICAN WATER WESTERN DIV	WAP880001	WSWL	2700004050	IVY ROAD 22	14070.61	03	12	379303.68	444799.65	100ft	102ft	123ft	37		2190	2660	600gm	1454303

76	5188X	NJ AMERICAN WATER WESTERN DIV	WAP880001	WSWL	2700005315	COOPER ST 32	15822.35	03	12	377206.18	445213.97	100ft	135ft	167ft	40		2190	2660	700gm	14543
77	5188X	NJ AMERICAN WATER WESTERN DIV	WAP880001	WSWL	2700000356	BEVERLY 15	18090.71	03	02	373883.92	449681.62	100ft	46ft	57ft	21		2190	2660	1000gm	14543
78	2470P	FOUR SEASONS @ LAKEWOOD	WAP950001	WSWL	2900033249	WELL 4	19039.03	15	14	407779.70	440477.88		120ft	140ft	25		1690	1451	60gm	14598
79	10483W	BURLINGTON CO COUNTRY CLUB	WUR030001	WSWL	2700005937	WELL 1A	20368.50	03	23	406835.03	437142.12	500ft	260ft	290ft	100	10Feet	2200	2662	150gm	15134
80	10483W	BURLINGTON CO COUNTRY CLUB	WUR030001	WSWL	2700013275	WELL 1R	20637.46	03	23	407380.19	437342.62	500ft	270ft	316ft	101	10Feet	2200	2662	559gm	15151
81	10483W	BURLINGTON CO COUNTRY CLUB	WUR030001	WSIN	POND	HOLE #11	20886.74	03	23	406676.35	436232.04	1000ft			90	10Feet			800gm	15198
82	5327	BURLINGTON TWP WATER DEPT	WAP990001	WSWL	2700010874	WELL 5	10804.30	03	06	381343.29	448837.86	100ft	76ft	127ft	30	5Feet	2260	2664	1000gm	15289
83	5327	BURLINGTON TWP WATER DEPT	WAP990001	WSWL	2700005727	WELL 2	9432.19	03	06	399366.19	445222.82	100ft	163ft	224ft	73	5Feet	2260	2664	500gm	15289
84	5327	BURLINGTON TWP WATER DEPT	WAP990001	WSWL	2700010144	WELL 1A	9146.76	03	06	398743.03	444921.60	100ft	140ft	195ft	62	5Feet	2260	2664	500gm	15289
85	5327	BURLINGTON TWP WATER DEPT	WAP990001	WSWL	2700006673	WELL 4	9758.42	03	06	399989.33	445524.06	100ft	315ft	366ft	77	5Feet	2260	2664	1000gm	15289
86	5327	BURLINGTON TWP WATER DEPT	WAP990001	WSWL	2700013641	WELL 6	10154.35	03	06	381920.72	449280.48	500ft			30	5Feet	2260	2664	1000gm	15289
87	5327	BURLINGTON TWP WATER DEPT	WAP990001	WSWL	2700015057	WELL 7	10232.55	03	06	382224.99	447761.40	500ft	80ft	115ft	23	5Feet	2260	2664	600gm	15335
88	5327	BURLINGTON TWP WATER DEPT	WAP990001	WSWL	2700005877	WELL 3	9388.72	03	06	398975.91	444819.55	100ft	209ft	260ft	71	5Feet	2260	2664	1000gm	15342

APPENDIX G
Vapor Intrusion Modeling

Vapor Intrusion Modeling Param Petroleum, Burlington, New Jersey

Vapor Intrusion Modeling Approach

The vapor intrusion modeling for the Param Petroleum Site was performed using the USEPA-approved NJDEP version of the Johnson-Ettinger groundwater-based vapor intrusion model. The vapor intrusion modeling procedure estimates actual health risks using site-specific inputs. For the purposes of this vapor intrusion modeling, two general areas of concern (AOCs) were defined based on the December 5-6, 2006 groundwater sampling results:

AOC-1 is in the central portion of the site and includes the facility building as well as monitoring wells MW-4 and MW-2. Elevated concentrations of benzene, ethylbenzene, methyl tertiary butyl ether (MTBE), toluene, xylenes have been detected, although only benzene (483 ug/l) exceeds NJDEP groundwater screening level for vapor intrusion (15 ug/l);

AOC-2 is in the western portion of the site. Monitoring wells MW-1 (shallow well) and MW-7 (deep well) are located within this area and showed elevated concentrations of only MTBE and TBA based on the December 2006 groundwater sampling event. Neither of these contaminants exceeded the NJDEP groundwater screening levels for vapor intrusion.

Model Inputs

Contaminants of concern and initial concentrations: Based on the December 5-6 2006 groundwater sampling event, the contaminants of concern and concentration levels are:

Contaminant (ug/l)	AOC 1 (MW-2 and 4)	AOC 2 (MW-1 and 7)
Benzene	483	NA
Ethylbenzene	80.90	NA
MTBE	65	28.3
Toluene	33.1	NA
Xylenes	110	NA
TBA	NA	6870

Depth to groundwater: Based on the December 5-6 2006 groundwater sampling event, the depth to groundwater for both AOC-1 and AOC-2 is approximately 5.0 feet below ground surface.

Soil type: Sand is the default soil type for the Johnson-Ettinger model. For substitution of any other soil type, NJDEP requires a laboratory texture analysis showing that the vertical soil profile consists of at least 75% of the intended substitute. Although this laboratory texture analysis was not conducted, the soil type was changed to silty sand based on drilling logs for comparative purposes.

Other soil/building parameters: Based on the predominantly commercial land use in the project area, it was assumed that buildings do not have basements. Also, default values were assumed for building dimensions, foundation crack widths, building indoor air exchange rates, average vapor flow rate into the building, as well as average soil parameters corresponding to soil type. Soil/shallow groundwater temperature of 13 degrees Celsius was assumed, per NJDEP Vapor Intrusion Guidance.

Exposure characteristics: Based on the predominantly commercial land use type in the project area, the vapor intrusion modeling was performed for a commercial exposure scenario. As a precautionary measure, and for comparison, a separate analysis was performed for residential exposure scenario, (the default scenario assumed in NJDEP Vapor Intrusion Guidance). Per NJDEP and USEPA risk assessment guidance, exposure frequencies of 350 days per year and 250 days per year were assumed for residential and commercial exposure scenarios, respectively. Other assumed exposure characteristics (pertaining to both residential and commercial exposure) include an average life span of 70 years and exposure duration of 30 years, as recommended by NJDEP/USEPA.

Discussion of Modeling Results

The modeling results are provided in Table 1. Columns 1A to 1D present the results for commercial exposure scenarios in AOC-1 and AOC-2, assuming both sand and silty sand. Columns 1E to 1H present the results for residential exposure scenarios in AOC-1 and AOC-2, assuming both sand and silty sand.

Commercial Exposure

Columns 1A and 1B show total cancer risks of $2.3E-4$ (230 in 1 million) and $2.5E-7$ (0.25 in 1 million) for AOC-1 and AOC-2, respectively, based on sand as the predominant soil type. Columns 1C and 1D show total cancer risks of $9.5E-5$ (95 in 1 million) and $1.2E-7$ (0.12 in 1 million) for AOC-1 and AOC-2, respectively, based on silty sand as the predominant soil type. Both of these results (i.e., based on sand and silty sand) exceed the NJDEP cancer risk guideline limit of $1.0E-6$ (1 in 1 million) for AOC-1 but are below the risk limit for AOC-2.

Column 1A and 1B show a hazard index of 2.46 and 0.034 for AOC-1 and AOC-2, respectively, based on sand as the predominant soil type, while Columns 1C and 1D show a hazard index of 0.995 and 0.0361 for AOC-1 and AOC-2, respectively, based on silty sand as the predominant soil type. Only the hazard index for AOC-1 based on sand (2.5) exceeds the guideline hazard index of 1.

It should be noted that although NJDEP generally uses 10^{-6} (1 in 1 million) as the target cancer risk limit, USEPA allows a cancer risk range of 10^{-6} (1 in 1 million) to 10^{-4} (100 in 1 million) as acceptable. Both agencies specify a guideline limit of 1 for hazard index. Therefore, if based on USEPA risk guidelines, only AOC-1 with sand as predominant soil type would exceed the cancer risk limits (as well as the hazard index limit) under a commercial exposure scenario.

Residential Exposure

Columns 1E and 1F show total cancer risks of $3.2E-4$ (320 in 1 million) and $3.5E-7$ (0.35 in 1 million) for AOC-1 and AOC-2, respectively, based on sand as the predominant soil type. Columns 1G and 1H show total cancer risks of $1.3E-4$ (130 in 1 million) and $1.7E-7$ (0.17 in 1 million) for AOC-1 and AOC-2, respectively, based on silty sand as the predominant soil type. Both of these results (i.e., based on sand and silty sand) exceed the NJDEP cancer risk guideline limit of $1.0E-6$ (1 in 1 million) for AOC-1 but are below the risk limit for AOC-2.

Column 1E and 1F show a hazard index of 3.4 and 0.048 for AOC-1 and AOC-2, respectively, based on sand as the predominant soil type, while Columns 1G and 1H show a hazard index of 1.39 and 0.0501 for AOC-1 and AOC-2, respectively, based on sandy silt as the predominant soil type. The hazard index for AOC-1 exceeds the guideline of 1 for both sand and silty sand.

It should be noted that although NJDEP generally uses 10^{-6} (1 in 1 million) as the target cancer risk limit, USEPA allows a cancer risk range of 10^{-6} (1 in 1 million) to 10^{-4} (100 in 1 million) as acceptable. Both agencies specify a guideline limit of 1 for hazard index. Therefore, for residential exposure, the cancer as well as hazard index risk limits would be exceeded for AOC-1 regardless of which soil type is assumed and which agency guideline limits are applied.

Modeling Assumptions and Uncertainties

Although the Johnson-Ettinger model is fully approved by EPA/NJDEP and incorporates EPA/NJDEP risk screening guidelines, there are inherent assumptions, limitations and uncertainties.

Assumptions

Infinite Contaminant Source: A conservative assumption (and limitation) of the model is that the contaminant source is infinite (i.e., does not diminish in concentration). However, natural attenuation is attained by gasoline range contaminants, thus reducing contaminant source strength and affecting fate and transport.

One-dimensional Contaminant Transport: The model assumes only vertical transport of volatilized contaminants toward a building directly above. Lateral flow patterns reducing contaminant concentrations available for upward migration are neglected.

Flow Dissipation around Building Exterior: The potential for some portion of vapors that accumulate beneath the building foundation to flow around the exterior walls and not actually enter the building is neglected. That is, all contaminant vapors originating from directly below the foundation slab are assumed to enter the building through cracks and openings in the foundation floor and walls.

Limitations

Building-Related Properties: The model requires input of building-related characteristics such as the building air exchange rate, foundation slab/wall crack widths, building area and mixing height, average vapor flow rate into building, etc. Actual characteristics for a specific building might be different from the assumed default values provided by the model.

Uncertainties

Uncertainty in Toxicological Data: Toxicological reference data such as unit risk factors and reference concentrations obtained from EPA and related agency sources are often developed by extrapolation of effects from animals to humans. There are uncertainties associated with the extrapolation process. Also, a lack of full knowledge regarding potential synergistic or antagonistic interactions between chemicals could be of relevance.

Uncertainty in Exposure Characteristics: Exposure factors such as exposure duration, exposure frequency and expected life span were assumed based on EPA guidance values or model default parameters. Actual site-specific values of these exposure characteristics might be different from the suggested default values.

Parameter Uncertainty: Any errors in contaminant sampling and laboratory data would directly affect the results predicted by the model.

Conclusions

Based on commercial exposure scenario, cancer risk estimated for AOC-1 for default sand type exceeds the NJDEP cancer risk guideline limit and USEPA guideline cancer risk range. However, for silty sand type the estimated cancer risk for AOC-1, only exceeds the NJDEP cancer risk guideline limit. For non-cancer health effects, the hazard index is only exceeded at AOC-1 if sand is assumed as the soil type. There are no exceedances of either cancer risk or hazard index limits for AOC-2 which is located in the western part of the site.

Although there are exceedances of established risk guidelines, it should be noted that the assumptions used are conservative and the uncertainties associated with the Johnson & Ettinger method are modeled conservatively, it is expected that the risks are greatly overstated. Such assumptions and uncertainties include:

- the highest documented detections are used;
- the highest detections are assumed to be directly beneath the structure in question;
- concentrations are not subject to attenuation or horizontal migration;
- the structure has a basement with existing pathways, such as cracked foundations; and
- all vapors associated with subsurface contamination migrates into the structure (no dissipation or diffusion).

Based on these assumptions and an assessment that these risks are greatly overstated, Berger does not believe at this time that there is a need to do any further vapor intrusion investigations at this Site.

Table 1

New Jersey Department of Environmental Protection
 Param Petroleum, Burlington, NJ
Johnson-Edinger Vapor Intrusion Modeling Results

Location Contaminant	1A AOC - 1 (Commercial / Sand)		1B AOC - 2 (Commercial / Sand)		1C AOC - 1 (Commercial / Silty Sand)		1D AOC - 2 (Commercial / Silty Sand)	
	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index
Benzene	0.00023	2.3	NA	NA	0.000095	0.93	NA	NA
Ethylbenzene	NA	0.013	NA	NA	NA	0.005	NA	NA
MTBE	0.0000058	0.00041	0.0000025	0.00018	0.0000028	0.0002	0.0000012	0.00009
Toluene	NA	0.001	NA	NA	NA	0.00042	NA	NA
Xylenes	NA	0.15	NA	NA	NA	0.059	NA	NA
TBA	NA	NA	NA	0.034	NA	NA	NA	0.036
Total Risk	0.000231	2.46	0.0000025	0.0342	0.000095	0.995	0.0000012	0.0361
Acceptable Risk Levels	0.000001	1.0	0.000001	1.0	0.000001	1.0	0.000001	1.0

Location Contaminant	1E AOC - 1 (Residential / Sand)		1F AOC - 2 (Residential / Sand)		1G AOC - 1 (Residential / Silty Sand)		1H AOC - 2 (Residential / Silty Sand)	
	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index	Cancer Risk	Hazard Index
Benzene	0.00032	3.2	NA	NA	0.00013	1.3	NA	NA
Ethylbenzene	NA	0.018	NA	NA	NA	0.0069	NA	NA
MTBE	0.0000081	0.00057	0.0000035	0.00025	0.0000039	0.00028	0.0000017	0.00012
Toluene	NA	0.001	NA	NA	NA	0.00058	NA	NA
Xylenes	NA	0.21	NA	NA	NA	0.083	NA	NA
TBA	NA	NA	NA	0.048	NA	NA	NA	0.05
Total Risk	0.000321	3.43	0.0000035	0.0483	0.000130	1.39	0.0000017	0.0501
Acceptable Risk Levels	0.000001	1.0	0.000001	1.0	0.000001	1.0	0.000001	1.0

Notes:

0.000231	Exceeds NJDEP Cancer Risk Guideline Limit of 1.0E-6
2.46	Exceeds USEPA Hazard Risk Guideline Limit of 1.0

A 1 in 1 million cancer risk may be interpreted as a statistical probability that 1 out of a hypothetical 1 million receptor population similarly exposed to the specified contaminant concentrations for a standard residency duration of 30 years might develop cancer due to the exposure.

A hazard index not exceeding 1 indicates that adverse (non-cancer) health effects are not expected from exposure to the contaminants at the specified concentrations.

References

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