nationalgrid

FEB 29 2008

February 28, 2008

John Spellman, P.E.
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, New York 12233-7010

Subject: Supplemental Investigation Report and Schedule for Forthcoming Deliverables
Troy (Water Street) Site – Area 2
Troy, New York

Dear Mr. Spellman:

Please find attached two (2) copies of the *Supplemental Investigation Report, Troy (Water Street) Site – Area 2, Troy, New York* prepared by Brown and Caldwell Associates (BC). The Supplemental Investigation (SI) Report includes tables, figures, logs, and other data and information related to the findings of the SI. This report is being submitted to the New York State Department of Environmental Conservation (NYSDEC) in accordance with: the NYSDEC-approved *Supplemental Investigation Work Plan, Troy (Water Street Site) – Area 2, Troy, NY* (Brown and Caldwell Associates, September 2006) and the NYSDEC-approved response to comments letter (November 16, 2006) associated with this work plan.

As discussed with the NYSDEC at the January 15, 2008 meeting between representatives of the NYSDEC, National Grid and BC, an assessment of groundwater quality in the Lower Sand and Gravel (LSG) unit is required for finalizing a proposal for potential modifications to the Record of Decision (ROD)-selected remedy. Thus, the results of groundwater modeling conducted to support the feasibility evaluations of subsurface barriers and the preliminary conclusions of the technical feasibility assessment of a subsurface barrier as a component of the remedy are not included in the enclosed SI Report. Rather, these components of the SI Work Plan will be provided in a subsequent submittal, following evaluation of the groundwater quality data. However, a preliminary report of the groundwater modeling efforts, exclusive of the assessment of subsurface barriers, is being forwarded under separate cover, immediately following submittal of the enclosed report.

A proposed schedule for forthcoming deliverables discussed during the January 15, 2008 meeting is provided below:

- Soil Volume Estimates – Updated soil volume estimates that incorporate the additional data collected during the SI will be prepared and submitted to NYSDEC. The volume estimate tables previously provided to the NYSDEC for excavation to 18 feet and 10 feet below ground surface will be updated based on the ROD criteria. In addition, as discussed in the January 15, 2008 meeting, volume estimates will be conducted to evaluate targeting areas/zones on the basis of the amount of unimpacted soil (i.e., soil that does not contain visible NAPL or total PAH concentrations greater than 500 mg/kg) overlying the soil targeted for removal, and NAPL type, extent and mobility to the extent practical based on the available data. Additional depth intervals may also be evaluated. This deliverable will also include updated versions of the cross-sections previously provided to NYSDEC, based on the additional data collected during the SI. It is anticipated that this deliverable will be submitted to the NYSDEC by April 18, 2008.

- Groundwater Characterization - A groundwater quality evaluation is currently being implemented to assess groundwater quality in the LSG unit, as well as to provide additional data for groundwater in shallower zones. The work plan for this assessment was provided to NYSDEC in a letter dated January 31, 2008; the work plan was subsequently modified by a February 5, 2008 email from National Grid responding to comments from NYSDEC. A draft technical memorandum will be submitted to NYSDEC, prior to the completion of the Data Usability Summary Report (DUSR), approximately three weeks after receipt of the laboratory data package (i.e., approximately the week of April 14, 2008). The final technical memorandum will be provided to the NYSDEC within approximately two weeks of receiving the DUSR from the data validator (i.e., approximately the week of May 5, 2008).

- Barrier Wall Preliminary Feasibility Analysis – As noted above, a groundwater quality evaluation is currently in progress for assessing groundwater quality in the LSG unit, as well as providing additional data for groundwater in shallower zones. After receipt and evaluation of the data, a preliminary feasibility analysis of barrier wall scenarios will be conducted. The preliminary conclusions of the technical feasibility of a subsurface barrier as a component of the remedy and the results of groundwater modeling conducted to support the feasibility evaluations of subsurface barriers will be documented in a report. It is anticipated that the report will be provided to the NYSDEC by approximately the week of April 28, 2008.

- Following submittal of the Barrier Wall Preliminary Feasibility Analysis, it is anticipated that a meeting would be held between representatives of National Grid and NYSDEC. The intent of the meeting would be to discuss the conclusions of the preliminary feasibility analysis and potential modifications to the site remedy, prior to preparation of a document to propose modifications to the site remedy. An additional goal of the meeting would be to identify the required content of a Proposal to Modify the Site Remedy document.

Please contact me at 315-428-6529 if you have any questions or require additional information.

Sincerely,

M. Cathy Geraci

M. Cathy Geraci
Lead Senior Environmental Engineer

Kaf

Enclosure

cc: M. Schuck, NYSDOH
J. Parkinson, National Grid
R. O'Neill, Brown and Caldwell

SUPPLEMENTAL INVESTIGATION REPORT
TROY (WATER STREET) SITE – AREA 2
TROY, NEW YORK

Prepared for

Niagara Mohawk Power Corporation d/b/a
National Grid, Syracuse, New York

February 2008

SUPPLEMENTAL INVESTIGATION REPORT
TROY (WATER STREET) SITE – AREA 2
TROY, NEW YORK

Prepared for

Niagara Mohawk Power Corporation d/b/a National Grid

300 Erie Boulevard West

Syracuse, New York 13202

February 2008

Project Number: 132071.107

BROWN AND CALDWELL

Brown and Caldwell Associates

110 Commerce Drive

Allendale, New Jersey 07401

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

This report presents the results and findings of the Supplemental Investigation (SI) that was conducted at Area 2 of the Troy (Water Street) Site (hereafter referred to as the "site"). In a letter dated July 7, 2006, the New York State Department of Environmental Conservation (NYSDEC) indicated that, based on the results of the Pre-Design Investigation (PDI) activities conducted from 2003 to 2006, and the June 20, 2006 meeting with Niagara Mohawk Power Corporation, doing business as (d/b/a) National Grid (referred to herein as National Grid), and Brown and Caldwell Associates (BC), components of the remedy selected in the July 2003 Record of Decision (ROD) warrant re-evaluation. The NYSDEC also agreed that supplemental investigatory activities were required to be conducted at the Site. Accordingly, on September 29, 2006, on behalf of National Grid, BC submitted the "Supplemental Investigation Work Plan, Troy (Water Street) Site—Area 2" (hereafter referred to as the "SI Work Plan") to NYSDEC for review. Following their review, NYSDEC issued comments on the SI Work Plan in an e-mail dated October 25, 2006. National Grid responded to NYSDEC's comments in a letter dated November 15, 2006. NYSDEC subsequently approved the response, and the November 15, 2006 response letter and associated attachments were attached to the SI Work Plan as an addendum.

Provided below in Section 1.1 is a discussion of the potential alternative remedy component that is under consideration, as discussed in the June 20, 2006 meeting. Section 1.2 describes the objectives of the supplemental investigation, which focus on evaluating the feasibility of the potential alternative component of the remedy. Sections 1.3 and 1.4 summarize the site setting and background, and the site remedial history, respectively. Section 1.5 describes the organization of the remainder of the report.

1.1 Potential Alternative Remedy Component

In the July 2003 Record of Decision (ROD) issued by the NYSDEC, the following remedial components were selected to address soil containing visible tar or non-aqueous phase liquid (NAPL), and/or containing concentrations of total polycyclic aromatic hydrocarbons (PAHs) above 500 mg/kg:

- For soil from ground surface to a depth of 18 feet: removal and off-site disposal.
- For soil deeper than 18 feet: treatment with in situ chemical oxidation (ISCO), following a pilot study to determine type and operating parameters of the ISCO treatment, with the objective of continuing treatment until concentrations of benzene, toluene, ethylbenzene and xylenes (BTEX) in groundwater meet groundwater quality standards, or until NYSDEC determines that the concentrations have achieved asymptotic levels for a sustained period of time. Additionally, the ROD indicated that a NAPL collection system was to be implemented in the treatment areas due to the potential for some ISCO treatments to enhance NAPL mobility.

During the meeting held on June 20, 2006 with representatives of NYSDEC, National Grid, and BC, pre-design investigation data (see "Pre-Design Investigation Report, Troy (Water Street) Site, Troy, New York" [Brown and Caldwell Associates, February 2004] and "Supplemental Pre-Design Investigation Report, Troy (Water Street) Site—Area 2, Rensselaer County, New York" [Brown and Caldwell Associates, May 2006]) were presented that indicated the volume of impacted soils from above 18 feet below grade that would require off-site disposal under the ROD is significantly greater than was estimated in the ROD. Furthermore, a pilot test of an ISCO process that was conducted as part of the pre-design investigation demonstrated that ISCO would not achieve remedial objectives in NAPL-impacted areas (see "In-Situ

Chemical Oxidation Pilot Test Report, Troy (Water Street) Site, Troy, New York" [Brown and Caldwell Associates, January 2006] and "In-Situ Chemical Oxidation Post-Pilot Test Report, Troy (Water Street) Site-Area 2, Troy New York" [Brown and Caldwell Associates, May 2006]).

As discussed during the June 20, 2006 meeting and presented in NYSDEC's July 7, 2006 letter, the significant increase in the volume of impacted soil, combined with the inability of ISCO to substantially decrease groundwater concentrations, warranted the evaluation of containment as an alternative remedy component to address impacted soil.

1.2 Objectives

The general objectives of the SI, as described in the SI Work Plan, are as follows:

1. Further evaluate the hydrogeology of the site to both assess the feasibility and support the preliminary design of a subsurface barrier system as a potential component of the site remedy.
2. Further evaluate those geologic characteristics of the site that are pertinent to the feasibility analysis and design of a subsurface barrier system.
3. Further refine the delineation of visible non-aqueous phase liquid (NAPL) in certain areas of the site.

Specific data gaps were identified in the SI Work Plan that when addressed, would facilitate the evaluation of the feasibility of incorporating a subsurface barrier system as a component of the remedy, including the development of a groundwater flow model (computer-numerical model and/or analytical model) to predict potential groundwater management requirements and impacts on site-wide groundwater flow that might result from the installation of a subsurface barrier system. The identified data gaps addressed in the SI are listed below, followed in brackets by the section of the report that discusses the findings relative the objective.

- Further definine the bedrock surface [see Section 3.1.1].
- Acquire additional information regarding the deeper overburden deposits (i.e., below the fill), such as thickness and continuity [see Sections 3.1.2 trough 3.1.5].
- Further evaluate the hydrogeologic properties (e.g., hydraulic conductivities) of the various stratigraphic units at the site [see Section 3.2.1].
- Evaluate vertical hydraulic gradients to assess the vertical component of groundwater flow [see Section 3.2.1].
- Evaluate the extent and magnitude of groundwater level fluctuation due to tides in the Hudson River and the interaction between surface water levels in Wynantskill Creek and groundwater levels adjacent to the creek [see Section 3.2.1].
- Further evaluate groundwater flow directions both laterally and vertically, and potential variations in flow with changes in seasonal weather conditions [see Section 3.2.1].
- Further delineate of the extent of visible tar or NAPL (soil saturated with NAPL, or with NAPL observable as a separate phase), including the following specific areas [see Section 3.3]:
    - Area north of former 300,000 ft^3 holder
    - Area under e-Lot Building (formerly the "Velocity Express" building)
    - Area south of MW-28R (west of Boiler House, south of Water Gas Building)

- Area east of Boiler House/southeast of Water Gas Building
- Area north and east of By-Products Building

▪ Evaluate specific subsurface structures that may potentially contain NAPL, including [see Section 3.4]:
  - Concrete vault referred to as the "junk pit" in the southern portion of the site.
  - Suspected subsurface structure in an area where a depression in the pavement had been noted directly north of the e-Lot building (formerly the "Velocity Express" building).

1.3 Site Background

The Site is located in Troy, Rensselaer County, New York. A plan of the current Site configuration is shown on Figure 2. National Grid currently owns a small portion of the Site (approximately 0.5 acre), on which a natural gas regulator station is situated. The approximate 16-acre Site is bordered by: a railroad spur to the east; a former asphalt batch plant owned by Chevron USA, Inc. to the south (Area 3) which was recently demolished; the Hudson River to the west; and Wynantskill Creek to the north. Although not defined by the ROD as part of the site, the NYSDEC requested the area extending approximately 50 feet north of the remnants of the former 2,000,000 cubic foot gas holder be included in the study area for previous pre-design investigation (PDI) activities.

The area in the vicinity of the site generally slopes to the west toward the Hudson River. The site itself is a generally flat-lying area between the relatively steep slope east of the railroad, and the steep bank from the site down to the Hudson River. The Hudson River in this area is tidal; the level in the river fluctuates approximately four to five feet twice per day. As described above, Wynantskill Creek flows from east to west through the northern part of the site. East of the site, the creek has a steep gradient. At the site, the gradient is somewhat more shallow, but the flow remains swift. The creek enters a concrete-lined channel just north of the former Water Gas Building. This concrete channel extends to the mouth of the creek where it discharges to the Hudson River. East of the concrete channel, the banks of the Wynantskill are steep and composed of fill material.

A description of the site background was presented in the NYSDEC-approved March 2002 Final Feasibility Study Report and the March 2003 ROD. As presented in those documents, industrial operations in Area 2 began in the mid-1800's with several generations of iron and steel making facilities. Manufactured gas production evolved to support the iron and steel industry. In 1924 the Site was acquired by Hudson Valley Coke Products (HVCP) and, in 1925, gas production began as a byproduct of coke production.

HVCP sold the facility to Hudson Valley Fuel Products, which merged into New York Power and Light, which in turn was consolidated into Niagara Mohawk Power Corporation (NMPC) in 1950. NMPC sold most of the property to Republic Steel in 1951. The Public Service Commission required NMPC to retain the MGP as a standby source of gas from 1951 until 1956 when the MGP was retired.

King Fuels began operating a bulk petroleum terminal and distribution center at the site in 1957 and, through a series of transactions during the 1960's and concluding in 1973, had acquired the entire site from Republic Steel except for the small natural gas regulator station retained by NMPC. King Fuels' operations resulted in the release and mobilization of hazardous substances and petroleum at the site. The NYSDEC documented a number of King Fuels' petroleum spills (e.g., see NYSDEC Spill Report numbers 860974, 8707424, 9007392, and 9006318). In its February 11, 2005 letter to King Fuels' counsel, the NYSDEC stated that Niagara Mohawk has no liability for "historical petroleum contamination at the site resulting from the operation of King Fuels". In its July 2003 Record of Decision, the NYSDEC identifies King Fuels as a potentially responsible party. In November 2003, the United States District Court, Northern District of New York, ruled that King Fuels is liable as both a current owner and an arranger under CERCLA. In 2004, the 2 million cu. ft. gas holder was demolished by King Fuels for scrap steel.

King Fuels filed for bankruptcy and the property was subsequently purchased by the Troy Local Development Corporation in 2006. National Grid maintains ownership of the small property associated with the natural gas regulator station.

1.4 Remedial History

Remedial activities at the Site were initially conducted in accordance with the 1992 Administrative Order on Consent (Index # DO-0001-9210) between Niagara Mohawk and the NYSDEC. The remedial activities at the site are now being conducted under a new Administrative Order on Consent (Index # A4-0473-0000) executed in November 2003.

The remedial history chronology of Area 2, including the additional investigation activities reported herein, is as follows:

- Preliminary Site Assessment (June 1994 – September 1995)
- Remedial Investigation (September 1996 – September 1998)
- Supplemental Investigations and Feasibility Study (September 1998 – 2002)
- Proposed Remedial Action Plan (February 2003)
- Record of Decision (ROD) (July 2003)
- Pre-Design Investigation and Report (October 2003 – February 2004)
- Supplemental Pre-Design Investigation Activities (April-December 2004)
- Initial In-Situ Chemical Oxidation (ISCO) Pilot Test (October 2004 – January 2005)
- Second ISCO Pilot Test and Report (July 2005 – December 2005)
- Resumption of Supplemental PDI Activities and Report (July 2005 – March 2006)
- Review of PDI findings with NYSDEC, and agreement that: components of the remedy selected in the July 2003 ROD warrant re-evaluation; and that supplemental investigatory activities were required for this re-evaluation (June 2006).
- Supplementary Investigation Work Plan development, implementation, and report (April 2007 to February 2008)

1.5 Report Organization

The remainder of the SI Report is organized as follows:

- Section 2: Scope of Work for SI.
- Section 3: Findings from the SI, including those related to the geologic setting, hydrostratigraphy and groundwater flow, extent of NAPL in soil, and results of evaluations of subsurface structures
- Section 4: Summary of SI findings

- Section 5: Conclusions and Recommendations
- Section 6: References

2. SCOPE OF WORK

The specific methods and procedures for the SI activities were conducted in accordance with the following plans:

- Supplemental Investigation Work Plan, Troy (Water Street) Site—Area 2 (Brown and Caldwell Associates, September 2006) (referred to as the "SI Work Plan"), as modified by National Grid's November 15, 2006 response letter to NYSDEC's comments on the SI Work Plan, which became an addendum to the SI Work Plan.
- Generic Field Sampling Plan for Site Investigations at Non-Owned Former MGP Sites, (Foster Wheeler, November, 2002) (referred to as "FSP").
- Generic Quality Assurance Project Plan for Site Investigations at Non-Owned Former MGP Sites, (Foster Wheeler, November 2002) (referred to as "QAPP").
- Health and Safety Plan for Supplemental Investigation and Interim Remedial Measures, Troy (Water Street) Site—Area 2 (Brown and Caldwell Associates, January 2007).

Several of the soil borings, piezometers, and test pits for the SI address more than one of the objectives and data gaps discussed in Sections 1. Table 1 lists the locations for these investigation activities, and indicates the data gap or gaps that they addressed. Table 2 provides a summarizes the background information for borings, piezometers, and wells drilled and installed during the SI and previous investigations, including, location survey information, total depths, screened intervals in piezometers and wells, and formations adjacent to screens.

Permission to access the site property south of Wynantskill Creek for intrusive field activities was obtained from the Troy Local Development Corporation on during the week of April 10, 2007. Permission to conduct these activities on the part of the site north of the Wynantskill was obtained from the City of Troy during the week of June 4, 2007. Drilling activities related to soil borings and piezometer and well installations began on April 16, 2007 and were completed during the week of August 20, 2007. Drilling services were provided by Parratt-Wolff, Inc. Development and slug testing of wells and piezometers was completed during the week of August 20, 2007. The dates for the other SI field activities are described in the sections below.

2.1 Bedrock Outcrop Evaluation

On December 5, 2006, a field evaluation of the lithologic and structural characteristics of bedrock exposed in outcrops located near the site was conducted. Present at the field evaluation were representatives of NYSDEC and BC. Per National Grid's November 15, 2006 response to NYSDEC's comments on the SI Work Plan, this evaluation was conducted prior to drilling activities so that, if necessary, adjustments could be made to the SI drilling program based on the findings of the evaluation. A copy of the memorandum describing the findings and conclusions of the outcrop evaluation that was provided to NYSDEC on December 20, 2006, is included in Appendix A.

2.2 Utility Mark-Outs and Clearance

Prior to conducting the intrusive activities for the SI, the locations were marked in the field. New York Dig Safely was contacted to obtain utility clearance for the subscribed utilities. A private utility locating subcontractor, Alpine Environmental Services, surveyed planned locations with electromagnetic instruments to identify metallic lines such as water pipes, electrical cables, etc. Some of the planned drilling and test pit locations were slightly adjusted to provide adequate clearance from utilities.

2.3 Soil Borings

Several borings were completed for the purposes of further delineating visible NAPL and further evaluating the subsurface geology. The soil borings are described in two groups in the sub-sections below. The first group was focused on further delineating the extent of visible NAPL, and the second group was focused on further evaluating the deeper overburden deposits and the configuration of the bedrock surface to facilitate evaluation of a potential subsurface containment remedy. As described further in Section 2.4, deep soil borings drilled during the installation of the piezometer nests also supported this evaluation. The positions of the soil boring locations are illustrated on Figure 2.

2.3.1 Soil Borings – Extent of Visible NAPL

Soil borings were advanced in selected areas to further evaluate the lateral and/or vertical extent of visible tar or NAPL as discussed in Section 1.2. These areas, and the SI borings associated with each, are as follows:

- **Area north of the former 300,000 ft3 gas holder and the area along the banks of Wynantskill Creek.** Three (3) soil borings--SB-168, PZ-11, and PZ-12—were initially advanced on the north and south banks of Wynantskill Creek to further assess the absence or presence of NAPL, as described in the SI Work Plan. As proposed to NYSDEC in an email memorandum dated August 16, 2007, and subsequently approved, an additional boring, SB-176, was drilled adjacent to PZ-11 to evaluate the vertical extent NAPL identified in the soil at PZ-11.
- **Area underneath the northern portion of the e-Lot building.** Borings were advanced to evaluate the extent of NAPL identified in soil boring SB-25 and at deeper depths in the buried former Wynantskill Creek channel where the former channel apparently extends under a portion of the building. Three (3) soil borings--SB-169, SB-170, and SB-171—were planned for tentative locations adjacent to, and possibly within, the northern portion of the building. The actual boring locations were to be determined based on field/access conditions; coordination with the building tenant and property owner; and discussions with NYSDEC. Following discussions with the building tenant, and review of findings from previous SI borings in the vicinity (e.g., PZ-15), the borings were drilled outside of the building at the locations shown on Figure 2. Drilling was conducted in the evening to reduce disruption of e-Lot's business operations. The preliminary findings of the drilling activities in the area of the e-Lot building were summarized in a memorandum from BC to National Grid, which was provided to NYSDEC on September 25, 2007.
- **Area south of MW-28/28R.** Soil boring SB-173 was advanced south of MW-28R for delineating the limits of NAPL.
- **Area north and east of the By-Products Building.** Two (2) soil borings--SB-172 and DSB-9—were completed to evaluate extent of NAPL previously identified in TP-122, SB-17, and TP-202. Test pits TP-217 and TP-218, were also excavated in this area to support the additional NAPL delineation, as described in Section 2.8.

- **East of the Boiler House and southeast of the former Water Gas Building.** Three (3) soil borings--SB-165, SB-166, and SB-167--were advanced around the perimeter of the southern 200,000 ft^3 gas holder to delineate the horizontal and vertical limits of NAPL previously observed in soil boring SB-152. Data from boring BRC-2, located adjacent to SB-152 (see Section 2.3.2) was also used for this evaluation. Information from the following soil borings that were subsequently added to the drilling described in the SI Work Plan also contributed to this evaluation:
  - **SB-174** - this boring was added per the July 23, 2007 email from National Grid to NYSDEC to provide additional information on the configuration of the bedrock surface in this area.
  - **SB-177** - This boring was added to the drilling program per National Grid's August 10, 2007 email to NYSDEC and pursuant to National Grid's November 15, 2006 response to NYSDEC's comments on the SI Work Plan.

In addition to the borings discussed above, two additional borings, SB-178 and SB-179, were drilled on the north side of Wynantskill Creek, north of the Water Gas building and south of the former 2 million ft^3 gas holder. Several previously drilled borings south of SB-178 and SB-179 and south of Wynantskill Creek, indicated the presence of NAPL within the fill at depths of up to 30 feet below grade (e.g., SB-124, SB-24). The purpose of these borings was to assess whether or not NAPL is present in a similar stratigraphic interval on the north side of the creek in this area.

2.3.1.1 Soil Boring Methods

The above-described soil borings were advanced using hollow-stem augers and continuously sampled with a two-foot long, three-inch inside diameter (I.D.) split-spoon sampler. The samples were described in the field to characterize soil type, including grain size, texture, and moisture content. Visible NAPL, if encountered, was noted and described with regard to color, odor, consistency, and distribution in the sample (i.e., degree of NAPL saturation). Soil samples were logged in accordance with the Burmister Soil Classification System and classified using the Unified Soil Classification System (USCS) as per the FSP. The samples were also field screened for indications of impacts via visual/olfactory observations and organic vapor concentration measurements using a photo-ionization detector (PID). Upon completion, the soil borings were filled with cement-bentonite grout.

2.3.2 Soil Borings – Deeper Overburden Deposits and Bedrock Surface

Seventeen (17) borings, identified with a 'DSB' prefix, were advanced at selected locations to further evaluate and characterize the overburden deposits and the depth to bedrock. These locations are shown on Figure 2.

At locations where previous depth to bedrock determinations appear to be anomalously shallow relative to nearby borings, three (3) borings, identified with a "BRC" prefix, were planned near the anomalies to determine the depth to bedrock. If split-spoon and auger refusal was encountered at similarly shallow depths, rock core samples were to be collected to confirm the presence of in-place bedrock, and define the topography of the bedrock surface. Otherwise, if the refusal was encountered at depths consistent with existing nearby borings, coring would not be necessary and the boring was to be terminated at the bedrock surface. As described in National Grid's July 23, 2007 email to NYSDEC, the originally-planned location for BRC-1 was very close to a portion of the Water Gas Building where the outside wall appears more degraded than others and shows signs that bricks have recently spalled-off nearby. Based on this safety concern, the location was moved to a position between the former 300,000 ft^3 gas holder and the northernmost former 200,000 ft^3 gas holder.

The BRC borings encountered refusal at depths consistent with nearby borings, thus per the SI Work Plan, no bedrock coring was necessary. However, a bedrock core was collected at BRC-2 to provide further information on the characteristics of shallow bedrock in this area.

As described in the July 23, 2007 email to NYSDEC, additional borings were drilled in the northeastern part of the site, east of the Water Gas Building to further evaluate the irregularities in the top of bedrock surface in this area. These borings were designated SB-174 and SB-175.

2.3.2.1 Soil Boring Methods

Soil borings were advanced using hollow-stem augers. At locations where previous borings provided sufficient characterization of the subsurface conditions over the interval they were sampled, the augers were advanced to the approximate bottom depth of the previous boring, and from that depth, split-spoon samples were collected continuously to refusal on bedrock. Otherwise, split-spoon sampling was conducted continuously from ground surface to the top of bedrock. A two-foot long, three-inch I.D. split-spoon sampler was used for the collection of soil samples. The samples were described in the field to characterize soil type, including grain size, texture, and moisture content. Soil samples were logged in accordance with the Burmister Soil Classification System and classified using the USCS as per the FSP. The samples were also field screened for indications of impacts via visual/olfactory observations and organic vapor concentration measurements using a PID. Thicknesses of the various stratigraphic units encountered (e.g., fill, alluvial deposits, till, etc.) were recorded for each location. Samples of distinct unconsolidated deposits were collected from selected borings and submitted for laboratory grain size analysis (see Section 2.5). Upon completion, the soil borings were filled with cement-bentonite grout.

As described above, at BRC-2, the soil boring was advanced into bedrock and a core sample of the bedrock was collected. Prior to coring, the augers were advanced into weathered bedrock to refusal. The boring was then advanced into bedrock using a conventional, nominal 4-inch diameter (NX) coring bit and barrel. Coring continued for approximately five feet. The core was described in the field to characterize: rock type; bedding thickness; texture; fracture type, orientation, and spacing; structural features in addition to fractures; and other descriptors used to identify the composition of the bedrock as per the FSP.

2.4 Piezometer and Well Installation

Piezometers were installed in nests, transects and individually during the SI. Some of the locations served to provide data to address several of the specific data gaps and SI objectives (see Table 1), as described in the following subsections. Installation of replacement wells for pre-SI wells that were destroyed or damaged and not repairable, and the re-development of pre-SI wells, are also described.

2.4.1 Piezometer Nests

Determination of the number of piezometers that were installed within each nest was dependent upon the stratigraphy encountered at the location. Because of the variability of the subsurface deposits across the site, a field determination of the composition of the deposits was used to determine the hydrostratigraphic units in which piezometer screens would be set in each nest, and thus the number of piezometers in each nest.

At each piezometer nest location, the soil boring for installing the deepest overburden piezometer was drilled first. At locations where previous borings provided sufficient characterization of the subsurface conditions over the interval they were sampled, the augers were advanced to approximately the bottom depth of the previous boring, and from that depth, split-spoon samples were collected continuously to refusal on bedrock. Otherwise, split-spoon sampling was conducted continuously from ground surface to the top of bedrock.

Visual classification of the entire length of the borehole was used as the basis for selecting depth intervals for screens in distinct hydrostratigraphic units. Selected samples were submitted for grain size analysis to assist in characterization of the individual layers and evaluation of hydraulic conductivities (see Section 2.5). Also, the laboratory grain-size testing provided for confirmation of visual soil classification conducted in the field. The screen depths for subsequent shallower piezometers within a nest were selected based on the findings from the initial boring at the location.

At six of the piezometer nest locations, a piezometer with a screen positioned in the bedrock was installed to evaluate the vertical hydraulic gradient from bedrock into the overburden deposits. Installation procedures associated with construction of a bedrock piezometer are described in Section 2.4.4.2.

2.4.2 Piezometer Transects

Three (3) piezometer transects aligned approximately perpendicular to the Hudson River (Transects 1, 2, and 3), and three (3) aligned approximately perpendicular to and crossing the Wynantskill Creek (Transects 4, 5, and 6) were constructed for the purpose of assessing the lateral extent of fluctuations in groundwater levels due to tides in the Hudson River, and the interaction between groundwater and surface water in Wynantskill Creek. Five of the piezometer nests described in Section 2.4.1 were installed as part of the transects. Inclusion of piezometer nests at transects allowed for an assessment of changes in vertical hydraulic gradient due to tidal fluctuation and changes in creek stage.

The piezometer transects include the following piezometers (designated with a "PZ" prefix) and wells installed prior to the SI:

Hudson River Area

- Transect 1: PZ-2, PZ-3, and pre-SI well MW-23
- Transect 2: PZ-4, pre-SI well MW-10R, and PZ-5 (piezometer nest)
- Transect 3: PZ-6 (piezometer nest), PZ-7, PZ-8 (piezometer nest), and PZ-22 (piezometer nest)

Wynantskill Creek Area

- Transect 4: PZ-9 and pre-SI well MW-9R
- Transect 5: PZ-10, PZ-11, PZ-12 (piezometer nest), and pre-SI well MW-6R
- Transect 6: PZ-13 and PZ-14

2.4.3 Other Piezometers

Two (2) individual piezometers, PZ-20 and PZ-21, were installed at locations situated in the area east of the e-Lot building and between the former Water Gas Building and the By-Products Building. These piezometers were positioned to provide additional data on the elevation of the water table.

2.4.4 Piezometer Construction and Development

Procedures used for the construction and development of the piezometers are provided below.

2.4.4.1 Overburden Piezometers

Piezometer installation procedures are provided in the FSP. At proposed locations where previous borings provided sufficient characterization of the subsurface conditions over the interval they were sampled, the augers were advanced to approximately the bottom depth of the previous boring, and from that depth, split-spoon samples were collected continuously to the target depth for piezometer installation. Otherwise, split-spoon sampling was conducted continuously from ground surface to the target depth for piezometer installation. Soil samples were logged in accordance with the Burmister Soil Classification System and classified using the USCS as per the FSP. The samples were also field screened for indications of impacts via visual/olfactory observations and organic vapor concentration measurements using a PID. Thicknesses of the various stratigraphic units encountered (e.g., fill, alluvial deposits, till, etc.) were recorded for each location. Consistent with most wells installed prior to the SI, at each location not identified as a piezometer nest, or at the shallowest piezometer in a nest, the screen was installed at a depth interval which straddles the water table. A discussion of screened intervals for nested piezometers is provided in Section 2.4.1.

The piezometers were constructed of two-inch diameter, Schedule 40, PVC casing with 0.020-inch slot PVC screens with an appropriately-sized filter pack, as described in the FSP. At piezometer locations where DNAPL was encountered in the soil, and at most other locations, a sump was installed below the screen, if appropriate, as described in the FSP. In instances where sumps were installed, the annular space between the sump and formation was filled with bentonite. Where appropriate, 2-foot long sumps were installed. At some locations, however, a shorter sump was required based on the thickness and characteristics of the subsurface deposits directly below the screen.

After a minimum period of 24 hours had passed following piezometer installation (to allow for the cement/bentonite grout to set), each piezometer was developed. Development was conducted in accordance with procedures in the FSP.

2.4.4.2 Bedrock Piezometers

At locations designated for bedrock piezometers, a soil boring was initially advanced with 6 ¼-inch ID hollow-stem augers to auger refusal on bedrock. A nominal 6-inch diameter roller bit was then lowered to the bottom of the augers, and used to drill approximately one foot of rock below the augers. A four-inch diameter steel casing was then seated at the base of the hole, a few feet below the bedrock surface, and grouted into place to reduce the potential for the introduction of constituents from shallower zones into bedrock. Note that the use of a four-inch diameter steel casing was a modification to the procedure proposed in the SI Work Plan, which described the use of a six-inch diameter casing. This modification was proposed in a January 18, 2007 email from BC to NYSDEC, and was subsequently accepted. After setting the casing, bedrock drilling was then continued using a conventional, nominal 4-inch diameter (HX) coring bit and barrel. Core samples were described in the field to characterize: rock type; bedding thicknesses; texture; fracture type, orientation and spacing; structural features in addition to fractures; and other descriptors used to identify the composition of the bedrock as per the FSP. Packer pressure testing was conducted after each 5-foot long core run, when conditions in the borehole would permit, to evaluate changes in hydraulic conductivity versus depth and identify potential water-bearing zones in the bedrock (see Appendix D). Information obtained from the bedrock core and packer test results was used as the basis for selecting the screen interval for the bedrock piezometer, which was targeted to the shallowest water-bearing zone identified in bedrock. Water-bearing zones were identified at the six locations at depth intervals varying from 5 to 25 feet below the base of the steel casing.

Once the water-bearing zone was identified, a piezometer was installed with a screen interval positioned in the water-bearing zone. The piezometers were constructed of two-inch diameter, Schedule 40, PVC casing with 0.020-inch slot PVC screens with an appropriately-sized filter pack as described in the FSP.

After a minimum period of 24 hours had passed following piezometer installation (to allow for the cement/bentonite grout to set), each piezometer was developed. Development was conducted in accordance with procedures in the FSP.

2.4.5 Well Replacement, Repair, and Redevelopment

During the field activities for the SI, well MW-14 was found to be damaged and unusable, and wells MW-35, MW-22, and MW-1 were found to be destroyed. As described in the July 23, 2007 email to NYSDEC, MW-14, MW-22, and MW-35 were replaced. MW-1 was not replaced because PZ-9, installed during the SI, provided adequate water level data for this area. The original well location for MW-14 was positioned directly east of the site on the east side of the railroad tracks. MW-14R was installed to replace MW-14. MW-14R was positioned on the site just to the west of the original location because permission to access the railroad property for drilling was not available during the SI. MW-35R was installed to replace MW-35, and was positioned adjacent to the original location. Pre-SI well MW-22 was to be the shallow piezometer for the PZ-15 piezometer nest (see Section 2.4.1). After MW-22 was found to be destroyed as a result of utility work being conducted by the City of Troy, PZ-15a was installed to replace MW-22. MW-35R, MW-14R, and PZ-15a were installed using the same procedures as the overburden piezometers, as described in Section 2.4.4.1.

Based on a well inspection conducted on June 8, 2007, the surface protective covers (flush-mounted wells) or protective casings (stick-up wells) of several pre-SI wells were found to be in need of repair or replacement. The surface protective covers or casings were subsequently replaced on the following wells: MW-13, MW-16, MW-17, and MW-29. Minor repairs were made to the protective covers at other well locations. Also, based on previous well gauging, approximately 16 of the pre-SI wells were found to contain a foot or more of siltation in the bottom of the well. These wells were redeveloped during the SI.

Several pre-SI wells could not be located during the June 8, 2007 well inspection. These wells were: MW-5, MW-12, MW-30, MW-32, and MW-34. In an effort to find the wells, the surveyors (see Section 2.11) marked the position of the missing wells in the field. The field crew then hand dug around the marked positions and relocated the wells, with the exception of MW-30, which was unable to be located.

2.4.6 Decommissioning of Wells and Well Points

During the SI field activities, wells MW-9 and MW-10 were decommissioned. These wells were previously replaced in May 2004 by MW-9R and MW-10R.

Additionally, the 14 of the 17 monitoring points (3/4-inch 1-inch diameter PVC) and the two injections points (2-inch diameter stainless steel) installed in 2004 and 2005 for the ISCO pilot test were decommissioned (see "In Situ Chemical Oxidation [ISCO] Pilot Test Report, Troy [Water Street] Site—Area 2 [Brown and Caldwell Associates, January 2006])". Three of the monitoring points—MP-2D, MP-6, and MP-10S—could not be located for decommissioning. These locations may have been destroyed during grading work in this area by the City of Troy.

Decommissioning was performed by over-drilling the well casing with hollow stem augers, and removing the well casings and screens. The boring was then filled with cement-bentonite grout from the bottom of the hole to ground surface. These procedures are in accordance with the NYSDEC guidance document "Groundwater Monitoring Well Decommissioning Procedures" (Malcolm Pirnie, October 1996).

2.5 Laboratory Geotechnical Analyses of Soil Samples

As described in Sections 2.3.2.1 and 2.4.1, at selected soil borings, soil samples were collected for laboratory sieve and hydrometer analysis to determine grain-size distribution. At each of these borings, representative samples from the various stratigraphic units encountered were collected and analyzed. The following samples were analyzed:

- **DSB-3:** 18-20 ft. BGS (fine-grained alluvial deposits); 41-42 ft. BGS (lower sand and gravel [LSG] unit); 51-52 ft. BGS (weathered rock)
- **PZ-8:** 15-17 ft. BGS (fill); 23-25 ft. BGS (fine-grained alluvial deposits); 41-43 ft. BGS (LSG unit [upper]); 53-55 ft. BGS (LSG unit [lower, in finer-grained sand interval])
- **PZ-15:** 14-16 ft. BGS (fill); 24-26 ft. BGS (fine-grained alluvial deposits); 44-46 ft. BGS (LSG unit)
- **PZ-18:** 12-14 ft. BGS (lacustrine deposits)
- **DSB-16:** 28-30 ft. BGS (fine-grained alluvial deposits); 32-33 ft. BGS (fine-grained alluvial deposits); 42-44 ft. BGS (LSG Unit); 57 ft. BGS (till)

Additionally, at locations PZ-8, PZ-15, and PZ-18, it was planned to attempt to collect soil samples with a Shelby tube from the relatively low permeability deposits. A Shelby tube sample was collected from the lacustrine deposits at PZ-18. No till or lacustrine deposits were encountered at PZ-8 and PZ-15. The sample from PZ-18 was analyzed in the laboratory for porosity, vertical permeability, bulk density, grain size by sieve analysis, Atterberg limits, moisture content, and specific gravity.

2.6 Slug Tests

In-situ hydraulic conductivity tests (i.e., slug tests) were performed on each piezometer installed during the investigation to evaluate the horizontal hydraulic conductivity of the adjacent formation. In addition, slug tests were conducted on existing wells that had not been previously tested and that are screened either within a distinct unit, or across the water table. These wells included MW-21, MW-23, MW-27, MW-124B, and RW-2. Rising head slug tests were conducted in accordance with the procedures described in the FSP and the data generated were input into AQTESOLV® software for hydraulic conductivity calculations. The slug test analyses are provided in Appendix F. Table 3 summarizes the results of the slug tests. Note that after evaluating the data from the slug tests conducted for the SI, four (4) of the 48 locations were identified where the test results are questionable and where retesting of the well/piezometer would be required to provide a reliable estimate of the hydraulic conductivity of the adjacent stratigraphic unit at the location. These locations are noted on Table 3.

2.7 Staff Gauges

Six (6) staff gauges were installed during the week of August 6, 2007 at the locations shown on Figure 2. A single staff gauge, SG-1, was installed in the Hudson River on the former asphalt dock. The remaining five (5) staff gauges, SG-2 through SG-6, were installed at various locations in Wynantskill Creek. At locations where automatic data loggers were used to monitor water levels (SG-1, SG-5, and SG-6), the staff gauges were equipped with stilling tubes for housing data logging pressure transducers. Staff gauges SG-5 and SG-6 were found to be destroyed during the November 2007 water level measurements (see Section 2.9) due to high flow conditions in Wynantskill Creek.

2.8 Test Pits

Five (5) test pits were excavated as part of the SI; four (4) were initially planned as described in the SI Work Plan, and the fifth was added to the SI program based on field observations (see Figure 2). These test pits, and their purposes, are described below.

- **TP-217** - To support the additional evaluation of the extent of NAPL north of the By-Products Building, as described in Section 2.3.1.
- **TP-218** - To support the additional evaluation of the extent of NAPL northeast of the By-Products Building, as described in Section 2.3.1.
- **TP-219** - To further assess the contents of a historic buried structure referred to as the "junk pit" located near the south end of the site and identified in the ROD as an underground vault.
- **TP-220** - to assess an area where a depression in the pavement had been noted directly north of the e-Lot building.
- **TP-221** - A potential subsurface structure was encountered when attempting to install piezometers for the PZ-22 piezometer nest. In a July 23, 2007 email to NYSDEC, National Grid proposed to excavate a test pit to evaluate this potential structure. NYSDEC concurred with the proposal.

Each test pit was excavated to a depth dependent on the purpose of the excavation, as further described in Sections 3.3 and 3.4. Soil samples from the test pits were described in the field to characterize soil type, including grain size, texture, and moisture content. Soil samples were logged in accordance with the Burmister Soil Classification System and classified using the USCS as per the FSP. Samples were also field screened for indications of impacts via visual/olfactory observations and organic vapor concentration measurements using a PID. Thicknesses of the various stratigraphic units encountered were recorded for each location. Photographs were also taken of the test pits. Logs for each of the test pits are provided in Appendix C. Upon completion of each test pit, the excavated material was backfilled into the excavation in the order the material was excavated (last-out, first-in), placing the backfill in approximately 1.5- to 2-foot lifts and tamping with the excavator bucket. The test pits excavated in paved areas (TP-218, TP-219, TP-220, and TP-221) were re-paved with asphalt pavement following completion of the backfilling.

2.9 Water Level Monitoring and NAPL Gauging

Depth to water measurements and NAPL gauging were conducted on the pre-SI and newly installed monitoring wells, piezometers, and staff gauges. The initial measurement round began on September 4, 2007, approximately one and half weeks after development and slug testing of the piezometers and wells was completed. Based on the season and the weather conditions, the water level measurements collected on September 4, 2007 are considered representative of generally low groundwater level conditions. A second round of measurements was made on November 26, 2007, and is considered generally representative of high groundwater level conditions. The water level data from these measurements are provided in Table 4.

After the initial round of water level measurements on September 4, 2007, data loggers were temporarily installed in the following selected piezometers within the transects adjacent to the Hudson River and the Wynantskill Creek: PZ-2, PZ-3, PZ-4, PZ-5a, PZ-5c, PZ-5d, PZ-6a, PZ-7, PZ-8a, PZ-8b, PZ-8d, PZ-12a, PZ-12c, PZ-12d, PZ-14, PZ-22a, and MW-23. Data loggers were also installed at a staff gauge location in the Hudson River, SG-1, and two staff gauge locations in Wynantskill Creek, SG-5 and SG-6. Water level data were recorded automatically using In-Situ Level-TROLLS®. The automatic data loggers recorded water levels for a period of approximately one week (from September 12 to September 19, 2007) after which they were removed and the data downloaded for evaluation and preparation of hydrographs (see Appendix I). Note that after approximately the first two days of monitoring, the data logger in PZ-5d malfunctioned, although the data collected prior to the malfunction is considered usable and representative.

The timing of the period of continuous water level logging was coincident with relatively low flow conditions in Wynantskill Creek. To assess conditions related to relatively higher creek flow, an additional round of water level measurements was made on staff gauges and piezometers that are proximal to the creek (including those in Transects 4, 5, and 6) on October 20, 2007, following a heavy rainfall event. These data are provided in Table 4.

The NAPL gauging was conducted after the water level measurements were made. Gauging was performed using an oil/water interface probe. Where the presence of NAPL was indicated by the probe, efforts were made to confirm its presence. These efforts included inspecting the interface probe for signs of NAPL, and/or lowering a translucent bailer or threaded steel rod into the well and inspecting them for indications of NAPL. The NAPL gauging data are provided in Appendix G.

2.10 Groundwater Flow Model

Data obtained from this investigation and previous investigations were used to develop a three-dimensional numerical groundwater flow model to simulate groundwater flow conditions at the site. The USGS MODFLOW finite-difference source code was used in this effort. The model was used to estimate and predict the behavior of groundwater under different potential remedial scenarios. The model was developed and calibrated against water elevations measured in the field. Sensitivity analyses were conducted to assess uncertainty in the model.

The calibrated model was used to evaluate the feasibility of potential barrier system alternatives and configurations, including the effect of potential barrier configurations on groundwater levels and flow directions, and to estimate potential groundwater management needs (if any) associated with these various configurations.

A round of groundwater sampling is currently being conducted in accordance with the approved letter work plan dated January 31, 2008 (subsequently modified by a February 6, 2008 email from National Grid responding to comments from NYSDEC) and the results of the groundwater modeling efforts will be presented under separate cover after receipt and evaluation of the groundwater quality data. The modeling report will include a discussion of the groundwater model's construction (e.g., model domain, boundary conditions, estimated aquifer properties, etc.), calibration, and sensitivity analyses. The modeling report will also include a discussion of the simulation of groundwater flow under current conditions, and under conditions where various subsurface barrier configurations are in place.

2.11 Survey

Each of the borings, test pits, piezometers, and staff gauges from the SI, and available existing wells installed prior to the SI, were surveyed for location coordinates, ground surface elevation, and in the case of the piezometers and wells, top of casing elevation data. Coordinates were be referenced to the State Plane coordinate system for New York using the North American Datum of 1983 (NAD 1983) in units of feet. Elevations were referenced to the National Geodetic Vertical Datum (NGVD) of 1929 in units of feet. The survey was performed by licensed surveyors from CT Male.

During the June 8, 2007 well inspection described in Section 2.4.5, several of the pre-SI wells could not be located. These wells were MW-5, MW-12, MW-30, MW-32, and MW-34. In an effort to find the wells, the surveyors marked the position of the missing wells in the field. The field crew then hand dug around the marked positions and relocated the wells, with the exception of MW-30, which was unable to be located. After these wells were relocated, and necessary repairs were made, the wells were re-surveyed as described above.

2.12 Investigation-Derived Waste (IDW)

Investigation derived waste (IDW) generated during the SI included soil and rock cuttings, drilling water, development water, equipment decontamination water, disposable sampling equipment, and personal protective equipment (PPE). The solid wastes (soil and rock cuttings) were containerized in DOT-approved, 55 gallon drums and were be labeled to identify its contents. Liquid wastes including drilling water, development water and equipment decontamination water were temporarily stored in 1000-gallon polyethylene tanks. Fragments of pavement from the test pit locations were placed in a roll-off container. Samples of the IDW were analyzed in the laboratory for waste profiling purposes and the appropriate treatment/disposal was arranged. Treatment/disposal of the IDW was managed by Clean Harbors Environmental Services, Inc. under contract to National Grid.

3. SI FINDINGS

3.1 Geologic Setting

Unconsolidated overburden deposits that are variable in nature overlie bedrock at the site. The overburden is generally thinnest in the eastern part of the site, and becomes progressively thicker toward the Hudson River to the west. Based on the data collected during the SI and previous investigations, the bedrock and overburden deposits are described below.

3.1.1 Bedrock

The description of the composition and structure of the bedrock beneath the site provided below is based on:

- **Outcrop examination** - Two bedrock outcrops were identified and evaluated as part of this effort. The first is located directly east of Area 2, along a cut in the base of the slope on the east side of the railroad tracks. The second is located approximately 1,600 feet south of the Area 2, adjacent to and west of the northern end of Area 4, below the high tide level of the Hudson River. A copy of a 12/20/06 memorandum describing the findings of the outcrop examination, which was previously provided to NYSDEC, is included in Appendix A.
- Examination of rock cores, which were collected at 7 locations: PZ-5d, PZ-8d, PZ-12d, PZ-16d, PZ-17c, PZ-19a, and BRC-2. The cores were collected from the base of the 4-inch diameter casing that was set below the top of rock to depths of 5 to 25 feet below the base of the casing (see Appendix B).
- Split-spoon sample examination (see Appendix B).

Examination of rock cores, split-spoon samples, and the outcrops indicate that the bedrock beneath the site is highly deformed, gray to black shale with pervasive, closely-spaced scaly and planar cleavage surfaces. Further, a variable degree of weathering is present at or near the surface of the bedrock. Measurements from the outcrops indicate that the cleavage surfaces typically dip moderately to steeply to the east, but are locally undulatory or folded. Mineralized veins (typically quartz) cut through the shale; in outcrop, these veins undulate somewhat, but consistently dip to the east at a moderate-to-high angle (49° to 65°), and locally are vertical (i.e., 90° dip). At numerous soil borings drilled within Area 2, split-spoon samples from the depth interval where refusal on bedrock was encountered recovered fragments of black to gray weathered shale. The shale observed in the outcrops was also weathered to varying degrees, as indicated by a decreased competency in the rock relative to fresher exposures. In weathered zones, the shale can be easily broken along cleavage surfaces, and is partly degraded to fragments of shale surrounded by clay and silt-rich material. The clay and silt-rich material is derived from the shale by the weathering process. In some locations where rock has spalled from the face of the outcrop, less weathered shale is exposed.

The observations on the core and outcrops are consistent with the understanding of the regional geologic setting, wherein the Troy (Water St.) Site and adjacent areas lie within an approximately 10 kilometer wide, north-south oriented zone of Ordovician-aged rock referred to as the Cohoes Melange (Kidd, et al., 1995), in which the bedrock is of similar composition and structure to that described above.

The surface of the top of bedrock underlying the site generally slopes from east to the west and north, with some irregularities, as depicted in the cross-sections in Figure 3 and the top of bedrock contour map provided in Figure 4. In the east, the top of bedrock surface is shallow; typically 10 to 20 feet BGS, or shallower, and cropping-out at the surface on the east side of the railroad tracks east of the former By-Products Building. It is progressively deeper to the north and northwest.

3.1.2 Glacial Deposits

Glacial till and glacial lacustrine deposits overlie bedrock, but are locally discontinuous. Where encountered in the same boring the lacustrine deposits are positioned above the till (see cross-sections in Figure 3).

The glacial till is variable in composition, consisting of poorly sorted mixtures of sand and gravel with varying amounts of silt and clay. A laboratory grain size analysis of a sample of the till from DSB-16 (57 feet BGS) demonstrates the poorly sorted nature of the till (see Appendix E). The consistency is typically dense and cohesive, but is locally loose. Variations in density and cohesiveness may be due to local weathering of these deposits prior to their burial beneath the overlying deposits. Wherever the till was encountered, it is positioned directly above bedrock.

The lacustrine deposits are typically fine-grained, ranging from silty clays to clayey silts, often with trace amounts of fine sand. The clay and silt deposits are often layered on a scale of centimeters or less, indicative of lake bed varves which are often observed in fine-grained glaciolacustrine deposits. The clay and silt are typically dense and cohesive. At some locations, samples of clay and silt displayed fractures which cross-cut bedding. Locally, thin, coarser intervals were encountered within these deposits, containing higher percentages of sand and fine gravel. A Shelby tube sample was collected from within the lacustrine deposits at PZ-18 (12 to 14 feet BGS) to measure vertical hydraulic conductivity and various geotechnical properties. Although this type of sampling does not permit a field description of the sample to be conducted, a grain-size analysis of this sample indicated that it likely intersected one of these coarser zones; the analysis showed a relatively high percentage of sand, and approximately 30 percent silt and clay (see Appendix E). The lacustrine deposits occur most frequently in the eastern portion of the site, either directly above glacial till, or directly above bedrock where no till is present. Lacustrine deposits similar to those encountered in the subsurface also crop out along the steep slope east of the site, east of the railroad tracks. In the western portion of the site, the lacustrine deposits were encountered much less frequently and are thin relative to those encountered to the east. The lacustrine deposits are considered to be representative of bottom sediments from a large, Pleistocene-age lake which formed during the recession of the glaciers from the area. These deposits were likely extensive, and were subsequently partly eroded away as the glacial lake drained and the Hudson River down-cut into these deposits, and the till, as it progressed toward its current configuration.

Figure 5 is a contour map of the top of the glacial deposits; where both types of deposits are present, the contours are representative of the shallower deposits. The till and lacustrine deposits were grouped together for the preparation of this map because these deposits are both positioned above bedrock, often occur together, and, as described in Section 3.2.1.4, are generally lower in permeability than overlying deposits. The cross-sections provided in Figure 3 distinguish between these two types of glacial deposits.

Figure 5 and the cross-sections in Figure 3 illustrate the variable thickness of these units, and the local discontinuity. There are several areas of the site where there are no glacial deposits present, and the next unit in the sequence (see below) directly overlies bedrock.

3.1.3 Lower Sand and Gravel Unit

The lower sand and gravel (LSG) unit is comprised of coarse-grained sand, gravel and cobbles. Locally, it contains finer sands, silt and clay, but is predominantly coarser-grained. Laboratory grain size analyses conducted on several samples from this unit (DSB-3 [41 to 42 feet BGS], PZ-8 [41 to 43 and 53 to 55 feet BGS], PZ-15 [44 to 46 feet BGS] and DSB-16 [42 to 44 feet BGS]) demonstrate the coarse-grained and poorly-sorted nature of the LSG unit (see Appendix E). The unit is thickest in the western portion of the site, is progressively thinner toward the east, and eventually ends beneath the site as the top of rock surface becomes shallower (see cross-sections in Figure 3). The furthest eastward extent of this unit is in the northern portion of the site, in the vicinity of Wynantskill Creek.

The LSG unit is likely an alluvial channel deposit of the Hudson River, although it may contain re-worked sediments from older, Pleistocene deposits related to glaciation (e.g., outwash deposits). The top of the LSG unit is typically below elevation -5 to -10 feet NGVD, so it is several feet below the water level of the Hudson River.

3.1.4 Fine-Grained Alluvial Deposits

The fine-grained alluvial deposits are variable in composition, containing layered organics/peat, silt, clay, and fine sand. Locally, these deposits contain lenses of coarser sand and gravel. Laboratory grain size analyses conducted on several samples from this unit (DSB-3 [18 to 20 feet BGS], PZ-8 [23 to 25 feet BGS], PZ-15 [24 to 26 feet BGS], and DSB-16 [28 to 30 and 32 to 34 feet BGS]) demonstrate the predominantly fine-grained composition of these deposits (see Appendix E). The grain-size analyses also indicates poor sorting (i.e., a broad range of grain sizes) on the scale of the sample analyzed; however, the degree of sorting within the individual thin layers often observed in these samples higher than is reflected by the whole sample analysis. This unit overlies the LSG deposits in the western portion of the site, and overlies the glacial deposits or bedrock in the eastern portion of the site where the LSG unit is absent (see Figure 3). The lower contact with the LSG unit at several locations appears to be gradational, with interbeds of finer- and coarser-grained material. The unit is not present in the easternmost part of the site where the top of bedrock surface, and the top of the glacial deposits, becomes shallower. In the westernmost part of the site, adjacent to the river, the unit becomes coarser-grained and appears to become indistinguishable from the LSG unit. Between the river and where the unit ends to the east, these alluvial deposits appear to be continuous, and variable in thickness, as depicted in the isopach (thickness) map provided in Figure 6.

Figure 7 presents a contour map of the base of the fill deposits; across most of the site, with the exception of the easternmost side, this surface is equivalent to the top of the alluvial deposits, the eastward limit of which is noted on the map. The surface of the alluvial deposits undulates somewhat, although there is a general shallow slope toward the west. The buried former channel of Wynantskill Creek is evident in the contours of the base of the fill shown in Figure 7, as this buried channel is bedded in the fine-grained alluvial deposits beneath the fill. The channel for the eastern, unlined segment of the existing Wynantskill, which is bedded in fill, overlies, and is parallel to, the former channel, as can be seen by the contours of the base of the fill. At about the position where the concrete channel for the lined portion of Wynantskill Creek begins, the buried former channel turns south for approximately 200 feet and then turns westward toward the Hudson River.

The fine-grained alluvial deposits are considered to be alluvial flood plain deposits of the Hudson River, and possibly to a lesser extent, of the former Wynantskill Creek. These deposits were subsequently buried beneath fill during site development.

3.1.5 Fill

The fill is composed of various materials including sand, gravel, slag, cinders and demolition debris. Finer-grained material (silt and clay), where present in the fill, is typically not the predominant component except locally in the eastern portion of the site. Laboratory grain size analyses conducted on several samples from this unit (PZ-8 [15 to 17 feet BGS] and PZ-15 [14 to 16 feet BGS]) demonstrate the coarse-grained nature of the deposit (predominantly gravel and sand) and the poor degree of sorting (see Appendix E). Fill occurs across the site and varies in thickness, but is generally thinner in the east and thicker to the west, and is relatively thick where it occupies the former channel of Wynantskill Creek.

3.2 Hydrostratigraphy and Groundwater Flow

3.2.1 Hydraulic Conductivity

The hydraulic conductivity (K) of each deposit is discussed below. The discussion is based on the following:

- **In-situ hydraulic conductivity tests (slug tests)** – Table 3 provides a summary of the estimated horizontal hydraulic conductivity (K_h) values from the in situ tests (slug tests) conducted on wells and piezometers at the site (see Appendix E). The results are grouped based on the saturated formation/deposit adjacent to the screen. A geometric mean K_h is calculated for each type of deposit. Results from wells that are not screened in a discrete formation are included in Table 3, but not included in the calculation of the geometric means. Where the water table is in the fill, it is typically toward the bottom of the fill. As such, wells in these areas were often extended into the unit below the fill (e.g., alluvial deposits, lacustrine deposits) to position the well screen to straddle the water table. Because the fill typically is coarser and has a much higher K_h than the directly underlying units, and since the slug tests from wells screened across multiple layers of differing grain size will be more representative of the material with higher K_h, slug tests from wells with screens adjacent to saturated fill, but also penetrating a portion of the underlying formation, are considered to be representative of the fill.
- **Packer pressure tests** - For the bedrock, in addition to the slug test results, packer pressure tests conducted to identify water-bearing zones also provide an evaluation of K_h versus depth at the tested locations. The data collected during these tests are provided in Appendix D.
- **Laboratory measurements** - A laboratory measurement of vertical hydraulic conductivity (K_v) was conducted on a sample of the lacustrine deposits at PZ-18b, and is discussed below. The laboratory results are provided in Appendix E.
- **Sample descriptions** - The nature of a deposit (e.g., grain size, sorting, density, degree of layering, etc.) provides insight on relative K_h and K_v values in a deposit (see Appendix B).

3.2.1.1 Fill

The estimated geometric mean K_h of the fill, based on slug tests, is 3.9×10^{-3} cm/sec. Estimated values range from 4.3×10^{-2} cm/sec, to as low as 3.1×10^{-5} cm/sec. The relatively high K_h is due to generally coarse-grained nature of the fill, while the large range in values is related to the local variable nature of the fill.

3.2.1.2 Fine-Grained Alluvial Deposits

The estimated geometric mean K_h of the fine-grained alluvial deposits, based on slug tests, is 3.7×10^{-4} cm/sec. This is approximately 1 order of magnitude lower that the fill deposits, and is related to the overall finer-grained nature of this deposit. Estimated values range from 1.8×10^{-3} cm/sec, to as low as

2.2 x 10^{-5} cm/sec. Slug tests evaluate the K_h in close proximity to the well screen; because the coarser layers in the alluvial deposits are relatively thin and discontinuous (i.e., lenses), the K_h of this unit on a larger scale is likely less than the mean K_h estimated form the slug tests. Due to presence of alternating thin layers of peat, silt, clay and sand, the K_v is likely several orders of magnitude lower than the K_h. As discussed below in Section 3.2.2.2, this is supported by the relative large vertical hydraulic gradient across this unit, where hydraulic head in the fill above the alluvial deposits is substantially higher than in the units below.

3.2.1.3 Lower Sand and Gravel Unit

The estimated geometric mean K_h of the LSG unit from slug test data is 2.1 x 10^{-3} cm/sec. Estimated values range from 1.9 x 10^{-2} cm/sec, to as low as 1.3 x 10^{-4} cm/sec. The relatively high K_h is due to generally coarse-grained nature of the LSG unit, while the large range in values is related to the local variable nature of the unit.

3.2.1.4 Glacial Deposits

The estimated geometric mean K_h of the glacial deposits, based on slug tests, is 4.8 x 10^{-4} cm/sec. This is nearly one order of magnitude lower than that of the fill and the LSG unit. Estimated values range from 6.9 x 10^{-3} cm/sec, to as low as 2.5 x 10^{-5} cm/sec. This lower K_h can be attributed to the high clay and silt content of lacustrine deposits, and to the higher degree of fines, poorer sorting higher density of the till. Note that there are no wells screened entirely in the till. Some of the K_h values estimated in the lacustrine deposits appear relatively high when considering the fine-grained nature of these deposits; however, at the piezometer locations, these deposits are relatively thin and shallow and some samples showed a degree of fracturing in the clay and silt, which would tend to locally (i.e., near the well) increase the K_h. This fracturing may have occurred when these deposits were exposed to weathering at or near the surface prior to burial under the overlying deposits. Note that the slug tests considered representative of the lacustrine and till units are from piezometers/wells in the eastern portion of the site, where these deposits are shallower and more likely to have been exposed to weathering environments.

The flexible wall permeameter test conducted in the laboratory on a sample of the lacustrine deposits at PZ-18b indicated a K_v of 2.01 x 10^{-6} cm/sec. Thus, the K_v of these deposits is substantially lower (approximately 2 orders of magnitude) than the K_h. This lower K_v is largely attributable to the thin layering, referred to as varves, in these deposits.

3.2.1.5 Bedrock

Packer pressure testing was conducted during the installation of the bedrock piezometers to identify a water-bearing zone within the upper bedrock across which to set a piezometer screen. The results of these tests are provided in Appendix D. The packer testing was typically conducted in 5-foot increments from the base of the casing that was installed into rock until a zone was encountered into which water could be readily injected, this being indicative of a water-bearing zone across which to screen the piezometer. Water-bearing zones were encountered within 10 to 20 feet of the top of bedrock, often with intervals of very low K_h above and/or below (as indicated by intervals where no water could be injected, or where the rate of injection was very low). Based on review of the core and outcrop, these flow zones are likely comprised by open fractures separated by low permeability rock (shale).

Slug tests were conducted on the piezometers that are screened in the bedrock to estimate K_h. K_h values from slug tests on these piezometers are representative of the bedrock intersected by water-bearing fractures, not the bedrock matrix itself. The estimated geometric mean K_h of the water-bearing zones in the bedrock is1.3 x 10^{-3} cm/sec. Estimated K_h values range from 4.4 x 10^{-3} cm/sec to 1.1 x 10^{-4} cm/sec.

3.2.2 Groundwater Flow

The evaluation of groundwater flow is based on the understanding of the hydrostratigraphy at the site, as described above, and the water level data collected from the piezometers, wells and staff gauges. Much of the data used for assessing overall groundwater flow patterns are from rounds of water level measurements, conducted over the course of several hours, wherein one water level measurement was recorded at each location (see Table 4). Noteworthy in using these data is that due to the tide in the Hudson River, the groundwater levels at some of the locations fluctuate cyclically to varying degrees. Provided below is a discussion of the influence of the tide on groundwater head, followed by a discussion of the directions and patterns of groundwater flow.

3.2.2.1 Tidal Influence

The water level in the Hudson River adjacent to the site rises and falls over a range of approximately four (4) to five (5) feet approximately every six (6) hours due to the tides. Using the continuous monitoring of water levels with data loggers in selected piezometers and wells over several tidal cycles (see Section 2.9), an understanding of the effect of the tides on groundwater levels has been developed. Appendix I includes several hydrographs (Figures I-1 through I-9) prepared using the continuous water level monitoring data to facilitate this evaluation. The tidal efficiency, or the ratio of groundwater head change to river tidal level change, was approximated as an indicator of tidal effect for each piezometer/well that was continuously monitored. These approximations are provided in Table 5. A tidal efficiency ratio of 1 indicates that the groundwater fluctuation and tidal fluctuation in the river are the same; for every one foot change in river level, there is a one foot change in groundwater head. Similarly, a ratio of 0.5 indicates that for every foot of change in river level, there is a 0.5 foot change in groundwater head.

Water levels in some of the shallow piezometers, screened across, or just below, the water table are affected by the tide to varying degrees, and some not at all. As demonstrated by the hydrographs in Figures I-1, I-2, and I-3, water levels in those piezometers closest to the river fluctuate with nearly the same amplitude and timing as the river level. With distance inland, the amplitude of water table fluctuation typically dampens relative to the river level, and there is a time lag between the peak water level in the river and the peak water level in the piezometer. MW-23 appears to be an exception to this (see the hydrograph in Figure I-3), as the water level in this well has a higher tidal efficiency than the nearby piezometers PZ-2 and PZ-3, which are closer to the river. This may be due to MW-23 having a better hydraulic connection with the river than the PZ-2/PZ-3 area. For example, there may be a zone of relatively higher permeability (e.g., coarser fill, abandoned pipe/pipe bedding) that connects the MW-23 area and the river, but do not intersect the area of PZ-2/PZ-3. At MW-23, the top of the alluvial deposits is deeper, and the amount of saturated fill is thicker than at PZ-2 and PZ-3 by several feet (see Figure 7); if this condition extends to the river, it likely accounts for the relatively higher tidal efficiency at MW-23. Also, the water level in MW-23 appears to have been affected by some sort of localized recharge event (e.g. potentially associated with storm water runoff originating from the roof of the e-Lot building, which is immediately adjacent to this well location) that occurred near the beginning of the week long monitoring period, as demonstrated by a steady decreasing trend in water levels during this time period.

The hydrograph in Figure I-1 shows the continuous water level monitoring data of the water table from piezometers and wells positioned along an east-to-west transect; the closest location is PZ-6a, positioned adjacent to the river, and the farthest is PZ-14, positioned over 600 feet from the river. The hydrograph indicates a significant decrease in the degree of tidal fluctuation of the water table between PZ-7 and PZ-8a (PZ-8a is approximately 150 feet from the river).

Hydrographs in Figures I-4 and I-5 illustrate the continuous water level monitoring data for piezometers in the LSG unit, and in the bedrock, respectively. These hydrographs indicate that heads in both the LSG unit and the bedrock are substantially influenced by tidal fluctuations, and that tidal influence persists much farther inland than the tidal influence on the water table; the fluctuation in heads at PZ-12c and PZ-12d, located approximately 480 feet from the Hudson River, indicates a tidal efficiency of approximately 0.45 and 0.4, respectively, whereas there is no indication of tidal influence on the water table at this same location (see hydrograph for PZ-12a in Figure I-1).

The occurrence of substantial groundwater head fluctuations due to tides in the units below the fine-grained alluvial deposits (i.e., the LSG unit and bedrock) at locations hundreds of feet from the river, and the dissipation of tidal influence on the water table above and within the alluvial deposits within a relatively short distance of the river, indicate that the alluvial deposits are serving as a confining or semi-confining layer.

3.2.2.2 Groundwater Flow Patterns

Water Table/Shallow Groundwater

The water table is typically positioned in the lower part of the fill or the upper part of the deposits just beneath the fill (fine-grained alluvial deposits or glacial deposits). Figures 8A and 8B illustrate the elevation contours of the water table based on measurements from September 4, 2007 and November 26, 2007 (see Table 4); these represent generally low groundwater conditions, and generally high groundwater conditions, respectively. The contours were developed using water level data from only the shallow piezometers and wells at the site; i.e., those that straddle, or are just below, the water table. As discussed further below, due to significant vertical hydraulic gradients, most of the data from the piezometers or wells screened in deeper intervals are not representative of the water table. The water level (hydraulic head) values for the deeper intervals are posted on Figures 8A and 8B, but were not used in developing the contour lines. In tidally-influenced areas, the hydraulic gradient is constantly changing in response to the tides, as described earlier. Groundwater in such areas will travel at constantly changing rates and possibly undergo temporary changes in flow direction due to the fluctuating gradients. Because the water level data posted on the maps were collected over a period of a few hours, the water table elevations closest to the river, as well as the river level itself, appear to be somewhat erratic with respect to each other. Under these conditions, the net groundwater flow is best understood by considering the average flow direction and gradient. In developing the water table contours through such areas, without having continuous water level data on each well from which to estimate a mean water level for each well, the “net” water table surface was estimated by projecting it from areas of minimal tidal influence, through the tidally-influenced area, to where the mean tide elevation (approximately 1.25 to 1.5 ft NGVD based on the continuous monitoring data from Hudson River staff gauge SG-1) intersects the bed of the Hudson River.

The water table contour maps indicate that the greatest component of lateral groundwater flow is from the east-central portion of the site toward the west, with groundwater discharging to the Hudson River. There is also a northwestern-to-northern component of lateral flow toward the unlined, eastern segment of Wynantskill Creek. North of the unlined section of Wynantskill Creek, the water table slopes southward toward the creek, indicating that shallow groundwater in this area discharges to the creek. Hydrographs in Figures I-8 and I-9 of Appendix I illustrate that the water elevation in this part of Wynantskill Creek, near SG-5 and SG-6, is consistently below the water table measured in piezometers directly adjacent to the creek (PZ-12a and PZ-14). Thus, the unlined section of Wynantskill Creek appears to be a gaining stream. Where Wynantskill Creek is contained within the concrete channel, piezometers and wells on both sides of the channel indicate that the water table is below the level of the creek, and that groundwater flows under the creek in this area, toward the Hudson River. If there are places in the concrete channel where water can be transmitted though the concrete (e.g., cracks, joints, etc.), water would be expected to leak from within the channel to the subsurface, i.e., this segment is potentially a losing stream.

The hydrographs in Figures I-8 and I-9 also show that the water table near the unlined section of Wynantskill Creek responds to changes in creek level, although the water table level changes are a fraction of the change in creek level. The interaction between Wynantskill Creek and groundwater was further evaluated using water level data collected on staff gauges and piezometers proximal to the creek on October 20, 2007 following a heavy rainstorm, and subsequent high flow in Wynantskill Creek (see Table 4). During these measurements, the water table level in PZ-13 (12.81 ft NGVD) was slightly lower that the creek level measured at staff gauge SG-6 (12.82 ft NGVD). This indicates that the water level in the creek can locally rise above the water table elevation in the adjacent banks, and thus the creek can temporarily lose water to the subsurface in this section during increases in flow.

The water table contour maps also show a relative low in the water table in the southern portion of the site near the area of MW-13 and MW-29. This low area is also consistently identified by water level data collected prior to the SI. No specific feature has been identified to explain this low in the water table, but it is likely due to the presence of a subsurface zone or feature with a greater hydraulic conductivity than the surrounding material (e.g., a pipe, pipe bedding, coarser sediments, etc.) that leads to an area of lower hydraulic head. Reconnaissance of the shoreline in this area at low tide did not identify any likely features to which to attribute this low in the water table.

Hydrographs I-8 and I-9 also show that the water table near the unlined section of Wynantskill Creek responds to changes in creek level, although the water table level changes are a fraction of the change in creek level.

There are uncertainties regarding the depth and configuration of some of the buildings on site (e.g., the water gas building, the by-products building, etc.), and thus their potential effect on groundwater flow. The foundations are likely surrounded by fill, but it is not known whether or not they locally extend below the water table.

Vertical Flow and Flow in Deeper Units

Due to the contrast in the hydraulic conductivities (both K_h and K_v) between the different units, the water table map is only representative of flow conditions in the shallow groundwater. Water level data from the piezometer nest locations, where there are piezometers screened in different depth intervals within discrete units (e.g., water table in fill, alluvial deposits, LSG unit, and bedrock), were used to evaluate the vertical hydraulic gradients and thus the vertical component of groundwater flow, as well as the horizontal component of groundwater flow in the deeper units.

As mentioned above, on the water table contour maps provided in Figures 8A and 8B, the water elevation data from the deeper piezometers at each piezometer nest are posted for comparison. Except near the river, the water table is typically higher in elevation than the head in underlying units (see hydrographs in Figure I-6, I-7, and I-8 in Appendix I), demonstrating a downward vertical hydraulic gradient, and thus indicating a vertical component of groundwater flow downward, across the finer-grained alluvial deposits, to the LSG unit. The difference in head between the water table and deeper intervals, and thus the vertical hydraulic gradient, is relatively high across much of the site. Vertical hydraulic gradients were estimated using the available continuous water level monitoring data from the piezometer nests, i.e., locations PZ-5, PZ-8, and PZ-12 (see hydrographs in Figures I-6, I-7, and I-8 of Appendix I); these estimates are provided in Table 6. For the locations where water levels are influenced by the tides, a mean water level was estimated for this calculation; thus, the resulting value can be considered an average vertical hydraulic gradient over a tidal cycle. At locations PZ-8 and PZ-12, the vertical gradient from the water table to the LSG unit is approximately 0.10 and 0.33 feet/foot, respectively. These steep vertical gradients indicate that the alluvial deposits are serving as a confining or semi-confining layer that restricts vertical movement of groundwater to a large degree. As described earlier, the confining properties of the fine-grained alluvial deposits are further demonstrated by the persistence of high tidal efficiencies inland from the river in the intervals below these deposits relative to those above these deposits.

Closer to the river, the vertical gradient from the water table to the LSG unit is less; at location PZ-5 it is estimated to be approximately 0.02 to 0.03, which is approximately 10 times less than further inland. The lower hydraulic gradient at this location, and other locations near to the river, is likely related to their proximity to the western limit of the alluvial deposits near the river channel.

Water level measurements from the piezometer nests indicate that the groundwater head elevations and the degree of tidal influence in the shallow bedrock piezometers is very similar to that observed in piezometers screened in the LSG unit (see hydrographs in Figures I-6, I-7, and I-8 in Appendix I). Vertical hydraulic gradients were estimated as described above using the available continuous water level monitoring data from the piezometer nests and indicate relatively low vertical hydraulic gradients between these two intervals (see Table 6).

The similarity in hydraulic head between the bedrock and the LSG unit indicates that there is no substantial vertical flow component between the LSG and the bedrock. The degree and similarity in amplitude of the tidal fluctuation indicate that both the LSG unit and the bedrock have a high degree of hydraulic connectivity with the river.

Two bedrock piezometers were installed in the eastern part of the site where the LSG unit is not present above bedrock—PZ-19a and PZ-16d. Lacustrine deposits, till, and fill overlie bedrock at the PZ-19a location. Because PZ-19a is distant from the river (approximately 650 feet) and the elevation of its screen is well above the river, this well is not expected to be influenced by the tides, although continuous water level monitoring was not conducted at this location to confirm this. Based on a comparison to the water table elevation at this location, as measured in MW-8, there is an upward gradient in bedrock of approximately 0.03 to 0.08 feet per foot (see Table 6) based on the September and November 2007 water level data, respectively. At the PZ-16 location, fine-grained alluvial deposits overlie bedrock. The degree of tidal influence at this location, if any, is not known. Assuming minimal tidal influence, the water level data indicate a downward hydraulic gradient from the alluvial deposits to the underlying bedrock.

Summary of Groundwater Flow Conditions

Net groundwater flow is from the east central portion of the site westward toward the Hudson River, with a northwestward component of flow toward the unlined, eastern part of Wynantskill Creek. Groundwater flows under the concrete-lined part of the creek. Lateral groundwater flow within the overburden deposits occurs primarily in the fill and the LSG unit, and there is a downward component of groundwater flow across the fine-grained alluvial deposits from the water table to the LSG unit below. Lateral groundwater flow in the fill discharges to the Hudson River and, to a lesser degree the eastern, unlined segment of Wynantskill Creek. Groundwater within the LSG unit discharges to the Hudson River. The tide in the river results in a high degree, of water level fluctuation in the LSG and bedrock piezometers. The water table near the river also fluctuates, but generally to a lesser extent. This is a further indication that the fine-grained alluvial deposits above the LSG unit serve as a confining or semi-confining layer.

3.3 Extent of NAPL in Soil

During the SI, 55 soil borings were drilled and sampled for descriptive purposes, many to the top of the bedrock surface. These soil samples were examined for the presence of visible NAPL, and other field indicators of impact, in addition to the being examined for geologic characteristics. This information was used to further evaluate and delineate NAPL in the subsurface, both laterally and vertically. Discussed below are the findings with regard to the general distribution of NAPL at the site, followed by a discussion of NAPL delineation efforts in specific areas, per the SI Work Plan.

3.3.1 General Findings

Figure 9 and 10 illustrate locations and depths where NAPL/tar was encountered at soil borings and test pit locations from the SI and previous investigations. Refer to the soil boring logs and test pit logs in Appendices B and C for a description of the nature and degree of NAPL saturation at individual locations from the SI. Logs for soil borings and test pits from previous investigations are provided in the corresponding reports listed in the references in Section 6. Figure 9 shows the NAPL observations for the depth interval from 0 to 18 feet below ground surface (BGS), and Figure 10 shows these observations from the interval below 18 feet BGS. These intervals correspond to the depth designations in the July 2003 Record of Decision (ROD).

As shown on Figure 9, several of the NAPL observations made in the 0 to 18 foot interval are contained within subsurface structures; the intervals contained within structures are enclosed in a box and shaded in pink on Figure 9. Also, for observations where the noted impacts are in the form of hardened, brittle tar, the intervals are enclosed in a box and shaded in blue. Figure 9 also shows the approximate limits of tar observed along a section of the concrete channel wall of Wynantskill Creek. The tar has been observed over the top of the wall in one area, and along a horizontal joint in the concrete wall in another area.

Review of the data from the SI and previous investigations supports the conclusion that most NAPL/tar at the site occurs within the fill above either the fine-grained alluvial deposits or glacial deposits or, to a lesser extent, within the fine-grained alluvial deposits. In only four of the 66 borings that were drilled into the LSG unit (44 of which penetrated the full thickness of the unit) was NAPL observed (or suspected based on noted field observations) below these alluvial deposits, in the LSG unit. These locations, identified on Figure 10 by a box enclosing the depth interval and shaded on blue, are as follows: MW-26, DSB-15, PZ-12, and SB-39. A brief description of the nature of the observations in the LSG unit from each of these locations is provided below:

- **MW-26** - In the soil boring log "product?" is noted within the LSG unit at 48.6 feet BGS (approximately 11.5 feet below the alluvial deposits), accompanied by an increase in PID readings, thus indicating the potential for NAPL to be present. However, a soil sample was also collected from the interval immediately below (49-51 feet BGS) the potentially observed NAPL and submitted for laboratory analysis of PAHs. No PAHs were detected in the sample. In addition, an SI boring (SB-169) located in the vicinity of MW-26 was continuously sampled to a depth below the potentially observed NAPL and did not encounter any NAPL at or below this interval.
- **SB-39** - Blebs of tar-like material and product are described in the upper portion of the LSG unit, directly below the alluvial materials. At this location, the description of the LSG unit indicates it is transitional with the overlying finer-grained deposits, with layers of fine sand, clay, silty clay, and organics interspersed

with the coarser deposits (see Section 3.1.3 and 3.1.4 regarding gradational contact between LSG unit and fine-grained alluvial deposits). The NAPL observed in the upper LSG unit, extending from 37 to 44 feet BGS, is limited to this transition zone.

- **DSB-15** - Brown NAPL was observed coating the grains of coarse sand and gravel from 44 to 48 feet BGS, approximately 9 feet below the base of the fine-grained alluvial deposits.
- **PZ-12** - Brown NAPL was observed coating the grains of gravel from 32.4 and 34.5 feet BGS, at the top of the LSG unit. As with SB-39, the description of the LSG unit indicates it is transitional with the overlying finer-grained deposits, with layers of fine sand, silt, clay, and organics interspersed with the coarser deposits. The NAPL observed in the upper LSG is limited to this transition zone.

Note that at PZ-17, NAPL blebs were observed in the in fine-grained deposits (silt, clay, fine sand) from 34 to 36 feet BGS, directly above the LSG unit, within the lower alluvial deposits where they are transitional to the LSG unit below.

The soils with the greatest thicknesses of NAPL and high degrees of NAPL saturation are in the area west of the Water Gas Building, and to the west within the fill material that was placed in the former channel of Wynantskill Creek. A comparison of the position of the former channel as depicted in the base of fill contour map in Figure 7, and the occurrence of NAPL depicted in Figure 10, illustrate a correspondence between NAPL occurrence and the former channel, and illustrates that no NAPL has been observed west and north of the former channel. As described earlier, this former channel is bedded in the fine-grained alluvial deposits, i.e., the bottom and banks are formed by this relatively fine-grained material. The finding that no NAPL has been observed west and north of the former channel, and the general lack of NAPL observations below this material (except for the few instances described above), indicates that the alluvial deposits have effectively restricted the migration of the NAPL present in this area.

The results of NAPL gauging indicate that the NAPL typically does not enter the wells and piezometers at the site (see Appendix G for NAPL gauging results). Exceptions to this are MW-21 (LNAPL and DNAPL), MW-33 (DNAPL), and MW-39 (DNAPL), which have screened intervals in the fill contained in the buried channel of Wynantskill Creek, and adjacent to the tar liquor sump west of the Water Gas Building. At these wells, the surrounding deposits adjacent to the screen have a high degree of NAPL saturation. DNAPL and LNAPL have also been observed in MW-6R, located northeast of the Water Gas Building, and south of Wynantskill Creek. The soil boring at this location, and others nearby (e.g., PZ-12, SB-168), indicate the presence of several feet of NAPL in the base of the fill above the alluvial deposits, locally extending partly into the alluvial deposits. The screen for MW-6R is positioned within the former Wynantskill Channel, near its southern bank; as described in Section 3.1.4, the current channel overlies the former channel in this area. A thin layer (0.17 ft) of LNAPL and silt was observed on the water column in PZ-2 during the September 2007 gauging event, but not during subsequent gauging. PZ-2 is screened across the water table and adjacent to soil in which NAPL was observed. In the southern part of the site, a thin layer of LNAPL was encountered in well MW-29. The LNAPL observed in MW-29, and historically in other wells in this area (e.g., MW-30, MW-31, and MW-36) is attributed to a petroleum release from former underground storage tanks (USTs) that were operated by King Fuels (see Section 1.3).

3.3.2 Findings from Specific Areas

Provided below are discussions of the efforts to further delineate NAPL in specific areas, as proposed in the SI Work Plan. Figures 11A through 11F show the NAPL/tar observations at each location in these specific areas, indicating the depth interval where the NAPL/tar was encountered, and providing a description of the NAPL/tar.

3.3.2.1 Area North of Former 300,000 ft3 Gas Holder

The extent of NAPL in the area north of the 300,000 ft^3 gas holder and along the south bank of Wynantskill Creek was further evaluated. NAPL was previously observed in the subsurface in the vicinity of the 300,000 ft^3 gas holder, but not on the north side of Wynantskill Creek.

Soil borings PZ-12 and SB-168, positioned south of the creek, and PZ-11, located north of the creek, were drilled and sampled to supplement existing data (see Figure 11A). SB-176 was subsequently drilled adjacent to PZ-11 to evaluate the extent of a thin zone (0.1 foot) where NAPL was encountered at PZ-11.

NAPL is present in the base of the fill and upper alluvial deposits south of the present-day Wynantskill Creek, positioned within the buried portion of the former creek channel. It was encountered at depths of 14 feet BGS or deeper. North of Wynantskill Creek, NAPL was not encountered except at one location, PZ-11, where a 0.1 ft-thick zone of grain-coating NAPL was identified at the base of the fill within the north side of the buried former creek channel. The subsequently-added boring adjacent to PZ-11, i.e., SB-176, did not encounter NAPL at or below this interval.

The borings described above also provided further indications that the present Wynantskill Creek is bedded in fill that is within the buried channel of the former Wynantskill in this area (see cross-section in Figure 3).

3.3.2.2 Area Under e-Lot Building

Soil borings (SB-169, SB-170, and SB-171) were drilled and a test pit (TP-220) was excavated in the vicinity of the e-Lot building (formerly referred to as the Velocity Express building) to evaluate the extent of NAPL identified in the shallow fill in soil boring SB-25, and NAPL in deeper intervals in the buried former channel of Wynantskill Creek (see Figures 11B and 11C) as encountered in several borings drilled during previous investigations. Historical maps and findings from previous investigations indicated that the southern bank of the buried former creek channel may extend laterally under the northern portion of the building.

Summarized below are the findings relative to subsurface conditions and NAPL distribution in the area of the e-Lot building. These findings were previously summarized in a 9/25/07 memorandum from BC to National Grid, which was forwarded to NYSDEC.

Stratigraphy

The understanding of the nature, position and configuration of subsurface deposits in the vicinity of and beneath the e-Lot building is based on soil borings drilled adjacent to the building and information from historical drawings. The building is underlain by coarse-grained fill. The fill is underlain by the fine-grained alluvial deposits. Locally, gravel layers or lenses were encountered within these alluvial deposits. Below the alluvial deposits is the LSG unit.

Historical maps indicate that a segment of the buried former channel of Wynantskill Creek is positioned almost directly north of the building, oriented approximately east to west. Information from the soil borings confirms this; the depth to the top of the alluvial deposits becomes deeper, and the thickness of the fill becomes greater directly north of the building (see Figure 7), indicating that the former channel is bedded in the alluvial deposits and was subsequently filled. The borings also indicate that the crest of the southern bank of the buried channel is almost directly under the northern edge of the building.

NAPL Distribution

In a vertical sense, the NAPL in the area of the e-Lot building can be categorized as either relatively deep NAPL, present in the subsurface deposits, or as relatively shallow NAPL that is apparently contained in subsurface structures. The NAPL distribution is described in more detail below.

Deep NAPL - NAPL has been locally encountered near the building in the above-described subsurface deposits at depths ranging from as shallow as 19 feet BGS to as deep as 36 feet BGS, and typically in intervals ranging from less than a foot to several feet thick. In these intervals, the degree of NAPL saturation is variable: in some locations it is described as droplets, blebs, pockets, grain coatings or lenses within an interval; in others, soil samples are described as being saturated with both groundwater and NAPL or as completely saturated with NAPL. In each of the borings closest to the east side of the building (MW-22, PZ-15, SB-148, SB-155, and SB-161), NAPL was typically encountered near or along the contact between the fill and alluvial deposits, or within lenses of sand and gravel within the alluvial deposits. Near the west side of the building, NAPL was only encountered in borings located near the northwest corner of the building (SB-169, SB-136, and MW-26) at the base of the fill and the upper part of the alluvial deposits (as discussed in Section 3.3.1, an interval with NAPL was also potentially identified in the LSG unit in MW-26); no NAPL was identified in the borings further to the south (i.e., MW-23, MW-24, MW-25, and SB-16).

Based on these findings, it is possible that NAPL is present beneath the building in these deeper stratigraphic intervals, possibly as far south as the vicinity of SB-161. Borings near the north side of the building also indicate the presence of NAPL in the lower fill and upper alluvial deposits (i.e., SB-169, SB-171, and SB-140). In other borings in the area north of the building, NAPL was frequently encountered in the deeper portion (i.e., approximate center line) of the buried former channel of Wynantskill Creek.

Shallow NAPL - In one area north of the building, NAPL was also locally encountered at shallower depths, i.e., 2 to 12 feet BGS. This shallower NAPL is apparently contained in a subsurface concrete structure. Per the SI Work Plan, as modified by National Grid's 11/15/06 response to NYSDEC's comments on the SI Work Plan, test pit TP-220 was excavated in an area where a depression in the pavement had been noted. The time and extent of test pit activities at TP-220 were necessarily limited so as not to interfere with e-Lot's business operations. The first part of TP-220 extended from approximately 7 feet north of the e-Lot building to approximately 24 feet north of the building. The following summarizes the findings from this part of TP-220:

- A partially broken, 6-inch thick, concrete slab was encountered at about 2 feet below grade. Black viscous NAPL with a tar odor was observed on fragments of the concrete. Fill material and black viscous NAPL were present below the slab. The fill consisted of various materials (e.g., glass, scrap metal, pieces of wood, brick, chicken wire, sand, gravel, etc.). NAPL and water flowed into the excavation as it was deepened. The excavation extended to a depth of at least 7 feet below grade, where the excavation was terminated due to the inflow of NAPL and the time constraints described above. Based on the presence of the concrete slab, the presence of shallow NAPL and water (the water table in this area is approximately 20 feet BGS), and the lack of NAPL and groundwater in nearby borings at the same interval, it was surmised that the NAPL and fill were contained within a structure.

The excavator was then moved to the north for the second part of the test pit in an effort to evaluate whether a structure was present. The following summarizes the findings from this second part of TP-220:

- An intact concrete slab was encountered directly below the asphalt pavement. The northern and southern edges of the slab (which are oriented east to west) are approximately 12 feet apart. The southern edge of this slab is approximately 47 feet from the e-Lot building, and about 15 feet from the first (southern) part of TP-220 described above.

Boring SB-170 was subsequently drilled between TP-220 and the e-Lot building, approximately 4 to 5 feet north of the building. SB-170 was drilled to a depth of 12 feet BGS. It encountered fill material and black viscous NAPL similar to that in TP-220. The NAPL was observed as follows: covering fragments of concrete from 2.3 to 2.6 feet; in pockets within the fill from 6 to 8 feet; and comprising most of the split-spoon sample, along with trace amounts of fill material, from 10 feet to the bottom of the boring. A piece of concrete was recovered from the shoe of the split-spoon in the last sample (there was not an attempt to auger or split-spoon through the concrete at this depth due to a concern that doing so might allow the liquid contents of the structure to migrate outside the structure). Water saturation was encountered at approximately 6 feet BGS. Based on these findings it is likely that SB-170 is positioned within the same structure encountered at TP-220. An older boring drilled to the east of TP-220, SB-25, encountered similar conditions and is also likely within this structure.

Based on these findings, it appears that TP-220 and SB-170 encountered a subsurface structure, likely constructed of concrete, which contains fill material, NAPL and water. Pre-SI boring SB-25 appears to be positioned within this structure as well. The findings from SB-170 and SB-25 indicate that the bottom of the structure is approximately 12 feet BGS. Because the structure contains water, and the water table in this area is known to be positioned well below the structure (approximately 20 ft BGS), the structure is apparently isolating its contents from the surrounding deposits. This is further supported by the lack of shallow NAPL and groundwater in nearby borings at the same interval; e.g., SB-37, PZ-1, and SB-140. The eastern and western lateral limits of this structure lie east of borings SB-37 and PZ-1, and west of SB-140. The southern limit has not been defined, but extends at least to SB-170. To the north, a shallow concrete slab was identified in the north end of TP-220. This may be part of a separate structure, or the structure encountered to the south may extend northward, and under this slab. Directly to the north, test pit TP-16 was excavated during the RI, and consisted of two sections, “A” and “B”. Both sections of TP-16 encountered an 8-foot deep concrete vault containing fill and an approximately 1 foot thick layer of NAPL at the bottom, the NAPL having a similar character to that observed in TP-220. It is not clear whether the structures at TP-220 and TP-16 are separate or related structures.

A review of available historical plant drawings did not provide additional insight on the identification of the structure encountered in TP-220, although Figure 2-7 of the FS (IT Engineering of New York, March 2002) indicates the presence of a subsurface structure labeled as “Sump 4” in the approximate location of TP-220, and south of TP-16 (Sump 4 is also identified in the ROD as a structure that is to be addressed during Remedial Action (RA), and is shown in the approximate location of TP-220). However, Section 2.4 of the RI Report (Fluor Daniel GTI, October 1998) indicates that the structure encountered at TP-16 is “Sump (4)”. Thus, there appears to be a discrepancy between the RI Report and the FS report relative to the position of Sump 4. Noteworthy is that the available historical drawings indicate a sump structure formerly located in the approximate vicinity of TP-16.

3.3.2.3 Area South of MW-28R (West of Boiler House, South of Water Gas Building)

NAPL was observed at 18 to 21.1 feet BGS, near the base of the fill, during the advancement of the soil boring at MW-28R (see Figure 11D). The extent of visible NAPL west of the south section of the Water Gas Building, south of MW-28/28R, was further assessed in this area using data from soil boring SB-173, drilled south of MW-28R as part of the SI, in conjunction with information from other borings drilled during and prior to the SI. NAPL was encountered in SB-173 in a stratigraphic interval similar to that of MW-28R, i.e., the base of the fill above the fine-grained alluvial deposits. In other borings to the southwest and west, e.g., DSB-7 and DSB-15, NAPL was also identified at the base of the fill, similar to MW-28R.

3.3.2.4 Area East of Boiler House/Southeast of Water Gas Building

As a result of the observation of NAPL in the soil at SB-152 from 8 to 10 feet BGS, the extent of NAPL in the area east of the Boiler House was further evaluated during the SI. Three soil borings--SB-165, SB-166, and SB-167--were advanced to the east of SB-152 around the perimeter of the southern 200,000 ft^3 gas holder to evaluate the horizontal and vertical limits of NAPL (see Figure 11E). Additional borings were drilled during the SI to further evaluate geologic characteristics of this area, including the elevation of the top of bedrock and the extent of NAPL identified in the fill at MW-38 and SB-153; these borings include BRC-2, SB-174, and SB-177.

As depicted on Figure 11E, in the area east of SB-152, the occurrence of NAPL is sporadic; NAPL was identified in only limited intervals in SB-166 and PZ-19a. Other borings/test pits in which no NAPL was encountered are present between these borings. The NAPL, where present, was typically not encountered until a depth of 8 feet BGS, except at PZ-19a, where it was encountered at 6.7 feet BGS. The NAPL previously encountered at MW-38 and SB-153 was not found to extend further south and southeast.

3.3.2.5 Area North and East of By-Products Building

The extent of NAPL in the area north and east of the By-Products Building, as previously identified in TP-122, SB-17, and TP-202, was further evaluated. Test pits were excavated and borings drilled to examine the soil for visible NAPL. Three soil borings, SB-172, DSB-9, and DSB-10 were completed north of the previously observed NAPL (see Figure 11F). Test pits TP-217 and TP-218 were also excavated in this area to support the additional NAPL delineation.

Observations in SB-172 and DSB-9 indicate that NAPL may extend from the area of TP-122 approximately 40 feet to the northwest and 20 feet to the east within the lower part of the fill. Observations in TP-217 did not indicate the presence of this NAPL further to the north. A shallow layer of brittle tar was encountered in TP-217, but is not considered related to the NAPL identified further south. A sample of soil collected from the intervals from 3.5 to 4.5 feet BGS and 4.5 to 6.0 feet BGS at TP-217 indicated total PAH concentrations in the soil of 3.8 and 0.98 mg/kg, respectively (see Table 7). No NAPL was observed in test pit TP-218 and boring DSB-10, indicating that the impacts identified in TP-202 and DSB-9 do not extend to this area. A sample collected from the interval from 1.0 to 2.5 feet BGS at TP-218 indicated total PAH concentrations in the soil of 54 mg/kg (the total PAH concentration in the duplicate sample from this interval 61 mg/kg).

3.4 Subsurface Structures

During the SI, certain subsurface structures were further evaluated. The findings are described below.

3.4.1 Concrete Vault (“Junk Pit”)

A historical structure referred to as the “junk pit” was identified in previous investigations near the south end of the site and is identified in the ROD as an underground vault. During the RI, test pit TP-12 (see Figure 9) was excavated in this area. On the test pit log included in the RI Report, no subsurface structure was identified, however, debris and product were noted as being observed. An additional test pit, TP-219, was excavated in this location to further assess the contents of the junk pit and the fill surrounding the junk pit. The test pit identified a concrete vault in the subsurface, with dimensions of approximately 30 feet long (north-to-south), by 10 feet wide, by 6 feet deep (see test pit log in Appendix C). The structure contains fill. Viscous black NAPL with a strong fuel odor was identified at about 4.5 feet BGS within the vault. No NAPL was observed in excavations outside of the structure.

3.4.2 Vault North of e-Lot Building

Per the SI Work Plan, as modified by National Grid's 11/15/06 response to NYSDEC's comments on the SI Work Plan, test pit TP-220 was excavated in an area where a depression in the pavement had been noted directly north of the e-Lot building (see Figures 9 and 11B). A subsurface concrete vault was identified at this location, as discussed previously in Section 3.3.2.2 in the context of subsurface conditions near the e-Lot building. NAPL (coal tar) was identified in the vault; the NAPL appears to be contained in the structure. A detailed description of the investigative findings in the vicinity of this vault is provided in Section 3.3.2.2.

3.4.3 Structure Near Area of PZ-22

A potential subsurface structure was encountered when attempting to install piezometers for the PZ-22 piezometer nest. At several boring locations east of PZ-22c (the initial boring in the nest), concrete, rebar and brick were encountered at approximately 10 feet, causing split-spoon and auger refusal. There was about 1 foot of water perched above the point of refusal. The samples had a sheen and a tar odor. Based on a review of available historical drawings, this feature appears to be located in the vicinity of a buried water tank and a sump associated with a former coke quenching station. In a 7/23/07 e-mail to NYSDEC, National Grid proposed in to excavate a test pit to evaluate this potential structure. NYSDEC concurred with the proposal. TP-221 was excavated to a depth of approximately 9 feet BGS (see Figure 9 and test pit log in Appendix C). The excavation indicated the presence of a concrete structure containing various fill materials. The concrete structure consists of connected concrete walls and beams. Water was encountered in the structure at approximately 7 feet BGS, indicating the structure, at least locally, can contain water, as the water table in this area is much deeper (over 20 ft BGS). The water had a weak to moderate petroleum odor. No NAPL was observed in association with this structure.

4. SUMMARY OF SI FINDINGS

Provided below is a summary of the findings based on the results and the SI and previous investigation activities at Area 2 of the Troy (Water Street) Site.

4.1 Geologic Setting

- Bedrock beneath the site is composed of black shale with pervasive, closely-spaced, scaly and planar cleavage surfaces. The cleavage surfaces, and the quartz veins that cut though the shale, dip moderately to steeply to the east. The top of bedrock surface is weathered to varying degrees. The surface of the bedrock slopes to the west and north with local irregularities (see Figures 3 and 4).
- Glacial deposits are present above the bedrock and are locally discontinuous (see Figures 3 and 5). These deposits include glacial till and lacustrine deposits; where they occur at the same location, the lacustrine deposits are above the till. The glacial till consists of poorly sorted mixtures of sand and gravel with varying amounts of silt and clay, and is typically dense and cohesive, but can be loose. The lacustrine deposits are typically fine-grained, ranging from silty clays to clayey silts, often with a trace amounts of fine sand. They are usually very thinly-bedded (varved), and are typically cohesive.
- The lower sand and gravel (LSG) unit is positioned above the glacial deposits and bedrock in the western portion of site (see Figure 3). The unit becomes thinner and ends toward the east. This unit is predominantly composed of coarse-grained sand and gravel with some cobbles. Locally, it contains finer sands, silt and clay. The upper contact of the LSG unit appears to be gradational with the overlying, fine-grained alluvial deposits.
- Finer-grained alluvial deposits overlie the LSG unit in the western part of the site, and overlie the glacial deposits or bedrock in the eastern part of the site (see Figure 3). They are absent on the easternmost side of the site. These deposits consist of layered organics, peat, silt, clay and fine sand and contain lenses of coarser sand and gravel. Adjacent to the Hudson River, the average grain size coarsens.
- Fill overlies the other deposits described above (see Figure 3). The fill is generally thinner in the east and thicker toward the west (see Figure 6). The fill is generally coarse-grained and is composed of various materials including sand, gravel, slag, cinders, and demolition debris. Finer-grained material (silt and clay) is locally present in the fill, but is typically not the predominant component.
- The buried former channel of Wynantskill Creek is bedded in the fine-grained alluvial deposits in the northern part of the site (see Figures 3 and 7). The course of this former channel is positioned under, and parallel to, the eastern, unlined section of the existing creek. Where the existing creek enters the concrete channel, the buried former channel turns south and then west toward the Hudson River. The fill is relatively thicker where it occupies the former channel.

4.2 Hydrostratigraphy and Groundwater Flow

- The fill and the LSG are the most permeable units, with a geometric mean horizontal hydraulic conductivity estimates (K_h) from slug tests of 3.9 x 10^{-3} cm/sec and 2.1 x 10^{-3} cm/sec, respectively.
- The fine-grained alluvial deposits are lower in permeability and form a semi-confining layer beneath the fill. The geometric mean K_h estimate of the alluvial deposits from slug tests, 3.7 x 10^{-4} cm/sec, is approximately an order of magnitude less than that of the fill and LSG unit. On a larger scale, the K_h of

the alluvial deposits is likely even less due to the discontinuous nature of the thin layers in these types of deposits. Due to the presence of alternating thin layers of peat, silt, clay and sand, the vertical hydraulic conductivity (K_v) is expected to be several orders of magnitude lower than the K_h.

- The glacial deposits (till and lacustrine) are also generally lower in permeability, with a geometric mean K_h of 4.8 x 10^{-4} cm/sec estimated from slug tests, and a laboratory-measured K_v (on a sample of lacustrine deposits) of 2.0 x 10^{-6} cm/sec. As with the alluvial deposits, the K_h estimates from the slug tests likely overestimates the K_h of these deposits on a larger scale.

- Water-bearing zones were encountered in upper 10 to 20 feet of bedrock; these zones are comprised by open fractures in low permeability shale.
- The water table is positioned in the fill or upper portions of alluvial deposits or glacial deposits (see Figure 3).
- Net groundwater flow is from the east central portion of the site westward toward the Hudson River, with a northwestward component of flow toward the unlined, eastern part of Wynantskill Creek (see Figure 8A and B). Groundwater flows under the concrete-lined part of the creek. Lateral groundwater flow within the overburden deposits occurs primarily in the fill and the LSG unit. Lateral groundwater flow in the fill discharges to the Hudson River, and to a lesser degree the eastern, the unlined segment of Wynantskill Creek. Groundwater within the LSG unit discharges to the Hudson River.
- Vertical hydraulic gradients are downward from the water table across the layer of alluvial deposits to the LSG unit. The large vertical gradient across this layer is a further indication of the low K_v of the alluvial deposits. The hydraulic head in the bedrock is similar to that in the LSG unit and thus the vertical hydraulic gradient between these units is low.
- Tidal fluctuations in the Hudson River result in a high degree of groundwater level (head) fluctuation in LSG and bedrock piezometers (see Figures in Appendix I). The water table near the river also fluctuates, but generally to a lesser extent. This is a further indication that the fine-grained alluvial deposits above the LSG unit serve as a confining or semi-confining layer.

4.3 Extent of NAPL in Soil

4.3.1 General Findings

- Most NAPL/coal tar present in the subsurface occurs within the fill above the finer-grained alluvial deposits or glacial deposits, or within the fine-grained alluvial deposits (see Figures 3 and 10). In only four (4) of 66 borings sampled into or through the LSG unit was NAPL encountered in the LSG unit.
- Subsurface NAPL is not present west and north of the buried former channel of Wynantskill Creek (see Figure 10.
- NAPL typically does not enter wells, except at a few locations screened in the fill of the buried Wynantskill Creek channel and adjacent to the tar liquor sump where the surrounding deposits have a high degree of NAPL saturation. In the southern area of the site, a thin layer of LNAPL is at times observed in some wells, and is related to the release of petroleum products from the former USTs in the area that were operated by King Fuels.

4.3.2 Specific Areas

4.3.2.1 Area North of Former 300,000 ft^3 Gas Holder

- NAPL is present in the base of the fill and upper alluvial deposits south of Wynantskill Creek, where the fill is positioned within the buried former channel of Wynantskill Creek that parallels and underlies the existing creek channel (see Figure 11A). The shallowest that NAPL was encountered was 14 feet BGS. North of Wynantskill Creek, NAPL was not encountered except at one location where a 0.1 ft-thick zone of grain-coating NAPL was observed at the base of the fill in the north side of buried former creek channel.

4.3.2.2 Area Under e-Lot Building

- **Deep NAPL** - NAPL was locally encountered near the building in the fill and alluvial deposits beginning at depths ranging from 19 feet BGS to 36 feet BGS (see Figures 11B and C). Where present, the NAPL is typically in intervals ranging from less than 1 foot to several feet thick with varying degrees of saturation; the NAPL occurs as droplets, blebs, pockets, grain coatings or lenses. North of the building, NAPL was frequently encountered in association with the deeper portion (i.e., center line) of the buried former channel of Wynantskill Creek. The crest of the southern bank of the buried creek channel is almost directly under the northern edge of the building.
- **Shallow NAPL** - In one area north of the building, NAPL was locally encountered in a subsurface concrete structure at shallower depths (2 to 12 feet BGS—see Figure 11B). This shallower NAPL is apparently contained in the structure.

4.3.2.3 Area South of MW-28R (West of Boiler House, South of Water Gas Building)

- NAPL was encountered in MW-28R near the base of the fill (18 to 21 ft BGS—see Figure 11D). NAPL was encountered in similar stratigraphic positions—i.e., in the base of fill and the uppermost fine-grained alluvial deposits--south of the boiler house and to the west toward the buried former channel of Wynantskill Creek.

4.3.2.4 Area East of Boiler House/Southeast of Water Gas Building

- NAPL occurs sporadically in this area (see Figure 11E). Where present, the NAPL was typically not encountered until a depth of 8 feet BGS or deeper.

4.3.2.5 Area North and East of By-Products Building

- No NAPL was encountered in borings and test pits northeast of this area (see Figure 11F). Also, PAH concentrations in soil samples from the test pits beyond the limits of the NAPL in this area ranged from 0.98 to 61 mg/kg.
- North of the By-Products building, NAPL was encountered within the fill at one location approximately 40 feet farther northwest (from ±4 to 7 feet BGS), and 20 feet farther east (from ±10 to 14 feet) than previously identified NAPL.

4.4 Subsurface Structures

- Viscous, black NAPL with a fuel odor was found to be contained within the subsurface concrete vault referred to as the "Junk Pit", located in the southern part of the site (see Figure 9). No NAPL was identified in the soil outside of this structure.
- Viscous black NAPL with a tar odor was identified in a concrete vault structure north of the e-Lot Building (see Figures 9 and 11B). The NAPL appears to be contained in the structure.
- The subsurface concrete structure encountered in the vicinity of piezometer nest PZ-22 contained fill (mostly demolition debris) and some water (see Figure 9). No NAPL was observed in association with this structure.

5. CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are made based on the information presented in the preceding sections of this report:

- The objectives of the SI have been met. The SI, and prior investigations, provided sufficient data to conduct the preliminary assessment of the feasibility of subsurface barrier systems as a potential component of the site remedy, and provided further delineation of the visible NAPL at the Site. Other than the additional groundwater quality data to be collected, no further data collection activities are believed necessary to support evaluation of remedial components. Depending on the potential modifications to the ROD-selected remedy, additional investigation may be required to support the remedial design.

The recommendations below are made based on the findings of the SI, as presented in Sections 3 and 4.

- As discussed with NYSDEC at the January 15, 2008 meeting, a groundwater quality evaluation is in progress that will assess groundwater quality in the LSG unit, as well as provide additional data for groundwater in shallower zones. The work plan for this assessment was provided to NYSDEC in a letter dated January 31, 2008; the work plan was subsequently modified by a February 6, 2008 email from National Grid responding to comments from NYSDEC. A technical memorandum summarizing the data, and their bearing on the remedy, will be prepared and submitted to NYSDEC. Results of this evaluation will also be used to modify, if necessary, the groundwater modeling efforts and the preliminary conclusions of the technical feasibility assessment of a subsurface barrier as a component of the remedy.

6. REFERENCES

Brown and Caldwell Associates, January 2007. “Health and Safety Plan for Supplemental Investigation and Interim Remedial Measures, Troy (Water Street) Site—Area 2”.

Brown and Caldwell Associates, January 2006. “In-Situ Chemical Oxidation Pilot Test Report, Troy (Water Street) Site, Troy, New York”.

Brown and Caldwell Associates, May 2006. “In-Situ Chemical Oxidation Post-Pilot Test Report, Troy (Water Street) Site-Area 2, Troy New York”.

Brown and Caldwell Associates, May 2006. “Supplemental Pre-Design Investigation Report, Troy (Water Street) Site—Area 2, Rensselaer County, New York”.

Brown and Caldwell Associates, September 2006. “Supplemental Investigation Work Plan, Troy (Water Street) Site—Area 2”.

Brown and Caldwell Associates, February 2004. “Pre-Design Investigation Report, Troy (Water Street) Site, Troy, New York”.

Fluor Daniel GTI, Inc. October 1998. “Remedial Investigation Report for Troy (Water Street) Site, Area 2”.

Foster Wheeler, November, 2002. “Generic Field Sampling Plan for Site Investigations at Non-Owned Former MGP Sites”.

Foster Wheeler, November 2002. “Generic Quality Assurance Project Plan for Site Investigations at Non-Owned Former MGP Sites”.

Groundwater Technology, Inc. October 1995. “Final Preliminary Site Assessment/Interim Remedial Measures Study for Troy (Water Street) New York (Area 2)”.

IT Engineering of New York, P.C., March 2002. “Final Feasibility Study Report, Troy Water Street Area 2”.

IT Corporation, March 2002. “Supplemental Phase II Data Report, Troy Water Street Area 2”.

IT Corporation, September 2000. “Troy Water Street Area 2, Supplemental Data Report”.

Letter, M. Geraci, National Grid to J. Spellman, P.E., NYSDEC, November 15, 2006 (response letter to NYSDEC’s comments on the SI Work Plan, which became an addendum to the SI Work Plan).

NYSDEC, February 2003. “Proposed Remedial Action Plan, NIMO Troy-Water Street MGP, Operable Unit No. 1, Area 2-Former Plant Site”.

NYSDEC, July 2003. “Record of Decision, NIMO-Troy-Water Street MGP Site, Operable Unit No.1, Area 2-Former Plant Site”.

TABLES

TABLE 1
INVESTIGATION ACTIVITY LOCATIONS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE, AREA 2
TROY, NEW YORK

Location ID	Pre-SI Wells Used in Transects and Piezometer Nests	DATA GAPS/DATA OBJECTIVES: Evaluate Stratigraphy & Hydrogeo Properties	Evaluate Depth to Bedrock Surface	Evaluate Vertical Gradients	Evaluate GW Flow Direction	Evaluate Tidal Fluctuations	Evaluate GW Interaction with Wynantskill Creek	Establish SW Levels and Gradient	Delineate Visible NAPL	Investigate Structure	Confirm Observations from Prior Investigations	FIELD SAMPLING: Field Screening	PAH Analysis	Grain Size Analysis	Shelby Tube Sample Vertical Permeability Test
Soil Borings															
BRC-1		X (2)	X								(6)	X			
BRC-2		X	X								X	X			
BRC-3		X	X								X	X			
DSB-1		X	X									X			
DSB-2		X	X									X			
DSB-3		X	X									X		X	
DSB-4		X	X									X			
DSB-5		X	X									X			
DSB-6		X	X									X			
DSB-7		X	X									X			
DSB-8		X	X									X			
DSB-9		X	X						X			X			
DSB-10		X	X									X			
DSB-11		X	X									X			
DSB-12		X	X									X			
DSB-13		X	X									X			

TABLE 1
INVESTIGATION ACTIVITY LOCATIONS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE, AREA 2
TROY, NEW YORK

Location ID	Pre-SI Wells Used in Transects and Piezometer Nests	DATA GAPS/DATA OBJECTIVES: Evaluate Stratigraphy & Hydrogeo Properties	Evaluate Depth to Bedrock Surface	Evaluate Vertical Gradients	Evaluate GW Flow Direction	Evaluate Tidal Fluctuations	Evaluate GW Interaction with Wynantskill Creek	Establish SW Levels and Gradient	Delineate Visible NAPL	Investigate Structure	Confirm Observations from Prior Investigations	FIELD SAMPLING: Field Screening	PAH Analysis	Grain Size Analysis	Shelby Tube Sample Vertical Permeability Test
DSB-14		X	X									X			
DSB-15		X	X									X			
DSB-16		X	X									X		X	
DSB-17		X	X									X			
SB-165		X							X			X			
SB-166		X							X			X			
SB-167		X							X			X			
SB-168		X							X			X			
SB-169		X							X			X			
SB-170		X							X	XX		X			
SB-171		X							X			X			
SB-172		X							X			X			
SB-173		X							X			X			
SB-174 (1)		XX	XX						XX			XX			
SB-175		XX	XX						XX			XX			
SB-176		XX							XX			XX			
SB-177		XX	XX						XX			XX			
SB-178		XX							XX			XX			
SB-179		XX							XX			XX			

TABLE 1
INVESTIGATION ACTIVITY LOCATIONS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE, AREA 2
TROY, NEW YORK

Location ID	Pre-SI Wells Used in Transects and Piezometer Nests	DATA GAPS/DATA OBJECTIVES: Evaluate Stratigraphy & Hydrogeo Properties	Evaluate Depth to Bedrock Surface	Evaluate Vertical Gradients	Evaluate GW Flow Direction	Evaluate Tidal Fluctuations	Evaluate GW Interaction with Wynantskill Creek	Establish SW Levels and Gradient	Delineate Visible NAPL	Investigate Structure	Confirm Observations from Prior Investigations	FIELD SAMPLING: Field Screening	PAH Analysis	Grain Size Analysis	Shelby Tube Sample Vertical Permeability Test
Piezometers															
Transects															
Transect 1															
PZ-2	MW-23 is part of transect 1				X	X						X			
PZ-3					X	X						X			
Transect 2															
PZ-4	MW-10R is part of transect 2				X	X						X			
PZ-5 (Nest-R) (3, 4)		X	X	X	X	X						X			
Transect 3															
PZ-6 (Nest)		X	X	X	X	X						X			
PZ-7		X	X	X	X	X						X			
PZ-8 (Nest-R)		X	X	X	X	X						X		X	(7)
Transect 4															
PZ-9	MW-9R is part of transect 4	X	X	X	X	X	X					X			
Transect 5															
PZ-10					X		X					X			
PZ-11					X		X		X			X			
PZ-12 (Nest-R)		X	X	X	X		X		X			X			
Transect 6															
PZ-13					X		X					X			
PZ-14					X		X					X			

BROWN AND CALDWELL

Location ID	Pre-SI Wells Used in Transects and Piezometer Nests	DATA GAPS/DATA OBJECTIVES: Evaluate Stratigraphy & Hydrogeo Properties	Evaluate Depth to Bedrock Surface	Evaluate Vertical Gradients	Evaluate GW Flow Direction	Evaluate Tidal Fluctuations	Evaluate GW Interaction with Wynantskill Creek	Establish SW Levels and Gradient	Delineate Visible NAPL	Investigate Structure	Confirm Observations from Prior Investigations	FIELD SAMPLING: Field Screening	PAH Analysis	Grain Size Analysis	Shelby Tube Sample Vertical Permeability Test
Other Nests(5)															
PZ-15 (Nest)		X	X	X	X							X		X	(7)
PZ-16 (Nest-R)		X	X	X	X							X			
PZ-17 (Nest-R)	MW-21 is part of nest	X	X	X	X							X			
PZ-18 (Nest)		X	X	X	X							X		X	X
PZ-19 (Nest-R)	MW-8 is part of nest	X	X	X	X							X			
PZ-22 (Nest)		X	X	X	X							X			
Other															
PZ-20					X							X			
PZ-21					X							X			
Test Pits															
TP-217									X			X	X		
TP-218									X			X	X		
TP-219									X	X	X	X			
TP-220									X	X		X			
TP-221										X		X			

TABLE 1
INVESTIGATION ACTIVITY LOCATIONS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE, AREA 2
TROY, NEW YORK

Location ID	Pre-SI Wells Used in Transects and Piezometer Nests	DATA GAPS/DATA OBJECTIVES: Evaluate Stratigraphy & Hydrogeo Properties	Evaluate Depth to Bedrock Surface	Evaluate Vertical Gradients	Evaluate GW Flow Direction	Evaluate Tidal Fluctuations	Evaluate GW Interaction with Wynantskill Creek	Establish SW Levels and Gradient	Delineate Visible NAPL	Investigate Structure	Confirm Observations from Prior Investigations	FIELD SAMPLING: Field Screening	PAH Analysis	Grain Size Analysis	Shelby Tube Sample Vertical Permeability Test
Staff Gauges															
SG-1						X		X							
SG-2						X	X	X							
SG-3							X	X							
SG-4							X	X							
SG-5							X	X							
SG-6							X	X							

Notes:

(1) Location added during field activities are noted in itialics.

(2) X - data gap identified in SI Work Plan addressed; XX - Data gap addressed by boring/test pit added to original scope of SI Work Plan during field activities;

(3) - Multiple piezometers were installed within each nest with screens at varying positions dependending on materials encountered (see Table 2). Differentiation of piezometers within the nest were denoted by a suffix (e.g., PZ-16a, PZ-16b, etc.).

(4) - "R" indicates that a piezometer screened within the bedrock was included at this nest location.

(5) - Besides the piezometer nests listed below, four additional piezometer nests were completed at locations within transects 2, 3, 5, as noted in this table.

(6) - Boring was shifted from originally planned location due to a safety concern (see Section 2 of Report text).

(7) - Did not encounter till or lacustrine deposits at this location (see Section 2 of Report text) and thus, Shelby tube sample was not collected.

Abbreviations:

GW - Groundwater

SW - Surface Water

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation (1) (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Screened Interval Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Screened Interval Bottom (ft., NGVD)	Formation Adjacent to Screen(2)
SI Soil Borings										
BRC-1	1411521.42	707138.15	27.46	38.3	-10.8	--	--	--	--	--
BRC-2	1411364.30	707104.97	27.79	42.0	-14.2	--	--	--	--	--
BRC-3	1411504.35	706935.96	27.86	61.0	-33.1	--	--	--	--	--
DSB-1	1411563.16	707271.87	28.25	35.6	-7.4	--	--	--	--	--
DSB-2	1411652.98	706886.22	27.30	55.5	-28.2	--	--	--	--	--
DSB-3	1411643.42	706820.00	27.00	52.4	-25.4	--	--	--	--	--
DSB-4	1411638.02	706729.42	26.66	65.0	-38.3	--	--	--	--	--
DSB-5	1411483.02	706666.99	23.11	58.8	-35.7	--	--	--	--	--
DSB-6	1411451.06	706699.98	23.96	66.0	-42.0	--	--	--	--	--
DSB-7	1411310.50	706966.95	27.94	58.0	-30.1	--	--	--	--	--
DSB-8	1411212.45	706990.59	28.21	49.0	-20.8	--	--	--	--	--
DSB-9	1411174.70	707113.39	29.60	27.0	2.6	--	--	--	--	--
DSB-10	1411187.08	707233.61	28.11	20.0	8.1	--	--	--	--	--
DSB-11	1411263.61	707272.85	28.04	18.1	9.9	--	--	--	--	--
DSB-12	1411340.73	707309.37	28.23	18.0	10.2	--	--	--	--	--
DSB-13	1411444.68	707336.69	27.31	20.3	7.0	--	--	--	--	--
DSB-14	1411514.85	707172.30	27.69	32.0	-4.3	--	--	--	--	--
DSB-15	1411428.59	706933.96	28.31	64.2	-35.9	--	--	--	--	--
DSB-16	1411472.23	706750.67	27.75	65.5	-37.8	--	--	--	--	--
DSB-17	1411080.45	706982.40	29.20	50.2	-21.0	--	--	--	--	--
SB-165	1411335.34	707148.30	28.16	24.4	3.8	--	--	--	--	--
SB-166	1411358.73	707182.54	28.26	14.9	13.4	--	--	--	--	--
SB-167	1411405.53	707180.03	27.69	11.8	15.9	--	--	--	--	--
SB-168	1411615.93	707144.41	27.49	36.0	-8.5	--	--	--	--	--
SB-169	1411383.18	706739.78	27.95	52.0	-24.1	--	--	--	--	--
SB-170	1411408.49	706818.81	28.09	12.0	16.1	--	--	--	--	--
SB-171	1411412.76	706785.41	27.62	34.0	-6.4	--	--	--	--	--
SB-172	1411204.54	707069.41	28.65	26.0	2.7	--	--	--	--	--
SB-173	1411364.37	707011.47	26.99	28.0	-1.0	--	--	--	--	--

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation (1) (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Screened Interval Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Screened Interval Bottom (ft., NGVD)	Formation Adjacent to Screen(2)
SB-174	1411418.10	707147.11	27.61	28.3	-0.7	--	--	--	--	--
SB-175	1411539.39	707191.04	27.95	36.0	-8.1	--	--	--	--	--
SB-176	1411706.36	707172.72	22.96	36.0	-13.0	--	--	--	--	--
SB-177	1411398.44	707100.63	27.69	36.2	-8.5	--	--	--	--	--
SB-178	1411738.34	706989.13	23.99	30.0	-6.0	--	--	--	--	--
SB-179	1411743.04	706910.95	25.64	30.0	-4.4	--	--	--	--	--
Historical Soil Borings										
SB-11	1411762.51	707094.72	21.25	62.0	-40.8	--	--	--	--	--
SB-12	1411642.12	707036.88	26.00	66.8	-40.8	--	--	--	--	--
SB-13	1411639.76	706885.81	27.00	57.0	-30.0	--	--	--	--	--
SB-14	1411357.67	707219.83	28.26	12.5	15.8	--	--	--	--	--
SB-15	1411423.77	706698.14	25.00	64.5	-39.5	--	--	--	--	--
SB-16	1411170.01	706787.84	28.00	58.0	-30.0	--	--	--	--	--
SB-17	1411133.42	707115.96	28.70	18.3	10.4	--	--	--	--	--
SB-18	1410880.83	707016.82	28.70	29.8	-1.1	--	--	--	--	--
SB-19	1410700.25	706809.09	27.80	45.3	-17.5	--	--	--	--	--
SB-20	1410406.36	706924.76	27.50	34.8	-7.3	--	--	--	--	--
SB-21	1411885.26	707033.34	22.30	49.2	-26.9	--	--	--	--	--
SB-22	1411751.89	707012.10	22.00	56.0	-34.0	--	--	--	--	--
SB-23	1411559.50	706804.37	28.00	53.5	-25.5	--	--	--	--	--
SB-24	1411650.39	706923.58	26.60	52.0	-25.4	--	--	--	--	--
SB-25	1411423.77	706820.89	28.00	12.0	16.0	--	--	--	--	--
SB-26	1411454.46	706968.43	28.31	43.0	-14.7	--	--	--	--	--
SB-27	1411278.59	706999.11	27.40	49.3	-21.9	--	--	--	--	--
SB-28	1411034.27	707021.54	28.60	36.5	-7.9	--	--	--	--	--
SB-29	1410824.18	707071.11	28.10	--	--	--	--	--	--	--
SB-30	1410824.18	707098.26	28.10	--	--	--	--	--	--	--
SB-31	1411393.08	706615.52	6.00	--	--	--	--	--	--	--
SB-32	1411443.83	706607.26	6.00	--	--	--	--	--	--	--

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation (1) (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Screened Interval Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Screened Interval Bottom (ft., NGVD)	Formation Adjacent to Screen(2)
SB-33	1411545.34	707278.84	28.27	11.5	16.8	--	--	--	--	--
SB-34	1411513.47	707336.68	27.20	31.0	-3.8	--	--	--	--	--
SB-35	1411442.65	706628.50	25.00	--	--	--	--	--	--	--
SB-36	1410778.15	707111.24	28.00	--	--	--	--	--	--	--
SB-37	1411416.69	706793.74	27.62	54.0	-26.4	--	--	--	--	--
SB-38	1411491.05	706890.53	28.00	36.0	-8.0	--	--	--	--	--
SB-39	1411486.32	706981.41	27.10	63.8	-36.7	--	--	--	--	--
SB-40	1411494.59	706829.15	27.63	55.0	-27.4	--	--	--	--	--
SB-105	1411033.47	707011.67	28.60	38.0	-9.4	--	--	--	--	--
SB-105B	1411033.20	706995.01	28.60	18.0	10.6	--	--	--	--	--
SB-106	1411035.11	707031.00	28.60	34.0	-5.4	--	--	--	--	--
SB-107	1411025.28	707022.15	28.70	38.0	-9.3	--	--	--	--	--
SB-108	1411043.63	707020.84	28.50	39.3	-10.8	--	--	--	--	--
SB-108B	1411064.49	707018.97	28.30	10.0	18.3	--	--	--	--	--
SB-112	1411495.26	707349.22	27.50	24.0	3.5	--	--	--	--	--
SB-113	1411486.12	707339.90	28.00	28.0	0.0	--	--	--	--	--
SB-116	1411609.98	707115.19	27.10	40.0	-12.9	--	--	--	--	--
SB-117	1411599.93	707104.83	27.10	24.0	3.1	--	--	--	--	--
SB-118	1411582.01	707192.74	26.30	26.0	0.3	--	--	--	--	--
SB-119	1411564.18	707185.47	26.50	22.0	4.5	--	--	--	--	--
SB-122	1411628.13	706868.50	27.20	28.0	-0.8	--	--	--	--	--
SB-123A	1411662.40	706895.01	26.20	16.0	10.2	--	--	--	--	--
SB-123B	1411648.80	706896.10	26.60	16.0	10.6	--	--	--	--	--
SB-124	1411664.50	706966.89	26.52	38.0	-11.5	--	--	--	--	--
SB-125	1411646.16	707002.93	26.52	30.0	-3.5	--	--	--	--	--
SB-126A	1411536.30	706965.90	26.83	10.0	16.8	--	--	--	--	--
SB-126B	1411524.90	706956.50	27.10	10.0	17.1	--	--	--	--	--
SB-126C	1411512.40	706947.10	27.10	32.0	-4.9	--	--	--	--	--
SB-127	1411493.93	706859.16	28.00	40.0	-12.0	--	--	--	--	--
SB-128	1411460.95	706898.06	28.00	50.0	-22.0	--	--	--	--	--

BROWN AND CALDWELL

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation (1) (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Screened Interval Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Screened Interval Bottom (ft., NGVD)	Formation Adjacent to Screen(2)
SB-129	1411500.70	706934.43	27.86	26.0	1.9	--	--	--	--	--
SB-130	1411579.35	706864.23	27.50	30.0	-2.5	--	--	--	--	--
SB-131	1411528.61	706860.85	27.80	32.0	-4.2	--	--	--	--	--
SB-132	1411420.35	706600.36	5.00	30.0	-25.0	--	--	--	--	--
SB-133	1411364.53	706609.67	4.00	37.0	-33.0	--	--	--	--	--
SB-134	1411370.45	706662.10	24.57	34.0	-9.4	--	--	--	--	--
SB-135	1411334.93	706712.00	26.54	32.0	-5.5	--	--	--	--	--
SB-136	1411372.99	706741.60	27.95	32.0	-4.1	--	--	--	--	--
SB-137	1411475.32	706728.92	25.00	32.0	-7.0	--	--	--	--	--
SB-138	1411492.24	706766.13	27.50	32.0	-4.5	--	--	--	--	--
SB-139	1411460.95	706772.05	27.80	34.0	-6.2	--	--	--	--	--
SB-140	1411421.20	706845.63	28.10	40.0	-11.9	--	--	--	--	--
SB-141	1411497.31	706799.11	27.00	34.0	-7.0	--	--	--	--	--
SB-144	1411453.00	707286.68	28.00	18.2	9.8	--	--	--	--	--
SB-147	1411400.07	706905.86	28.00	44.0	-16.0	--	--	--	--	--
SB-148	1411362.72	706871.01	29.15	40.0	-10.9	--	--	--	--	--
SB-151	1411408.20	707110.60	27.69	26.0	1.7	--	--	--	--	--
SB-152	1411356.10	707105.43	27.79	14.0	13.8	--	--	--	--	--
SB-153	1411428.00	707082.50	27.93	15.0	12.9	--	--	--	--	--
SB-154	1411506.10	707191.90	27.69	17.0	10.7	--	--	--	--	--
SB-155	1411325.10	706868.75	28.50	40.0	-11.5	--	--	--	--	--
SB-156	1411001.18	707025.66	29.03	35.4	-6.4	--	--	--	--	--
SB-157	1411073.76	707022.49	28.30	30.0	-1.7	--	--	--	--	--
SB-158	1411650.15	706845.70	27.00	34.0	-7.0	--	--	--	--	--
SB-159	1411377.65	706900.61	28.70	42.0	-13.3	--	--	--	--	--
SB-160	1411541.08	707175.14	27.95	26.0	2.0	--	--	--	--	--
SB-161	1411287.26	706895.42	28.30	40.0	-11.7	--	--	--	--	--
SB-162	1411581.62	707088.48	26.70	26.0	0.7	--	--	--	--	--
SB-163	1411194.27	706929.04	27.60	38.0	-10.4	--	--	--	--	--
SB-164	1411131.92	707019.33	28.30	30.0	-1.7	--	--	--	--	--

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation [1] (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Screened Interval Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Screened Interval Bottom (ft., NGVD)	Formation Adjacent to Screen[2]
SI Piezometers										
Transects										
Transect 1										
PZ-2	1411190.45	706695.44	26.64	32.0	-5.4	18.5	28.5	8.14	-1.86	Fill
PZ-3	1411192.59	706731.79	27.75	31.0	-3.3	19.0	29.0	8.75	-1.25	Fill/Alluvial Deposits
Transect 2										
PZ-4	1411393.89	706605.72	6.14	17.0	-10.9	5.0	15.0	1.14	-8.86	Fill/Alluvial Deposits
PZ-5a	1411417.06	706697.20	24.14	28.0	-3.9	16.0	26.0	8.14	-1.86	Fill
PZ-5b	1411423.21	706696.65	23.75	34.0	-10.3	32.0	34.0	-8.25	-10.25	Alluvial Deposits
PZ-5c	1411413.95	706699.04	24.75	62.4	-37.7	49.0	54.0	-24.25	-29.25	Lower Sand & Gravel Unit
PZ-5d	1411424.63	706701.03	24.96	74.0	-49.0	65.5	70.5	-40.54	-45.54	Bedrock
Transect 3										
PZ-6a	1411520.92	706630.92	7.94	15.0	-7.1	5.0	15.0	2.94	-7.06	Fill/Alluvial Deposits
PZ-6b	1411520.81	706626.76	7.28	30.0	-22.7	20.0	30.0	-12.72	-22.72	Lower Sand & Gravel Unit (upper)
PZ-6c	1411516.23	706629.32	7.82	44.0	-36.2	33.0	38.0	-25.18	-30.18	Lower Sand & Gravel Unit (lower)
PZ-7	1411577.84	706740.97	28.06	36.0	-7.9	20.0	30.0	8.06	-1.94	Fill/Alluvial Deposits
PZ-8a	1411572.30	706775.86	27.88	30.0	-2.1	18.0	28.0	9.88	-0.12	Alluvial Deposits
PZ-8b	1411572.03	706781.58	27.52	51.0	-23.5	45.0	50.0	-17.48	-22.48	Lower Sand & Gravel Unit (upper)
PZ-8c	1411572.86	706770.52	28.11	66.0	-37.9	53.5	55.5	-25.39	-27.39	Lower Sand & Gravel Unit (lower)
PZ-8d	1411567.37	706772.13	27.72	83.4	-55.7	73.4	78.4	-45.68	-50.68	Bedrock
Transect 4										
PZ-9	1411712.22	706776.66	24.04	20.0	4.0	10.0	20.0	14.04	4.04	Fill/Alluvial Deposits
Transect 5										
PZ-10	1411741.85	707173.84	22.15	18.0	4.2	6.0	16.0	16.15	6.15	Fill/Alluvial Deposits
PZ-11	1411706.57	707151.55	23.22	18.0	5.2	7.0	17.0	16.22	6.22	Fill/Alluvial Deposits
PZ-12a	1411624.25	707118.71	27.53	25.0	2.5	13.0	23.0	14.53	4.53	Fill
PZ-12b	1411618.67	707122.77	27.74	32.0	-4.3	25.0	30.0	2.74	-2.26	Alluvial Deposits
PZ-12c	1411619.45	707111.76	27.90	56.0	-28.1	40.0	50.0	-12.10	-22.10	Lower Sand & Gravel Unit
PZ-12d	1411615.54	707117.26	27.93	65.0	-37.1	55.0	60.0	-27.07	-32.07	Bedrock

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation (1) (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Bottom (ft., NGVD)	Formation Adjacent to Screen(2)
Transect 6										
PZ-13	1411642.69	707332.77	22.42	20.0	2.4	7.0	17.0	15.42	5.42	Fill
PZ-14	1411561.61	707278.75	28.27	22.0	6.3	10.0	20.0	18.27	8.27	Fill/Alluvial Deposits
Other Nests										
PZ-15a	1411386.15	706876.31	29.15	25.0	4.2	13.0	23.0	16.15	6.15	Fill/Alluvial Deposits
PZ-15b	1411392.47	706876.03	29.06	30.0	-0.9	25.0	29.0	4.06	0.06	Alluvial Deposits
PZ-15c	1411397.34	706874.28	29.12	56.8	-27.7	47.8	52.8	-18.68	-23.68	Lower Sand & Gravel Unit
PZ-16a	1410997.63	707009.82	29.18	24.0	5.2	12.0	24.0	17.18	5.18	Fill/Alluvial Deposits (upper)
PZ-16b	1410982.62	707009.32	29.33	32.5	-3.2	30.5	32.5	-1.17	-3.17	Alluvial Deposits (middle)
PZ-16c	1410989.94	707009.19	29.22	40.4	-11.2	34.0	39.0	-4.78	-9.78	Alluvial Deposits (lower)
PZ-16d	1410988.68	707016.12	29.48	66.5	-37.0	56.0	66.0	-26.52	-36.52	Bedrock
PZ-17a	1411531.84	706909.13	27.98	38.8	-10.8	34.8	36.8	-6.82	-8.82	Alluvial Deposits/Lower Sand & Gravel Unit
PZ-17b	1411540.11	706909.06	28.05	57.9	-29.9	42.0	52.0	-13.95	-23.95	Lower Sand & Gravel Unit
PZ-17c	1411540.16	706900.08	28.06	71.0	-42.9	61.0	66.0	-32.94	-37.94	Bedrock
PZ-18a	1411078.61	707120.89	28.87	12.0	16.9	4.0	11.0	24.87	17.87	Fill/Lacustrine
PZ-18b	1411085.10	707118.01	28.78	19.0	9.8	16.0	18.0	12.78	10.78	Lacustrine Deposits/Weathered Bedrock
PZ-19a	1411397.82	707267.04	29.03	33.5	-4.5	23.5	28.5	5.53	0.53	Bedrock
PZ-22a	1411565.72	706803.10	27.44	28.0	-0.6	16.0	26.0	11.44	1.44	Fill/Alluvial Deposits
PZ-22b	1411556.74	706807.24	27.53	43.0	-15.5	36.0	41.0	-8.47	-13.47	Lower Sand & Gravel Unit (upper)
PZ-22c	1411570.58	706804.93	27.48	59.5	-32.0	50.0	55.0	-22.52	-27.52	Lower Sand & Gravel Unit (lower)/Glacial Till
Other										
PZ-20	1411309.11	706954.59	28.36	24.0	4.4	12.0	22.0	16.36	6.36	Fill/Alluvial Deposits
PZ-21	1411293.96	707144.49	28.17	23.3	4.9	12.8	22.8	15.37	5.37	Lacustrine Deposits/Glacial Till
SI Well Replacements										
MW-14R	1410655.59	707105.14	28.22	17.0	11.2	4.5	14.5	23.72	13.72	Fill/Lacustrine Deposits/Glacial Till
MW-35R	1411648.91	706881.21	27.53	25.0	2.5	13.0	23.0	14.53	4.53	Fill/Alluvial Deposits

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation (1) (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Bottom (ft., NGVD)	Formation Adjacent to Screen(2)
Existing Monitoring Wells										
MW-2	1411501.59	707335.23	27.20	26.0	1.2	9.0	24.0	18.20	3.20	Fill/Lacustrine Deposits
MW-3	1411477.79	706684.49	22.70	50.0	-27.3	17.3	37.3	5.40	-14.60	Fill/Alluvial Deposits/Lower Sand & Gravel Unit
MW-4	1410993.01	706734.52	27.10	66.0	-38.9	36.0	51.0	-8.90	-23.90	Lower Sand & Gravel Unit
MW-5	1410395.60	706803.95	28.70	34.5	-5.8	17.5	32.5	11.20	-3.80	Fill
MW-6R	1411606.94	707109.93	27.10	34.0	-6.9	12.0	32.0	15.10	-4.90	Fill/Alluvial Deposits
MW-7	1411527.46	707090.38	26.91	25.0	1.9	10.0	25.0	16.91	1.91	Fill/Alluvial Deposits
MW-8	1411403.79	707278.19	29.23	18.0	11.2	8.0	18.0	21.23	11.23	Alluvial/Lacustrine Deposits/Weathered Bedrock
MW-9R	1411641.72	706739.50	26.43	36.0	-9.6	14.0	34.0	12.43	-7.57	Alluvial Deposits
MW-10R	1411402.64	706636.75	11.08	22.0	-10.9	5.0	20.0	6.08	-8.92	Fill/Alluvial Deposits
MW-11	1411365.07	707379.55	23.79	10.0	13.8	5.0	10.0	18.79	13.79	Lacustrine Deposits
MW-12	1410748.76	706792.77	27.88	40.0	-12.1	18.0	38.0	9.88	-10.12	Fill/Alluvial Deposits/Lower Sand & Gravel Unit
MW-13	1410675.00	706939.78	28.56	35.0	-6.4	13.0	33.0	15.56	-4.44	Alluvial Deposits
MW-15	1410541.02	706799.55	29.22	37.0	-7.8	15.0	35.0	14.22	-5.78	Fill/Alluvial Deposits/Lower Sand & Gravel Unit
MW-16	1410387.73	707008.47	27.75	34.0	-6.3	12.0	32.0	15.75	-4.25	Fill/Alluvial Deposits
MW-17	1411768.08	706914.45	25.94	30.0	-4.1	7.0	27.0	18.94	-1.06	Fill/Alluvial Deposits
MW-18	1410880.58	707027.74	28.93	29.3	-0.4	5.0	20.0	23.93	8.93	Fill/Alluvial Deposits
MW-19	1411038.94	706926.85	28.70	50.0	-21.3	15.0	30.0	13.70	-1.30	Fill/Alluvial Deposits
MW-20	1410971.79	707120.82	28.07	11.0	17.1	6.0	11.0	22.07	17.07	Fill
MW-21	1411540.52	706918.73	27.16	32.0	-4.8	10.0	30.0	17.16	-2.84	Fill
MW-23	1411192.01	706772.16	27.73	29.0	-1.3	12.5	28.0	15.23	-0.27	Fill
MW-24	1411254.77	706762.82	27.89	63.0	-35.1	17.0	32.0	10.89	-4.11	Fill/Alluvial Deposits
MW-25	1411299.73	706753.75	27.65	59.0	-31.4	15.0	30.0	12.65	-2.35	Fill/Alluvial Deposits
MW-26	1411355.82	706721.86	26.54	59.0	-32.5	17.0	32.0	9.54	-5.46	Fill/Alluvial Deposits
MW-27	1411589.91	706932.49	27.00	63.0	-36.0	6.0	31.0	21.00	-4.00	Fill/Alluvial Deposits
MW-28R	1411417.45	707003.68	26.58	30.0	-3.4	13.0	28.0	13.58	-1.42	Fill/Alluvial Deposits
MW-29	1410680.28	706861.91	29.00	40.0	-11.0	20.0	40.0	9.00	-11.00	Fill/Alluvial Deposits/Lower Sand & Gravel Unit
MW-31	1410602.39	706834.16	29.14	35.0	-5.9	15.0	35.0	14.14	-5.86	Fill/Alluvial Deposits
MW-32	1411494.22	706827.34	27.63	34.0	-6.4	12.0	32.0	15.63	-4.37	Fill/Alluvial Deposits
MW-33	1411479.42	706887.67	27.95	40.0	-12.1	16.0	36.0	11.95	-8.05	Fill/Alluvial Deposits

TABLE 2
SOIL BORING, PIEZOMETER, AND MONITORING WELL BACKGROUND INFORMATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Survey Coordinates NY State Plane - NAD 83 Northing	Easting	Ground Surface Elevation (1) (ft., NGVD)	Total Depth of Borehole (ft., BGS)	Total Depth Elevation (ft., NGVD)	Screened Interval Top (ft., BGS)	Screened Interval Bottom (ft., BGS)	Screened Interval Top (ft., NGVD)	Screened Interval Bottom (ft., NGVD)	Formation Adjacent to Screen(2)
MW-34	1411547.84	706879.46	27.56	36.0	-8.4	14.0	34.0	13.56	-6.44	Fill/Alluvial Deposits
MW-36	1410662.13	706783.05	28.00	40.0	-12.0	12.0	32.0	16.00	-4.00	Fill
MW-37	1411419.12	706699.68	23.69	36.0	-12.3	14.0	34.0	9.69	-10.31	Fill/Alluvial Deposits
MW-38	1411430.08	707085.12	27.93	34.0	-6.1	12.0	32.0	15.93	-4.07	Fill/Alluvial Deposits
MW-39	1411556.42	706966.20	26.83	34.0	-7.2	12.0	32.0	14.83	-5.17	Fill/Alluvial Deposits
MW-124B	1411660.95	706978.75	26.52	30.0	-3.5	15.0	25.0	11.52	1.52	Fill
MW-134B	1411369.23	706671.34	24.57	32.0	-7.4	20.5	30.5	4.07	-5.93	Fill
PZ-1	1411452.35	706785.65	27.80	57.0	-29.2	15.0	31.0	12.80	-3.20	Fill/Alluvial Deposits
RW-1	1410992.94	707142.19	27.69	14.4	13.3	3.0	13.0	24.69	14.69	Fill/Lacustrine Deposits
RW-2	1411050.23	707198.81	27.59	10.0	17.6	3.0	9.5	24.59	18.09	Fill/Lacustrine Deposits
<u>Historical Monitoring Wells</u>										
MW-1	1411829.79	706713.48	25.70	57.4	-31.7	9.0	23.0	16.70	2.70	Fill/Alluvial Deposits
MW-6	1411609.31	707110.30	27.27	31.0	-3.7	9.0	29.0	18.27	-1.73	Fill/Alluvial Deposits
MW-9	1411645.02	706739.17	26.57	35.0	-8.4	13.0	33.0	13.57	-6.43	Fill/Alluvial Deposits
MW-10	1411403.51	706636.45	10.68	24.0	-13.3	5.0	20.0	5.68	-9.32	Fill/Alluvial Deposits
MW-14	1410643.73	707167.05	25.49	8.5	17.0	3.5	8.5	21.99	16.99	Lacustrine Deposits/Glacial Till
MW-22	1411393.30	706870.05	28.50	53.7	-25.2	15.5	25.5	13.00	3.00	Fill/Alluvial Deposits
MW-28	1411419.21	707002.52	27.00	46.1	-19.1	8.0	23.0	19.00	4.00	Fill
MW-30	1410719.13	706823.25	28.50	38.0	-9.5	18.0	38.0	10.50	-9.50	Fill/Alluvial Deposits/Lower Sand & Gravel Unit
MW-35	1411650.01	706880.04	26.65	34.0	-7.4	12.0	32.0	14.65	-5.35	Fill/Alluvial Deposits

<u>Notes:</u>
(1) - For monitoring wells, value presented reflects ground surface elevation at time of installation, if available. Otherwise, elevation from survey completed closest to time of installation is presented. For historical soil borings, topographic interpolation, or data from adjacent location is presented.
(2) - For wells screens that are positioned to straddle the water table, the saturated formation(s) adjacent to the screen depends on the height of the water table at any given time.
-- Data not available or not applicable
NGVD - National Geodetic Vertical Datum
BGS - Below Ground Surface

TABLE 3
SUMMARY OF IN-SITU HYDRAULIC CONDUCTIVITY TEST RESULTS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)	Tested By	Test Method	Formation(s) Screened[1]	Saturated Formation(s) Adjacent to Screen at Time of Slug Test[2]	Test Date	Hydraulic Conductivity (cm/sec)
Fill							
RW-2	3-9.5	BC	Rising Head	Fill(6.2)/Lacustrine(0.3)	Fill/Lacustrine	8/24/2007	2.74E-03
MW-21	10-30	BC	Rising Head	Fill(20)	Fill	8/24/2007	2.36E-04
MW-27	6-31	BC	Rising Head	Fill(24.7)/Alluvial Dep.(0.3)	Fill/Alluvial Dep.	8/24/2007	1.83E-03
PZ-2	18.5-28.5	BC	Rising Head	Fill(10)	Fill	8/22/2007	5.88E-03
PZ-3	19-29	BC	Rising Head	Fill(9.8)/Alluvial Dep.(0.2)	Fill/Alluvial Dep.	8/22/2007	1.25E-02
PZ-4	5-15	BC	Rising Head	Fill(5)/Alluvial Dep.(5)	Fill/Alluvial Dep.	8/23/2007	2.90E-03
PZ-5a	16-26	BC	Rising Head	Fill(10)	Fill	8/23/2007	1.94E-03
PZ-6a	5-15	BC	Rising Head	Fill(5.8)/Alluvial Dep.(4.2)	Fill/Alluvial Dep.	8/23/2007	4.84E-03
PZ-10	6-16	BC	Rising Head	Fill(8.3)/Alluvial Dep.(1.7)	Fill/Alluvial Dep.	8/23/2007	4.22E-02
PZ-11	7-17	BC	Rising Head	Fill(9.7)/Alluvial Dep.(0.3)	Fill/Alluvial Dep.	8/23/2007	5.58E-04
PZ-12a	13-23	BC	Rising Head	Fill(10)	Fill	8/22/2007	2.57E-02
PZ-13	7-17	BC	Rising Head	Fill(10)	Fill	8/23/2007	1.11E-02
PZ-14	10-20	BC	Rising Head	Fill(8.7)/Alluvial Dep.(1.3)	Fill/Alluvial Dep.	8/22/2007	5.10E-03
PZ-15a	13-23	BC	Rising Head	Fill(9.8)/Alluvial Dep.(0.2)	Fill/Alluvial Dep.	8/23/2007	9.22E-03
PZ-18a	4-11	BC	Rising Head	Fill(6.6)/Lacustrine(0.4)	Fill/Lacustrine	8/24/2007	3.09E-05
PZ-20	12-22	BC	Rising Head	Fill(8.5)/Alluvial Dep.(1.5)	Fill/Alluvial Dep.	8/22/2007	5.62E-03
MW-22	15.5-25.5	BC	Rising Head	Fill(14.5)/Alluvial Dep.(0.5)	Fill/Alluvial Dep.	1/23/2004	4.33E-02
MW-25	15-30	BC	Rising Head	Fill(14)/Alluvial Dep.(1)	Fill/Alluvial Dep.	1/22/2004	2.19E-03
MW-35R	13-23	BC	Rising Head	Fill(8.5)/Alluvial Dep.(1.5)	Fill/Alluvial Dep.	8/22/2007	1.62E-02
						Geometric Mean	3.93E-03
Fine-Grained Alluvial Deposits							
PZ-5b	32-34	BC	Rising Head	Alluvial Dep.(2)	Alluvial Deposits	8/23/2007	6.76E-04
PZ-8a	18-28	BC	Rising Head	Fill(4)/Alluvial Dep.(6)	Alluvial Deposits	8/21/2007	2.78E-04
PZ-9	10-20	BC	Rising Head	Fill(4.3)/Alluvial Dep.(5.7)	Alluvial Deposits	8/23/2007	2.58E-04
PZ-12b	25-30	BC	Rising Head	Alluvial Dep.(5)	Alluvial Deposits	8/22/2007	1.39E-04
PZ-16a	12-24	BC	Rising Head	Fill(2.6)/Alluvial(9.4)	Alluvial Deposits	8/22/2007	1.80E-04
PZ-16b	30.5-32.5	BC	Rising Head	Alluvial Dep.(2)	Alluvial Deposits	8/22/2007	1.83E-03
PZ-16c	34-39	BC	Rising Head	Alluvial Dep.(5)	Alluvial Deposits	8/22/2007	6.11E-04

BROWN AND CALDWELL

TABLE 3
SUMMARY OF IN-SITU HYDRAULIC CONDUCTIVITY TEST RESULTS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)	Tested By	Test Method	Formation(s) Screened[1]	Saturated Formation(s) Adjacent to Screen at Time of Slug Test[2]	Test Date	Hydraulic Conductivity (cm/sec)
PZ-22a	16-26	BC	Rising Head	Fill(3.3)/Alluvial Dep.(6.7)	Alluvial Deposits	8/23/2007	3.95E-04
MW-9	13-33	Fluor Daniel GTI	Rising Head	Fill(9)/Alluvial Dep.(11)	Alluvial Deposits	6/17/1998	1.78E-03
MW-19	15-30	BC	Rising Head	Fill(6)/Alluvial Dep.(9)	Alluvial Deposits	1/23/2004	7.80E-04
PZ-17a	34.8-36.8	BC	Rising Head	Alluvial Dep.(1.2)/Lower Sand&Gravel(0.8)	Alluvial Dep./Lower Sand&Gravel	8/24/2007	2.22E-05
						Geometric Mean	3.67E-04
Lower Sand & Gravel Unit							
MW-4	36-51	BC	Rising Head	Lower Sand&Gravel(15)	Lower Sand&Gravel	1/23/2004	1.71E-02
MW-4	36-51	Fluor Daniel GTI	Rising Head	Lower Sand&Gravel(15)	Lower Sand&Gravel	6/17/1998	4.07E-03
PZ-6b	20-30	BC	Rising Head	Lower Sand&Gravel(10)	Lower Sand&Gravel	8/23/2007	1.92E-02
PZ-6c	33-38	BC	Rising Head	Lower Sand&Gravel(5)	Lower Sand&Gravel	8/23/2007	6.98E-03
PZ-8b	45-50	BC	Rising Head	Lower Sand&Gravel(5)	Lower Sand&Gravel	8/21/2007	2.97E-03
PZ-12c	40-50	BC	Rising Head	Lower Sand&Gravel(10)	Lower Sand&Gravel	8/22/2007	1.28E-04
PZ-15c	47.8-52.8	BC	Rising Head	Lower Sand&Gravel(5)	Lower Sand&Gravel	8/23/2007	1.99E-04
PZ-17b	42-52	BC	Rising Head	Lower Sand&Gravel(10)	Lower Sand&Gravel	8/23/2007	5.16E-03
PZ-22b	36-41	BC	Rising Head	Lower Sand&Gravel(5)	Lower Sand&Gravel	8/23/2007	2.71E-04
PZ-22c	50-55	BC	Rising Head	Lower Sand&Gravel(1.3)/Till(3.7)	Lower Sand&Gravel/Till	8/21/2007	1.64E-03
						Geometric Mean	2.09E-03
Glacial Deposits (Lacustrine Deposits and Till)							
MW-8	8-18	BC	Rising Head	Alluvial Dep.(2)/Lacustrine(6)/Bedrock(2)	Lacustrine	1/23/2004	2.49E-05
MW-11	5-10	BC	Rising Head	Lacustrine(5)	Lacustrine	1/23/2004	6.90E-03
MW-14R	4.5-14.5	BC	Rising Head	Fill(2.6)/Lacustrine(4.3)/Till(3.1)	Lacustrine/Till	8/24/2007	1.26E-04
PZ-21	12.8-22.8	BC	Rising Head	Lacustrine(2.6)/Till(7.4)	Lacustrine/Till	8/22/2007	1.55E-03
PZ-18b	16-18	BC	Rising Head	Lacustrine(0.7)/Bedrock(1.7)	Lacustrine/Bedrock	8/24/2007	7.62E-04
						Geometric Mean	4.80E-04
Bedrock							
PZ-5d	65.5-70.5	BC	Rising Head	Bedrock(5)	Bedrock	8/23/2007	1.63E-03
PZ-8d	73.4-78.4	BC	Rising Head	Bedrock(5)	Bedrock	8/21/2007	1.30E-03
PZ-12d	55-60	BC	Rising Head	Bedrock(5)	Bedrock	8/22/2007	4.35E-03
PZ-16d	56-66	BC	Rising Head	Bedrock(10)	Bedrock	8/22/2007	1.05E-04

TABLE 3
SUMMARY OF IN-SITU HYDRAULIC CONDUCTIVITY TEST RESULTS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)	Tested By	Test Method	Formation(s) Screened[1]	Saturated Formation(s) Adjacent to Screen at Time of Slug Test[2]	Test Date	Hydraulic Conductivity (cm/sec)
PZ-17c	61-66	BC	Rising Head	Bedrock(5)	Bedrock	8/23/2007	1.69E-03
PZ-19	23.5-28.5	BC	Rising Head	Bedrock(5)	Bedrock	8/22/2007	2.85E-03
						Geometric Mean	1.29E-03
Other							
MW-2	9-24	BC	Rising Head	Fill(9)/Lacustrine(6)	Fill/Lacustrine	1/23/2004	4.34E-05
MW-3	17.2-37.2	BC	Rising Head	Fill(8.8)/Alluv. Dep.(10)/Lower Sand&Gravel(1.2)	Fill/Alluvial/Lower Sand&Gravel	1/23/2004	5.64E-03
MW-6	9-29	Fluor Daniel GTI	Falling Head	Fill(13)/Alluvial Dep.(7)	Fill/Alluvial Dep.	6/17/1998	1.82E-02
MW-6	9-29	Fluor Daniel GTI	Rising Head	Fill(13)/Alluvial Dep.(7)	Fill/Alluvial Dep.	6/17/1998	7.22E-03
MW-9[5]	13-33	Fluor Daniel GTI	Falling Head	Fill(9)/Alluvial Dep.(11)	Alluvial Deposits	6/17/1998	1.14E-02
MW-10	5-20	Fluor Daniel GTI	Falling Head	Fill(12.5)/Alluvial Dep.(2.5)	Fill/Alluvial Dep.	6/17/1998	1.49E-02
MW-10	5-20	Fluor Daniel GTI	Rising Head	Fill(12.5)/Alluvial Dep.(2.5)	Fill/Alluvial Dep.	6/17/1998	4.83E-03
MW-12	18-38	Fluor Daniel GTI	Rising Head	Fill(2)/Alluv. Dep.(16)/Lower Sand&Gravel(2)	Alluvial/Lower Sand&Gravel	6/17/1998	3.09E-02
MW-12	18-38	Fluor Daniel GTI	Rising Head	Fill(2)/Alluv. Dep.(16)/Lower Sand&Gravel(2)	Alluvial/Lower Sand&Gravel	6/17/1998	4.07E-03
MW-15	15-35	Fluor Daniel GTI	Rising Head	Fill(11)/Alluv. Dep.(6)/Lower Sand&Gravel(3)	Alluvial/Lower Sand&Gravel	6/17/1998	4.63E-03
MW-16	12-32	BC	Rising Head	Fill(8)/Alluvial Dep.(12)	Fill/Alluvial Dep.	1/23/2004	6.14E-04
MW-17	7-27	BC	Rising Head	Fill(12)/Alluvial Dep.(8)	Fill/Alluvial Dep.	1/23/2004	2.26E-02
MW-24	17-32	BC	Rising Head	Fill(11.5)/Alluvial Dep.(3.5)	Fill/Alluvial Dep.	1/22/2004	7.58E-02
MW-26	17-32	BC	Rising Head	Fill(11.5)/Alluvial Dep.(3.5)	Fill/Alluvial Dep.	1/22/2004	3.81E-03
PZ-7	20-30	BC	Rising Head	Fill(8)/Alluvial Dep.(2)	Fill/Alluvial Dep.	8/23/2007	7.04E-05

Notes:

(1) - Formation(s) adjacent to screened interval. Value presented in parentheses indicates length of screen in feet adjacent to listed formation(s).

(2) - Based on depth to water data collected prior to initiation of slug test, formation(s) listed indicates which formation(s) the slug test is representative of.

(3) - Tests listed under "Other" section are not considered representative of a distinct formation and thus were not used in the estimate of the geometric mean hydraulic conductivity.

(4) - Test tesults for MW-23, MW-124B, PZ-5c, and PZ-8c were not inluded in the table as the review of the test data indicates they are likely not representative of the formation. Suspect that early time recovery data were not recorded and/or that water level was affected by tidal fluctuation.

(5) - Falling head test results are less representative than rising head tests where the screen straddles the water table, as in MW-9. Rising head test result was included in the section above listing test results of fine-grained alluvial deposits.

TABLE 4
WATER LEVEL MEASUREMENTS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Reference Elevation(1) (ft., NGVD)	Screened Interval (ft., BGS)	9/4/2007 Depth to Water (ft., Below Reference)	9/4/2007 Water Elevation (ft., NGVD)	9/4/2007 LNAPL Thickness (ft.)	9/4/2007 Corrected Water Elevation (ft., NGVD)	10/20/2007(2) Depth to Water (ft., Below Reference)	10/20/2007(2) Water Elevation (ft., NGVD)	11/26/2007 Depth to Water (ft., Below Reference)	11/26/2007 Water Elevation (ft., NGVD)	11/26/2007 LNAPL Thickness (ft.)	11/26/2007 Corrected Water Elevation (ft., NGVD)
Piezometers												
Transects												
Transect 1												
PZ-2	28.30	18.5-28.5	26.10	2.20	0.17	2.32	NM	--	24.73	3.57	NA	NA
PZ-3	27.24	19-29	24.96	2.28	NA	NA	NM	--	23.13	4.11	NA	NA
MW-23	27.99	12.5-28	25.18	2.81	NA	NA	NM	--	24.43	3.56	NA	NA
Transect 2												
PZ-4	8.55	5-15	8.20	0.35	NA	NA	NM	--	8.83	-0.28	NA	NA
PZ-5a	23.59	16-26	22.93	0.66	NA	NA	NM	--	22.91	0.68	NA	NA
PZ-5b	23.36	32-34	23.94	-0.58	NA	NA	NM	--	24.3	-0.94	NA	NA
PZ-5c	24.21	49-54	25.81	-1.60	NA	NA	NM	--	25.04	-0.83	NA	NA
PZ-5d (BR PZ)	24.35	65.5-70.5	24.79	-0.44	NA	NA	NM	--	25.21	-0.86	(4)	NA
MW-37	24.23	14-34	22.05	2.18	NA	NA	NM	--	20.62	3.61	NA	NA
Transect 3												
PZ-6a	10.24	5-15	9.94	0.30	NA	NA	NM	--	10.57	-0.33	NA	NA
PZ-6b	8.90	20-30	9.03	-0.13	NA	NA	NM	--	9.89	-0.99	NA	NA
PZ-6c	9.68	33-38	9.80	-0.12	NA	NA	NM	--	10.67	-0.99	NA	NA
PZ-7	30.15	20-30	27.88	2.27	NA	NA	NM	--	27.71	2.44	NA	NA
PZ-8a	27.53	18-28	22.80	4.73	NA	NA	NM	--	27.1	0.43	NA	NA
PZ-8b	27.00	45-50	27.15	-0.15	NA	NA	NM	--	27.4	-0.40	NA	NA
PZ-8c	27.65	53.5-55.5	27.74	-0.09	NA	NA	NM	--	26.65	1.00	NA	NA
PZ-8d (BR PZ)	28.10	73.4-78.4	27.85	0.25	NA	NA	NM	--	28.15	-0.05	NA	NA
Transect 4												
PZ-9	26.66	10-20	17.84	8.82	NA	NA	17.65	9.01	17.61	9.05	NA	NA
MW-9R	29.76	14-34	26.71	3.05	NA	NA	25.65	4.11	25.75	4.01	NA	NA
Transect 5												
PZ-10	21.83	6-16	9.72	12.11	NA	NA	9.23	12.60	9.19	12.64	NA	NA
PZ-11	24.92	7-17	12.85	12.07	NA	NA	12.35	12.57	12.25	12.67	NA	NA
PZ-12a	29.63	13-23	18.23	11.40	NA	NA	17.30	12.33	17.51	12.12	NA	NA
PZ-12b	29.87	25-30	24.53	5.34	NA	NA	23.64	6.23	23.99	5.88	(4)	NA
PZ-12c	29.72	40-50	27.46	2.26	NA	NA	26.65	3.07	27.57	2.15	NA	NA

TABLE 4
WATER LEVEL MEASUREMENTS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

			9/4/2007				10/20/2007[2]		11/26/2007			
Location ID	Reference Elevation[1] (ft., NGVD)	Screened Interval (ft., BGS)	Depth to Water (ft., Below Reference)	Water Elevation (ft., NGVD)	LNAPL Thickness (ft.)	Corrected Water Elevation (ft., NGVD)	Depth to Water (ft., Below Reference)	Water Elevation (ft., NGVD)	Depth to Water (ft., Below Reference)	Water Elevation (ft., NGVD)	LNAPL Thickness (ft.)	Corrected Water Elevation (ft., NGVD)
PZ-12d (BR PZ)	29.81	55-60	27.62	2.19	NA	NA	26.80	3.01	27.59	2.22	NA	NA
MW-6R	30.33	12-32	19.20	11.13	0.58	11.55	18.21	12.12	18.48	11.85	(4)	NA
Transect 6												
PZ-13	24.30	7-17	12.03	12.27	NA	NA	11.49	12.81	11.41	12.89	NA	NA
PZ-14	30.54	10-20	18.48	12.06	NA	NA	17.69	12.85	17.82	12.72	NA	NA
__Other Nests__												
PZ-15a	28.73	13-23	19.14	9.59	NA	NA	NM	--	18.81	9.92	NA	NA
PZ-15c	28.54	47.8-52.8	26.21	2.33	NA	NA	NM	--	28.68	-0.14	NA	NA
PZ-16a	28.87	12-24	19.40	9.47	NA	NA	NM	--	16.43	12.44	NA	NA
PZ-16b	29.01	30.5-32.5	25.87	3.14	NA	NA	NM	--	25.05	3.96	NA	NA
PZ-16c	28.73	34-39	26.10	2.63	NA	NA	NM	--	24.1	4.63	NA	NA
PZ-16d (BR PZ)	28.93	56-66	27.08	1.85	NA	NA	NM	--	26.7	2.23	NA	NA
MW-21	27.44	10-30	19.15	8.29	NA	NA	NM	--	NM	--	--	--
PZ-17a	27.13	34.8-36.8	25.03	2.10	NA	NA	NM	--	25.52	1.61	NA	NA
PZ-17b	27.68	42-52	25.06	2.62	NA	NA	NM	--	26.89	0.79	NA	NA
PZ-17c (BR PZ)	27.66	61-66	25.04	2.62	NA	NA	NM	--	26.46	1.20	NA	NA
PZ-18a	28.54	4-11	10.15	18.39	NA	NA	NM	--	9.69	18.85	(4)	NA
PZ-18b	28.40	16-18	12.63	15.77	NA	NA	NM	--	12.09	16.31	NA	NA
MW-8	28.93	8-18	12.00	16.93	NA	NA	NM	--	10.79	18.14	NA	NA
PZ-19a (BR PZ)	28.49	23.5-28.5	11.10	17.39	NA	NA	NM	--	9.83	18.66	NA	NA
PZ-22a	27.05	16-26	21.97	5.08	NA	NA	NM	--	19.26	7.79	(4)	NA
PZ-22b	26.91	36-41	27.25	-0.34	NA	NA	NM	--	27.36	-0.45	NA	NA
PZ-22c	26.85	50-55	26.99	-0.14	NA	NA	NM	--	27.46	-0.61	NA	NA
__Other__												
PZ-20	28.01	12-22	16.57	11.44	NA	NA	NM	--	16.06	11.95	NA	NA
PZ-21	27.77	12.8-22.8	9.09	18.68	NA	NA	NM	--	8.08	19.69	NA	NA

TABLE 4
WATER LEVEL MEASUREMENTS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Reference Elevation[1] (ft., NGVD)	Screened Interval (ft., BGS)	9/4/2007 Depth to Water (ft., Below Reference)	9/4/2007 Water Elevation (ft., NGVD)	9/4/2007 LNAPL Thickness (ft.)	9/4/2007 Corrected Water Elevation (ft., NGVD)	10/20/2007[2] Depth to Water (ft., Below Reference)	10/20/2007[2] Water Elevation (ft., NGVD)	11/26/2007 Depth to Water (ft., Below Reference)	11/26/2007 Water Elevation (ft., NGVD)	11/26/2007 LNAPL Thickness (ft.)	11/26/2007 Corrected Water Elevation (ft., NGVD)
Well Replacements												
MW-14R	27.93	4.5-14.5	8.50	19.43	NA	NA	NM	--	7.45	20.48	NA	NA
MW-35R	27.23	13-23	17.43	9.80	NA	NA	17.13	10.10	11.23	16.00	NA	NA
Existing Monitoring Wells												
MW-2	30.80	9-24	18.00	12.80	NA	NA	17.29	13.51	17.17	13.63	NA	NA
MW-3	26.28	17.2-37.2	24.91	1.37	NA	NA	NM	--	25.07	1.21	NA	NA
MW-4	30.45	36-51	30.79	-0.34	NA	NA	NM	--	30.61	-0.16	NA	NA
MW-5	28.79	17.5-32.5	NM	--	--	--	NM	--	24.47	4.32	NA	NA
MW-7	27.24	10-25	NM	--	--	--	NM	--	14.85	12.39	NA	NA
MW-10R	14.27	5-20	14.13	0.14	NA	NA	NM	--	14.87	-0.60	NA	NA
MW-11	27.28	5-10	10.89	16.39	NA	NA	NM	--	9.86	17.42	NA	NA
MW-12	28.41	18-38	26.55	1.86	NA	NA	NM	--	NM	--	--	--
MW-13	29.06	13-33	26.46	2.60	NA	NA	NM	--	26.11	2.95	NA	NA
MW-15	29.79	15-35	27.41	2.38	NA	NA	NM	--	NM	--	--	--
MW-16	27.88	12-32	14.47	13.41	NA	NA	NM	--	13.6	14.28	NA	NA
MW-17	28.39	7-27	17.07	11.32	NA	NA	16.85	11.54	16.59	11.80	NA	NA
MW-18	29.04	5-20	13.50	15.54	NA	NA	NM	--	14.98	14.06	NA	NA
MW-19	28.68	15-30	19.09	9.59	NA	NA	NM	--	18.9	9.78	NA	NA
MW-20	27.92	6-11	8.61	19.31	NA	NA	NM	--	7.33	20.59	NA	NA
MW-24	28.29	17-32	25.28	3.01	NA	NA	NM	--	23.38	4.91	(4)	NA
MW-25	28.05	15-30	25.88	2.17	NA	NA	NM	--	24.16	3.89	NA	NA
MW-26	26.86	17-32	25.21	1.65	NA	NA	NM	--	23.86	3.00	NA	NA
MW-27	27.39	6-31	18.37	9.02	NA	NA	NM	--	17.23	10.16	NA	NA
MW-28R	29.89	13-28	18.35	11.54	NA	NA	NM	--	17.74	12.15	(4)	NA
MW-29	28.71	20-40	26.80	1.91	0.005	1.91	NM	--	26.08	2.63	(4)	NA
MW-31	29.20	15-35	26.64	2.56	NA	NA	NM	--	25.97	3.23	NA	NA
MW-32	27.89	12-32	22.11	5.78	NA	NA	NM	--	12.21	15.68	NA	NA
MW-33	28.34	16-36	20.02	8.32	NA	NA	NM	--	NM	--	--	--
MW-34	27.74	14-34	NM	--	--	--	NM	--	19.48	8.26	NA	NA
MW-36	31.92	12-32	29.66	2.26	NA	NA	NM	--	27.86	4.06	NA	NA

TABLE 4
WATER LEVEL MEASUREMENTS
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location ID	Reference Elevation(1) (ft., NGVD)	Screened Interval (ft., BGS)	9/4/2007 Depth to Water (ft., Below Reference)	9/4/2007 Water Elevation (ft., NGVD)	9/4/2007 LNAPL Thickness (ft.)	9/4/2007 Corrected Water Elevation (ft., NGVD)	10/20/2007(2) Depth to Water (ft., Below Reference)	10/20/2007(2) Water Elevation (ft., NGVD)	11/26/2007 Depth to Water (ft., Below Reference)	11/26/2007 Water Elevation (ft., NGVD)	11/26/2007 LNAPL Thickness (ft.)	11/26/2007 Corrected Water Elevation (ft., NGVD)
MW-38	30.32	12-32	18.47	11.85	NA	NA	NM	--	17.88	12.44	NA	NA
MW-39	29.99	12-32	18.94	11.05	NA	NA	NM	--	13.27	16.72	NA	NA
MW-124B	29.61	15-25	18.74	10.87	NA	NA	18.19	11.42	18.12	11.49	NA	NA
MW-134B	28.52	20.5-30.5	28.36	0.16	NA	NA	NM	--	27.67	0.85	NA	NA
PZ-1	27.41	15-31	23.39	4.02	NA	NA	NM	--	22.16	5.25	NA	NA
RW-1	30.93	3-13	10.46	20.47	NA	NA	NM	--	8.73	22.20	NA	NA
RW-2	30.60	3-9.5	9.01	21.59	NA	NA	NM	--	7.8	22.80	NA	NA
Stream Gauges												
SG-1	3.08	NA	2.90	0.18	NA	NA	NM	--	4.0	-0.92	NA	NA
SG-2	21.00	NA	11.20	9.80	NA	NA	9.70	11.30	10.23	10.77	NA	NA
SG-3	27.52	NA	17.72	9.80	NA	NA	16.21	11.31	16.74	10.78	NA	NA
SG-4	19.01	NA	9.25	9.76	NA	NA	7.92	11.09	8.35	10.66	NA	NA
SG-5(3)	15.99	NA	4.86	11.13	NA	NA	4.20	11.79	--	--	--	--
SG-6(3)	16.10	NA	4.15	11.95	NA	NA	3.28	12.82	--	--	--	--

Notes:

(1) - For piezometers and monitoring wells, the top of PVC well casing is the reference point. Reference points associated with the stream gauges are either a surveyed point on a fixed structure (e.g., concrete wall) or top of PVC for stream gauges equipped with stilling tubes (SG-5 and SG-6).

(2) - To assess high flow conditions in the Wynatskill Creek following a large rainstorm, water level measurements were collected from the Wynatskill stream gauges and piezometers and monitoring wells located proximal to the creek.

(3) - Stream gauge locations SG-5 and SG-6 were established within the stream bed along Transects 5 and 6 and were subsequently destroyed during high flow conditions in the Wynantskill Creek. Sufficent water level data was collected from these locations for the purposes of the Supplemental Investigation prior to their destruction.

(4) - Skim layer of NAPL detected on surface of water. Thickness of layer was not measureable.

NGVD - National Geodetic Vertical Datum

BGS - Below Ground Surface

NA - Not applicable

NM - Not measured

TABLE 5
TIDAL EFFICIENCY ESTIMATES
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location	Approximate Distance from River (ft.)	Screened Interval (ft., BGS)	Saturated Formation Adjacent to Screen	Approximate Tidal Efficiency
PZ-5a	± 110	16.0-26.0	Water Table (Fill)	± 0.65-0.7
PZ-5c		49.0-54.0	Lower Sand & Gravel Unit	± 0.7-0.8
PZ-5d		65.5-70.5	Bedrock	± 0.85
PZ-8a	± 150	18.0-28.0	Water Table (Alluvial Deposits)	± 0.05
PZ-8b		45.0-50.0	Lower Sand & Gravel Unit	± 0.9
PZ-8d		73.4-78.4	Bedrock	± 0.85
PZ-12a	± 480	13.0-23.0	Water Table (Fill)	0.0
PZ-12c		40.0-50.0	Lower Sand & Gravel Unit	± 0.45
PZ-12d		55.0-60.0	Bedrock	± 0.4

Note:
Approximations based on data from continuous water level monitoring from 9/12/07 to 9/20/07.

TABLE 6
VERTICAL HYDRAULIC GRADIENT ESTIMATES
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Location	PZ-5[a]		PZ-8[a]		PZ-12[a]		MW-8/PZ-19a [b]	
Date of Measurement	9/12/2007	9/14/2007	9/12/2007	9/14/2007	9/12/2007	9/14/2007	9/4/2007	11/26/2007
Mean Hydraulic Head								
(ft., NGVD)								
Water Table	1.83	2.22	4.00	4.08	11.81	11.82	16.93	18.14
Lower Sand & Gravel Unit	1.26	1.51	1.16	1.71	2.03	2.32	--	--
Bedrock	0.97	--	1.47	2.03	2.11	2.39	17.39	18.66
Average Vertical Hydraulic Gradient								
(ft.) [c]								
Water Table to Lower Sand & Gravel Unit	0.020	0.025	0.118	0.099	0.338	0.329	--	--
Lower Sand & Gravel Unit to Bedrock	0.018	--	-0.011	-0.011	-0.006	-0.006	--	--
Water Table to Bedrock	--	--	--	--	--	--	-0.034	-0.032

Notes:

(a) Because of the presence of substantial water level fluctuations due to tides across much of the site, vertical hydraulic gradients were estimated using available continuous water level monitoring data from the piezometer nests; i.e., locations PZ-5, PZ-8 and PZ-12. For the wells that are tidally-influenced, a mean water level was estimated for the gradient calculation; thus, the resulting value can be considered an average vertical gradient over a tidal cycle. The mean water levels were estimated for two dates, 9/12/07 and 9/14/07 to assess variability.

(b) The MW-8/PZ-19a piezometer nest is not expected to be within the tidally-influenced area and thus continuous water level monitoring was not conducted at this nest.

(c) A positive value indicates a downward gradient; a negative value indicates an upward gradient.

BROWN AND CALDWELL

TABLE 7
ANALYTICAL RESULTS SUMMARY - TEST PIT SOIL SAMPLES (AUGUST 2007)
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

Chemical Name	TP-217 3.5-4.5' 8/1/2007 mg/kg	TP-217 4.5-6.0' 8/1/2007 mg/kg	TP-218 1.0-2.5' 8/1/2007 mg/kg	DUP TP-218 1.0-2.5' 8/1/2007 mg/kg
Polycyclic Aromatic Hydrocarbons (PAHs)				
Acenaphthene	0.043 ND	0.039 ND	0.12 J	0.14 J
Acenaphthylene	0.38	0.33	1.6	2.3
Anthracene	0.25	0.069 J	1.6	1.9
Benzo(g,h,i)perylene	0.075 J	0.079 J	2.3	3.2
Fluoranthene	0.49	0.043 J	7.7 D	8.2 D
Fluorene	0.29	0.039 ND	2.4 J	0.39 J
Naphthalene	0.77	0.15 J	0.26	0.31
Phenanthrene	0.17 J	0.044 J	3.2	3.1
Pyrene	0.57	0.063 J	7.8 D	8.4 D
Benzo(a)anthracene	0.18 J	0.085 J	5.7 D	6.6 D
Benzo(a)pyrene	0.11 J	0.039 ND	4.0	5.4 D
Benzo(b)fluoranthene	0.15 J	0.050 J	6.7 D	8.2 D
Benzo(k)fluoranthene	0.077 J	0.039 ND	2.5	2.9
Chrysene	0.20 J	0.065 J	4.9 D	5.6 D
Dibenzo(a,h)anthracene	0.043 ND	0.039 ND	0.97	1.1
Indeno(1,2,3-cd)pyrene	0.066 J	0.039 ND	2.4	3.2
Total PAHs	3.8	0.98	54.2	60.9

Description of Qualifiers:

J - Estimated concentration. The result is below the quantitation limit but above the method detection limit.

D - Reported result is representative of a diluted sample analysis as original sample exceeded calibration range for individual constituent.

ND - Non-detected. Value presented for non-detected analytes is the Method Detection Limit.

FIGURES

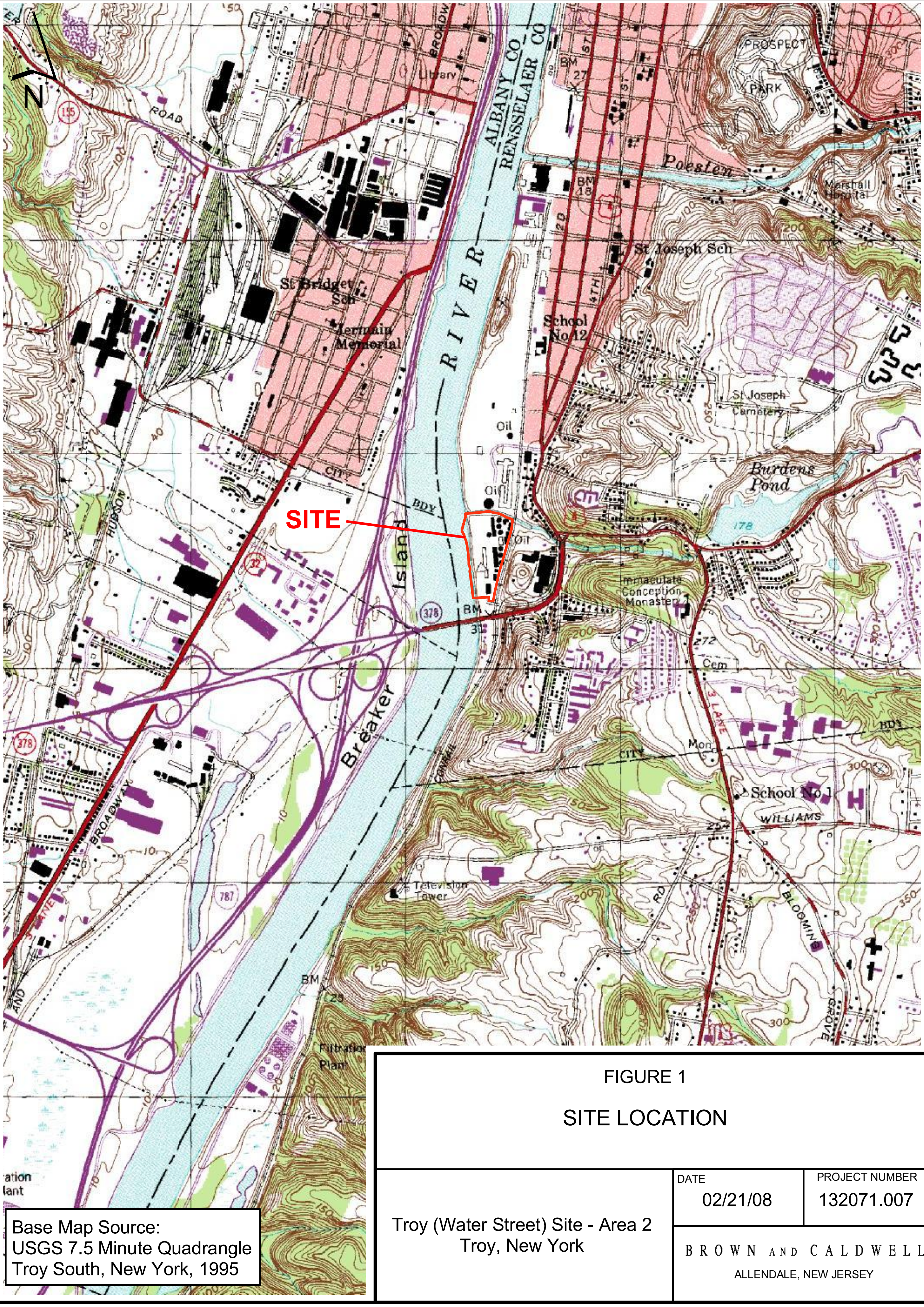


FIGURE 1

SITE LOCATION

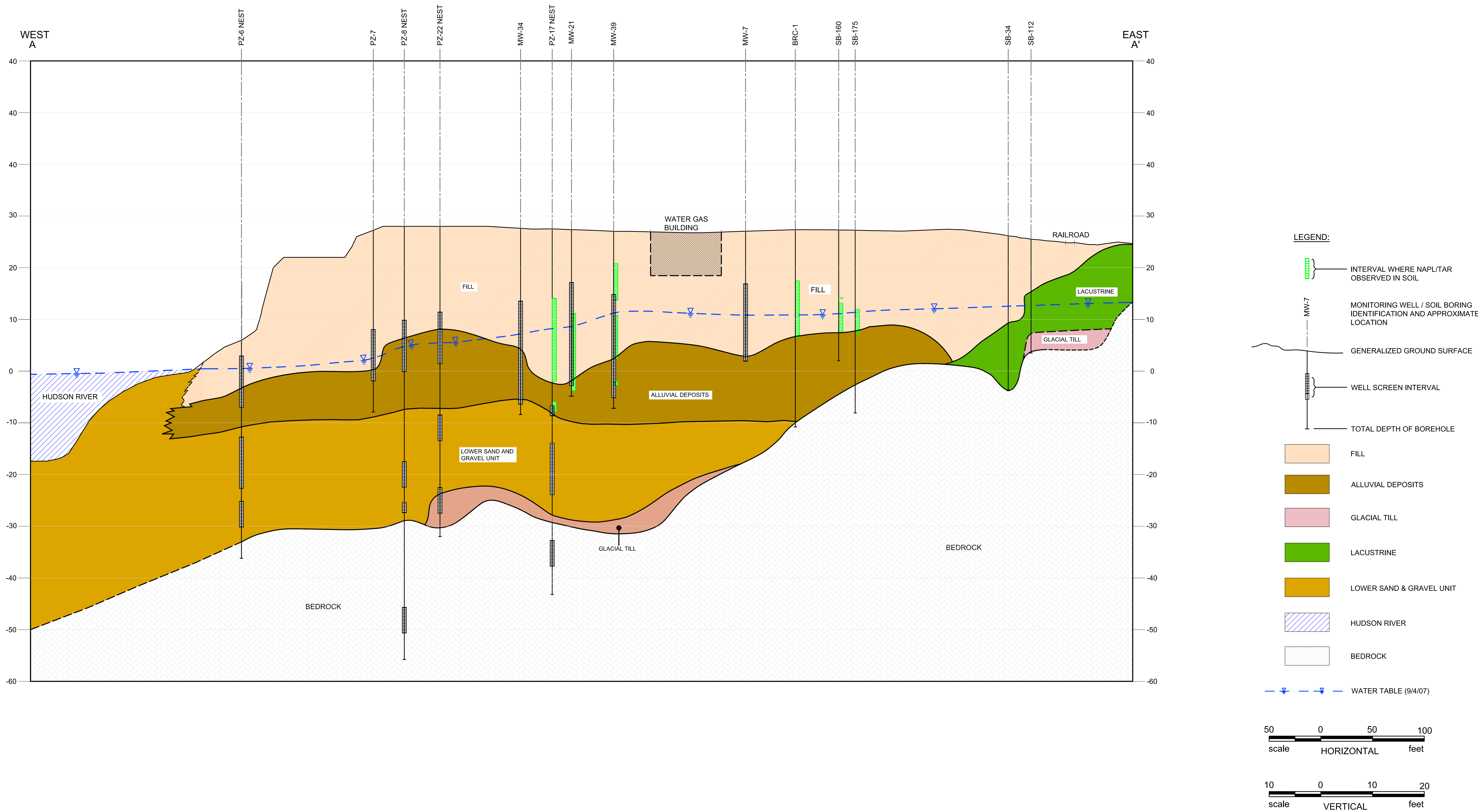
Troy (Water Street) Site - Area 2
Troy, New York

DATE	PROJECT NUMBER
02/21/08	132071.007

BROWN AND CALDWELL
ALLENDALE, NEW JERSEY

P:/GIS/National_Grid/Troy/Troy_Site_Location.mxd

P:/GIS/National_Grid/Troy_Site_Plan_0208.mxd



rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\FIGURE-3A CROSS-SECTIONS A-A.dwg
Feb 26, 2008 - 1:43pm

BROWN AND CALDWELL ASSOCIATES
ALLENDALE, NEW JERSEY

SUBMITTED: BOB O'NEILL (PROJECT MANAGER) DATE: 02/5/08
APPROVED: (BROWN AND CALDWELL) DATE:

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: JLM
DRAWN: RMJ
CHECKED: JLM
CHECKED: RLO
APPROVED:

EXTERNAL REFERENCES

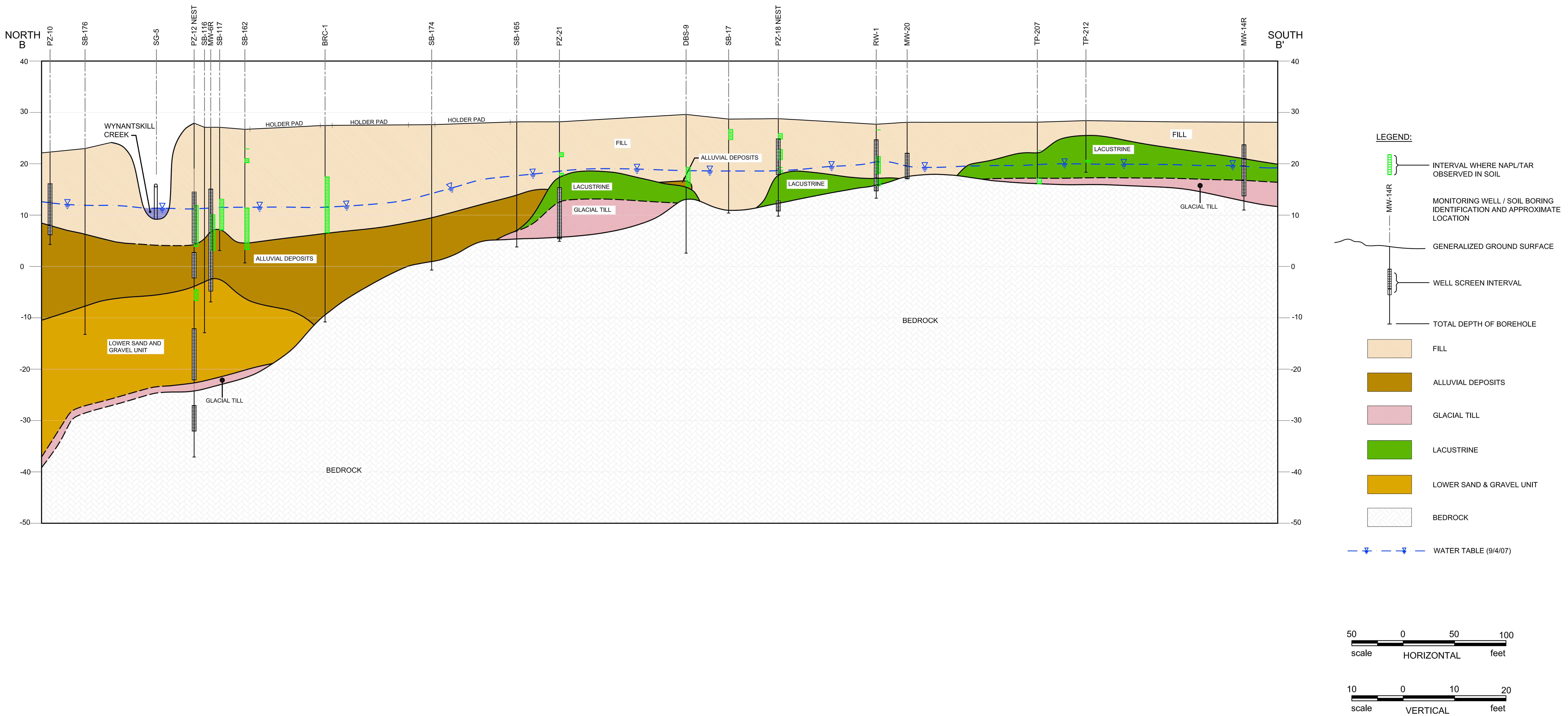
REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

FIGURE 3A
GENERALIZED GEOLOGIC CROSS-SECTION A-A

NATIONAL GRID
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

FILENAME
-
BC PROJECT NUMBER
132071.107
CLIENT PROJECT NUMBER
DRAWING NUMBER
-
SHEET NUMBER



rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\FIGURE-3B CROSS-SECTIONS B-B.dwg
Feb 26, 2008 - 1:47pm

BROWN AND CALDWELL ASSOCIATES
ALLENDALE, NEW JERSEY

SUBMITTED: BOB O'NEILL, PROJECT MANAGER — DATE: 02/5/08
APPROVED: BROWN AND CALDWELL — DATE:

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: JLM
DRAWN: RMJ
CHECKED: JLM
CHECKED: RLO
APPROVED:

EXTERNAL REFERENCES

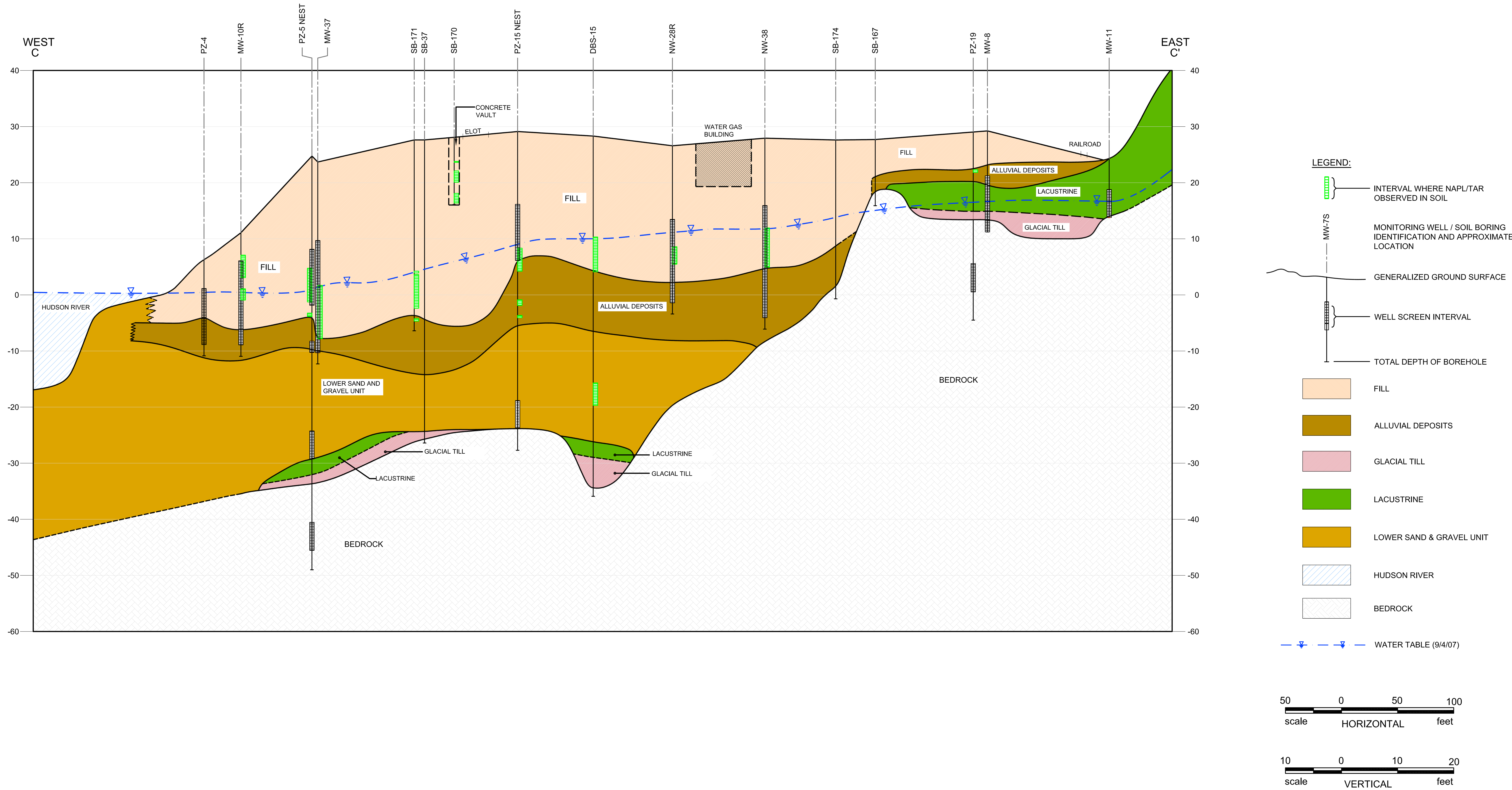
REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

FIGURE 3B
GENERALIZED GEOLOGIC CROSS-SECTION B-B

NATIONAL GRID
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

FILENAME -
BC PROJECT NUMBER 132071.107
CLIENT PROJECT NUMBER
DRAWING NUMBER -
SHEET NUMBER



rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\FIGURE-3C CROSS-SECTIONS C-C.dwg
Feb 26, 2008 - 1:56pm

BROWN AND CALDWELL ASSOCIATES
ALLENDALE, NEW JERSEY

SUBMITTED: BOB O'NEILL (PROJECT MANAGER) DATE: 02/5/08
APPROVED: (BROWN AND CALDWELL) DATE:

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED:	JLM
DRAWN:	RMJ
CHECKED:	JLM
CHECKED:	RLO
APPROVED:	

EXTERNAL REFERENCES

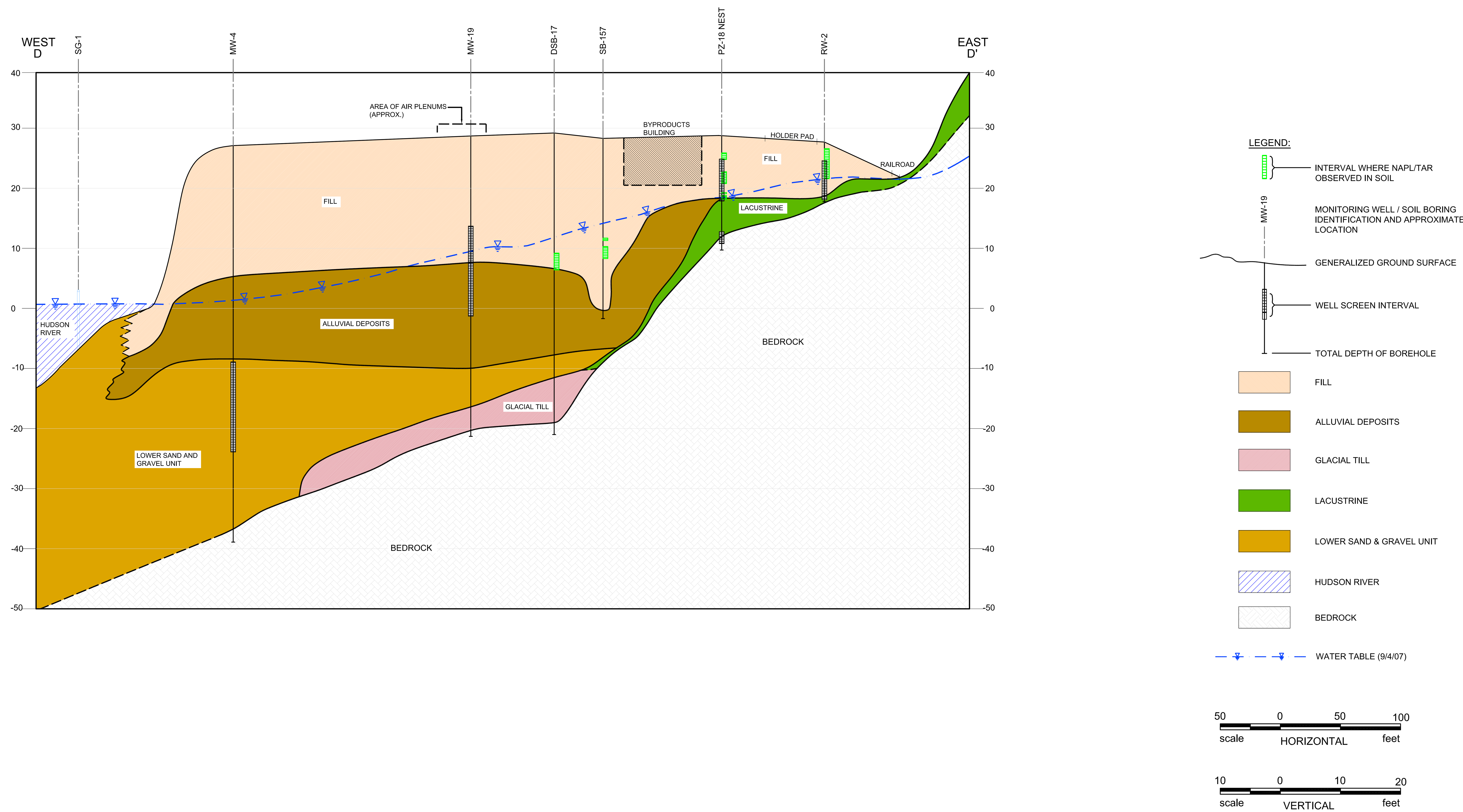
REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

FIGURE 3C
GENERALIZED GEOLOGIC CROSS-SECTION C-C

NATIONAL GRID
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

FILENAME
-
BC PROJECT NUMBER
132071.107
CLIENT PROJECT NUMBER
DRAWING NUMBER
-
SHEET NUMBER



BROWN AND CALDWELL ASSOCIATES

ALLENDALE, NEW JERSEY

SUBMITTED: BOB O'NEILL, PROJECT MANAGER DATE: 02/5/08

APPROVED: BROWN AND CALDWELL DATE:

LINE IS 2 INCHES AT FULL SIZE (IF NOT 2" - SCALE ACCORDINGLY)

DESIGNED: JLM
DRAWN: RMJ
CHECKED: JLM
CHECKED: RLO
APPROVED:

EXTERNAL REFERENCES

REVISIONS

ZONE	REV.	DESCRIPTION	BY	DATE	APP.

FIGURE 3D
GENERALIZED GEOLOGIC CROSS-SECTION D-D

NATIONAL GRID
TROY (WATER ST.) SITE - AREA 2
TROY, NEW YORK

FILENAME: -
BC PROJECT NUMBER: 132071.107
CLIENT PROJECT NUMBER
DRAWING NUMBER: -
SHEET NUMBER

rjames
Feb 26, 2008 - 1:57pm
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\FIGURE-3D CROSS-SECTIONS D-D.dwg

FIGURE 4

TOP OF BEDROCK SURFACE CONTOUR MAP

PROJECT LOCATION

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

DATE: FEB., 2008

PROJECT NUMBER: 132071 / 107

BROWN AND CALDWELL ASSOCIATES
ALLENDALE, NEW JERSEY

Feb 26, 2008 - 2:04pm rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\TOP BEDROCK SURFACE.dwg

FIGURE 5
GLACIAL DEPOSITS (LACUSTRINE/TILL) SURFACE CONTOUR MAP

PROJECT LOCATION	DATE	PROJECT NUMBER
NATIONAL GRID TROY (WATER ST.) SITE-AREA 2 TROY, NEW YORK	FEB., 2008	132071 / 107
	BROWN AND CALDWELL ASSOCIATES ALLENDALE, NEW JERSEY	

Feb 26, 2008 - 2:06pm rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\GLACIAL DEPOSIT.dwg

FIGURE 6

ISOPACH MAP OF ALLUVIAL DEPOSITS

PROJECT LOCATION	DATE	PROJECT NUMBER
NATIONAL GRID TROY (WATER ST.) SITE-AREA 2 TROY, NEW YORK	FEB., 2008	132071 / 107

BROWN AND CALDWELL ASSOCIATES
ALLENDALE, NEW JERSEY

Feb 26, 2008 - 2:02pm rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\ISOPACH MAP OF ALLUVIAL.dwg

FIGURE 7
BASE OF FILL SURFACE
CONTOUR MAP

PROJECT LOCATION	DATE	PROJECT NUMBER
NATIONAL GRID TROY (WATER ST.) SITE-AREA 2 TROY, NEW YORK	FEB., 2008	132071 / 107
	BROWN AND CALDWELL ASSOCIATES ALLENDALE, NEW JERSEY	

Feb 26, 2008 - 2:00pm rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\BASE OF FILL SURFACE.dwg

FIGURE 8A
WATER TABLE CONTOUR MAP
(SEPTEMBER 4, 2007)

PROJECT LOCATION	DATE	PROJECT NUMBER
NATIONAL GRID TROY (WATER ST.) SITE-AREA 2 TROY, NEW YORK	FEB., 2008	132071 / 107
	BROWN AND CALDWELL ASSOCIATES ALLENDALE, NEW JERSEY	

Feb 26, 2008 - 2:09pm rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\WATER TABLE CONTOUR MAP (SEPTEMBER 2007).dwg

FIGURE 8B
WATER TABLE CONTOUR MAP
(NOVEMBER 26, 2007)

PROJECT LOCATION
NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

DATE
FEB., 2008

PROJECT NUMBER
132071 / 107

BROWN AND CALDWELL ASSOCIATES
ALLENDALE, NEW JERSEY

Feb 26, 2008 - 2:07pm rjames
P:\DRAFTING\NATIONAL_GRID\NIMO_TROY\132071\107\WATER TABLE CONTOUR MAP (NOVEMBER 2007).dwg

Legend

- Soil Boring/Test Pit NAPL/Coal Tar Observed
- Soil Boring/Test Pit NAPL/Coal Tar Not Observed
- Interval where NAPL/coal tar is present within a structure
- Tar in interval is Brittle/Hard

No boring log is available for locations SB-29, SB-30, SB-31, SB-35, and SB-36

50 25 0 50 Feet

FIGURE 9

LOCATIONS OF OBSERVED NAPL / COAL TAR
0 TO 18 FEET BELOW GROUND SURFACE

Troy (Water Street) Site - Area 2
Troy, New York

DATE	PROJECT NUMBER
11/28/07	132071.107

BROWN AND CALDWELL
ASSOCIATES

P:/GIS/National_Grid/Troy_NAPL_Structure_020408.mxd

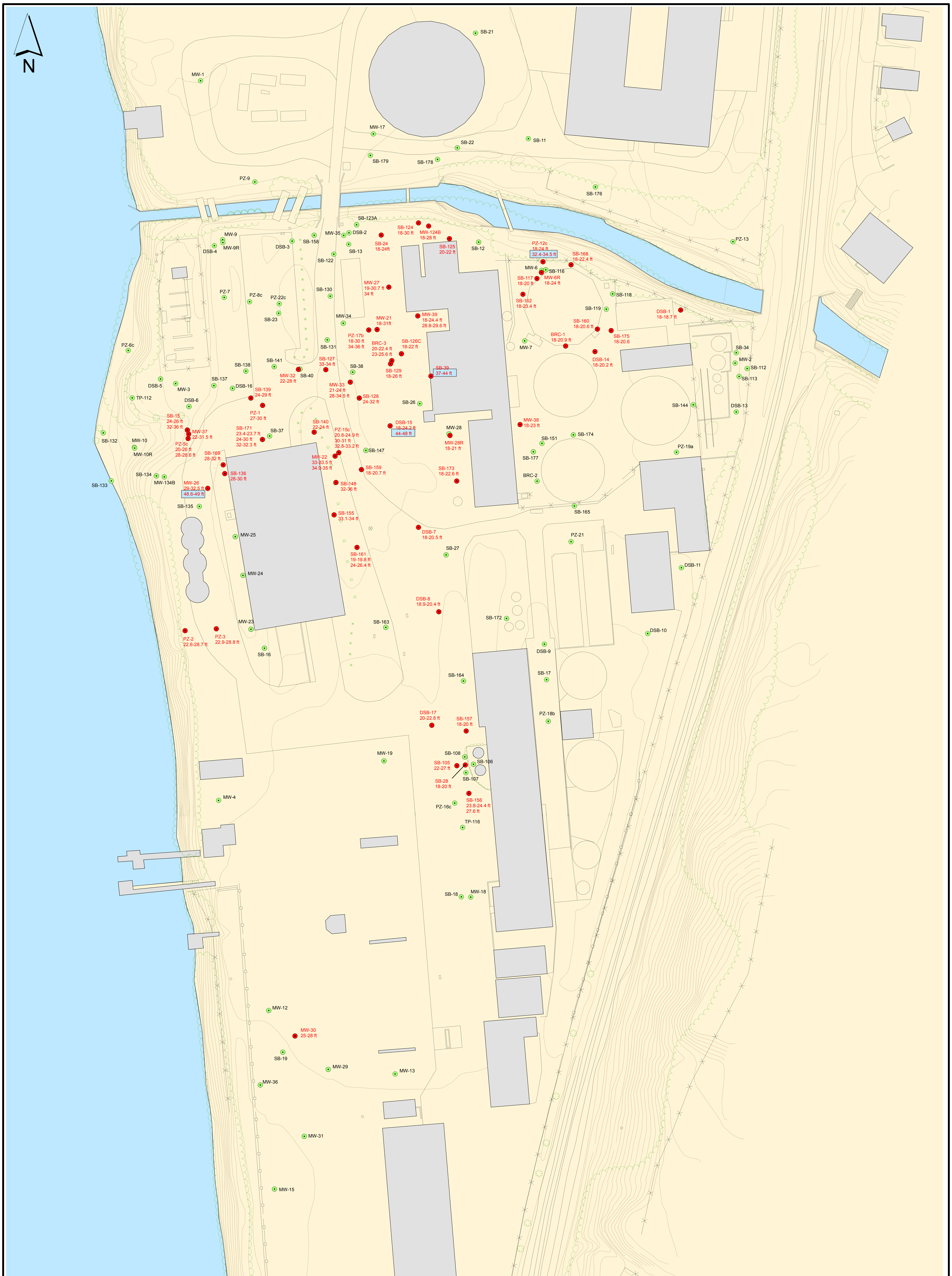
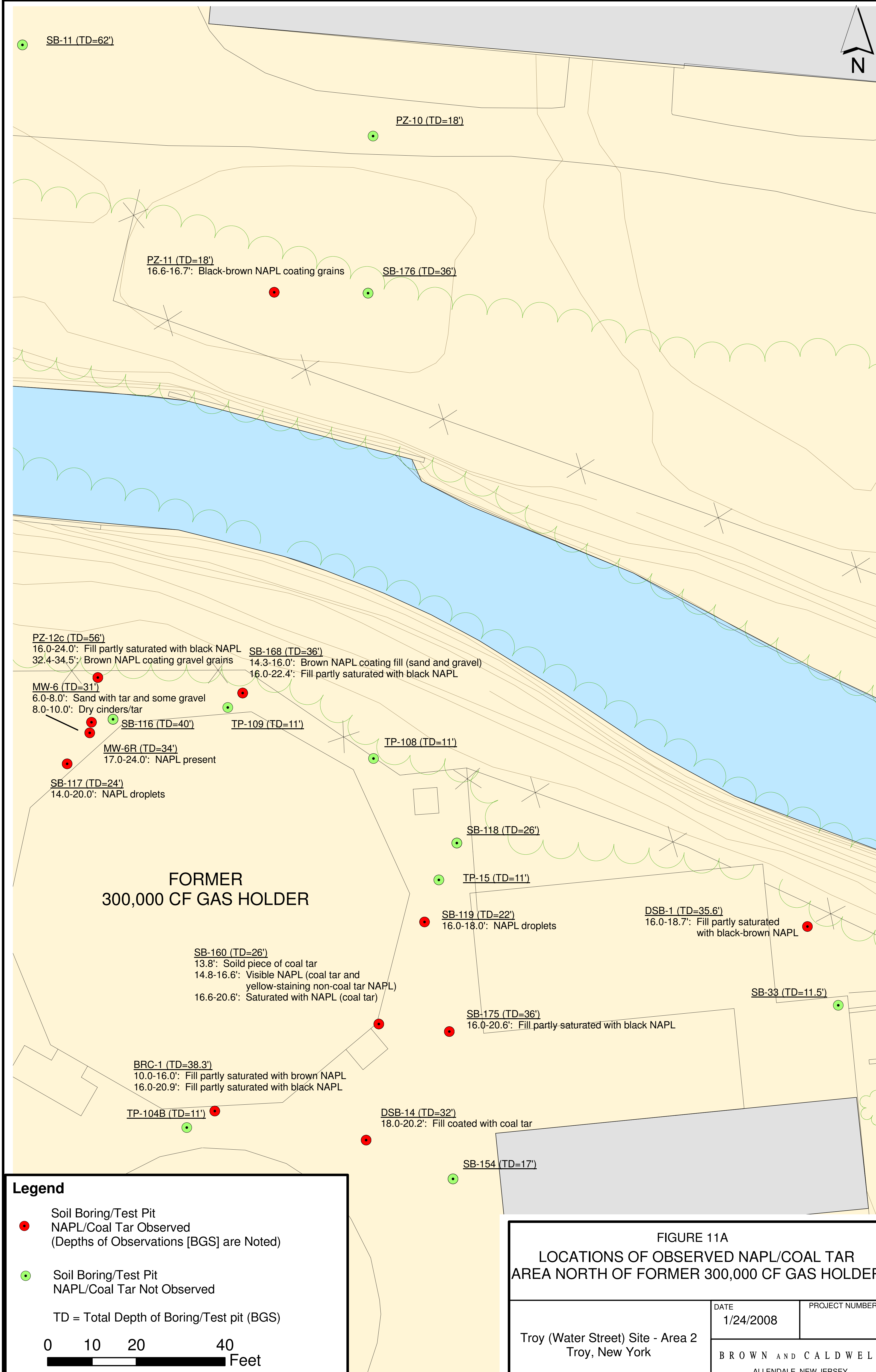


FIGURE 10

LOCATIONS OF OBSERVED NAPL / COAL TAR
GREATER THAN 18 FEET BELOW GROUND SURFACE

Troy (Water Street) Site - Area 2 Troy, New York	DATE 11/28/07	PROJECT NUMBER 132071.107
	BROWN AND CALDWELL ASSOCIATES	

P:/GIS/National_Grid/Troy_NAPL_LSG.mxd



Legend

Soil Boring/Test Pit
NAPL/Coal Tar Observed
(Depths of Observations [BGS] are Noted)

Soil Boring/Test Pit
NAPL/Coal Tar Not Observed

TD = Total Depth of Boring/Test pit (BGS)

0 10 20 40 Feet

FIGURE 11A

LOCATIONS OF OBSERVED NAPL/COAL TAR
AREA NORTH OF FORMER 300,000 CF GAS HOLDER

Troy (Water Street) Site - Area 2 Troy, New York	DATE 1/24/2008	PROJECT NUMBER
	BROWN AND CALDWELL ALLENDALE, NEW JERSEY	

P:\GIS\National_Grid\Troy\Troy_NAPL_SB11_SB33.mxd

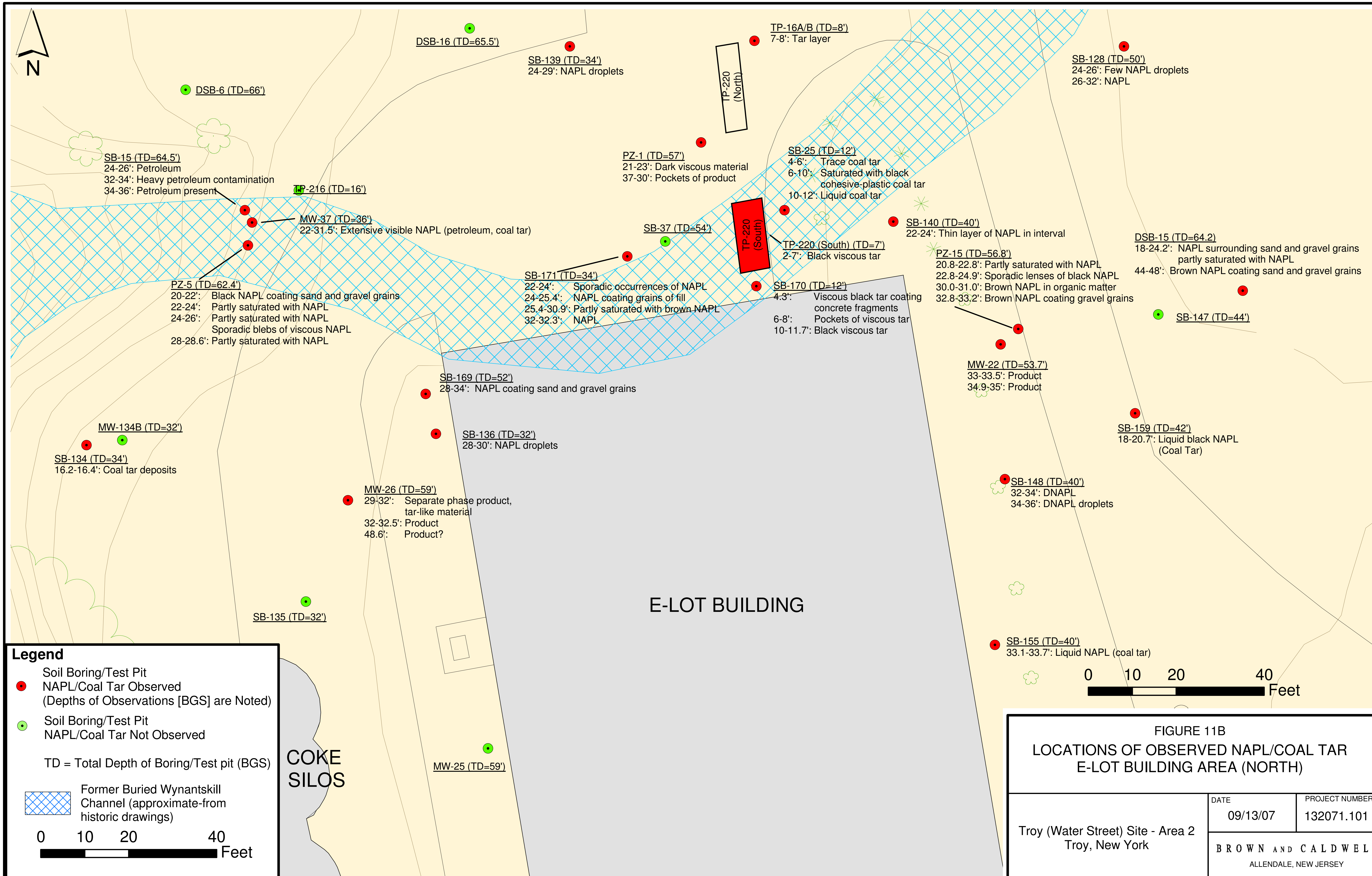


FIGURE 11B
LOCATIONS OF OBSERVED NAPL/COAL TAR
E-LOT BUILDING AREA (NORTH)

Troy (Water Street) Site - Area 2 Troy, New York	DATE 09/13/07	PROJECT NUMBER 132071.101
	BROWN AND CALDWELL ALLENDALE, NEW JERSEY	

P:\GIS\National_Grid\Troy\Troy_e-Lot_Building_Area_N.mxd

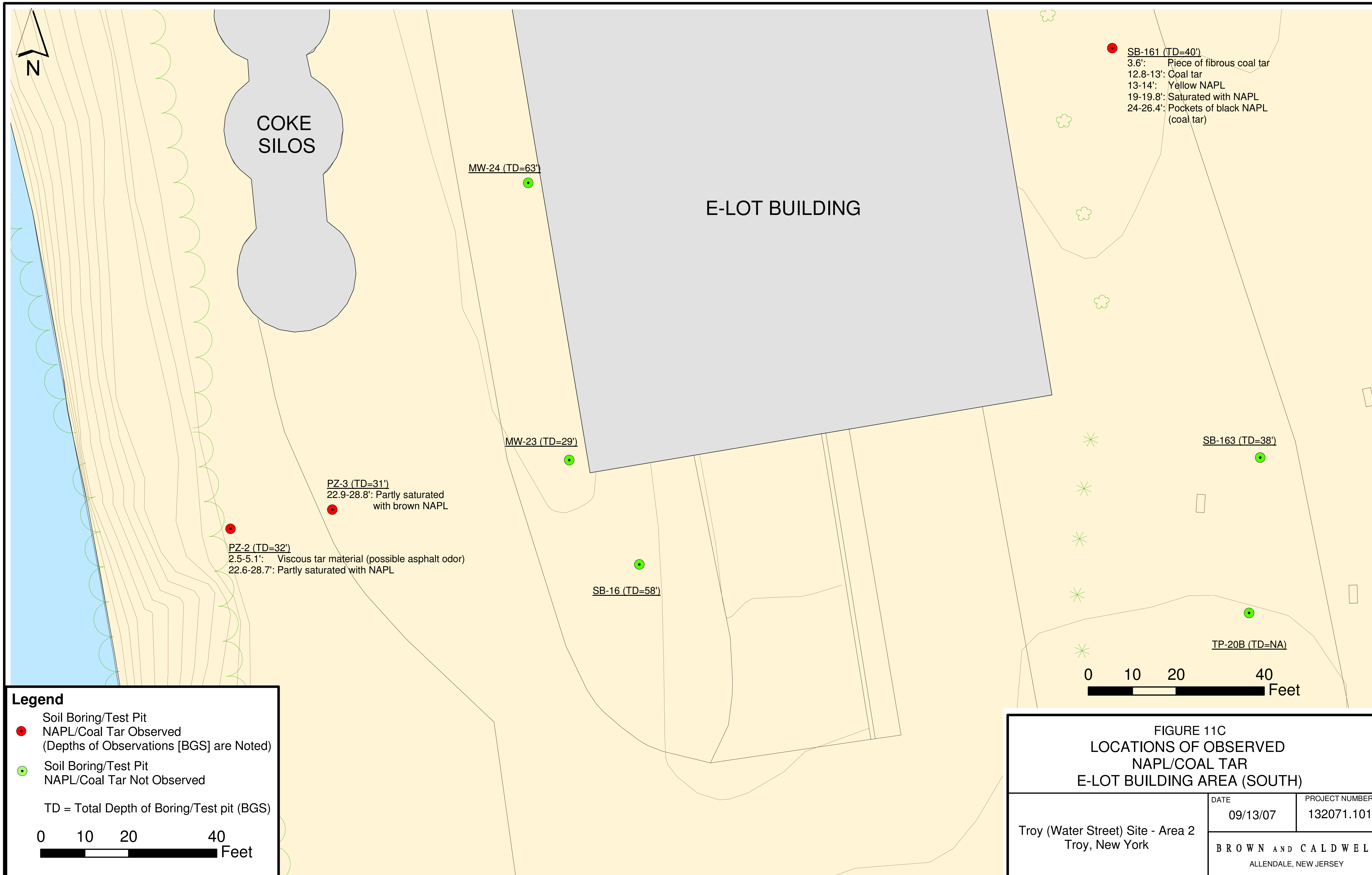


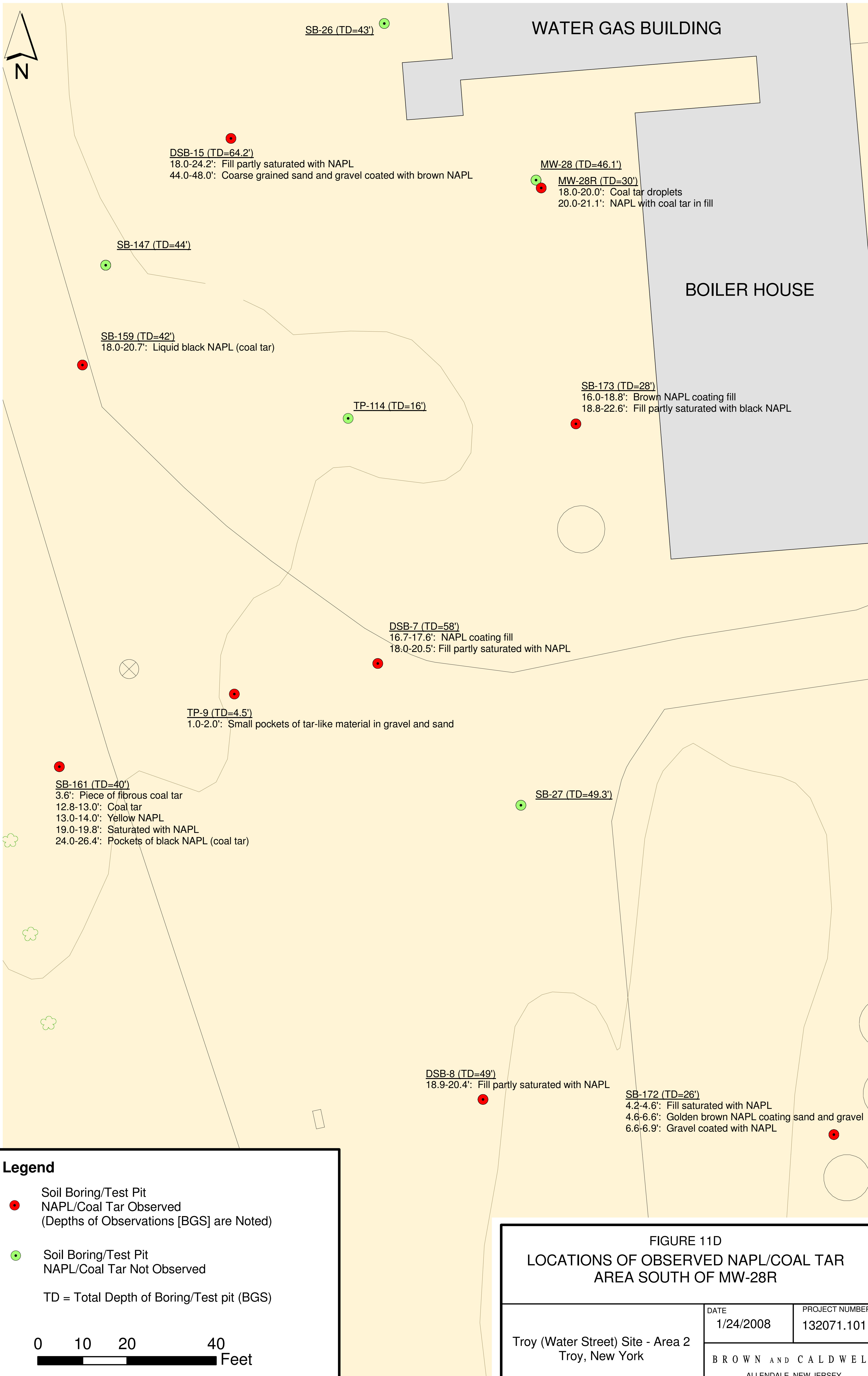
FIGURE 11C
LOCATIONS OF OBSERVED
NAPL/COAL TAR
E-LOT BUILDING AREA (SOUTH)

Troy (Water Street) Site - Area 2
Troy, New York

DATE	PROJECT NUMBER
09/13/07	132071.101

BROWN AND CALDWELL
ALLENDALE, NEW JERSEY

P:\GIS\National_Grid\Troy\Troy_e-Lot_Building_Area_S_(020108).mxd



Legend

Soil Boring/Test Pit
NAPL/Coal Tar Observed
(Depths of Observations [BGS] are Noted)

Soil Boring/Test Pit
NAPL/Coal Tar Not Observed

TD = Total Depth of Boring/Test pit (BGS)

0 10 20 40 Feet

FIGURE 11D

LOCATIONS OF OBSERVED NAPL/COAL TAR AREA SOUTH OF MW-28R

Troy (Water Street) Site - Area 2 Troy, New York	DATE 1/24/2008	PROJECT NUMBER 132071.101
	BROWN AND CALDWELL ALLENDALE, NEW JERSEY	

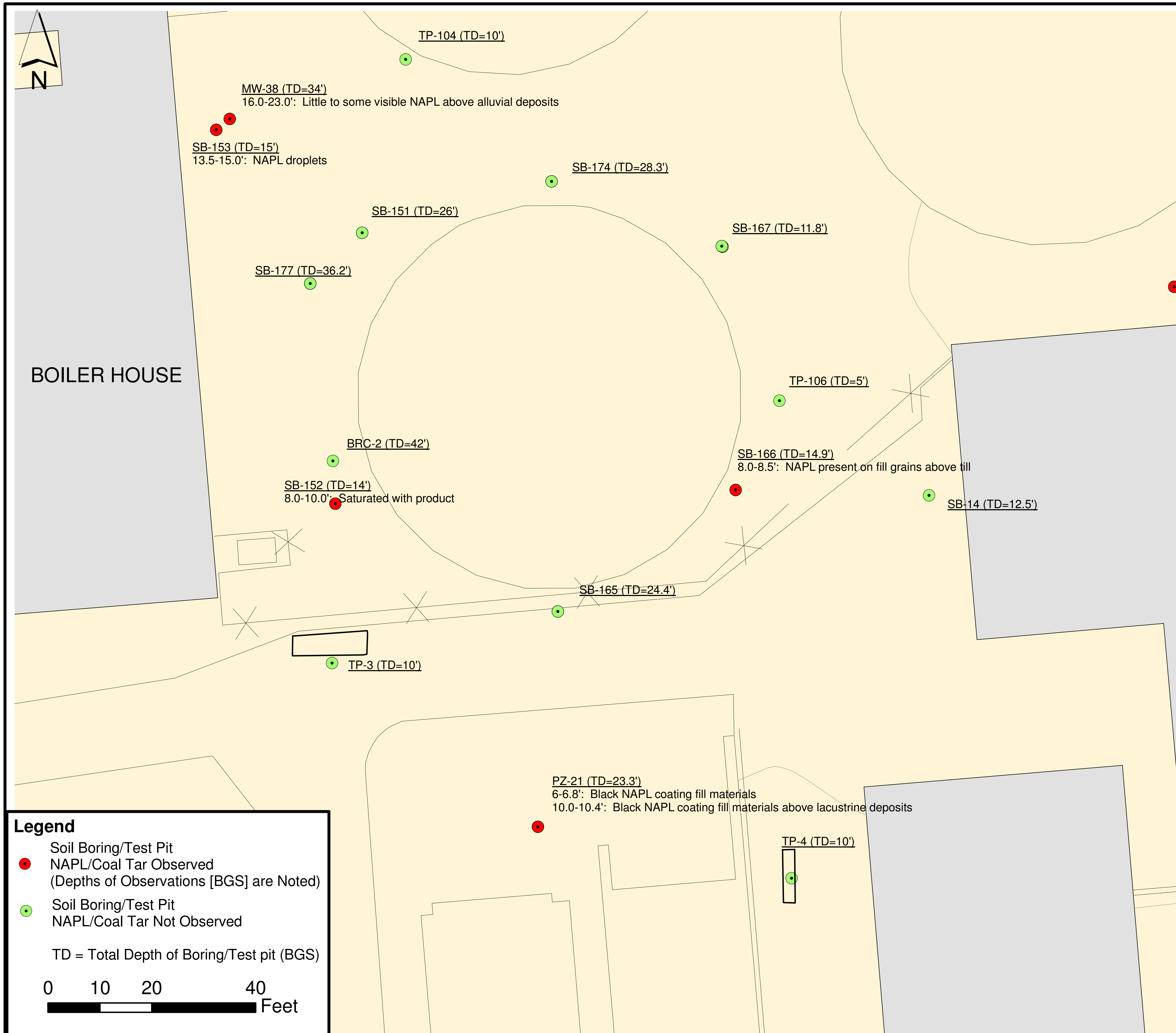


FIGURE 11E

LOCATIONS OF OBSERVED NAPL/COAL TAR AREA EAST OF BOILER HOUSE/SOUTHEAST OF WATER GAS BUILDING

Troy (Water Street) Site - Area 2 Troy, New York	DATE 1/24/2008	PROJECT NUMBER 132071.101
	BROWN AND CALDWELL ALLENDALE, NEW JERSEY	

P:\GIS\National_Grid\Troy\Troy_NAPL_MW-38_DSB12.mxd

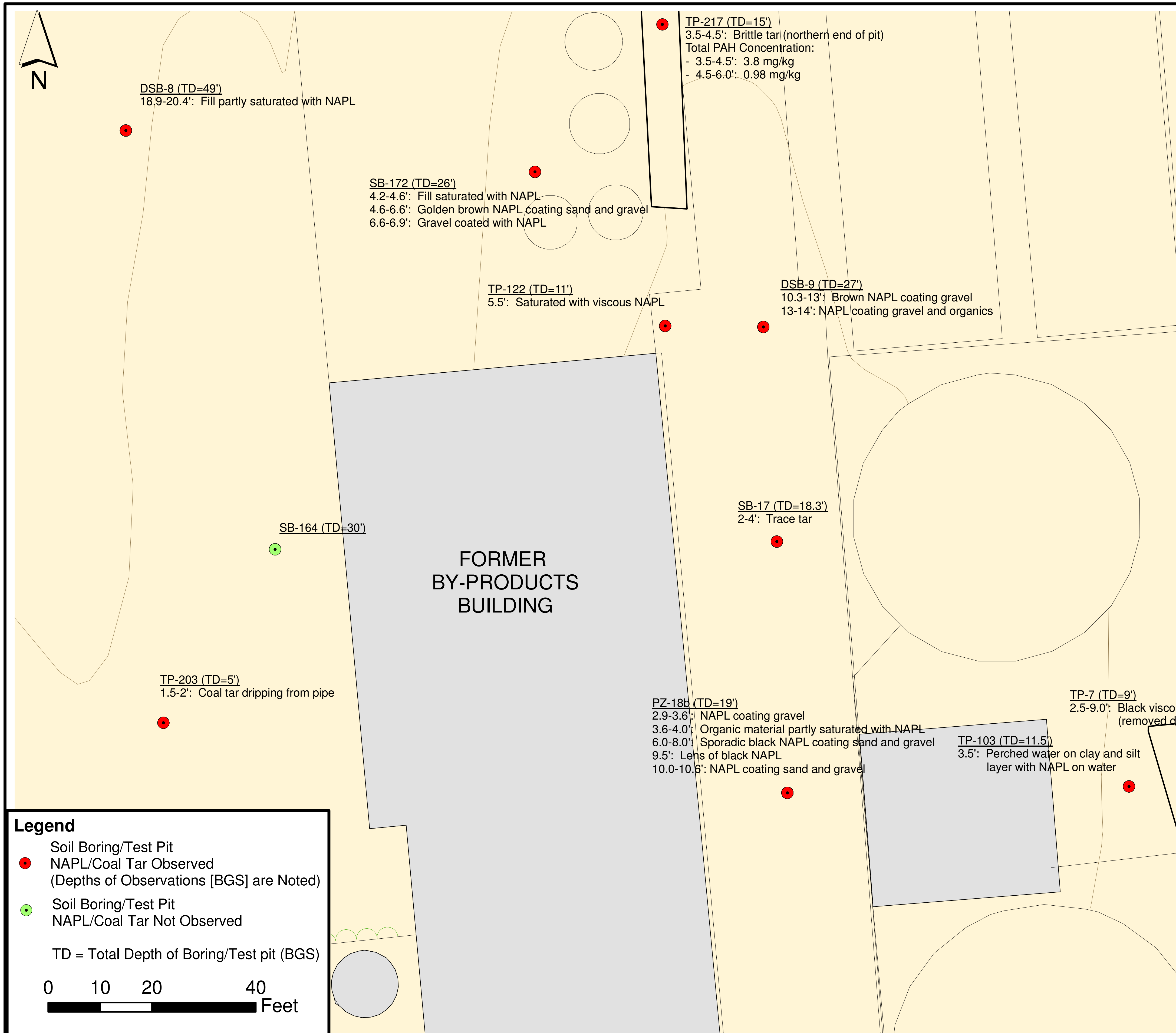


FIGURE 11F

LOCATIONS OF OBSERVED NAPL/COAL TAR, AREA NORTH AND EAST OF BY-PRODUCTS BUILDING

Troy (Water Street) Site - Area 2
Troy, New York

DATE 1/24/2008

PROJECT NUMBER 132071.101

BROWN AND CALDWELL
ALLENDALE, NEW JERSEY

P:\GIS\National_Grid\Troy\Troy_NAPL_DSB8_DSB10.mxd

APPENDIX A

Bedrock Outcrop Evaluation Memorandum
(Brown and Caldwell Associates, December 20, 2006)

BROWN AND CALDWELL

MEMORANDUM

TO:	Cathy Geraci, National Grid	**JOB NO**:	128076.506
FROM:	Bob O'Neill, Jim Marolda, and Frank Williams		
DATE:	December 20, 2006		
SUBJECT:	Bedrock Outcrop Evaluation Troy (Water Street) Site, Area 2		

As described in the Supplemental Investigation (SI) Work Plan for Area 2 of the Troy (Water St.) site, an evaluation of the lithologic and structural characteristics of the bedrock exposed in outcrops located near the site was conducted. In accordance with the November 15, 2006 letter from National Grid to the New York State Department of Environmental Conservation (NYSDEC), it was agreed that this outcrop evaluation would be conducted prior to initiating drilling activities and that, if necessary, adjustments would be made to the SI program based on the findings of this evaluation.

The bedrock outcrop evaluation was conducted on December 5, 2006. Present were Mr. Charles Post of the NYSDEC, and Messrs. Frank Williams, Jim Marolda, and Bob O'Neill of Brown and Caldwell.

Provided below is a summary of the findings and conclusions from the outcrop evaluation, followed by recommendations for the SI program based on these findings.

SUMMARY OF FINDINGS

Identification of Nearby Bedrock Outcrops

Two bedrock outcrops were identified and evaluated as part of this effort. The first is located directly east of Area 2, along a cut in the base of the slope on the east side of the railroad tracks (see Figure 1). The second is located approximately 1,600 feet south of the Area 2, adjacent to and west of the northern end of Area 4, below the high tide level of the Hudson River.

No bedrock outcrops have been observed within Area 2, or along the Hudson River adjacent to Area 2. This is consistent with data from soil borings from Area 2 and along the river, which indicate that the surface of the bedrock beneath Area 2 generally slopes towards the west, is shallowest in the eastern portion of the site, and is approximately 40 feet or more below grade adjacent to the river.

During the December 5, 2006 site visit, a reconnaissance of the unlined portion of the Wynantskill Creek adjacent to the site was conducted. No bedrock outcrops were observed along the creek banks or bottom.

Outcrop East of Area 2, Adjacent to Railroad

This outcrop is a westward-facing, approximately 300 foot long, continuous exposure of bedrock positioned directly east of the site, along a cut in the base of the slope on the east side of the railroad tracks (see Figure 1). The top and sides of the outcrop are covered with soil that has eroded off of the steep slope above the outcrop.

The rock that crops out at this exposure is composed entirely of gray to black, highly-deformed, shale. Due to the degree of deformation, bedding was not apparent, although on some rock fragments there are indications of slight compositional/grain-size changes which may be indicative of relict bedding. Very closely-spaced scaly and planar cleavage surfaces are the predominant structural feature. In general, the cleavage surfaces dip moderately to steeply toward the east (see Table 1). Locally within the outcrop, the cleavage surfaces are folded (see Photograph #1). Thin (approximately ¼-inch thick) quartz veins were observed along much of the outcrop and are generally oriented parallel to adjacent cleavage surfaces (see Photograph #2). The veins were observed to be continuous over at least several feet, although typically their full length could not be determined due to soil cover. The veins undulate somewhat, but consistently dip to the east at a moderate-to-high angle (49° to 65°), and locally are vertical (i.e., 90° dip). Slickenlines (lineations composed of fibrous mineral growths) were often observed associated with the vein surfaces (see Photograph #3). Where observed, the slickenlines are parallel to the surface of the vein, and plunge toward the southeast (see Table 1). The slickenlines are indicators of fault displacement, with the displacement oriented parallel to the slickenlines. Small steps are visible on the ends of some of the slickenlines (see Photograph #3). These steps indicate that the rocks above the vein moved northwestward relative to the rocks below the vein during formation of the slickenlines.

The shale is weathered to varying degrees throughout the outcrop. Weathering is indicated by a decreased competency in the rock relative to fresher exposures. In weathered zones, the shale can be easily broken along cleavage surfaces, and is partly degraded to fragments of shale surrounded by clay and silt-rich material. The clay and silt-rich material is derived from the shale by the weathering process. In some locations where rock has spalled from the face of the outcrop, less weathered shale is exposed.

Outcrop South of Site, Adjacent to Hudson River

This outcrop is located approximately 1,600 feet south of Area 2, below the high tide level of the Hudson River, adjacent to the northern end of Area 4 (the southern end of the outcrop begins approximately 50 feet north of the end of the retaining wall for Area 4). The outcrop is approximately 180 feet long and partly covered by river sediments. Observations were made while the tide was relatively low.

The lithology and structure of this outcrop is very similar to that described above for the outcrop east of Area 2. It is composed of gray to black deformed shale, with closely spaced planar and scaly cleavage surfaces. Bedding is not apparent in the outcrop. The cleavage surfaces dip steeply (72° to 87°) to the east (see Table 1). Quartz veins were not observed on this outcrop, however such features, if present, are less likely to be observed due to sediment and algae cover. These outcrops are smooth relative to those near the railroad due to erosion by the river, and thus the weathered materials are less well developed, since they are eroded by the river soon after they form (see Photograph #4).

CONCLUSIONS

The rocks exposed at the outcrops directly east of Area 2 and approximately 1,600 feet south of Area 2 are generally the same in their lithology and structural characteristics: highly deformed, variably weathered, gray to black shale with pervasive, closely-spaced scaly and planar cleavage surfaces that dip moderately to steeply to the east. At numerous soil borings drilled within Area 2, split-spoon samples from the depth interval where refusal on bedrock was encountered recovered fragments of black to gray weathered shale. Based on the similarity between these two nearby outcrops, and the bedrock material recovered from on-site soil borings, it is expected that the rocks observed in the outcrops are generally representative of the bedrock beneath Area 2. These observations are consistent with the understanding of the regional geologic setting, wherein the Troy (Water St.) Site and adjacent areas lie within an approximately 10 kilometer wide, north-south oriented zone of Ordovician-aged rock referred to as the Cohoes Melange (Kidd, et al., 1995), in which the bedrock is of similar composition and structure to that described above. The memorandum entitled, "Cohoes MGP Site Bedrock Literature Review" (Brown and Caldwell, February 2005), which was prepared as part of National Grid's Remedial Investigation activities at the Cohoes Former MGP, discusses the characteristics of bedrock in the region, including the Cohoes Melange, in more detail.

RECOMMENDATIONS

The drilling program described in the SI Work Plan, as modified by the November 15, 2006 letter, includes the collection of bedrock cores from six locations across Area 2 where bedrock piezometers are to be installed. As described above, bedrock beneath Area 2 is anticipated to be generally similar in character throughout Area 2 based on:

- The similarity in the nature of bedrock characteristics within and between the outcrops near Area 2;

- The similarity of bedrock fragments recovered from soil borings within Area 2 to bedrock observed in the outcrops; and

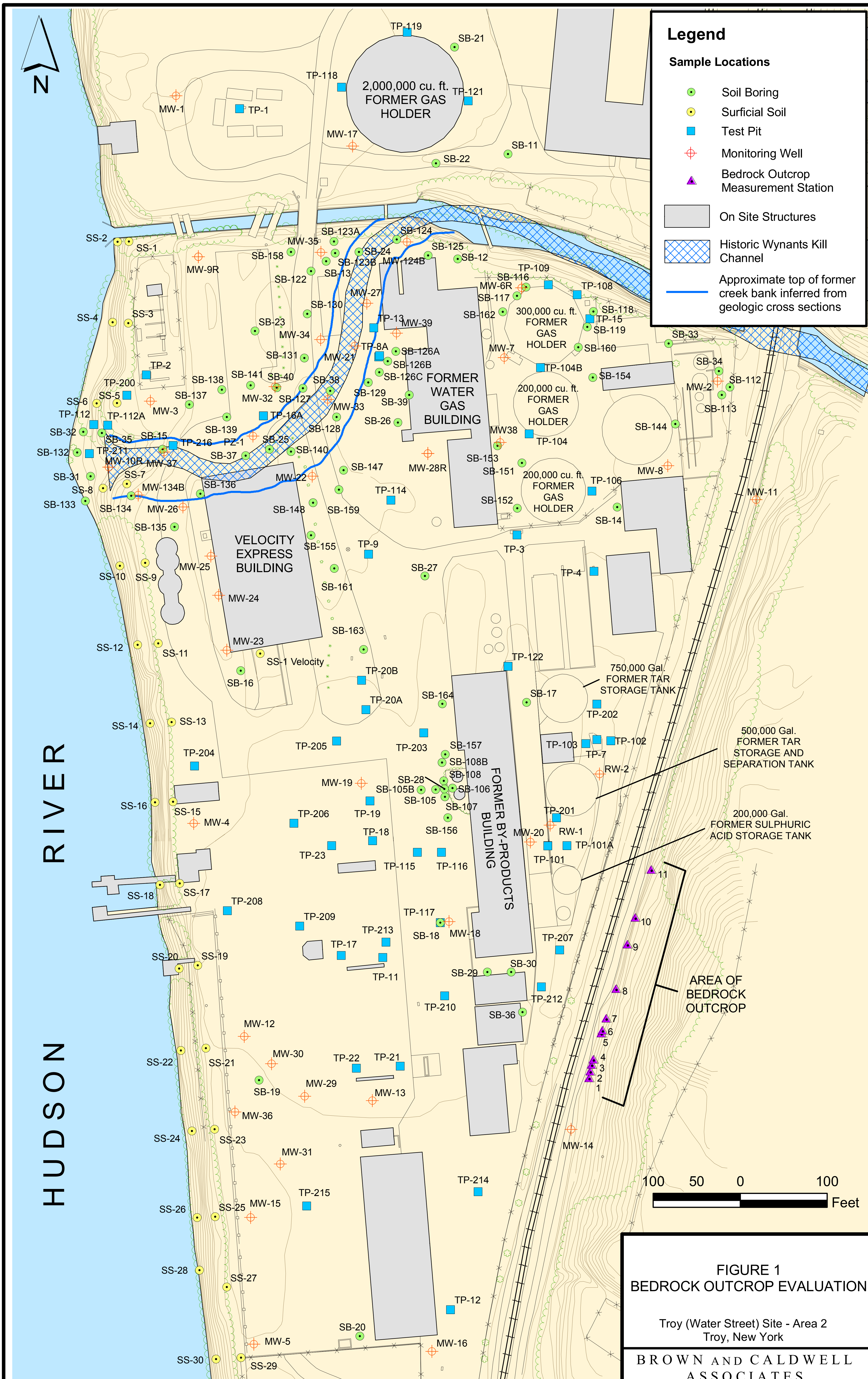
- The consistency of the outcrop observations with the regional understanding of bedrock in this area.

Accordingly, no additional coring is recommended at this time. It is recommended that the bedrock piezometer locations be drilled early in the SI field program. If the bedrock cores indicate that the characteristics of the bedrock beneath the site are substantially different from the outcrops, or show substantial variability between locations, coring may be conducted at additional locations to further characterize the bedrock.

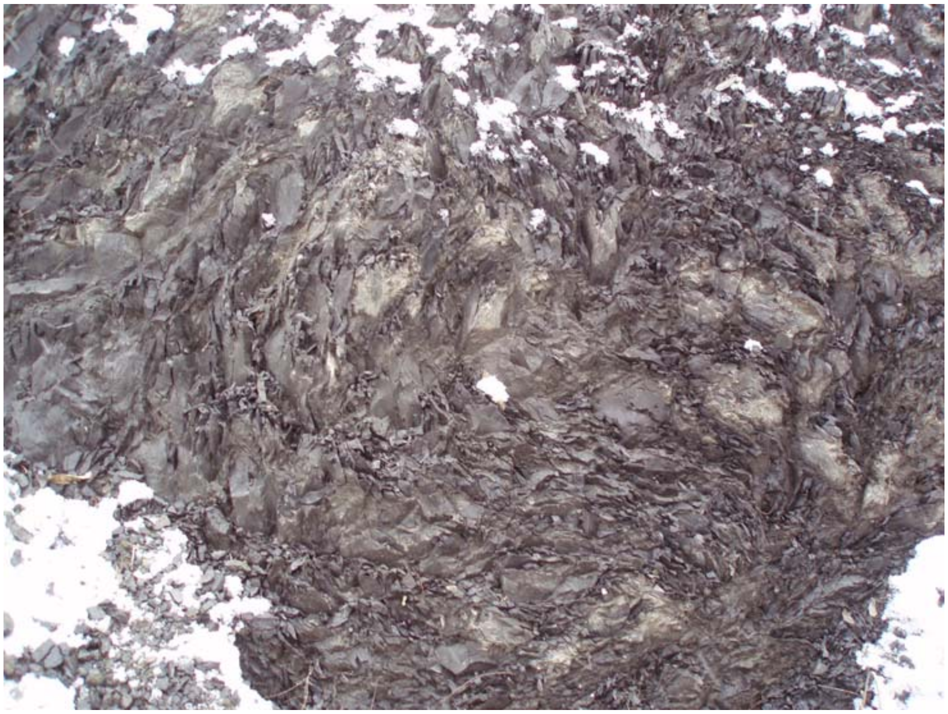
REFERENCES

Kidd, W.S.F., Plesch, A., and Vollmer, F.W., 1995. Field Trip A4: October 14th. “Lithofacies of the Taconic Flysch, Mélange, & Allochthon in the New York Capital District.” Field Trip Guidebook for the 67th Annual Meeting of the New York State Geological Association, edited by; John I. Garver and Jacqueline Smith.

Brown and Caldwell, February 15, 2005. Memorandum to S. Stucker of National Grid: “Cohoes MGP Site Bedrock Literature Review”.



P:/GIS/National_Grid/Troy/Bedrock_Outcrop_Evaluation.mxd



Photograph #1 – Tightly folded cleavage surfaces observed in outcrop east of Area 2, adjacent to railroad.

Photograph #2 – Quartz vein generally oriented parallel to cleavage surfaces. Observed in outcrop east of Area 2, adjacent to railroad.

Photograph #3 – Slickenlines on vein surfaces in outcrop east of Area 2, adjacent to railroad. As discussed in text, steps are visible on ends of slickenlines.

Photograph #4 – Outcrop observed south of Area 2, adjacent to Hudson River. Outcrop surface is worn by river erosion and is partly covered by sediment and algae.

TABLE 1
ORIENTATION OF STRUCTURAL FEATURES
BEDROCK OUTCROPS NEAR AREA 2 OF TROY (WATER ST.) SITE
SUPPLEMENTAL INVESTIGATION
TROY, NY

Station/Location	Feature	Strike Azimuth	Dip	Slickenline Plunge Direction
Outcrop East of Area 2, Adjacent to Railroad				
1. 63' North of MW-14	Vein(1)	035°	46°E	NA
2. 69' North of MW-14	Vein(1)	350°	52°E	NA
3. 77' North of MW-14	Vein(1)	024°	56°E	115°E
4. 83' North of MW-14	Vein(1)	014°	90°	NA
5. 114' North of MW-14	Vein(1)	352°	60°E	NA
6. 117' North of MW-14	Vein(1)	008°	65°E	NA
7. 132' North of MW-14	Vein(1)	029°	65°E	139°E
8. 168' North of MW-14	Vein(1)	015°	90°	NA
9. 220' North of MW-14	Vein(1)	032°	49°E	120°E
10. 252' North of MW-14	Vein(1)	351°	51°E	132°E
11. 310' North of MW-14	Vein(1)	021°	53°E	NA
Outcrop South of Area 2, Adjacent to Hudson River				
1. 51' North of Area 4 Retaining Wall	Cleavage	006°	83°E	NA
2. 54' North of Area 4 Retaining Wall	Cleavage	356°	85°E	NA
3. 87' North of Area 4 Retaining Wall	Cleavage	004°	85°E	NA
4. 148' North of Area 4 Retaining Wall	Cleavage	019°	87°E	NA
5. 232' North of Area 4 Retaining Wall	Cleavage	008°	72°E	NA

Notes:
(1) - Veins are generally parallel to adjacent cleavage surfaces.
NA - Not Applicale

APPENDIX B

Soil Boring and Piezometer/Well Construction Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **BRC-1** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
THC/C. Mino/	RLO	8.25"		N/A"	38.3 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/31/07 - 7/31/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.5 ft.	Easting: 707083.7 ft. Northing: 1411437.7 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL				*Borehole backfilled w/ cement/bentonite grout*
5							
		SP SM	Brwn mf SAND, little (+) Silt&Clay, trace (+) f Gravel, trace (-) Organics (roots). Dry.	2-1-2-4	1	1.1	
		GW GM	Brwn-blk cmf GRAVEL (cinders, coal), little (-) Clay&Silt, trace (+) mf Sand. Wet.	2-4-4-3	2	8.4	8.7-10'- Weak turpentine odor
10		GW	Blk-brwn-orange mfc GRAVEL (cinders, coal), little (-) cmf Sand (cm sand composed of cinders and coal), trace (-) Silt.	4-13-15-9	3	36.8	
				4-8-15-15	4	36.2	
		GW	Rust Brwn cmf GRAVEL (cinders, coal), little (-) mf Sand, trace (+) Silt. Saturated.	9-11-8-13	5	39.4	10-16' - Fill material saturated w/ GW and Brwn NAPL (weak - moderate turpentine/ tar odor)
15							
		GW	Blk-brwn cmf GRAVEL (cinders, slag), little (-) mf Sand, trace (+) Silt. Saturated.	3-4-4-5	6	60.3	
		SW GW	Blk cmf SAND and fm GRAVEL (sand and gravel composed of slag, cinders). Saturated.	6-8-5-5	7	12	16-20.9' - Fill material saturated w/GW and Blk NAPL (moderate - strong acetone odor/weak tar odor), fluid in spoon cold to the touch w/rainbow sheen on surface
20				6-13-11-6	8	5	
		ML CL	**ALLUVIAL DEPOSITS** Blk-grey SILT&CLAY, little (-) f Sand. Saturated.	3-2-1-1	9	13.6	
		CL ML	Grey-blk Silty CLAY. Moist.				
		ML CL	Grey Clayey SILT, trace f Sand. Moist/wet.	1-1-1-1	10	3.3	
25							22.9-28' - Blk staining (paint thinner odor, No visible NAPL)
		ML CL	Grey-orange Clayey SILT, trace f Sand (dense, fe staining throughout).	3-4-4-4	11	4.4	
		SW SM	Grey-purple cmf SAND, little (+) Clayey Silt.	WOH-2-9-11	12	6	
		SW SM	Grey-purple cmf SAND, little (+) Silt, trace (-) cmf Gravel. @ 27.3' layer of Organics. Moist.				
30		SP SM	Grey f SAND, little (+) Clayey Silt.	1-5-8-10	13	0.4	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. BRC-1 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description
		SP SC	Grey-purple fm SAND, little (-) Clay, trace (-) f Gravel and organics (roots).
		SP GP	Grey f SAND, little (+) mfc Gravel, little (-) brwn Organics (roots).
		SW GW	Grey mfc SAND, some mf Gravel, little (-) Silt.
35		PT	Brwn ORGANICS (roots).
		ML CL	Grey-brwn Clayey SILT, little (+) f Sand, little (-) Organics (roots).
		SP SM	Grey-brwn f SAND, some (-) Silt, little Organics.
		SP SM	Orange-brwn f SAND, some Clayey Silt.
		ML CL	Grey Clayey SILT, some (+) f Sand, some (-) Organics (wood, roots), trace mica flakes throughout.
			BEDROCK
			Weathered drk Grey shale.
			No Recovery

Blow Counts	Sample No.	PID Readings (ppm)	Remarks
7-3-5-5	14	0.3	
2-3-4-8	15	0.3	
2-2-26-50/.4	16	5.1	
50/.3	17	N/A	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **BRC-2** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	42.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/20/07 - 7/20/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.8 ft.	Easting: 707105.0 ft. Northing: 1411364.3 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA/NX Coring	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	PID Readings (ppm)	Remarks
0			**FILL** Refer to MW-38 soil boring log for description of soils from 0-10'.				*Borehole backfilled w/ cement/bentonite grout*
10		SP GP	Rust Brwn-blk mfc SAND and fm GRAVEL, trace (+) Silt. (Gravel and c sand composed of cinders and slag). Cobble size piece of slag in shoe.	5-9-14-29	1	0.1	
		GP SP	Blk cmf GRAVEL (slag), little (-) mfc Sand (coal,cinders), trace (-) Silt&Clay. Wet.	32-30-17-12	2	0.5	
15		SP GP	Blk-brwn-tan mfc SAND, and fm GRAVEL (coal,cinders,slag), trace (-) Silt. Wet.	8-6-6-8	3	0.0	
		GP GM	**ALLUVIAL DEPOSITS** Grey mf GRAVEL (composed of drk grey shale), little (+) Silt&Clay, little (-) mf Sand (dense/cohesive).	9-9-11-11	4	2.8	
		SP GP	Grey mf SAND and fm GRAVEL, some (-) Silt&Clay. (Gravel and sand composed of drk grey shale)	9-10-11-9	5	0.0	
20		ML CL					
		CL ML	Brwn-green-grey SILT&CLAY, some (-) fm Sand. Wet.	2-3-5-7	6	0.0	
		CL ML	Greenish Grey CLAY&SILT, little (-) f Sand. (very dense w/ fractures)	2-2-4-4	7	0.0	
		CL ML	Grey CLAY&SILT, little (+) fm Sand, little (-) f Gravel (shale). Saturated.	2-2-3-2	8	0.0	
25		CL ML	Grey-green-brwn CLAY&SILT, little (-) fm Sand and f Gravel, trace (+) Organics. Moist/wet.	WOH-1-2-2	9	0.1	
		ML CL	Greenish Grey CLAY&SILT, trace (+) f Sand. Moist.				
		SW SM	Drk Grey SILT&CLAY, some (-) f Sand, trace (+) Organics.	3-3-6-6	10	0.0	
		SW SM	Grey f SAND, some (-) Silt&Clay, trace (+) Organics (leaves), trace (-) mica flakes. Wet.				
30		SP SM					
		PT	Grey f SAND, little (+) Silt&Clay, trace (+)	2-6-8-12	11	0.0	

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. BRC-2 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	PID Readings (ppm)	Remarks
			mica flakes. Wet.				
		SP SM	Brwn fm SAND, little (+) Organics (leaves), little (-) Silt&Clay, trace (+) mica flakes. @ 29.7' lens of Grey fm Sand.	2-3-4-6	12	0.0	
		SP SM	Brwn ORGANICS (leaves, stem in layers), little (+) fm Sand, trace (+) Silt&Clay, trace (-) mica flakes. From 31.1-31.2' lens of Grey fm GRAVEL, some(-) mf Sand.	5-5-72/0.5	13	0.0	
35		SP GP					Split spoon refusal @ 35'
		SP SM	Brwn fm SAND, some (-) Organics (leaves,stem), little (+) Silt&Clay, trace (+) mica flakes.	50/0.3	14	0.0	
				23.3% (RQD)	15	0.0	
			Same as above w/ trace(-) f Gravel (composed of dk Grey shale).				
40			Grey cmf SAND and f GRAVEL, trace (+) Organics, trace (-) Silt.				37-42' - Conventional coring to characterize bedrock
			Grey-brwn fm SAND, little (+) Silt&Clay, little (-) Organics.				
			BEDROCK				
			Weathered drk Grey shale.				
			Drk Grey shale, moderately hard.				
			Dk Grey Shale, mod hard, mod/slightly weathered. High angle fractures @ 38.2', 39'. Horizontal hairline fracture filled in by calcite @ 39.2'. From 40-40.5' intensely weathered bedrock w/ minor amt of decomposed bedrock (Grey SILT&CLAY) on fractured surfaces.				

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. BRC-3 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	61.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
6/22/07 - 6/26/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.9 ft.	Easting: 706936.0 ft. Northing: 1411504.4 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0			**FILL** Refer to SB-129 soil boring log for description of soils from 0-20.0'.				*Borehole backfilled w/ cement/bentonite grout*
5							
10							
15							
20		SW GW	Blk stained mfc SAND, some (-) fm Gravel (cinders). Saturated. @ 20.4 cmf GRAVEL (red brick, cinders), little (-) mf Sand.	14-21-24-25	1	99.3	
				4-7-18-32	2	249.0	
		ML CL GW	Dk Grey Clayey SILT, little (+) f Sand. Blk cmf GRAVEL (slag, cinders), little (-) cmf Sand, trace (+) Silt. @ 25.6' Drk Grey fm SAND, some (-) Silt&Clay.	20-40-24-24	3	132	20-22.4' - Fill material saturated w/ GW and Blk NAPL (moderate - strong mineral spirit/paint thinner odor) 23-25.6' - Fill material saturated w/ GW and Blk NAPL (moderate - strong tar/paint thinner odor)
25		SP SM	**ALLUVIAL DEPOSITS** Grey f SAND, some (-) Silt&Clay, trace (+) mica flakes, trace (-) Organics.	2-4-6-10	4	4.6	
		PT PT	Brwn ORGANICS (wood), little (-) f Sand, trace (+) Silt. Brwn ORGANICS (wood).	22-42-30-50/0.3	5	0.8	
30		PT	Brwn Organics, little (+) Silt&Clay, little (-)	28-10-9-12	6	3.9	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **BRC-3** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			f Sand. Saturated.				
		SP SM	Brwn f SAND, some (-) Organics (leaves), little (+) Silt&Clay, trace (-) mica flakes.	10-8-9-11	7	40.2	
35		SP SM	Grey fm SAND, little (-) Silt&Clay, trace (+) Organics.	3-4-6-18	8	14.3	32-36' - Weak mineral spirit odor
		SP GP	Brwn ORGANICS (leaves, stems), little (+) f Sand, trace (+) Silt&Clay.				
		SP GP	Grey, fm SAND and f GRAVEL, little (-) Silt&Clay, trace (+) Organics.	6-8-7-4	9	5.6	
			LOWER SAND/GRAVEL UNIT				
40		GP SP	Grey mf SAND and mf GRAVEL, trace (+) Silt&Clay (Gravel rounded to sub-angular). @ 36.8' Grey mf SAND, little (-) Silt&Clay, trace (+) Organics.	4-8-12-18	10	55.6	36.8-40' - Weak/moderate paint thinner odor
			Greenish Grey cmf GRAVEL, little (+) mf Sand, trace (+) Silt&Clay.	6-9-11-7	11	0.0	
		GP SP	No Recovery		12	0.0	
45			Grrenish Grey mfc GRAVEL, some (-) cmf Sand, little (+) Silt&Clay. Saturated.		13	0.0	
		GP SP	Grey mf GRAVEL and cmf SAND, trace (+) Silt. Saturated.		14	0.0	
		SP	Grey mf SAND, trace (+) Silt.		15	0.0	
50		SP GP	Grey cmf SAND and mf GRAVEL, trace (+) Silt. Saturated.		16	0.0	
		GP SP	Grey cmf GRAVEL, some (-) cmf Sand, trace (+) Silt&Clay. (Gravel rounded to sub-angular).				
55							52-61' - Split spoon sampling not possible due to the loss of roller bit in borehole
60							
			BEDROCK				61' - Depth to bedrock (determined by auger refusal)

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-1 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	36.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
7/17/07 - 7/18/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.3 ft.	Easting: 707271.9 ft. Northing: 1411563.2 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0			**FILL** Refer to SB-33 soil boring log for description of soils from 0-10'.				*Borehole backfilled w/ cement/bentonite grout*
5							
10		SW GW	Blk-brwn cmf SAND and cmf GRAVEL (composed of mostly cinders and slag), trace (-) Silt&Clay. Piece of concrete stuck in shoe.	2-9-14-50/0.3	1	0.2	
				10-19-49-31	2	4.0	
		SW GW	Rust Brwn-Blk cmf SAND and fm GRAVEL (composed of cinders and coal). Moist.				
			No Recovery	9-20-21-18	3	0.0	
15							
		GW	Blk-Brwn cmf GRAVEL (composed of slag and cinders), little (-) mf Sand, trace (+) Silt&Clay. Saturated.	8-8-11-8	4	23.2	16-18.7' - Saturated w/ GW and Blk-brwn NAPL (moderate/strong turpentine odor)
				3-2-3-3	5	5.2	
		ML CL	**ALLUVIAL DEPOSITS** Grey SILT CLAY, some (-) f Sand. Moist/wet.				
20		SP SM	Grey f SAND, some (-) Silt&Clay. Moist/wet.	2-2-3-3	6	6.0	
				WOH/12"-1-2	7	1.2	
		SP SM	Grey f SAND, little (-) Silt&Clay. (Fe staining throughout, compact/dense). Color change to Tan -Brwn @ 24'. Wet.	WOH/12"-2-2	8	0.0	
25							
		GP	Grey fm GRAVEL, little (+) cmf Sand, trace (-) Silt. Wet.	1-2-3-4	9	0.0	
		SP SM	Grey mf SAND, little (+) Silt&Clay, trace (+) Organics (leaves). saturated.	3-3-5-7	10	0.0	
		GP SP	**LOWER SAND/GRAVEL UNIT** Grey mfc GRAVEL(rounded to sub-angular), some (-) cmf Sand, little (+)				
30		GP		1-3-5-7	11	0.1	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-1 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP	Silt&Clay, trace (+) Organics.				
			GLACIAL DEPOSITS (Till) Greenish Grey mf GRAVEL (rounded to sub-angular and composed of mostly drk grey shale), some (-) mfc Sand, little (+) Silt&Clay. (slightly cohesive/dense) Saturated.	50-50/0.3	12	0.0	Split spoon refusal @ 32.5'
35				50/0.2	13	0.0	
			BEDROCK Drk Grey weathered shale, moderately hard.				36' - End of boring (auger refusal)

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-2 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	55.5 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/31/07 - 5/31/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.3 ft.	Easting: 706886.2 ft. Northing: 1411653.0 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to MW-35 soil boring log for description of soils from 0-18'.				*Borehole backfilled w/ cement/bentonite grout*
5							
10							
15							
		SP SM	Brwn-blk fm SAND, some(-) Silt&Clay, trace(+) f Gravel. Wet/saturated @ 18.3'	4-5-24-27	1	2.4	
20		ML CL	**ALLUVIAL DEPOSITS** Grey-blk SILT&CLAY, some(-) f Sand, trace(-) Organics(roots), grading into		2	0.1	
		SP SM	Grey-blk f SAND, some(+) Silt&Clay, trace(-) Organics. Wet.	2-2-2-3	3	0.0	
		SP SM	Grey-blk f SAND, some(+) Silt&Clay, trace(-) Organics. Moist. Mica flakes throughout.	1-2-2-3	4	0.2	
25		SP	Grey f SAND (w/ yellow mottles), some Silt&Clay, trace(-) Organics(roots), grading into Grey fm SAND, little(+) Silt&Clay. Wet.	1-1-2-3	5	0.7	
			Grey mf SAND, trace(+) Clayey Silt. Saturated. Lenses of Clayey SILT, some Organics(roots and stems) @ 26.8 and 27.2'.	1-3-4-6	6	0.0	
30		CL ML	Grey CLAY&SILT, little(+) f Sand. Mica flakes throughout.	2-2-2-3	7	0.0	

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-2

Blow Counts	Sample No.	PID Readings (ppm)
2-3-6-9	8	0.1
3-3-6-6	9	0.1
1-1-1-12	10	0.1
7-9-10-8	11	0.8
4-10-7-8	12	0.3
9-22-22-20	13	0.1
9-16-14-14	14	0.0
20-10-12-12	15	0.0
4-11-19-19	16	0.0
15-19-17-14	17	0.3
18-42-37-17	18	
80/0.2	19	

Depth (feet): 35, 40, 45, 50, 55

USC Soil Type: SP SC; SP SM; SP SM; SW GW; GW SW; SP; SP; GW SW; GW SW; GW; GW; GW GC; SW GW; SW GW; SW GW

Description

Grey fm SAND, little(+) Clay&Silt. Mica flakes throughout.

Grey fm SAND, litte(+) Silt&Clay. Mica flakes throughout.

Grey f SAND, some(-) Silt&Clay, trace(+) Organics(leaves).

Grey mcf SAND, some(-) mf Gravel, little(-) Silt&Clay.

Grey mf GRAVEL(rounded to sub-angular) and cmf SAND, little(+) Silt&Clay. Cohesive (Gravel and Sand held together in Silt&Clay matrix).

Brwn f SAND, little(+) Silt&Clay, trace(+) Organics, grading into Brwn f SAND, little(+) Organics(leaves and stems), trace(+) Silt&Clay. Moist.

Brwn f SAND, little(+) Silt&Clay, little(-) f Gravel, trace(+) Organics.

LOWER SAND/GRAVEL UNIT

Grey mcf GRAVEL(rounded to sub-angular) and cmf SAND, little(+) Silt&Clay. Saturated.

Grey mcf GRAVEL(rounded to sub-angular), some(-) cmf Sand, little(+) Silt&Clay. Pulverized piece of Qtz Cobble in shoe of spoon. Saturated.

Grey-yellow cmf GRAVEL, little(+) cmf Sand, trace(-) Silt. Pulverized piec of Qtzite Cobble @ 42.6'.

Grey cmf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(-) Silt. Saturated.

GLACIAL DEPOSITS (Till)

Dk Grey cmf GRAVEL, some(-) Clay&Silt, little(-) fm Sand. Cohesive/compact.

Grey cmf SAND and mfc GRAVEL(rounded to sub-angular), little(+) Silt&Clay. Saturated. Compact/dense

As above, wet. Very compact/cohesive (Gravel held together by Sand and Silt&Clay).

Grey mf SAND and cmf GRAVEL, little(+) Silt. Not as compact as previous interval (loose).

BEDROCK

Weathered fragments of Dk Grey Shale. Wet. Laminations observed.

As above.

Remarks

Split spoon refusal @ 54.2'

Auger refusal @ 55.5'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-3 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	54.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
6/21/07 - 6/21/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.0 ft.	Easting: 706820.0 ft. Northing: 1411643.4 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Remarks
0			**FILL** Refer to SB-158 soil boring log for description of soils from 0-16'.			*Borehole backfilled w/ cement/bentonite grout*
16		GW	Blk cmf GRAVEL (slag, cinders), little (+) mf Sand, trace (+) Silt & Clay.	9-15-6-3	1	16-51.7' - No PID reading due to equipment malfunction
17		ML CL	**ALLUVIAL DEPOSITS** Grey SILT&CLAY, little (-) Sand, trace (+) mica flakes. Moist.	2-2-3-3	2	
19.5		ML CL	Grey SILT&CLAY, some (-) f Sand, trace (+) mica flakes. Moist.	2-2-2-2	3	
21		SP SM	Tan-grey f SAND, some (-) Silt&Clay. Wet.	1-1-1-2	4	
22.5		SP SM	Tan-grey f SAND, little (+) Silt&Clay, trace (+) mica flakes. Wet/saturated.			
24		SP SM	Tan-grey f SAND, some (-) Silt&Clay. Fe staining throughout. @ 24.3' and 25.1' (3" lens of fm SAND, little (-) Silt&Clay, very loose).	1-1-2-2	5	
				1-3-4-4	6	
27.5		SP SM	Tan-grey f SAND, some (-) Silt&Clay, trace (+) Organics, trace (-) mica flakes. Moist. Color change to Grey @ 29.3'.	1-4-5-5	7	
30		SP	Dk Grey f SAND, little (+) Organics	2-2-3-8	8	

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-3** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SM	(leaves, stem), little (-) Silt&Clay, trace (+) mica flakes.	3-5-10-15	9		
		GP SP	Grey fmc SAND and mf GRAVEL, little (+) Silt&Clay, trace (+) mica flakes. (gravel rounded to sub-angular). Wet.	6-8-3-5	10		
35		GP SP	Grey-brwn mfc SAND, little (+) f Gravel, trace (+) organics (leaves).	2-3-4-5	11		
		GP SP SW GW	**LOWER SAND/GRAVEL UNIT** Grey, mf GRAVEL and cmf SAND, little (+) Silt&Clay, (gravel rounded to sub-angular). Saturated.	3-6-2-9	12		
40		GW SW	Dk Grey cmf SAND, some (-) mf Gravel, trace (+) Silt&Clay, (gravel rounded to sub-angular).	16-20-22-22	13		Sample for grain size analysis taken from 41-42'.
		GW SW	Grey cmf GRAVEL and cmf SAND, trace (+) Silt&Clay. Piece of Cobble in shoe of split spoon.	6-29-27-29	14		
45		SP GP	COBBLES, some (-) cmf Gravel and cmf Sand, trace (-) Silt&Clay. Grey cmf SAND and GRAVEL, little (+) Silt&Clay. Saturated.	10-23-18-12	15		
				13-13	16		No Sample from 46-47' (Drillers accidentally auger past 46')
			No Recovery.	5-14-30-32	17		
50		SP GP	**GLACIAL DEPOSITS (Till)** Grey mf SAND, some (-) mf Gravel, little (+) Silt&Clay. (Very cohesive, gravel held together by a Sand, Silt&Clay matrix).	6-14-20-50/0.2	18		Split spoon refusal @ 51.7' Sample for grain size analysis taken from 51-52'.
			BEDROCK Dk moderately hard shale.	100/0.4	19		

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-4** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	65.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/31/07 - 6/1/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 26.7 ft.	Easting: 706729.4 ft. Northing: 1411638.0 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0–20			**FILL** Refer to MW-9R soil boring log for description of soils from 0-20'.				*Borehole backfilled w/ cement/bentonite grout*
20		SW GW	Brwn mf SAND, some(-) f Gravel, trace(-) Silt. Moist.	4-4-2-2	1	9.4	
		SW GW	Misc. Fill (Blk-brwn-grey cmf SAND and fm GRAVEL[cinders and pieces of coal], trace(+) Silt. Moist.	1-1-3-7	2	1.2	
		SP	**ALLUVIAL DEPOSITS**				
		SP	Grey f SAND, little(+) Silt&Clay, little(-) Organics(leaves). Moist.	2-2-3-9	3	1.3	
25		SP	Grey fm SAND, trace(+) Silt. Moist.				
		SP	Grey f SAND, little(+) Organics(leaves and stems), little(-) Silt&Clay. Wet @ 25.4'.	2-5-9-10	4	5.9	
			Grey f SAND, little(+) Silt&Clay, trace(+) Organics. Saturated. Trace mica flakes throughout.	2-4-9-10	5	0.8	
30		SP	Grey-brwn f SAND, little(+) Organics(wood and leaves), little(+) Silt&Clay. Saturated. Trace mica flakes	3-3-3-3	6	0.7	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-4** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP SM	throughout. Lenses of mf SAND @ 29.4 and 29.8'. Grey-brwn f SAND, some(-) Silt&Clay, little(+) Organics(leaves). Trace mica flakes throughout. Compacted.		7	0.2	
35		GW SW SW GW	**LOWER SAND/GRAVEL UNIT** Grey-blk mf GRAVEL(rounded to sub-angular) and cmf SAND, trace(+) Silt&Clay. Wet.		8	0.1	
		GW SW	Grey mcf SAND and mf GRAVEL(rounded to sub-angular), trace(+) Silt&Clay. Saturated.		9	0.0	
		GW	Grey mfc GRAVEL and cmf SAND, little(+) Silt&Clay. Lens of SILT&CLAY, some Organics(leaves) @ 36.5'. Pulverized pieces of Cobble @ 37'.		10	0.0	
40			Grey cmf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt&Clay. Saturated.		11	N/A	
		GW SW	No Recovery. Cobble stuck in shoe of spoon.		12	0.0	
45		SW GW	Grey cmf GRAVEL(rounded to sub-angular) and cmf SAND, trace(+) Silt&Clay. Saturated.	17-22-20-10	13	0.2	
		GW SW	Grey cmf SAND and mf GRAVEL(rounded to sub-angular), trace(+) Silt&Clay. Qtz Cobble @ 44.5'.	26-16-10-13	14	0.0	
		SW GW	Grey mcf GRAVEL(rounded to sub-angular) and cmf SAND, trace(+) Silt&Clay. Saturated.	22-15-15-9	15	0.0	
50			Grey cmf SAND, some(-) fm Gravel, trace(+) Silt&Clay. Saturated.	9-6-10-8	16	0.0	
		SW SP	Grey mfc SAND, trace(+) Silt. Very loosely packed. Grey mf SAND, trace(+) Silt&Clay. Saturated. Lens(approx. 3/8" thick) of Grey Clayey SILT, some(-) f Sand @ 55.5'.	10-10-7-15	17	0.1	
				8-8-8-10	18	0.0	
55		SP	Grey f SAND, trace(+) Silt&Clay. Saturated.	6-5-5-8	19	0.0	
				36-23-22-40	20	0.0	
60		SW GW SW GW	**GLACIAL DEPOSITS (Till)** Grey mfc SAND and mfc GRAVEL, little(+) Silt&Clay. Compacted/lithified. Pieces of weathered Shale in shoe of spoon.	10-45-50/0.4	21	0.0	
		SW GW	Grey mfc SAND and mfc GRAVEL, little(+) Silt&Clay. Compacted/cohesive. Saturation observed around gravel grains. Fracturing (vertical) w/in material observed when broken apart.	25-30-31-46	22	0.0	
65		BR BR	As above, w/ weathered pieces of Dk Grey Shale. **BEDROCK** Weathered Dk Grey Shale. Moderately hard Dk Grey Shale.	50/0.1	23	0.0	Split spoon refusal @ 64.1' Auger refusal @ 65'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-5 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	58.8 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/24/07 - 5/24/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 23.1 ft.	Easting: 706667.0 ft. Northing: 1411483.0 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

USC Soil Type	Description
	FILL
SW GW GP	Misc. Fill (Brwn-blue fm SAND, little(-) f Gravel[cinders, slag, pieces of coal]), trace(+) Silt&Clay. Moist.
SW GW	Misc. Fill (c GRAVEL[slag]).
	Misc. Fill (Brwn-blk mf SAND, little(+) mf Gravel[cinders], little(-) Silt&Clay). Moist.
SW GW	Mfc SAND and mf GRAVEL, little(-) Silt&Clay, trace(-) Organics(stems). Moist.
SW GW	Misc. Fill (Brwn-orng cmf SAND[cinders], some(-) mf Gravel[slag]), trace(+) Silt.
GW SW	Misc. Fill (cmf GRAVEL[cinders], little(-) mcf Sand[cinders], trace(-) Silt). Pieces of red brick @ 6.5', 2" pieces of slag @6.7'.
SW GW SW	Misc. Fill (Blk cmf SAND[cinders], trace(+) f Gravel), trace(-) Silt.
	Misc. Fill (Brwn-blk-orng cmf GRAVEL[slag and cinders], little(-) cmf Sand[cinders]), trace(-) Silt. Moist/wet.
	No recovery.
GW	Misc. Fill (Brwn-blk cmf GRAVEL[slag], little(-) cmf Sand[cinders and pieces of coal]), trace(-) Silt. Moist.
SW GW	Misc. Fill (Blk-brwn-orng cmf SAND[cinders] and mfc GRAVEL[slag and cinders]), trace(+) Silt. Moist/wet.
GW	Misc. Fill (Blk-orng cmf GRAVEL[slag], little(-)mcf Sand[cinders]), trace(+) Silt. Saturated @ 18.6'.
GW SW	Blk stained mf GRAVEL and cmf SAND, trace(+) Silt.
	ALLUVIAL DEPOSITS
SP SP	Grey f SAND, trace(+) Silt. Wet/saturated. Well sorted.
	Grey fm SAND, little(+) mf Gravel, trace(+) Organics, trace(-) Silt. Moist.
SP	Grey fm SAND, little(+) cmf Gravel, trace(+) Organics, trace(-) Silt. Moist/wet. Mica flakes throughout.

Blow Counts	Sample No.	PID Readings (ppm)	Remarks
5-5-4-4	1	0	*Borehole backfilled w/ cement/bentonite grout*
2-2-4-5	2	2.1	
5-7-5-6	3	1.2	
6-12-12-13	4	9.5	
8-14-7-2	5	33.2	8-10' - weak paint thinner odor
28-24-32-29	6	9.5	
27-22-16-22	7		
22-30-26-26	8	25.8	
8-19-19-14	9	3.8	
14-29-22-22	10	20.2	18.6-23' - weak turpentine/paint thinner odor, sheen observed on pieces of slag
19-20-12-12	11	32.8	
8-8-11-13	12	11.2	22-26' - weak tar odor
5-10-7-9	13	8.7	
7-8-11-13	14	5.2	
15-11-11-9	15	1.4	
2-2-3-6	16	1.1	

Depth (feet): 5, 10, 15, 20, 25, 30

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-5** Page 2 of 2

Depth (feet)	Elevation (feet)	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		16-8-8-11	17	0.5	
35		3-8-12-12	18	0.6	
		1-3-11-11	19	1.3	
		13-11-13-15	20	2.1	
40		15-21-21-19	21	2.0	
		8-18-13-13	22	0.5	
45		2-4-4-6	23	0.0	
		1-2-5-10	24	0.0	
		5-5-8-11	25	0.0	
50		7-8-8-9	26	0.0	
		7-8-12-34	27	0.0	
55		10-28-54	28	0.0	
		8-8-32-52	29	0.0	
		44-50/0.3	30	0.0	Split spoon refusal @ 58.8'

USC Soil Type / Description

SW GW — Grey mcf SAND and mf GRAVEL(rounded to sub-angular), trace(+) Silt. Saturated.

SW GW — As above, grading into mcf SAND, little(-) f Gravel, trace(-) Silt.

SW — Mf SAND, trace(+) f Gravel, trace(-) Silt, trace(-) Organics.

SP SM — Grey f SAND, little(+) Silt, little(-) Organics(layered leaves). Brwn ORGANICS, little(+) f Sand, little(-) Silt&Clay in shoe of spoon.

ML CL — Grey-brwn SILT&CLAY, some(-) f Sand, little(-) Organics(leaves). Organic layers from 34.5-34.7' and 34.8-34.9' consisting of Brwn ORGANICS(leaves and stems), little(+) Silt&Clay, trace(+) f Sand. Lenses of fm SAND throughout 34-36' interval.

Brwn ORGANICS(leaves and stems), little(+) Silt&Clay, trace(+) f Sand. Lenses of fm SAND spaced 1-2" apart throughout.

GW — Moist/wet. mf GRAVEL and cmf SAND, trace(+) Silt in shoe of spoon.

LOWER SAND/GRAVEL UNIT

GW SW — Grey cmf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt&Clay. Saturated.

GW SW — Grey mcf GRAVEL(rounded to sub-angular), some(-) cmf Sand, trace(+) Silt&Clay. Saturated.

SW GW — Grey mf GRAVEL(rounded to sub-angular) and mcf SAND, little(+) Silt&Clay. Moderately cohesive (Gravel and Sand held together in Silt&Clay matrix).

GW SW — Grey cmf SAND, some(-) f Gravel, trace(+) Silt&Clay. Saturated.

GW SW — Grey mf GRAVEL(rounded to sub-angular), some(-) cmf Sand, trace(-) Silt.

GW — Grey mfc GRAVEL(rounded to sub-angular), some(-) cmf Sand, trace(+) Silt&Clay. Pulverized Granite Cobble in shoe of spoon.

GW — Grey mfc GRAVEL, little(+) cmf Sand, trace(-) Silt. Piece of Qtz Cobble in shoe of spoon.

As above.

LACUSTRINE DEPOSITS

CL ML — Grey CLAY&SILT, trace(-) f Sand.

GLACIAL DEPOSITS (Till)

GW — Mfc GRAVEL, little(+) cmf Sand, trace(-) Silt.

BEDROCK

Weathered Dk Grey Shale. Moderately hard. Laminations observed.

As above.

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-6** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
THC/JLM/	RLO	8.25"		N/A"	66.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
4/17/07 - 4/18/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 24.0 ft.	Easting: 706700.0 ft. Northing: 1411451.1 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW	**FILL** Brwn mcf SAND, little f Gravel, trace(+) Silt, trace Organics.	13-23-23-18	1	0.0	*Borehole backfilled with cement/bentonite grout*
		SM SW	Brwn mf SAND, some(-) Silt, trace(+) fm Gravel, trace Organics. Dry. Blk cmf SAND, little(+) f Gravel, trace Silt.	10-14-16-20	2	0.0	Slight sulfur odor
5		SW GW	Dk Brwn cmf SAND, some(-) fm Gravel, trace(+) Clayey Silt. Material resembling solidified lime with bluish-green color observed at end of spoon(4-6' interval). Wet.	6-10-8-8	3	0.0	Moderate sulfur odor
		SW GW	Same as above.	6-6-8-6	4	0.2	Sulfur odor
		GW SW	Miscellaneous Fill (slag and cinders)	11-30-29-26	5	0.0	
10			Same as above.	25-17-19-20	6	0.0	
∇			Same as above.	16-14-11-6	7	0.2	Saturated @12.8'
15			Same as above.	13-20-22-16	8	0.0	
			Same as above.	26-18-26-32	9	62.3	
			Same as above.	12-12-13-22	10	9.8	Moderate fuel odor @ 17.5' 18-20' - Slight fuel odor
20			Same as above.	34-27-15-11	11		
			Same as above.	15-11-10-10	12	21.4	22' - Strong fuel odor, sheen observed on water surface w/in spoon
25		GM	Blk stained mf Gravel, little(+) Silt&Clay	11-8-12-8	13	19.4	24.5' - Moderate fuel odor, sheen observed on water surface w/in spoon
		SM	**ALLUVIAL DEPOSITS** Blk stained fm SAND, little(+) Silt, trace(+) fm Gravel, trace Organics. Mica flakes throughout.	21-10-6-7	14	29.6	Slight fuel odor @ 26'
		OL SP	Dk Brwn ORGANICS, little(+) fm Sand, trace(+) fm Gravel.	4-9-9-13	15	31.0	
30		OL SP	Grey cmf SAND, some(-) f Gravel, trace(-) Silt.	3-3-6-8	16	34.9	30-66' - No PID readings

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-6** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Remarks
		OL	Dk Brwn layered ORGANICS, some(-) fm Sand, little Silt.	3-3-3-5	17	
		SM	Grey mf SAND, little(+) Organics, trace(+) Silt.			
		OL	As above grading to Brwn Clayey SILT, little(+) Organics, trace(-) f Sand.	4-5-5-7	18	
35		GW	Brwn mf SAND, little(+) Silt&Clay.			
			Brwn Clayey SILT, little(+) Organics, trace(-) f Sand.	5-7-8-8	19	
			LOWER SAND/GRAVEL UNIT			
		GW	Dk Grey cmf GRAVEL (rounded to sub-angular), some Cobbles, little(+) mf Sand, trace(+) Silt.	7-7-11-17	20	
40			Dk Grey cmf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt.	17-16-18-13	21	
		GW	Grey cmf GRAVEL(rounded to sub-angular), little(+) mf Sand, trace(+) Silt	18-11-10-14	22	
45		GW	Grey mfc GRAVEL(rounded to sub-angular), some(-) cmf Sand, trace(+) Silt	13-11-9-10	23	
				8-9-6-12	24	
		GW	Grey cmf GRAVEL(rounded to sub-angular), little(-) fm Sand, trace(-) Silt.			
		GW	Grey fmc GRAVEL(rounded to sub-angular), little(+) cm Sand.	6-7-9-9	25	
50		GW	Grey fm GRAVEL, little(+) cm Sand, trace(-) Silt.	1-4-5-7	26	
		SW	Grey cmf SAND, little(+) f Gravel, little(-) Silt.	7-9-40-50	27	
		SW	Grey mcf SAND, little(+) f Gravel, trace(-) Silt.			
55		GW	Grey fm GRAVEL, some(-) mf Sand, trace(+) Silt.	22-27-11-14	28	
		CH	**LACUSTRINE DEPOSITS**			
		SP	Grey Silty CLAY(layered), trace(-) f Gravel	4-9-26-32	29	
			As above, grading into Grey f SAND (well sorted).			
		SW	**GLACIAL DEPOSITS(Till)**	7-20-21-26	30	
60			Grey fm SAND, little(+) mf Gravel, trace(+) Silt&Clay.			
		SW	As above w/ weathered fragments of Dk Grey Shale/Slate.	15-30-28-40	31	
		BR	**BEDROCK**			Weathered bedrock @ 60.9', indications of cleavage planes observed
		BR	Weathered fragments of Dk Grey Shale/Slate.	50/0.4	32	Split spoon refusal @ 62.4'
			Weathered Dk Grey Shale/Slate			
65						Augers advanced to approximately 66'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-7 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	58.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
4/25/07 - 4/25/07	Parratt-Wolff		N/A

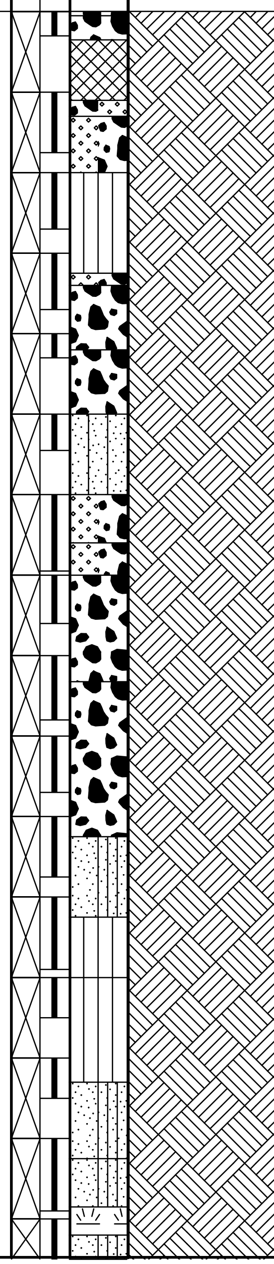
Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.9 ft.	Easting: 706967.0 ft. Northing: 1411310.5 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

USC Soil Type	Description
GW	**FILL**
SW	Mf GRAVEL.
	Brwn-grey mf SAND, little(+) Silt, trace(+) f Gravel.
GW SW	Misc. Fill (material resembling solidified lime w/ bluish tinge).
SW GW	Tan-beige mf GRAVEL, little(+) mf Sand.
ML	Brwn-blk cmf SAND, little(+) fm Gravel, trace(-) Silt and misc. fill (cinders, coal). Moist @ 1.4'.
SW GW SW GW	Tan-grey Clayey SILT, little(-) f Sand, trace(+) mf Gravel, trace(-) Organics and weathered pieces of dk grey Shale. Color changes to Grey @ 4.8'. Moist.
	Blk mfc SAND, little(+) f Gravel, trace(-) Silt.
SM	Pulverized red brick.
	Misc. Fill (slag).
SW GW	Blk stained mfc SAND, little(+) Silt, trace(-) f Gravel. Wet.
SW GW	Brwn mfc SAND, little(+) fm Gravel, trace(+) Silt.
GW	Misc. Fill (ornge-blk-brwn cinders, coal, slag).
GW	Misc. Fill (brwn-blk cinders and slag), little(-) fm Sand, trace(+) Silt. Saturated @ 14.7'.
	As above, w/ blk staining.
SP SM	**ALLUVIAL DEPOSITS** Blk-grey f SAND, some(-) Clayey Silt. Saturated.
ML	As above, grading into Dk Grey Clayey SILT, some(-) f Sand, trace(-) Organics.
ML	Dk Grey Clayey SILT, little(+) f Sand, trace(+) Organics.
SP SM	As above, grading into Grey f SAND, little(+) Silt&Clay. Mica flakes observed throughout.
SP SM	Grey mf SAND, little(+) Silt&Clay, trace(+) mf Gravel, trace(-) Organics.
	Layered ORGANICS. Wet.
SP	

Depth (feet): 5, 10, 15, 20, 25, 30

Sample No.	Blow Counts	PID Readings (ppm)	Remarks
1	110-100\.4	83.5	*Borehole backfilled w/ cement/bentonite grout*
2	12-23-10-10	38.0	Sulfur odor from solidified lime material
3	2-2-2-7	62.7	
4	3-6-7-12		
5	11-26-24-26	27.0	
6	17-50/.3		
7	24-19-11-11		
8	8-5-8-15		
9	5-28-20-22	152.3	Moderate petroleum odor 16.7-17.6' - NAPL (strong petroleum odor) coating grains of fill material
10	2-2-2-2	79.8	18-20.5' - Fill material saturated w/ GW and NAPL (moderate petroleum odor) 20.5-58' - No PID readings
11	5-7-5-6		
12	1-2-2-2		
13	WOH/18"		
14	WOH/12"-2-4		
15	1-3-6-6		
16	1-4-9-9		

Graphic Log: Sample Int, Recovery, Lithology, Backfill



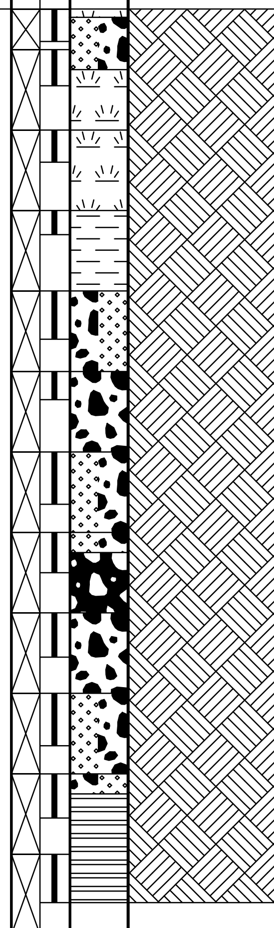
P:\\Clients\\National_Grid\\Nimo_Troy\\132071(SI&IRMs)\\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-7** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SM	Brwn mf SAND, little(-) Silt&Clay, trace(+) Organics.	8-8-8-15	17		
		SW GW	Red-brwn ORGANICS (layered), little(-) f Sand, trace(+) Silt.				
		PT PT	Grey cmf SAND, some(-) fm Gravel (rounded to sub-angular), trace(+) Silt&Clay.	6-10-7-8	18		
35		OL	Ylw-ornge-brwn ORGANICS (layered), little(+) f Sand, trace(+) Silt.	2-4-4-8	19		
		GW	Brwn-blk ORGANICS (layered), w/ lens of Grey f SAND, trace(+) Silt, trace(-) f Gravel.	3-5-7-15	20		
		SW	Brwn-grey Clayey SILT, some(+) Organics, little(-) mf Sand, little(-) f Gravel.				
40		GW	**LOWER SAND/GRAVEL UNIT**	9-10-10-14	21		
			Grey mf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt&Clay.	11-11-15-17	22		
		SW GW	Grey cmf GRAVEL(rounded to sub-angular), little(-) Cobbles, trace(+) cmf Sand, trace(-) Silt&Clay.				
45		SW GW	Grey mcf SAND and mf GRAVEL, trace(+) Silt&Clay. Pulverized sandstone cobble in shoe.	15-17-44-40	23		
		GW	Grey mcf SAND and mf GRAVEL, trace(+) Silt&Clay.	4-19-24-17	24		
			Pulverized COBBLES (sandstone, quartzite).	10-10-10-14	25		
		SW GW	Grey mcf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt.				
50		GW SW	Grey cmf SAND, some(-) fm Gravel, trace(+) Silt.	10-10-50/0.4	26		
			Grey cmf GRAVEL and cmf SAND, trace(+) Silt.	29-40-50/0.4	27		
			BEDROCK				Split spoon refusal @ 53.4'
			Weathered pieces of Dk Grey Shale/Slate.				
55							
							Auger refusal @ 58'

Graphic Log (Sample Int, Recovery, Lithology, Backfill):



BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-8** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	49.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
4/26/07 - 4/26/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.2 ft.	Easting: 706990.6 ft. Northing: 1411212.4 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	USC Soil Type	Description
	SM	**FILL**
		Asphalt
	SM	Brwn-tan mfc SAND, little(+) Silt&Clay, trace(+) f Gravel.
	SW	Blk mf SAND, little(+) Silt&Clay, trace(+) f Gravel.
5	GW SW	Brwn mf SAND, trace(+) Silt, trace(+) misc. fill (cinders).
	SW GW	Misc. Fill (slag)
	SM	Misc. Fill (Brwn-orng mf SAND, trace(-) Silt, slag, cinders).
	SW GW	Tan-brwn mf SAND, little(+) f Gravel, trace(-) Silt.
		Brwn-yellow mf SAND, little(+) Silt&Clay, little misc. fill (cinders, pieces of coal). Moist.
10	SW GW	Misc. Fill (cinders, pieces of coal).
		No recovery
		Misc. Fill (cinders, pieces of coal, mf Sand). Wet @ 11'.
15	SW GW	Brwn-orng-yellow Misc. Fill (cinders, pieces of coal, mf Sand).
	SW GW	As above. Saturated @ 16'.
20	ML	**ALLUVIAL DEPOSITS**
		Blk stained Clayey SILT, little(+) f Sand, trace(-) f Gravel.
	ML	Blk stained Clayey SILT, little(+) f Sand. Wet, mica flakes observed throughout.
25	ML CL	Grey SILT&CLAY, little(-) f Sand. Saturated, mica flakes observed throughout.
	SM ML	As above, grading into Grey f SAND, some(-) Silt&Clay.
30	SM ML	Grey f SAND, some(-) Silt&Clay, trace(+) Organics.

Sample No.	Blow Counts	PID Readings (ppm)
1	21-24-37-28	0.0
2	6-9-13-16	0.0
3	7-8-8-13	0.8
4	10-10-16-10	2.3
5	17-15/.4	N/A
6	57-37-23-23	2.4
7	12-22-17-47	11
8	13-13-13-20	
9	13-10-9-5	14.3
10		29.4
11	7-7-5-5	
12	1-2-2-2	
13	1-1-2-2	
14	WOH/12"-1-1	
15	1-2-3-5	
16	3-9-9-7	

Remarks

Borehole backfilled w/ cement/bentonite grout

18.9-20.4' - Fill material saturated w/ GW and Blk NAPL (moderate tar/petroleum odor and possible naphthalene odor)

20-49' - No PID readings

Moderate sulfur odor @ 29.8

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

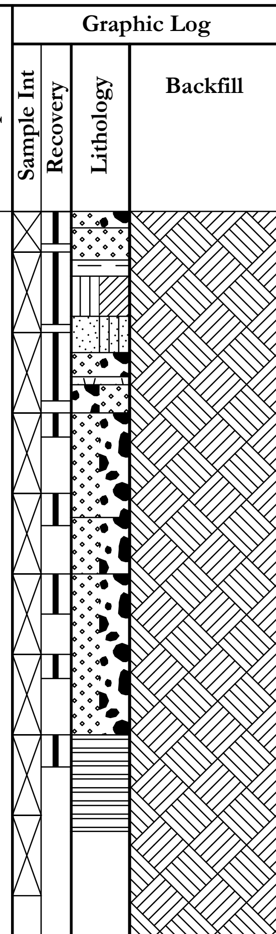
BROWN AND CALDWELL

Project Name: Troy (Water St.) Site - Area 2
Project Number: 132071
Project Location: Troy, NY

Permit Number: N/A

Boring No. DSB-8

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		OL	Blk-grey ORGANICS (wood and leaves), little(-) Silt&Clay, trace(+) f Sand.	3-9-9-7	17		Sulfur odor from 31.4-32.2'
		SW GW	Brwn-yellow ORGANICS, lens of mcf SAND w/in.				
		SW	Grey cmf SAND, little(+) mf Gravel, trace(-) Silt.	2-2-2-3	18		
35		OL ML CL	Grey-brwn mfc SAND, little(+) Organics, trace(-) Silt&Clay. Mica flakes observed throughout.				
		SP SM	ORGANICS, little(+) Silt&Clay, trace(+) f Sand.	2-2-4-8	19		
		SW GW	Grey SILT&CLAY, little(+) f Sand, trace(-) Organics.	6-5-8-12	20		
40		GW SW	As above, grading into a Grey f SAND, little(+) Silt&Clay. Mica flakes observed throughout.	4-10-14-18	21		
		SW GW	Grey cmf SAND, little(+) mf Gravel, trace(+) Silt&Clay.	12-10-10-10	22		
		SW GW	Brwn ORGANICS				
		SW GW	**LOWER SAND/GRAVEL UNIT**				
45		BR	Grey mf GRAVEL(rounded to sub-angular) and cmf SAND, trace(+) Silt&Clay.	10-10-5-62	23		
			Grey cmf SAND and mf GRAVEL, trace(+) Silt&Clay.	50/0.4	24		Split spoon refusal @ 46.4'
			GLACIAL DEPOSITS (Till)				
			Grey cmf SAND and mf GRAVEL, little(+) Silt&Clay, little weathered Shale fragments. Material is compacted/cohesive.				
			Grey mcf SAND and mf GRAVEL, little(+) Silt&Clay, little weathered fragments of Shale. Material is more compacted/cohesive than previous sample.				Auger refusal @ 49'
			BEDROCK				
			Weathered fragments of Dk Grey Shale/Slate.				



BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-9** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	27.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/1/07 - 5/1/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.6 ft.	Easting: 707113.4 ft. Northing: 1411174.7 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0		SW GW	**FILL** Brwn mf SAND, little(+) mf Gravel, trace(-) Silt&Clay. Pulverized pieces of red brick @ 0.2'.	8-10-20-15	1	0.3	*Borehole backfilled w/ cement/bentonite grout* 1-2.1' - Sulfur odor
		GW SW	Misc. Fill (slag and material resembling solidified lime). Blue tinge observed on lime material.	3-9-9-7	2	0.3	
		CL ML	Misc. Fill (Yellow-pink building material). Brwn-blk fm SAND, little(+) f Gravel (cinders), little(+) Misc. Fill (slag). Moist.	6-4-4-6	3	0.0	
5		SW	Grey CLAY&SILT, little(-) f Sand, grading into Tan-grey SILT&CLAY, little(+) f Sand, trace(+) f Gravel.	4-4-17-39	4	0.3	
		ML CL	Blk fm SAND, little(+) f Gravel, trace(-) Silt, trace(-) Misc. Fill (cinders, slag, and pieces of red brick). Moist.	24-15-10-8	5	5.6	9.2-10.3' - Slight mineral spirit odor
10		ML CL	Brwn SILT&CLAY, little(-) f Sand, trace(-) mf Gravel. Very compacted.	2-4-6-8	6	3.9	10.3-13' - Brwn NAPL (moderate tar/moth ball odor) coating gravel
		ML	As above, w/ color change to Green-grey. Green-grey Clayey SILT, little(+) mf Gravel (weathered Shale fragments), trace(+) cmf Sand. Piece of slag @ 12.6'.	3-5-3-5	7	22.3	13-14' - NAPL coating gravel and organic material
		GW ML	Mf GRAVEL, little(+) cmf Sand, trace(+) Clayey Silt.	2-3-4-5	8	16.3	14-16' - Slight tar odor
15		ML CL	**ALLUVIAL DEPOSITS** Grey Clayey SILT, little(+) mf Gravel, little(-) f Sand, trace(+) Organics.	2-26-50/.2	9	2.3	Split spoon refusal @ 16.7'
		BR	**LACUSTRINE DEPOSITS** Green-grey SILT&CLAY, little(+) f Sand, trace(+) fm Gravel, trace(-) Organics. Very compacted, varving observed in SILT&CLAY material.	50/0.3	10	2.1	
20			**BEDROCK** Weathered fragments of Dk Grey Shale/Slate. Fe staining throughout.	50/0.3	11	0.9	
25							
27							Auger refusal @ 27'

P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-10** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	20.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
5/2/07 - 5/2/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83	Easting: 707233.6 ft.
Robert Baldoze	4.25" HSA	CME 75	Vert Datum: NGVD29	Northing: 1411187.1 ft.
			Ground Surface Elev: 28.1 ft.	TOC Elev: N/A ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL	25-19-20-18	1	0.3	
		GW	Asphalt.				*Borehole backfilled w/ cement/bentonite grout*
		SW SW SW	Blk fmc SAND, little(+) mf Gravel, trace(+) Silt.	7-13-13-13	2	0.9	
			Brwn-orng mfc SAND, little(-) f Gravel (cinders), trace(-) Silt, trace(-) Misc. Fill (slag and pieces of coal).				
		ML CL	Tan-brwn SILT&CLAY, little(+) fm Sand, trace(+) f Gravel.	4-11-17-20	3	1.0	
5		GW	Misc. Fill (cinders).				
		CL ML CL	**LACUSTRINE DEPOSITS**	5-25-68-30	4	0.8	
			Tan-brwn CLAY&SILT, little(-) f Sand. Moist, compacted, layered.				
			Green-grey Silty CLAY (layered), trace(-) f Sand, trace(-) Organics. Moist.	3-6-13-11	5	0.6	
10		SW GW SW GW	**GLACIAL DEPOSITS (Till)**	7-50/0.2	6	0.0	Split spoon refusal @ 10.5'
			Tan-grey mfc SAND and f GRAVEL, some(-) Clayey Silt, grading into Tan-brwn mf GRAVEL (rounded to sub-angular), little(+) mfc Sand, trace(+) Clayey Silt. Fe staining observed around gravel. Compacted. Saturated @ 8.1'.	47-50/0.2	7	0.0	
15			Blk cmf SAND, some(-) f Gravel, trace(+) Clayey Silt, grading into Blk cmf SAND and mf GRAVEL (rounded to sub-angular), trace(+) Clayey Silt.	50/0.3	8	0.0	
			BEDROCK				
			Weathered fragments of Dk Grey Shale/Slate. Dry.				
			As above, w/ Fe staining observed on cleavage surfaces.				
20							End of boring, augered into approx. 9.5' of weathered bedrock

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-11** Page 1 of 1

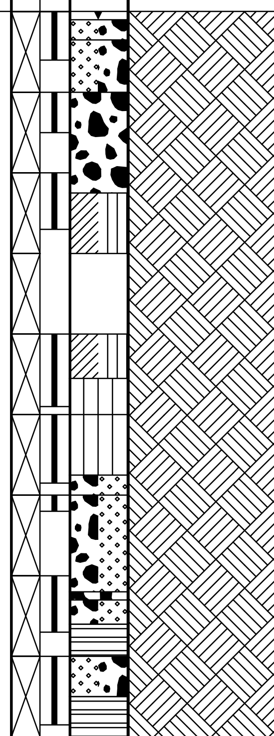
Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	18.1 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/2/07 - 5/2/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.0 ft.	Easting: 707272.8 ft. Northing: 1411263.6 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		GW SW GW SW GW GW	**FILL** 0-0.2': Asphalt. 0.2-0.7': Blk fm SAND, little(+) f Gravel, trace(+) Silt. 0.7-2': Blk fm SAND, little(+) mf Gravel, trace(+) Silt, trace(-) Organics, trace(-) Misc. Fill (slag and cinders).	5-4-4-12 5-10-23-30	1 2	0.1 0.0	*Borehole backfilled w/ cement/bentonite grout*
5		CL ML	2-4.5': As above, w/ increased amt of Misc. Fill (slag, cinders and concrete).	31-13-7-7	3	0.3	
		CL ML ML ML	**LACUSTRINE DEPOSITS** 4.5-6': Tan-brwn-grey CLAY&SILT (layered/varved), trace(-) f Sand. 6-8': No recovery. 8-9.1': Tan-brwn CLAY&SILT, trace(-) f Sand. Saturated @ 9'.	6-6-15-13 7-6-13-10	4 5	 0.9	
10			9.1-10': Tan-brwn SILT, little(+) f Sand. 10-11.5': As above, grading into Tan-brwn fm SAND, little(+) Clayey Silt.	4-7-11-47	6	1.7	
		GW SW GW SW	**GLACIAL DEPOSITS(Till)** 11.5-12': Tan-brwn f GRAVEL and cmf SAND, little(-) Clayey Silt. Very compacted, Fe staining observed around gravel.	50/.4 36-43-28-20	7 8	0.0 0.1	
15		GW SW SW GW	12-14.4': Tan-brwn mf GRAVEL(rounded to sub-angular) and cmf SAND, little(+) Clayey Silt. Very compacted, Fe staining observed around gravel, Color change to Grey @ 12.2'. 14.4-14.6': Pulverized pieces of COBBLE. 14.6-15.2': Grey mf GRAVEL and cmf SAND, little(+) Clayey Silt. Compacted. 15.2-16': Weathered fragments of Dk Grey Shale. Fe staining observed on cleavage surfaces. 16-17': Grey-blk cmf SAND and fm GRAVEL, little(+) Silt. Poorly sorted and not as compacted as previous samples.	25-26-50/.1 50/.1	9 10	0.0 0.0	Split spoon refusal @ 17.1'
			BEDROCK 17-18.1': Weathered fragments of Dk Grey Shale/Slate. Fe staining observed on cleavage surfaces.				

Graphic Log: Sample Int, Recovery, Lithology, Backfill



P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-12** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	20.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/18/07 - 7/19/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.2 ft.	Easting: 707309.4 ft. Northing: 1411340.7 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		ML CL	**FILL**	3-5-17-18	1	0.0	*Borehole backfilled with cement/bentonite grout*
		ML CL	Drk Brwn SILT&CLAY, little (+) mf Sand, little (-) Organics (roots).				
		SW SM	Blk mf SAND, little (+) Silt&Clay, little (-) mf Gravel, trace (+) Organics.	8-17-18-8	2	0.0	
		SW GW	Grey-blk mf SAND and mf GRAVEL (gravel composed of red brick and coal), little (+) Silt & Clay, trace (-) Organics. Moist.	6-17-10-8	3	0.0	
5		SW GW	Broken pieces of Red brick.				
		ML CL	Greenish-Grey SILT&CLAY, some (-) f Sand, little (-) f Gravel. Moist.	2-5-6-6	4	0.1	
		ML CL / CL ML	Greenish-Grey SILT&CLAY, some (-) fm Sand, little (-) fm Gravel (Red Brick) trace (-) Organics. Moist	3-4-3-4	5	0.0	
10			**LACUSTRINE DEPOSITS**				
			Greenish-Grey CLAY&SILT, little (-) f Sand (layered/varved). Moist.	3-2-2-2	6	0.0	
			No Recovery				
		CL ML	Greenish-Grey CLAY&SILT, little (-) f Sand. Saturated	3-16-60/2	7	0.1	
		GW	**GLACIAL DEPOSITS (Till)**				
15		GW SW	Grey mfc GRAVEL (rounded to subangular), little (+) mf Sand, little (-) Silt&Clay. (Fe staining throughout, very cohesive/dense). Moist	56-50/2	8	0.0	
				55-50/2	9	0.1	
			GRAVEL AND SAND				
			Mfc GRAVEL (rounded to subangular, flattened), some (-) cmf Sand. Saturated. (very loose, no fines present)	108/5	10	0.0	Augers unable to advance to bedrock in several locations (split spoon recovery is limited w/ broken pcs of gravel and cobbles)
			No Recovery				
20							

Graphic Log: Sample Int, Recovery, Lithology, Backfill

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-13** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	22.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/19/07 - 7/19/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.3 ft.	Easting: 707336.7 ft. Northing: 1411444.7 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL				
		SW GW	Blk mf SAND and fm GRAVEL, little (+) Silt & Clay, little (-) Organics (roots). Color Change to light brwn at 0.4'. Dry.	3-6-10-16	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
		SW GW	Light Brwn mf SAND and fm GRAVEL, little (+) Silt&Clay, little (-) Organics (roots).	42-37-33-37	2	0.2	
5		SW GW	Brwn fm SAND, some (-) mfc Gravel, trace (-) silt. (Gravel consists of slag and cinders). Dry.	22-34-30-22	3	0.3	
		SW GW	Brwn fm SAND, some (-) mfc Gravel, trace (-) silt. (Gravel consists of slag and cinders). Dry.	17-12-12-12	4	5.5	
		CL ML	Tan-Beige CLAY&SILT, little(-) f Sand. Pieces of glass. Dry.	6-33-21-12	5	4.4	
10		SW GW	Blk mf SAND, little (-) fm Gravel (cinders), trace (-) Silt. Dry. Rust Brwn-blk cmf GRAVEL (c gravel composed of slag), little (+) mf Sand, trace (-) silt. Dry.	9-7-6-6	6	0.8	
			ALLUVIAL DEPOSITS				
		ML CL	Grey SILT&CLAY, little (+) Organics (stems), little (-) f Sand and mf Gravel (gravel composed of dark grey shale). Dry.	1-1-3-3	7	0.0	
15		CL ML	Grey CLAY&SILT, little (-) f Sand and Organics, trace (-) f gravel. Moist.	1-3-5-7	8	0.0	
		CL ML	Grey CLAY&SILT, little (-) fm Sand. Moist.				
			LACUSTRINE DEPOSITS				
		CL ML	Greenish Grey CLAY&SILT, trace (+) f Sand. (very dense and compact w/ fractures) Moist.	9-8-8-5	9	0.0	
		CL ML	Beige-brwn CLAY&SILT, little (+) fm Gravel, little (-) mf Sand, Fe staining throughout. Moist	100/0.4	10	0.4	Split spoon refusal @ 18.4'
20			**GLACIAL DEPOSITS (Till)**	100/0.3	11	0.0	
		GW SW	Beige Brown mf GRAVEL, some (-) cmf Sand, little (+) Silt&Clay. Saturated				
		GW	Beige Brwn cmf GRAVEL, little (+) mfc Sand, trace (+) Silt&Clay				Auger to 22'
		GW	Mf GRAVEL, little (+) cmf Sand, little (-) Silt&Clay.				
			BEDROCK				
		BR	Dark Grey Shale, Moderately hard.				

P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-14** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	32.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon / Hammer Type: Auto/140 lbs	Development Method:
4/19/07 - 4/19/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.7 ft.	Easting: 707172.3 ft. Northing: 1411514.9 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SM	**FILL**	9-12-21-14	1	5.3	*Borehole backfilled with cement/bentonite grout*
			Asphalt				
			Orng-brwn mf SAND, little(+) Silt, trace(+) fm Gravel. Moist.	6-8-4-6	2		
			Blk stained misc. fill (bricks fragments and cinders).				
		SM	2-3" diameter pieces of slag.	6-6-4-6	3	3.5	
5		SM	Brwn mfc SAND, little(-) Silt, trace(+) mf Gravel (slag).				
			Brwn mf SAND, little(+) Silt&Clay, trace(+) mf Gravel. Moist.	13-15-28-32	4	8.4	
			Pulverized concrete.				
			Misc. Fill (refractory brick, slag, cinders, pieces of coal), trace(+) Silt&Clay. Moist.	27-15-10-11	5	19.6	
10			Misc. Fill (slag, cinders, pieces of coal), trace(+) mf Gravel.	12-20-11-16	6	13.0	
			Misc. Fill (slag, cinders, pieces of coal).	19-20-23-22	7	12.3	
15			Blk stained cinders. Saturated.	11-23-14-20	8	25.0	Saturated @14.2, moderate fuel odor, sheen observed on water surface
				7-7-6-4	9	42.5	
			Blk stained mf SAND, little(+) Silt&Clay, cinders.				16.8-18' - Blk staining (moderate petroleum odor)
			Blk stained cinders, trace(+) Silt&Clay.	5-17-11-13	10	138	18-20.2' - Fill material coated w/ NAPL (moderate to strong petroleum odor)
20		ML	**ALLUVIAL DEPOSITS**	2-2-5-6	11	210	Petroleum odor absent
		SM SC	Blk stained Clayey SILT, trace(+) f Sand.				
		SM SC	Grey f SAND, some(-) Silt&Clay, trace(+) Organics, trace f Gravel (fragments of blk Shale/Slate). Cohesive.	3-4-3-4	12	12.0	
			Grey f SAND, some(+) Clayey Silt, trace(-) Organics.	2-3-3-5	13	23.8	
25		ML CL	Grey SILT&CLAY (w/ tan mottles), little(-) f Sand.				
		SW	Grey mf SAND, little(+) Organics, trace(-) Gravel (fragments of blk Shale/Slate).	2-2-3-6	14	87.5	
		SW	As above, w/ trace(+) mf Gravel(rounded).	3-4-53/.5	15	35.5	Weathered bedrock @ 28.4'
			BEDROCK				
30			Weathered fragments of Dk Grey Shale/Slate.	50/.1	16		Split spoon refusal @ 29.5'

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-14 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Backfill	PID Readings (ppm)	Remarks
											Auger refusal @ 32'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-15 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	64.2 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
4/24/07 - 4/24/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.3 ft.	Easting: 706934.0 ft. Northing: 1411428.6 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0			**FILL** Refer to SB-147 soil boring log for description of soils from 0-16'.				*Borehole backfilled w/ cement/bentonite grout*
16		SW	Mf SAND, little(+) mf Gravel, trace Silt&Clay. Dry. Misc. Fill (orng-brwn-blk cinders and slag). Saturated.	11-15-18-50	1	59.0	Saturated @ 16.2'
18				11-11-13-14	2	114	18-24.2' - Fill materials saturated w/ GW and NAPL (strong tar odor), sheen observed
20				4-4-9-9	3	204	
22		SW GW	Mfc SAND and f GRAVEL, trace(+) Silt.	2-2-2-4	4	219	
24		ML SP GP ML SW SM SW SW GW SP	**ALLUVIAL DEPOSITS** Grey Clayey SILT, some(+) f Sand, trace(+) Organics. As above, grading into Grey fm SAND and f GRAVEL, little Silt&Clay. Grey Clayey SILT, some(-) f Sand, little(+) Organics (layered), trace f Gravel. Dk Grey mf SAND, little(+) Silt&Clay, trace Organics, grading to mf SAND, some(-) Organics (layered), little(+)	1-1-1-1	5	51.1	Organic odor
26				WOH-2-4-8	6	89.4	
28				4-8-8-8	7		28-64.2' - No PID reading due to equipment malfunction
30				2-2-5-5	8		

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-15** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			Silt&Clay.				
		SP	Grey mf SAND and ORGANICS (pieces of wood), little(+) f Gravel	2-5-9-9	9		
			Grey mfc SAND, some(+) mf Gravel (rounded to sub-angular), trace Silt&Clay, trace Shale fragments.	10-4-5-9	10		
35		OL	Brwn-grey f SAND, little(+) Silt, trace(+) Organics. Lens of cmf SAND w/in, mica flakes observed throughout.				
		SW GW		8-8-7-5	11		
		GW	As above, grading to Grey-brwn f SAND, some(+) Organics (layered), little(+) Silt&Clay, trace f Gravel. Lens of cmf SAND w/in.	12-13-19-23	12		
40			Grey-blk-brwn ORGANICS (wood), little(+) Silt&Clay, trace(+) f Sand.				
		SW GW	**LOWER SAND/GRAVEL UNIT**	13-13-13-9	13		
			Grey cmf SAND and mf GRAVEL (rounded), trace(+) Silt.				
		SW	Cmf GRAVEL (rounded to sub-angular), little(+) cmf Sand, trace(-) Silt.	9-6-9-20	14		
			Grey cmf SAND and cmf GRAVEL (rounded to sub-angular), trace(+) Silt.	8-16-16-12	15		44-48' - Coarse grained sand and gravel coated w/ brwn NAPL (tar odor)
45			Grey cmf SAND, little(+) mf Gravel, trace(-) Silt.				
		SW GW	Grey cmf SAND and mf GRAVEL, trace(+) Silt.	12-14-13-12	16		
		SW	Grey cmf SAND, little(+) mf Gravel (rounded to sub-angular), trace(+) Silt.	6-8-10-13	17		
50		SW	As above w/ pulverized Cobble @ 50.5'	7-9-17-22	18		
		GW SW	Grey-brwn mf GRAVEL (rounded to sub-angular), some(-) cmf Sand, trace(+) Silt. Pulverized piece of Sandstone in shoe.	9-17-15-24	19		
				14-14-11-10	20		
55		ML	**LACUSTRINE DEPOSITS**				
			Grey Clayey SILT, little(+) mcf Sand.				
		ML	Grey Clayey SILT, little(+) mf Sand. Compacted.	9-10-17-17	21		
		SW GW	**GLACIAL DEPOSITS (Till)**				
			Grey cmf SAND and f GRAVEL, trace(+) Silt.	13-18-46-33	22		
		GW	Weathered fragments of Dk Grey Shale/Slate.				
60		GW SW	Grey mf GRAVEL (rounded to sub-angular) and cmf SAND, little Silt&Clay. Very compact.	9-16-21-34	23		
				12-21-36-40	24		
			BEDROCK				
			Weathered fragments of Dk Grey Shale/Slate.	50/0.4	25		Split spoon refusal @ 64.2'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-16** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
THC/JLM/	RLO	8.25"		N/A"	65.5 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon / Hammer Type: Auto/140 lbs	Development Method:
4/16/07 - 4/17/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.8 ft.	Easting: 706750.7 ft. Northing: 1411472.2 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP	**FILL**	5-5-18-23	1	0.0	
		SW	Brwn mf SAND, trace(+) Silt.				*Borehole backfilled w/ cement/bentonite grout*
		SW	Brwn mfc SAND and f GRAVEL, trace(+) Silt.	8-30-15-16	2	0.0	
		SW GW	Brwn mf SAND, little(+) fm Gravel, trace(+) Silt.				
5		SW GW	Grey cmf SAND and GRAVEL, little(+) Silt.	14-9-6-11	3	0.0	
		SW SM	As above with color transition from Grey to Brwn. Wet.	3-8-10-5	4	0.0	
			Brwn mf SAND, some(-) fm Gravel, trace(+) Silt&Clay. Pulverized brick @ 4.4'.				
			Blk stained fm SAND, little(+) Silt, trace(+) fm Gravel.	6-6-2-2	5	0.0	
10			Miscellaneous Fill (slag, fm SAND and f GRAVEL).	8-16-9-8	6	0.0	
			Miscellaneous FIll (slag, pieces of anthracite, Blk/brwn cmf SAND, little f Gravel, trace Silt).	3-10-10-9	7	0.0	
15				8-7-5-6	8	0.0	
			As above w/ wood fragments.	13-20-50/.2	9	0.0	
		SW GW	Brwn mcf SAND and mf GRAVEL, trace Silt.				
			Pulverized concrete	50/.5	10	0.0	
20			Miscellaneous Fill (Fe stained mf SAND, little(+) Silt, trace(+) fm Gravel).	15-20-8-22	11	0.0	
			Pulverized pieces of slag. Saturated.	10-10-18-12	12	3.8	Saturated @ 22' 22-24' - Weak fuel odor
25			Blk cmf GRAVEL, little(+) fmc Sand, trace Silt. Saturated.	15-17-15-24	13	27.0	24-26' - Moderate tar odor throughout interval w/ sheen observed on water surface
				5-7-10-8	14	10.5	
		ML	**ALLUVIAL DEPOSITS** Blk stained Clayey SILT, little(-) f Sand.				26-28' - Moderate tar odor throughout interval w/ sheen observed on water surface
		SM	Grey/blk cmf SAND, little(-) Silt&Clay, trace(+) fm Gravel(rounded).	3-5-6-6	15	2.0	
30		SM SM	Grey fm SAND, some(+) decomposed Organics, little(+) Silt&Clay	6-9-13-15	16	2.1	Tar odor ends @ 29'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-16 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		ML ML	Grey fm micaceous SAND, some(-) Organics, little Silt. Grey Clayey SILT/SILT&CLAY, little to trace organics, trace(-) Gravel(rounded).	2-3-2-6	17		
35		GW SW	Grey Clayey SILT, little(-) f Sand, trace(+) f Gravel(rounded). **LOWER SAND/GRAVEL UNIT**	5-8-12-10	18	0.0	
		GW SW	Grey mfc GRAVEL(rounded to sub-angular), some(-) cmf Sand, little(+) Clayey Silt.	10-12-13-9	19	0.0	
			Grey fmc GRAVEL(rounded to sub-angular), some(-) cmf Sand, trace(+) Clay&Silt. Fragments of Blk Shale/Slate within material.	8-12-11-12	20	0.0	
40				6-7-7-9	21	0.0	
		GW SW	As above, w/ more abundant fragments of Shale/Slate.	14-11-13-13	22	0.0	
45		GW SW	As above, w/ pieces of pulverized Cobbles.	10-9-16-14	23	0.0	
		GW	Grey to Blk mf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt. Fragments of Dk Grey-Blk Shale/Slate throughout.	25-19-19-25	24	0.0	
50		GW	COBBLES, some(+) cmf Gravel, little(+) cmf Sand, trace(+) Silt&Clay. Fragments of Dk Grey-Blk Shale/Slate throughout.	24-20-17-14	25	0.0	
		GW SW	Blk-grey mf GRAVEL, some(-) cmf Sand, little(-) Silt&Clay.	15-14-13-10	26		
		GW	Grey-blk mfc GRAVEL(rounded to sub-angular), some(-) Cobbles, little(+) cmf Sand, trace Silt.	15-9-9-12	27	0.0	
55		CL CL	**LACUSTRINE DEPOSITS** Brwn Silty CLAY.	16-9-15-43	28	0.0	
		CL CL ML	Grey CLAY&SILT, little(-) mf Gravel, trace(-) f Sand. Pulverized Shale/Slate fragments in shoe.	17-19-15-16	29	0.0	
60		SW GW	**GLACIAL DEPOSITS (Till)** Grey CLAY&SILT, little(+) mf Gravel, trace(+) mf Sand grading into cmf SAND, little(+) mf Gravel, trace(+) Silt&Clay.	15-15-18-17	30	0.0	
			Grey CLAY&SILT, some(-) cm Gravel, little(+) fm Sand, trace Cobbles.	10-15-21-24	31	0.0	Weathered bedrock @ 61.7'
			Grey cmf SAND and mf GRAVEL, little(+) Silt&Clay. Pulverized cobbles throughout.	10-34-50/.4	32	0.0	Split spoon refusal @ 63.4'
65			**BEDROCK** Weathered pieces of Dk Grey-blk Shale/Slate. Weathered pieces of Dk Grey-blk Shale/Slate. Decomposed bedrock (Grey SILT+CLAY) observed btwn fragments .	50/.4	33	0.0	Auger refusal @ 65.5'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. DSB-17 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	50.2 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
4/27/07 - 4/27/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.2 ft.	Easting: 706982.4 ft. Northing: 1411080.5 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to SB-157 soil boring log for description of soils from 0-14'.				*Borehole backfilled w/ cement/bentonite grout*
5							
10							
		ML CL	Grey-brwn Clayey SILT, little(-) fmc Sand, trace(+) Gravel (slag).	3-8-9-9	1		
15		GW	Misc. Fill (slag and cinders, refractory brick).				
		ML CL	Tan-brwn Clayey SILT, little(+) fm Sand, trace(-) f Gravel. Sporadic occurences of Misc. Fill (slag, brick, porcelain).	5-6-4-6	2		
		GW GM	Misc. Fill (cinders and slag), little(-) Clayey Silt.	3-5-17-10	3	18.6	
20		GW	Misc. Fill (slag).				
		GW	Misc. Fill (cinders, slag, pieces of coal), trace fm Sand.	4-4-4-4	4	30.9	20-21.1' - Fill material saturated w/ GW and blk NAPL (moderate petroleum/acetone odor) 21.1-22.8' - Sand grains slightly coated w/ NAPL (slight petroleum odor) 24-50' - No PID readings
		SW	Grey-blk cmf SAND, trace(+) Silt, trace Misc. Fill (slag and cinders), trace(-) f Gravel.	6-16-9-5	5	36	
		ML	**ALLUVIAL DEPOSITS** Blk-grey Clayey SILT, little(-) f Sand. Blk mottles observed w/in Silt.	2-2-2-2	6		
25		SP SM	Grey f SAND, some(-) Silt&Clay, trace(-) Organics. Mica flakes observed throughout.	WOH/12"-2-1	7		
				1-4-8-11	8		
		SP	Grey fm SAND, little(-) Organics, trace(-) Silt&Clay. Mica flakes observed throughout.				
30				2-4-5-7	9		

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **DSB-17** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP	Grey mf SAND, some(-) Organics (layered), trace(+) Silt.	3-8-11-11	10		
		SW GW	Grey cmf SAND and f GRAVEL, trace(+) Silt.				
35			Grey-brwn ORGANICS (leaves and wood), some(-) f Sand, little(-) Silt&Clay. Mica flakes observed throughout.	4-8-6-8	11		
			As above, w/ lenses (1/2" to 3" thick) of mf SAND, trace(+) Silt.	5-5-9-12	12		
		SW GW	**LOWER SAND/GRAVEL UNIT**				
		GW SW	Grey mcf SAND and mf GRAVEL (rounded to sub-angular), little(-) Silt.	2-5-5-1	13		
40			As above, grading into Grey mf GRAVEL, little(+) cmf Sand, trace(+) Silt.	1-1-7-14	14		
		SW GW	Grey cmf SAND and fm GRAVEL, little(+) Silt&Clay.				
		SW GW	**GLACIAL DEPOSITS (Till)**				
			Grey cmf SAND and fm GRAVEL, little(+) Silt&Clay. Weathered pieces of Shale observed throughout, 2" Qtz Gravel in shoe.	11-40-30-22	15		
45			No recovery.	20-44-50/0.3	16		
			No recovery.				
			No sample. Advanced past obstruction causing split spoon refusal.				
		SW SM	Grey fm SAND, some(-) Clayey Silt, little(+) f Gravel. Compacted.	50-50/0.2	17		
50		BR	**BEDROCK**				Split spoon refusal @ 49.2'
		BR	Weathered Dk Grey Shale/Slate. Decomposed bedrock (Grey SILT&CLAY) observed on clavage surfaces. Weathered Dk Grey Shale/Slate.	50/0.2	18		Auger refusal @ 50'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-165 Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	24.4 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
4/23/07 - 4/23/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.2 ft.	Easting: 707148.3 ft. Northing: 1411335.3 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW	**FILL** Asphalt Mcf SAND, little(+) fm Gravel, trace(+) Silt.	34-14-26-50/.2	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
		ML	Gravel sized pieces of slag. Blue tinge observed on material.	11-14--9-6	2	0.0	Sulfur odor
			Broken pieces of concrete	4-17-41-28	3	1.3	
5		SM	Brw-grey Clayey SILT, little(+) fm Sand, trace(-) f Gravel. Moist. Misc. Fill (slag, cinders), trace(-) fm Gravel.	4-6-18-26	4	4.6	
		SM	Blk stained fm SAND, little(+) Silt, trace(+) f Gravel. Moist. Blk-ornge cmf SAND, little(-) Silt, trace(+) f Gravel (Shale, pieces of coal). Moist.	9-8-20-19	5	0.8	
10			Misc. Fill (blk, ornge, red cinders and slag). Misc. Fill (slag, cinders, refractory brick), trace(+) mf Sand. Wet.	7-20-26-24	6	0.0	
			Misc. Fill (slag, cinders, pieces of coal). Saturated.	35-22-25-26	7	0.0	Saturated @ 12'
15		ML	**ALLUVIAL DEPOSITS** Brwn Clayey SILT, little(+) fmc Sand, trace(+) Organics, trace(-) mf Gravel.	18-14-11-9	8	0.8	
		SM	Grey mfc SAND, some(+) Clayey Silt.	11-9-10-18	9	0.9	
		CL ML	Grey CLAY&SILT, little(+) fm Sand, trace(+) fm Gravel (rounded to sub-angular).	11-13-13-15	10	0.1	
20		OL	Brwn Clayey SILT, little(+) Organics, trace(+) f Sand and mf Gravel.	1-3-3-4	11		
		OL	Brwn ORGANICS, little(+) Silt&Clay.				
		SW SW GW	Brwn mf SAND, some(+) Organics, little Silt&Clay, trace(+) fm Gravel (Shale).	3-4-3-14	12	0.2	
		SW GW	**GLACIAL DEPOSITS (Till)** Grey mf SAND, some(-) fm Gravel (Shale). little(+) Silt&Clay. Weathered fragments of Shale/Slate @ 21.6'. Grey mf SAND, some(+) mf Gravel (Weathered fragments of Shale/Slate), little(+) Silt&Clay.	50/0.4	13	0.3	Split spoon refusal @ 24.4'
		BR BR	**BEDROCK** Weathered pieces of Shale/Slate. Decomposed bedrock (Grey SILT&CLAY) observed on cleavage surfaces. Weathered pieces of Shale/Slate.				

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-166 Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	14.9 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
4/23/07 - 4/23/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.3 ft.	Easting: 707182.5 ft. Northing: 1411358.7 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL				
		SW	Asphalt	2-5-11-11	1	2.8	Boring backfilled w/ cement/bentonite grout
		GW	Brwn mf SAND, little(-) Silt, trace(+) fm Gravel(slag). Dry.	9-5-10-10	2	41.1	
		SW	Concrete				
		SM	Brwn mf SAND, little(+) Clayey Silt, trace(+) mf Gravel.	10-12-40-50/.2	3	4.4	
5		SW SM	Misc. Fill (cinders) and Brwn mf SAND, little(+) Silt.				
		GW	Misc. Fill (cinders, slag). Wet.	7-15-18-26	4	4.1	Saturated from storm water infiltration @ 6.3'.
		SW SM	Brwn-blk fmc SAND, little(+) Silt, trace f Gravel. Saturated.				
		GW	Misc. Fill (cinders, pieces of coal).	17-7-3-4	5	63.8	8-8.5' - NAPL present on grains (fuel odor)
			GLACIAL DEPOSITS (Till)				
10		SM	Grey fm SAND, some(+) Silt&Clay, little(-) fm Gravel(shale fragments), trace Organics. Dry.	1-2-3-19	6	34.7	
		CL ML	Grey SILT&CLAY, little(-) cm Sand, trace(-) f Gravel.				
			BEDROCK				
		BR	Decomposed bedrock (Grey SILT&CLAY) and highly weathered Shale fragments.	20-50/0.4	7	8.3	Slight fuel odor @ 12'
		BR	Weathered Dk Grey Shale/Slate fragments. Decomposed bedrock (Grey SILT&CLAY) observed on cleavage surfaces. Dry.				
		BR	Weathered Dk Grey Shale/Slate fragments. Dry. Fe staining throughout.	20-50/0.4	8	154	14-14.9' - Trace NAPL staining w/ moderate fuel/turpentine odor observed on cleavage surfaces of weathered bedrock when broken apart Split spoon refusal @ 14.9'

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **SB-167** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	11.8 ft.

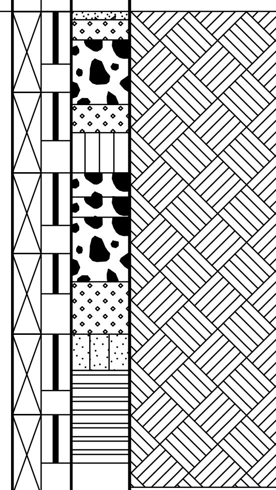
Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
4/20/07 - 4/20/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.7 ft.	Easting: 707180.0 ft. Northing: 1411405.5 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

USC Soil Type	Description
	FILL
GW	Concrete
SW	Grey cmf SAND, little mf Gravel, trace(-) Silt.
GW	Misc. Fill (cinders, slag). Moist.
SW	Blk mcf SAND, little(+) fm Gravel, trace(+) Silt.
ML	Grey Clayey SILT, some(-) f Sand, little mf Gravel.
GW	Brwn-blk misc. fill (cinders, slag), little(-) fm Gravel.
GW	Tan-beige pieces of refractory brick (fire brick).
GW	Misc. Fill (cinders, slag).
	ALLUVIAL DEPOSITS
SW	Grey cmf SAND, little(+) mf Gravel, trace(-) Silt.
SM	Grey cmf SAND, some(-) Silt&Clay, trace(+) mf Gravel. Saturated.
	BEDROCK
BR	Dk Grey weathered fragments of Shale/Slate. Fe staining throughout.

Blow Counts	Sample No.	PID Readings (ppm)
7-9-12-11	1	0.0
13-9-4-4	2	18.6
24-22-17-19	3	14.3
11-18-12-8	4	16.3
2-2-2-12	5	28.3
8-28-44-50/0.3	6	10.3

Graphic Log (Sample Int, Recovery, Lithology, Backfill)



Remarks:

Borehole backfilled w/ cement/bentonite grout

6.7-8' - Moderate petroleum odor

Weathered bedrock @ 8.9'
8.9-10.6' - Trace NAPL staining w/ slight/moderate fuel odor observed on cleavage surfaces of weathered bedrock when broken apart. Slight sheen/greasy luster observed on NAPL stained surfaces. Split spoon refusal @ 11.8'

Depth (feet): 5, 10

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-168 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	36.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
6/20/07 - 6/21/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.5 ft.	Easting: 707144.4 ft. Northing: 1411615.9 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW GW	**FILL** Asphalt Brwn mfc SAND, some (-) mf Gravel, trace (+) Silt&Clay, trace (-) Organics, dry.	10-7-8-9	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
				5-6-5-7	2	0.5	
5		GW SW GW	Red-brwn cmf GRAVEL (slag, cinders), little (+) mf Sand, trace (+) Silt. Dry. Brwn-blk mfc SAND and cmf GRAVEL, trace (+) Silt&Clay. Dry.	54-50/.3	3	0.1	
		SW	Tan-brwn mf SAND, trace (+) Silt&Clay, trace (-) Organics (roots). Dry.	4-3-4-6	4	0.0	
				4-4-7-50/.3	5	0.4	
10		SW GW	Blk-brwn-beige, mfc SAND and mf GRAVEL (cinders and coal). Dry. @ Moist @ 9.4'.	12-19-24-14	6	32.2	
		GW SW	Rust Brwn cmf GRAVEL (cinders, coal) and mfc SAND, trace (-) Silt, moist. Saturated @ 14.3'.	17-22-25-15	7	4.7	10-12' - Moderate paint thinner/turpentine odor.
15				28-12-9-15	8	25.4	14.3-16' - Brwn NAPL (mod paint thinner/turpentine odor) coating grains of sand and gravel, sheen observed.
				2-13-8-13	9	171	16-17.3' - Saturated w/ Blk NAPL and GW (mod/strong paint thinner/turpentine odor).
				5-12-15-12	10	157	17.3-18' - Saturated w/ GW and Blk NAPL.
20		GW SW	Mf GRAVEL (cinders) and cmf SAND, (cinders, coal), trace (+) Silt. Saturated.	13-10-11-11	11	113	18-18.7' - Saturated w/ GW and Blk NAPL (mod/strong paint thinner/acetone odor).
		OH SP SM	**ALLUVIAL DEPOSITS** Blk Stained Clayey SILT, some (-) f Sand, trace (+) Organics (Stems). @ 22.7' lens of Blk stained mf SAND, trace (-) Silt. Saturated.	8-5-3-4	12	16.6	18.7- 20' - Saturated w/ GW and Blk NAPL (mod/strong coal tar odor).
25		SP SM	Dk Grey, f SAND, some (-) Clayey Silt, trace (+) Organics. Saturated.	4-4-3-3	13	37.7	20-22.4' - Saturated w/ GW and Blk NAPL (mod paint thinner/ weak coal tar odor). Fluid in spoon was cold to touch.
		SP SM	Dk Grey f SAND, some (-) Silt & Clay, trace (+) Organics (stem, leaves). Grading @ 24.3 into a Grey f SAND, little (+) Silt & Clay, trace (+) Organics. @ 24.8, 25' lens of fm SAND and f GRAVEL.	1-1-1-3	14	40.6	22.4-23' - Weak paint thinner odor. No visible NAPL.
		SP SM		3-4-5-5	15	18.9	
30			Grey f SAND, little (+) Silt & Clay little (-) Organics (wood). Moist/wet.	1-2-2-4	16	9.5	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-168 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW GW	Grey fm SAND, little (+) Organics (leaves and wood in layers), little (-) Silt & Clay. @ 28.5' Lens of Grey cmf SAND and fm GRAVEL, trace (+) Silt. Saturated.	3-5-14-8	17	29.7	
		SW	Grey, mfc SAND, some (-) fm Gravel, trace (+) Silt.				
35		SW GW	Grey-brwn mf SAND, some (-) Organics (wood), little (+) f Gravel, trace (+) Silt & Clay. Saurated.	14-9-8-13	18	N/A	33.1-34' - Weak paint thinner odor. No visible NAPL.
			LOWER SAND/GRAVEL UNIT				
			Grey mf GRAVEL and cmf SAND, trace (+) Silt & Clay, trace (+) Organics. Saturated.				

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **SB-169** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
C. Mino/	RLO	8.25"		N/A"	52.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
8/9/07 - 8/9/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.0 ft.	Easting: 706739.8 ft. Northing: 1411383.2 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Backfill	PID Readings (ppm)	Remarks
		SP	**FILL** Brwn cmf SAND, little (-) mf Gravel, trace Silt, trace Organics. Dry.	2-4-6-10	1					0.0	*Borehole backfilled w/ cement/bentonite grout*
		SP GP	Brwn mf SAND, some (-) cmf Gravel (brick, cinders), trace (+) Silt.	10-9-17-30	2					0.0	
5		SP GP	Brwn mf SAND, some (+) cmf Gravel, (brick, cinders), trace (+) Silt, trace (-) Organics.	6-1-1-2	3					5.8	
		SP	Brwn-grey mf SAND, little (-) mf Gravel, trace (+) Silt.	1-1-1-1	4					2.3	
		SP CL ML	Blk fmc SAND, little (-) cmf Gravel (cinders, clinkers), trace (-) Silt. In tip of shoe Tan-brwn f SAND, some (+) Silt&Clay, trace (+) mf Gravel. Wood chips.	1-1-2-2	5					0.5	
10		ML CL	Tan-brwn Silty CLAY, little (-) cmf Sand, trace (+) Organics (root matter), wood chips.	1-1-1-3	6					1.1	
		SP GP	Tan-brwnClayey SILT, little (-) cmf Sand and Gravel, trace (+) organics (root, tree) Dk Brwn-blk cmf SAND, little (+) cmf Gravel. Moist/wet.	1-2-3-4	7					0.0	
15			Brwn-blk cmf GRAVEL, littel (-) c Sand. Moist. No Recovery	1-1-1/12"	8					0.0	
		GP	Brwn- blk cmf GRAVEL (cinders), little (-) c Sand. Moist to wet. Large cobble stuck in shoe.	2-2-2-3	9					2.4	
		GP	Brwn-blk cmf GRAVEL (brick, cinders), little (-) c Sand. Large cobble in shoe.	17-6-4-6	10					0.0	
20		SP GP	Brwn cmf SAND, some (+) fmc Gravel, trace (+) Silt. Wet.	1-1-1-2	11					0.4	
		SP SM	Brwn-red fmc SAND, little (+) Silt, little (-) mfc Gravel (clinkers, cinders). Wet.	WOH/24"	12					0.0	
		SP SM	Red-brwn fm SAND, little (+) Silt and Organics (roots, tree branches). Wet/saturated.								
25		SP SM	Red-brwn fm SAND, little (+) Silt, little (-) Organics (roots, tree matter), trace (+) cmf Gravel. Saturated.	4-6-10-16	13					31	
		SP	Red-brwn fm SAND, some Organics (roots, tree branches), little (+) Silt, trace (+) Gravel (brick, shells)	57-17-46	14					28.6	24-26' - Slight sheen on surface of water in spoon and surrounding fill material (fuel odor)
		SP GP	Blk cmf SAND, some (+) mcf Gravel. Wet/saturated.	12-19-19-20	15					318	26-28' - Slight sheen on water (fuel/paint thinner odor)
30		SP	Blk cmf SAND and mfc GRAVEL, trace (-)	6-6-9-16	16					204	Augers not able to advanced past 27.5'. Move borehole 4' SSE

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **SB-169** Page 2 of 2

Depth (feet) scale: 35, 40, 45, 50

USC Soil Type	Description
GP	wood chips throughout. Wet/Saturated.
SP / GP	Blk cmf SAND, some (+) mfc Gravel. Wet/saturated.
	ALLUVIAL DEPOSITS
SP / SM	Grey cmf SAND, little (+) Silt, trace f Gravel and Organics (root).
SW / SM	Grey f SAND, little (+) Silt, trace f Gravel, root matter and mica flakes.
ML / CL	Grey Clayey SILT, little (+) f Sand, trace (+) mica flakes.
SP / GP	Grey cmf SAND, little (+) Gravel, trace Silt. Wet.
SP	Grey cmf SAND, little (-) fm Gravel. Wet.
SP / GP	Grey cmf SAND, little (-) fmc Gravel. Pockets of Grey f SAND, some Silt&Clay.
GP / SP	Grey cmf SAND, little (+) cmf Gravel.
	LOWER SAND/GRAVEL UNIT
SP / GP	Grey cmf GRAVEL and cmf SAND, little (+) Clayey Silt.
SP / GP	Grey mfc SAND, some (-) mf Gravel. Pockets of Clayey Silt throughout, trace (-) Organics.
GP / SP	Mf SAND, little mf Gravel.
GP / SP	Grey mfc GRAVEL and cmf SAND, trace Silt&Clay.
	Grey mfc GRAVEL and cmf SAND, trace (-) Silt.

Blow Counts	Sample No.	PID Readings (ppm)
3-4-5-5	17	11.9
3-2-6-4	18	11.8
WOH/12"-8-8	19	0.0
2-2-8-13	20	11.9
6-11-23-25	21	2.6
2-3-3-4	22	20.8
3-6-6-15	23	66.4
14-9-9-17	24	10.4
5-20-20-18	25	15.5
8-17-21-12	26	0.0

Remarks

- 28-32' - slight sheen and NAPL coating grains (tar/paint thinner odor)
- 32-34' - Sheen on grains (fuel/coal tar odor)
- 36-44' - Slight paint thinner odor throughout, no visible NAPL
- 46-52' - Slight to moderate tar/paint thinner odor, no visible NAPL

BORING LOG

BROWN AND CALDWELL	**Project Name:** Troy (Water St.) Site - Area 2 **Project Number:** 132071 **Project Location:** Troy, NY	**Permit Number:** N/A	**Boring No.** SB-170 **Page** 1 **of** 1

Geologist/Office	**Checked By:**	**Borehole Diameter:**	**Screen Diameter and Type:**	**Slot Size:**	**Total Boring Depth (ft)**
T. Chaturgan/	RLO	8.25"		N/A"	12.0 ft.

Start/Finish Date	**Drilling Contractor:**	**Sampling:** 3" Split Spoon **Hammer Type:** Auto/140 lbs	**Development Method:**
8/7/07 - 8/7/07	Parratt-Wolff		N/A

Driller:	**Drilling Method:**	**Drilling Equipment:**	**Horiz Datum/Proj:** NAD83 **Vert Datum:** NGVD29 **Ground Surface Elev:** 28.1 ft.	**Easting:** 706818.8 ft. **Northing:** 1411408.5 ft. **TOC Elev:** N/A ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP	**FILL** Asphalt. Brwn mf SAND, trace (+) fm Gravel, trace (-) Silt. Moist.	9-4-4-4	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
		GP	Cm GRAVEL size Pieces of concrete.	3-12-7-9	2	0.0	4.3' - concrete covered w/ very viscous Blk tar (strong tar odor)
				3-12-12-12	3	327	
5				10-26-4-9	4	105	
		GP	Blk stained cmf GRAVEL (slag),	4-10-12-12	5	59.1	6-8' - Pockets of viscous coal tar throughout (strong tar odor) 8-10' - Blk water coating fill material (moderate/weak coal tar odor mixed w/ unidentified odor)
10			Mics. Fill (mf Gravel size pcs of slag, wood). In tip of Shoe - Tan-beige porous concrete.	9-12-20-27	6	438	10-10.6' - Very viscous coal tar throughout (strong tar odor) Drilling was stopped to prevent advancing past possible base of concrete structure.

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **SB-171** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
C. Mino/	RLO	8.25"		N/A"	34.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling:	Development Method:
8/1/07 - 8/2/07	Parratt-Wolff	3" Split Spoon Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.6 ft.	Easting: 706785.4 ft. Northing: 1411412.8 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

Log (Depth 0–30 ft; Elevation (feet) column blank)

USC Soil Type	Description
	FILL
SP GP	Asphalt/concrete
	Brwn cmf SAND, some (+) fmc Gravel (cinders, brick), trace (+) Silt.
SP GP	Brwn cmf SAND, some (-) mfc Gravel (brick, ash, cinders), trace (+) Silt. Moist.
SW SM	Brwn f SAND, little (+) Silt. Wet.
SW SM	Brwn f SAND, little (+) Silt, little (-) mf Gravel (refractory brick, cinders).
SP SM	Blk cmf SAND, little (+) fmc Gravel, trace (+) Silt. Moist.
SP	Blk fmc SAND, little (+) Silt, little (-) fmc Gravel (cinders, coke).
SP GP	Blk cmf SAND, little (+) cmf Gravel (slag, cinders), trace (-) Silt.
SP SM	Tan-brwn cmf SAND, little (-) f Gravel, trace (-) Silt and Organics.
SP GP	Blk cmf SAND, some (+) mfc Gravel (slag, coke), trace (-) Silt.
SP GP	Brwn cmf SAND, some (+) fmc Gravel (brick, slag), trace (+) Silt. Moist.
SP GP	Brwn mfc SAND, little (-) Gravel, trace (+) Silt. Moist.
SP GP	Blk cmf SAND, little (+) mfc Gravel (slag, cinders, coke), trace (+) silt.
SP GP	Brwn-blk cmf SAND, some (+) Gravel (slag, coke, cinders), trace (-) Silt. Wet.
SP GP	Brwn- blk cmf SAND and GRAVEL. Wet/saturated.
SP GP	Brwn-blk cmf SAND, little (+) fmc Gravel (slag), trace (-) Silt. Saturated.
GP	Brwn- blk mfc GRAVEL, little (+) fm Sand.
SP SP GP	Blk cmf SAND and GRAVEL. Saturated.

Blow Counts	Sample No.	PID Readings (ppm)
33-8-9-9	1	0.0
6-4-4-9	2	0.6
3-8-8-5	3	0.1
2-2-3-4	4	0.8
2-2-2-2	5	4.7
2-1-1-2	6	0.5
1-2-2-4	7	0.2
5-5-5-6	8	0.4
2-2-1-1	9	0.3
2-7-10-7	10	56.8
4-4-4-6	11	1.4
4-9-36-50/0.2	12	37.8
23-13-9-30	13	60.5
37-50/0.2	14	70.8
10-20-46-48	15	65.7
17-8-8-8	16	65.8

Remarks

Borehole backfilled w/ cement/bentonite grout

18-20' - Paint thinner/tar odor

22-23.4' - Paint thinner odor

23.4-23.7' - Blebs of NAPL (tar/paint thinner odor). Sheen on fluids in spoon.

24-30' - NAPL Coating grains (strong paint thinner/tar odor)

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-171 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Backfill	PID Readings (ppm)	Remarks
		SW SM	**ALLUVIAL DEPOSITS @ 30.9'** Grey f SAND, little (+) Silt, trace Organics.	4-3-4-4	17					10.4	32-32.3' - NAPL observed w/in native soils, visible NAPL ends @ 32.3'
		ML CL	Grey SILT&CLAY, some (+) f Sand, little (-) Organics, trace mica flakes throughout.								

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-172 Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	26.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
5/1/07 - 5/1/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.7 ft.	Easting: 707069.4 ft. Northing: 1411204.5 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL	5-15-11-10	1	0.2	*Borehole backfilled w/ cement/bentonite grout*
			Brwn mf SAND, little(+) mf Gravel, little(-) Organics.				
			Misc. Fill (pulverized pieces of concrete).	13-9-13-9	2	22.4	2-4' - Slight petroleum odor, sheen observed
			Blk mf SAND, little(-) f Gravel (cinders), trace Silt. Moist @ 2'.				
			Misc. Fill (Blk-brwn-orng slag and cinders).	6-6-12-24	3	143.2	4.2-4.6' - Sand and gravel grains saturated (all grains are heavily coated) w/ NAPL (strong tar odor, tacky to touch)
5			Blk fm SAND, little(+) mf Gravel. Pulverized concrete @ 4.6'.				
				13-18-15-15	4	28.3	4.6-6.6' - Golden-brwn NAPL w/ moth ball (naphthalene) odor coating grains of sand and gravel
			Blk stained mf SAND, little(-) mf Gravel, trace(+) Silt&Clay.				6.6-6.9' - Gravel coated w/ NAPL (slight tar odor)
			Misc. Fill (Brwn-orng cinders, pieces of coal).	14-14-7-9	5	0.7	
10			Misc. Fill (Brwn-orng cinders), little(+) mf Sand, little(+) pieces of coal.	12-18-12-14	6	0.3	
			As above, w/ pieces of red brick				
		ML CL	**ALLUVIAL DEPOSITS**	2-3-4-5	7	0.0	
			Tan-brwn SILT&CLAY, little (-) f Sand, trace(-) f Gravel. Compact.	2-4-5-6	8	0.0	
15		ML CL	Green-grey SILT&CLAY, little(-) f Sand, trace(+) Organics, trace(+) Gravel.				
		ML CL	Sub-anguar piece of c Gravel @ 15.8'.	3-12-7-5	9	0.3	
			As above, w/ fragments of Dk Grey Shale.				
		ML CL	**LACUSTRINE DEPOSITS**	2-3-4-7	10	2.3	18-22.4' - Slight paint thinner odor on vertical fracture surfaces w/in SILT&CLAY material
20			Green-grey SILT&CLAY, little(-) f Sand, trace(-) Organics. Very compact. Vertical fractures filled w/ soft and wet SILT&CLAY material.	2-4-4-5	11	2.4	
		ML	**GLACIAL DEPOSITS (Till)**	2-4-4-4	12	0.0	
			Brwn-grey Clayey SILT, little(+) f Sand, little(-) Organics.				
		ML	Weathered Shale fragments.	2-6-7-9	13	0.3	
25		ML	Grey Clayey SILT, some(-) f Sand, little(+) Organics, trace(+) fm Gravel. Pieces of wood @ 25'.				
			Brwn-grey Clayey SILT, some(-) f Sand, little(+) Organics, little(+) fragments of weathered Shale.				End of boring

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-173 Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	28.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon / Hammer Type: Auto/140 lbs	Development Method:
5/1/07 - 5/1/07	Parratt-Wolff	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.0 ft.	Easting: 707011.5 ft. Northing: 1411364.4 ft. TOC Elev: N/A ft.
Robert Baldoze	4.25" HSA	CME 75		

USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
	FILL				
GM SM	Brwn-blk Clayey SILT, some(-) f Sand, little(+) mf Gravel, trace(+) Organics (root matter).	4-5-10-8	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
SM SC	Blk fm SAND, little(+) Clayey SILT, trace(+) mf Gravel (broken glass).	6-6-9-7	2	0.0	
SP SP	Blk fm SAND, trace(+) Silt, trace(+) Misc. Fill (cinders).				
GW	Mf SAND, little(+) f Gravel, trace (+) Silt&Clay, trace(+) Misc. Fill (cinders). Refractory brick @ 2.9'. Moist.	9-8-7-14	3	0.0	
GW SW	Misc. Fill (refractory brick, cinders, slag), trace(-) fm Sand. Wet @ 4.2'.	24-34-42-50/.4	4	50.9	
GW SW	Misc. Fill (slag), trace(+) fm Sand.	22-50/0.2	5	0.0	
SW	Blk-brwn-orng mf SAND, little(-) mf Gravel (cinders), trace(-) Silt, trace (-) Misc. Fill (pieces of coal).	17-12-11-9	6	0.0	
	Blk-brwn Misc. Fill (cinders).				
SW	Brwn-blk-orng fm SAND, little(-) mf Gravel (cinders, pieces of coal).	4-5-9-22	7	40.6	
	As above, little slag.				
GW SW	Misc. Fill (Brwn-orng cinders, slag, pieces of coal). Saturated @ 14.9'.	24-13-11-23	8	49.6	
		6-15-9-8	9	88.2	15.4' - Moderate petroleum/turpentine odor, sheen observed
		14-14-7-9	10	90.5	16-18.8' - Brwn NAPL (strong petroleum/turpentine odor) coating grains of sand and cinders. Sheen observed
		15-19-12-15	11	61.3	18.8-22.6' - Fill materials saturated w/ GW and Blk NAPL (mod/strong turpentine odor). Sheen observed
		2-1-2-2	12		
	ALLUVIAL DEPOSITS				
ML ML	Blk stained Clayey SILT, little(+) f Sand, trace(+) Organics. Mica flakes observed throughout.	2-2-1-1	13		22.6-24' - NAPL on outside of sample (presumably dragdown)
	Grey/blk Clayey SILT, some(-) f Sand. Mica flakes throughout.				
SP SM	Grey f SAND (w/ blk mottles), little(+) Silt&Clay, little(-) Organics. Lens of cmf SAND @ 27'.	1-2-1-1	14		
					End of boring

Depth (feet): 5, 10, 15, 20, 25

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-174 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	30.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
8/6/07 - 8/6/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.6 ft.	Easting: 707147.1 ft. Northing: 1411418.1 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

USC Soil Type	Description
	FILL
SP GP	Asphalt
GP	Brwn mfc SAND, little (-) f Gravel, trace (+) Organics (roots), trace (-) Silt, dry.
SP GP	Blk-brwn cmf GRAVEL (slag, cinders), trace (+) mfc Sand, dry.
SP GP	Rust Brwn cmf SAND, some (-) mf Gravel, little (-) Silt&Clay. (gravel and sand composed of slag, cinders, coal).
CL ML	Brwn-blk cmf SAND and fm GRAVEL (cm sand and c gravel composed of brick, coal, cinders, refractory brick), trace (+) Silt&Clay. Moist. @ 3.3' Color change to Blk. Saturated @ 4.5'.
SP GP	Tan- greenish gray CLAY&SILT, little (-) mf Sand, trace (+) f Gravel, trace (-) mica flakes.
GP SP	Rust Brwn-blk mfc SAND and fm GRAVEL (cinders, coal, ash). Moist. @ 8.8' Color change to Tan-beige-white.
GP SP	Blk-brwn cmf GRAVEL (slag, cinders, coal), little (-) mfc Sand, trace (-) Silt. Moist.
	Brwn-blk cmf GRAVEL and cmf SAND, (cmf sand and gravel composed of cinders, slag, coal, refractory brick), trace (+) Silt. Wet. Saturated @ 14.3'.
SP GP	Brwn-blk mfc SAND and mf GRAVEL (red brick, concrete, coal), little (+) Clayey Silt. Satruated.
	ALLUVIAL DEPOSITS
ML CL	Grey SILT&CLAY, some (-) f Sand, little (+) mf Gravel, trace (+) Organics (stem, leaves)
SM SC	Brwn mfc SAND, (c Sand composed of dk gray shale), some (-) Silt&Clay, trace (+) Organics, trace (-) mica flakes. In tip of shoe, Gray f SAND, some (-) Clayey Silt, little (+) Organics (leaves), trace (+) mica flakes. Saturated.
SP SM	Grey f SAND, some (-) Clayey Silt, trace (+) Organics (leaves), trace (-) mica flakes. Saturated.
SC SM	Grey fm SAND, little (+) Clayey Silt, trace (+) Organics, trace (-) mica flakes. Saturated.
SW SM	Grey-brwn mf SAND, little (-) Silt&Clay, little (+) mf Gravel (dk grey shale), trace (+) Organics, trace (-) mica flakes. Wet.
	BEDROCK

Blow Counts	Sample No.	PID Readings (ppm)
8-15-10-9	1	3.0
3-8-10-7	2	1.2
3-3-3-4	3	0.3
2-9-16-25	4	0.4
7-21-24-12	5	0.2
18-13-17-10	6	0.7
14-16-15-14	7	0.4
8-7-5-4	8	14
2-2-2-3	9	2.2
1-1-1-4	10	4.5
2-2-4-4	11	7.6
1-2-2-2	12	3.0
WOH/24"	13	2.3
2-5-28-50/0.4	14	1.5
50/0.3	15	1.3

Remarks:

Borehole backfilled w/ cement/bentonite grout

14.6-16' - Moderate to strong petroleum odor, weak turpentine odor

16-18.4' - Moderate petroleum/turpentine odor

End of boring

Depth (feet): 5, 10, 15, 20, 25, 30

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-174 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Backfill	PID Readings (ppm)	Remarks
			Dk Grey weathered shale, w/ clay deposits on fractured and cleavage surfaces. Fe staining throughout.								
			Dk Grey moderately hard shale.								

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. **SB-175** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	36.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
8/7/07 - 8/7/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.0 ft.	Easting: 707191.0 ft. Northing: 1411539.4 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to DSB-14 soil boring log for description of soils from 0-6'.				*Borehole backfilled w/ cement/bentonite grout*
5							
		GW SW	Blk mf GRAVEL (coal, cinders) and mfc SAND, trace (+) Silt. Dry.	3-5-7-7	1	1.4	
		GW SW	Rust Brwn cmf GRAVEL (slag), some (-) mfc Sand, trace (-) Silt. Dry.	13-15-20-18	2	13.8	
		GW SW	Same as above, misc fill (Gravel composed of slag, cinders, glass).				
10				13-15-10-5	3	4.9	
		SW	Blk-tan fm SAND, trace (+) f Gravel. Moist.				
				2-4-5-15	4	2.5	
		SW GW	Misc. Fill, Blk stained cmf SAND and mf GRAVEL (cinders, coal), trace (-) Silt. Wet @ 13.0'. @ 14.5' Color change to Brwn-blk.	7-21-22-10	5	65.3	
15							
		SW GW	Misc. Fill, Blk stained cmf SAND mf GRAVEL (Sand and gravel composed of slag, cinders). Wet.	3-5-6-5	6	42.0	14-16' - Weak coal tar/acetone odor
		GW SW	Misc. Fill, Blk fm GRAVEL (coal, cinders), some (-) cmf Sand, trace (-) silt. Saturated.	4-4-4-4	7	97.1	16-18' - Saturated w/ GW and Blk NAPL (moderate acetone/ weak tar odor). Fluid in spoon cold to touch as if evaporating quickly
20				4-4-2-3	8	34.3	18-20.6' - Saturated w/ GW and Blk NAPL (strong acetone/ weak petroleum odor). Fluid in spoon cold to touch as if evaporating quickly. Rainbow sheen on spoon.
		ML CL	**ALLUVIAL DEPOSITS** Grey Clayey SILT/SILT&CLAY, little (-) f Sand, trace (-) mica flakes. Saturated.	2-2-1-1	9	0.0	
		ML CL	Grey Clayey SILT, some (-) f Sand, trace (-) mica flakes. Wet/saturated.				
				WOH/12"-2-2	10	0.0	
25		SP SM	Grey f SAND, some (-) Clayey Silt, trace (+) Organics (leaves), trace (-) mica flakes.				
		SW SM	Grey fm SAND, little (-) Clayey Silt, trace (+) Organics (leaves), Trace (-) mica flakes.	WOH/12"-2-2	11	0.0	
		SW SM	Brwn f SAND, little (+) Organics (leaves, stem), little (-) Silt&Clay, trace (-) mica flakes.	2-3-4-4	12	0.0	
30		SW SM PT	Grey fm SAND, little (+) Clayey Silt, little (-) Organics, trace (-) mica flakes.	2-23-50/0.4	13	0.0	

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-175 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Backfill	PID Readings (ppm)	Remarks
			Brwn ORGANICS (leaves, stem, wood), some (-) fm Sand, little (+) Silt&Clay, trace (-) mica flakes. In tip of shoe, Gray fm SAND, little (+) Organics, littel (-) Silt&Clay, trace (-) mica flakes. Wet.	50/0.3	14					0.0	Split spoon refusal @ 32.3'
35			**BEDROCK** Dk Grey moderately hard shale.								Auger refusal @ 36'

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-176 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	36.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
8/8/07 - 8/8/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 23.0 ft.	Easting: 707172.7 ft. Northing: 1411706.4 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0			**FILL**				*Borehole backfilled w/ cement/bentonite grout*
10		SW SP	Blk mfc SAND, little (-) fm Gravel (brick, cinders, slag). Moist.	8-11-12-13	1	0.0	
		GW	Blk cmf GRAVEL (slag), trace (+) fm Sand. Cobble size piece of slag stuck in shoe.	3-5-5-9	2	0.1	
		SW SP	Rust Brwn mfc GRAVEL (slag, cinders), little (-) mfc Sand, trace (-) Silt. Saturated.	12-11-7-15	3	0.2	14-16' - Water and soil w/in interval cold to touch, no odors noted, no visible NAPL observed
15				2-2-2-2	4	0.0	
		SW SM	**ALLUVIAL DEPOSITS** Grey fm SAND, some (-) Silt&Clay, trae (+) Organics (stem, leaves). Saturated.	9-3-3-7	5	0.0	
		SW GW	Grey cmf SAND and f GRAVEL (rounded, flattened), little (-) Silt&Clay (gravel and cm sand composed of dk gray shale). Saturated.	5-5-7-5	6	0.0	
20		SW GW	Grey cmf SAND and fm GRAVEL (rounded, flattened), little (+) Silt&Clay (slightly cohesive). Saturated.	2-10-15-12	7	0.0	
		SW GW	Grey cmf SAND and fm GRAVEL, little (+) Silt&Clay (gravel and cm sand composed of mostly dk grey shale). Saturated.	3-4-6-6	8	0.0	
25				3-5-6-7	9	0.0	
				1-2-6-6	10	0.0	
		PT	Brwn ORGANICS (leaves, stem), little (+) mfc Sand, trace(+) Silt&Clay. Saturated.				
30		GW	Grey cmf GRAVEL, some (-) cmf Sand,	4-7-8-10	11	0.0	

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-176 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW	little (+) Silt&Clay, trace (+) Organics.				
		GW SW	Green stained cmf GRAVEL, some (-) cmf Sand, little (+) Silt&Clay.	4-11-10-16	12	0.0	
		GW SW	Green stained cmf GRAVEL, little (-) mfc Sand, trace(+) Silt&Clay. Saturated.				
35			Quartzite COBBLE, little (+) cmf Gravel, trace (+) mfc Sand, trace (-) Silt. Saturated.	11-8-16-91	13	0.0	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-177 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	36.2 ft.

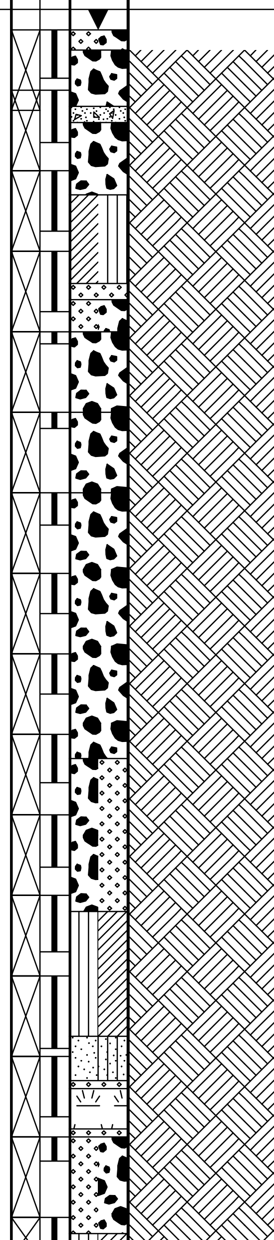
Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Manual/140 lbs	Development Method:
8/20/07 - 8/20/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.7 ft.	Easting: 707100.6 ft. Northing: 1411398.4 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

USC Soil Type	Description
	FILL
SW	Asphalt.
GW GW	Blk mf SAND, little (+) fm Gravel, trace(+) Silt.
GW GW	Blk-brwn cmf GRAVEL (slag), little (-) mfc Sand, trace (+) Silt.
	Misc fill (Tan-beige refractory brick).
CL ML	Brwn mf GRAVEL (slag, cinders, coal), little (+) mfc Sand, trace (-) Silt. Moist.
	Brwn CLAY&SILT, little (-) f Sand, trace (+) f Gravel (glass, coal).
SW SW	Drk Brwn mfc SAND (cinders, coal), little (-) f gravel (cinders, coal).
GW GW	Blk mfc SAND and GRAVEL (coal, cinders), little (-) Organics (wood), trace (+)Silt. Moist.
GW	Misc. fill (Pulverized pcs of slag, cinders in shoe of sampler).
GW	Blk cmf GRAVEL (slag, cinders), trace (+) mfc Sand. Moist/wet.
	Blk-orange, same as above. Wet.
GW SW	Blk stained mf GRAVEL and cmf SAND, trace (+) Silt. Saturated.
	ALLUVIAL DEPOSITS
ML CL	Grey w/ blk mottles SILT&CLAY/ CLAY&SILT, little (-) f Sand, trace (+) f Gravel. Wet.
SP SM	Grey f SAND, some(-) Silt&Clay, trace (+) Organics. Wet.
SW	Grey fm SAND, trace (+) Silt.
PT	Brwn ORGANICS (stem, leaves), little (-) f Sand, trace (+) Silt&Clay.
SW SW	Grey fmc SAND, little (+) fGravel, trace (+) Silt.
GW	Grey mfc SAND and mf GRAVEL
ML	

Blow Counts	Sample No.	PID Readings (ppm)	Remarks
8-20-20	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
12-20-18-12	2	0.6	
8-5-7-10	3	0.0	
3-5-27-36	4	0.5	
50/0.4	5	0.5	
15-30-50/.3	6	0.0	
23-23-50/.2	7	1	
20-35-22-18	8	22.3	
11-14-24-30	9	87.6	14-16' -Weak to moderate solvent odor
14-14-10-9	10	63.9	16-20' - Moderate paint thinner/petroleum odor. Sheen observed on split spoon and on surface of water
7-12-8-8	11	15.3	20-22.4' - Weak paint thinner/petroleum odor
6-6-6-9	12	2.3	
3-4-4-5	13	3.7	
4-7-13-13	14	0.6	
4-5-12-14	15	4	
12-9-12-14	16	0.5	

Graphic Log: Sample Int, Recovery, Lithology, Backfill



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-177 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		CL	(rounded to sub-angular), little (-)Silt&Clay, trace (+) Organics. Saturated.				
		SP SM	Grey SILT&CLAY, some (-) f Sand, trace (+) Organics. Saturated.	6-13-14-17	17	1	
		SW GW	Brwn f SAND, little (+) Organics, little (-) Clayey Silt. Wet.	7-6-50/.4	18	0.2	
35		BR	Grey cmf SAND and mfc GRAVEL (rounded to sub-angular and composed of mostly drk Grey shale), trace (+) Silt.				
		BR	**BEDROCK** Drk Grey weathered shale, intensely fractured w/ clay deposits on fracture surfaces. Drk Grey moderately hard shale.	50/.2	19	0.0	

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-178 Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	30.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
8/16/07 - 8/17/07	Parratt-Wolff	Hammer Type: Manual/140 lbs	N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 24.0 ft.	Easting: 706989.1 ft. Northing: 1411738.3 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW	**FILL** Brwn mf SAND, little (+) fm Gravel, trace (+) Clayey Silt, trace (-) Organics (roots). Dry.	1-2-3-3	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
		PT	Brwn-orange ORGANICS (wood), trace (+) Silt.	6-7-8-8	2	0.0	
		SW	Blk mfc SAND, little (+) mf Gravel, trace (-) Silt (mc sand and gravel composed of cinders, clinkers). Dry	3-4-4-3	3	0.0	
5				18-13-6-6	4	1.4	
		GW	Misc fill (broken pieces of concrete with reinforced wire).	5-8-7-9	5	0.3	
		GW SW	Blk-grey cmf GRAVEL (slag, cinders, refractory brick, coal), some (-) mfc Sand, trace (+) Silt. Moist.				
10				11-10-7-3	6	0.0	
		SW GW	Tan-beige-blk cmf SAND (coal, cinders) and mfc GRAVEL (coal, cinders). Moist.				
		GW	Brwn-blk cmf GRAVEL (slag), trace (+) mc Sand, trace (-) Silt. Saturated.	3-12-10-10	7	39.0	12-14' - Weak turpentine odor, no visible NAPL.
				4-4-3-2	8	0.4	
15				3-6-11-11	9	4.3	
		GW	Blk stained mfc GRAVEL (slag), trace (+) mfc Sand. Saturated.				
		ML CL	**ALLUVIAL DEPOSITS** Grey Clayey SILT, some (+) f Sand, trace (+) mica flakes. Saturated.	10-5-5-4	10	2.5	
20		SP SM	Grey f SAND, some (-) Clayey Silt/Silt&Clay, trace (+) mica flakes. Wet.	1-2-2-3	11	0.6	
				4-4-6-8	12	0.0	
		SW SM	Grey fm SAND, little (+) Clayey Silt. Wet.				
		SW SM	Grey fm SAND, little (-) Silt&Clay, trace (+) Organics (wood)	10-12-12-9	13	0.0	
25		SW	Grey cmf SAND, little (+) mf Gravel, trace (+) Silt&Clay. Saturated.				
		SW		2-4-6-6	14	0.0	
		SP SM	Grey mfc SAND, little (+) fm Gravel (rounded to sub-angular), little (-) Clayey Silt.	2-2-2-4	15	0.0	
		SP SM	Grey f SAND, little (-) Silt&Clay. Saturated.				
30			Same as above w/ trace (+) Organics. Saturated.				

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-179 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"		N/A"	30.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Manual/140 lbs	Development Method:
8/17/07 - 8/17/07	Parratt-Wolff		N/A

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 25.6 ft.	Easting: 706911.0 ft. Northing: 1411743.0 ft. TOC Elev: N/A ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW SM	**FILL** Brwn cm SAND, little (+) Clayey Silt, trace (+) f Gravel, trace (-) Organics (roots).	7-5-5-5	1	0.0	*Borehole backfilled w/ cement/bentonite grout*
		SW	Brwn mfc SAND, trace (+) f Gravel, trace (-) Silt. Dry.	5-8-16-12	2	0.0	
5		SW SW	Blk mfc SAND, little (+) mf Gravel (cinders, clinkers), trace (+) Silt. Dry. Misc fill. [Blk mfc SAND (cinders, clinkers), little (+) mfc Gravel (cinders, coal), trace (-) Silt. Dry.	10-11-7-8	3	0.0	
				13-18-22-26	4	0.3	
				10-7-4-3	5	0.0	
10		SW GW	Misc fill [Brwn-blk-beige cmf SAND and mf GRAVEL, trace (-) Silt sand and gravel composed of coal, cinders)]. Moist @8.6'.	6-6-4-4	6	0.0	
				7-17-14-46	7	0.0	
		GW	Brwn cmf GRAVEL (slag, cinders, shale), little (-) mf Sand, trace (-) Silt. Saturated.	15-11-11-4	8	126	
15				7-7-12-7	9	46.7	14.8-18' - Moderate to strong petroleum odor, no visible NAPL
				10-4-6-8	10	0.1	
		SP SM	**ALLUVIAL DEPOSITS** Grey f SAND, some (-) Silt&Clay/Clayey Silt, trace (+) mica flakes. Saturated.				
20				2-4-6-8	11	0.0	
				1-2-3-3	12	0.0	
		SW SM	Grey fm SAND, little (+) Silt&Clay, trace(+) mica flakes. Wet.	2-4-6-8	13	0.0	
25		SW	Brwn fm SAND, little (+) Organics (leaves, stem), trace (+) Silt&Clay, trace (-) mica flakes. Wet.	1-2-2-1	14	0.0	
		SW	Grey mfc SAND, trace (+) Silt&Clay.				
		ML CL	Grey SILT&CLAY, little (+) f Sand.				
		SW GW	Grey mf SAND and fm GRAVEL (rounded to sub-angular), little (-) Silt&Clay. Saturated.	3-3-5-4	15	0.0	
30		SP SM	Grey f SAND, little (-) Silt&Clay, trace (+)				

BORING LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Boring No. SB-179 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Backfill	PID Readings (ppm)	Remarks
			organics (stem, leaves). Saturated.								

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **MW-14R** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	16.5 ft.

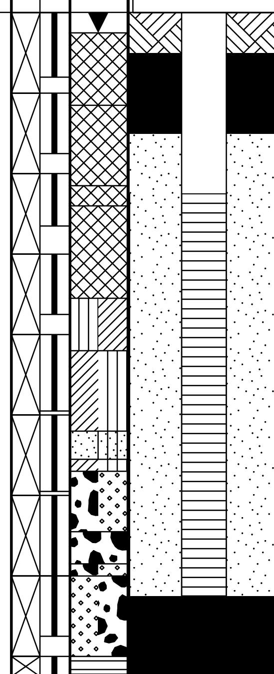
Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
8/8/07 - 8/8/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.2 ft.	Easting: 707105.1 ft. Northing: 1410655.6 ft. TOC Elev: 27.9 ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description
			FILL
		SW SP	Asphalt
			Brwn mfc SAND, little (+) fm Gravel (pcs of brick, coal), trace (-) Silt. Dry.
		SW SP	Blk stained mf SAND, little (+) fm Gravel (coal, brick), trace (+) Silt. Dry. Moist @ 2.7'.
5			Misc. Fill (red brick).
		SW SP	MIsc. Fill, Blk mfc SAND and mf GRAVEL (sand and gravel composed of coal, slag), trace (+) Silt. Moist. Wet @ 6'.
			LACUSTRINE DEPOSITS
		ML CL	Grey SILT&CLAY, little (+) fm Sand. Moist/wet.
10		CL ML	Greenish Grey CLAY&SILT, little (-) f Sand (very compact). Moist/wet.
		SP SM	Greenish Grey f SAND, some (-) Silt&Clay.
		CL ML	Greenish Grey CLAY&SILT (varved).
			GLACIAL DEPOSITS(Till)
		GW SW	Grey-brwn cmf GRAVEL, little (-) mf Sand, trace (+) Silt&Clay (very cohesive/dense). Fe staining throughout.
15		GW	Grey-brwn cm GRAVEL, trace (+) mf Sand, trace (-) Silt&Clay (cohesive/dense).
		GW SW	Grey cmf GRAVEL, some (-) mfc Sand, little (+) Silt&Clay (cohesive/dense).
		SW GW	Grey mfc SAND and cmf GRAVEL, little (+) Silt&Clay (gravel rounded to sub-angular and composed entirely of dk gray shale, very cohesive/dense). Moist/wet. Weathered pcs of dk Grey shale in tip of shoe.
			BEDROCK
			Dk Grey moderately hard shale.

Blow Counts	Sample No.	PID Readings (ppm)	Remarks
45-11-8-5	1	0.0	*Concrete Pad*
3-3-5-6	2	0.0	*1-3' - Bentonite Seal* *3-3.5' - Choker Sand (#00)*
5-7-7-5	3	0.0	*3.5-14.5' - Filter Sand (#1)*
3-5-5-4	4	0.0	
2-3-5-3	5	0.0	
6-10-26-50/0.4	6	0.0	*4.5-14.5' - 0.020" Slot PVC Screen*
14-20-21-18	7	0.0	
9-14-55/100	8	0.0	
22-53/100	9	0.0	*14.5-16.5' - Bentonite Backfill*

Graphic Log: Sample Int, Recovery, Lithology, Well (Traffic Rated Vault Box)



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

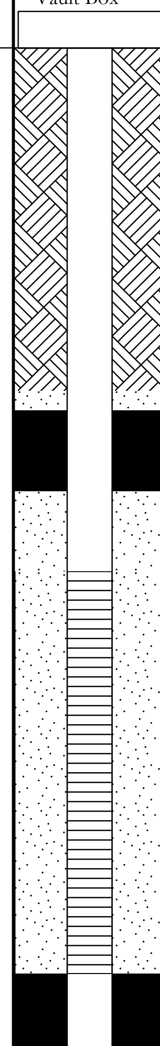
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **MW-35R** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
C. Mino/	RLO	8.25"	2" PVC	0.020"	25.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A	Development Method:
8/1/07 - 8/1/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.5 ft.	Easting: 706881.2 ft. Northing: 1411648.9 ft. TOC Elev: 27.2 ft.
Lane Pech	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
			Refer to MW-35 boring log for description of soils from 1-25'.								*Concrete Pad*
											0.5-8.5' - Cement/Bentonite Grout
5											
											8.5-9' - Choker Sand (#00)
10											*9-11' - Bentonite Seal*
											11-11.5' - Choker Sand (#00)
											11.5-13' - Filter Sand (#1)
15											
											13-23.5' - 0.020" Slot PVC Screen
20											
25											*23.5-25' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump*



P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

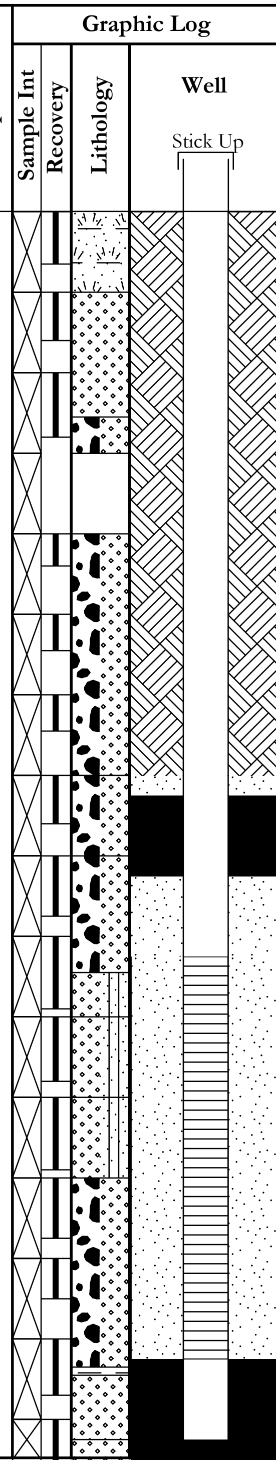
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-2 Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	32.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
5/3/07 - 5/3/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 26.6 ft.	Easting: 706695.4 ft. Northing: 1411190.4 ft. TOC Elev: 28.3 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW	**TOPSOIL** Blk fm SAND, little(+) mf Gravel, trace(+) Silt, trace(-) Organics (root matter).	4-6-4-9	1	0.2	*Concrete Pad*
		SW	**FILL** As above, w/ Misc. Fill (cinders and slag). Dry.	7-13-9-8	2	29.8	2.5-5.1' - Viscous tar material (possible asphalt odor)
				26-13-11-10	3	3.8	
5		GW SW	Misc. Fill (cinders, slag, pieces of coal), little(+) mf Sand, trace(-) Silt. Wet @ 5.5'. No recovery.	25-9-7-4	4	N/A	*0.5-14' - Cement/Bentonite Grout*
		GW SW	Blk-brwn-orng Misc. Fill (cinders, slag, pieces of coal and red brick), little(+) mf Sand, trace(-) Silt. Moist.	3-2-3-3	5	0.2	
10				3-7-8-5	6	2.8	
				4-4-3-4	7	0.4	
15		GW SW	As above, wet.	3-6-8-10	8	0.0	*14-14.5' - Choker Sand (#00)* *14.5-16.5' - Bentonite Seal*
		GW SW	As above, moist.	5-7-7-6	9	0.0	*16.5-17' - Choker Sand (#00)*
				11-11-9-9	10	0.0	*17-28.5' - Filter Sand (#1)*
20		SW SM SW SM	Brwn-blk fm SAND, little(-) Silt, trace(+) f Gravel (cinders, slag, coal). As above, wet @ 20.6'.	12-18-24-24	11	0.8	*18.5-28.5' - 0.020" Slot PVC Screen* 20-22' - Slight moth ball (naphthalene) odor
∇		SW SM	As above, saturated @ 22.6'.	12-15-18-50	12	214.8	Saturated @ 22.6' 22.6-28.7' - Fill material saturated w/ GW and Blk NAPL, strong moth ball (naphthalene) odor throughout.
25		GW SW	Misc. Fill (cinders, slag, and pieces of coal), little(-) mf Sand, trace(+) Silt, trace(-) f Gravel.	6-12-12-9	13	385	
				5-7-15-12	14	181	
				10-6-10-13	15	12.2	
30		OL SW	**ALLUVIAL DEPOSITS** Blk ORGANICS, little(+) Silt, trace(+) fm Sand.	4-5-10-9	16	20	*28.5-30.5' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump*



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-2 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
		SW	Grey cmf SAND, little(+) f Gravel, trace(+) Silt.								
			Grey fmc SAND, trace(+) f Gravel, trace(-) Silt.								

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-3** Page 1 of 2

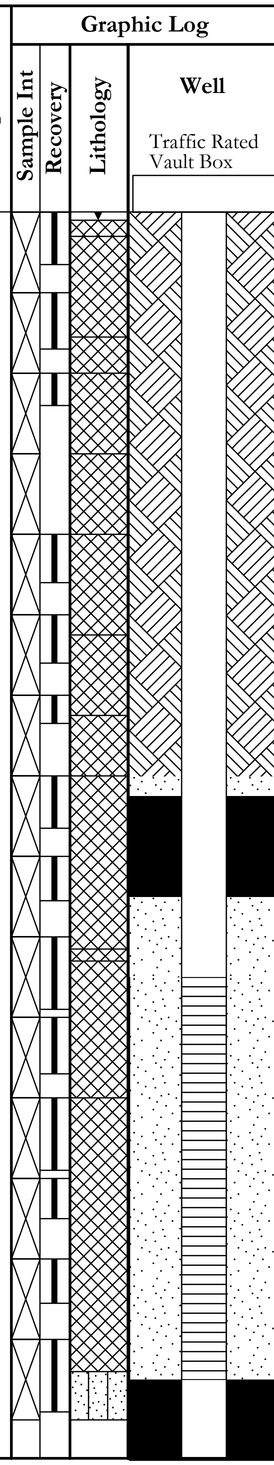
Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	31.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
5/2/07 - 5/3/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.8 ft.	Easting: 706731.8 ft. Northing: 1411192.6 ft. TOC Elev: 27.2 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW	**FILL** Asphalt. Pulverized pieces of Qtz Cobble.	23-38-21-12	1	0.0	*Concrete Pad*
			Brwn-blk fm SAND, little(+) mf Gravel, trace(+) Silt. Moist.	6-6-18-19	2	0.1	*0.5-14' - Cement/Bentonite Grout*
5			Misc. Fill (cinders and refractory brick). Moist. Misc. Fill (cinders and refractory brick), little(+) Blk fm Sand. Moist.	3-9-4-3	3	0.1	
			No recovery.	5-6-6-5	4		
			Misc. Fill (cinders and slag), little(+) mf Gravel, little(+) mf Sand, trace(+) Silt. Red brick @ 10.5'	5-5-5-5	5	0.3	
10			Misc. Fill (Red-brwn cinders and slag), little(-) mf Sand. Moist.	5-5-5-4	6	16	
			Pulverized pieces of concrete.	19-20-14-10	7	2.0	
15			Misc. Fill (pieces of concrete and coal, slag, cinders), little mf Sand. Wet @ 14.5'.	5-6-9-50/0.4	8	0.1	*14-14.5' - Choker Sand (#00)* *14.5-17' - Bentonite Seal*
				12-16-13-13	9	0.1	*17-17.5' - Choker Sand (#00)* *17.5-29' - Filter Sand (#1)*
		SW	Pink-brwn mf SAND, little(-) f Gravel. Misc. Fill (Blk-brwn cinders, slag, and pieces of coal).	15-13-18-20	10	0.2	*19-29' - 0.020" Slot PVC Screen*
20				8-11-14-19	11	4.7	
			As above. Saturated @ 22'.	10-10-26-15	12	151	
25				2-3-50/0.4	13	282	22.9-28.8' - Fill material saturated w/ GW and brwn NAPL (strong mixed naphthalene/paint thinner odor)
				14-6-9-7	14	184	
				8-8-4-6	15	3.0	
30		SM	**ALLUVIAL DEPOSITS** Grey fm SAND, little(+) Silt, little(-) Organics.				28.8' - Slight odor (mixed naphthalene/paint thinner), no visible NAPL

Graphic Log



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-3 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Well	PID Readings (ppm)	Remarks
											29-31' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-4** Page 1 of 1

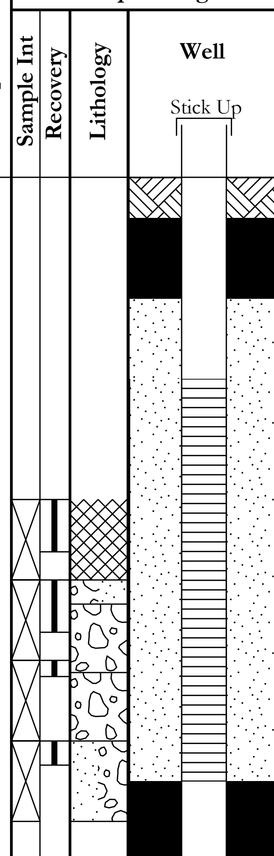
Geologist/Office	**Checked By:**	**Borehole Diameter:**	**Screen Diameter and Type:**	**Slot Size:**	**Total Boring Depth (ft)**
THC/C.Meyn/	RLO	8.25"	2" PVC	0.020"	16.0 ft.

Start/Finish Date	**Drilling Contractor:**	**Sampling:** 3" Split Spoon **Hammer Type:** Auto/140 lbs	**Development Method:**
7/27/07 - 7/27/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	**Drilling Method:**	**Drilling Equipment:**	**Horiz Datum/Proj:** NAD83 **Vert Datum:** NGVD29 **Ground Surface Elev:** 6.1 ft.	**Easting:** 706605.7 ft. **Northing:** 1411393.9 ft. **TOC Elev:** 8.6 ft.
Lane Pech	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			Refer to MW-10R soil boring log for description of soils from 0-8'.				*0-1' - Concrete Pad* *1-3' - Bentonite Seal* *3-3.5' - Choker Sand (#00)* *3.5-5' - Filter Sand (#1)*
5							
		GP SP	Blk stained cmf GRAVEL (slag, cinders, red brick), some (-) cmf Sand, little (-) Clayey Silt. Saturated.	22-10-10-8	1	4.9	
10		GP SP	**ALLUVIAL DEPOSITS** Blk stained mf GRAVEL, some (-) mfc Sand, little (+) Silt. Saturated.	6-7-6-3	2	0.3	*5-15' - 0.020" Slot PVC Screen*
		GP GP	Grey cmf GRAVEL, little (+) mfc Sand, trace (+) Silt. In shoe f SAND, some (-) Silt&Clay. Saturated.	2-7-7-5	3	0.1	
		SP	Grey cmf GRAVEL, little (-) cm Sand, trace (-) Silt&Clay. Saturated.	3-4-8-8	4	0.0	
15		GP	Grey cmf SAND and mf GRAVEL (rounded, flattened), trace (+) Silt&Clay. Saturated.				*15-17' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump*

Graphic Log



P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-5a** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	28.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon / Hammer Type:	Development Method:
7/11/07 - 7/11/07	Parratt-Wolff	Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 24.1 ft.	Easting: 706697.2 ft. Northing: 1411417.1 ft. TOC Elev: 23.6 ft.
Robert Baldoze	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-5c soil boring log for description of soils from 0-28'.								*Concrete Pad*
5											*0.5-11.5' - Cement/Bentonite Grout*
10											*11.5-12' - Choker Sand (#00)*
											12-14' - Bentonite Seal
15											*14-14.5' - Choker Sand (#00)*
											14.5-26' - Filter Sand (#1)
20											*16-26' - 0.020" Slot PVC Screen*
25											*26-28' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump*

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-5b Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	34.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
7/12/07 - 7/12/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 23.8 ft.	Easting: 706696.6 ft. Northing: 1411423.2 ft. TOC Elev: 23.4 ft.
Robert Baldoze	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-5c soil boring log for description of soils from 0-34'.								*Concrete Pad*
5											
10											
13											*0.5-27.5' - Cement/Bentonite Grout*
15											
20											
25											
27.5											*27.5-28' - Choker Sand (#00)*
28											*28-30' - Bentonite Seal*
30											

P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-5b Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
											30-30.5' - Choker Sand (#00) *30.5-34' - Filter Sand (#1)* *32-34' - 0.020" Slot PVC Screen*

MONITORING WELL LOG

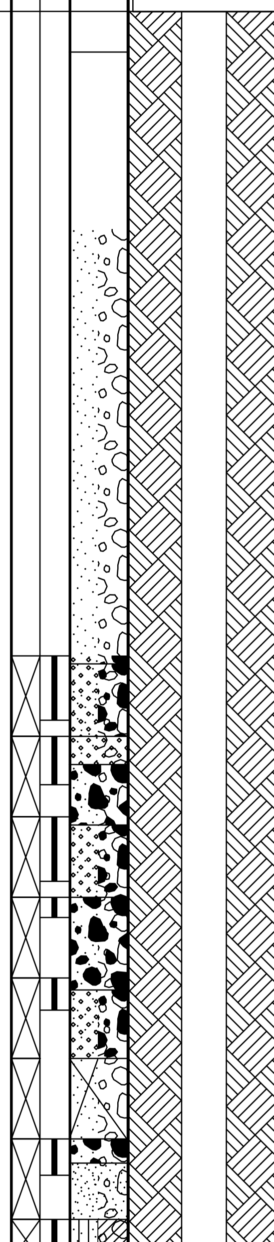
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-5c** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	64.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/9/07 - 7/11/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 24.8 ft.	Easting: 706699.0 ft. Northing: 1411414.0 ft. TOC Elev: 24.2 ft.
Robert Baldoze	4.25" HSA	CME 75/Track		

Graphic Log: Sample Int, Recovery, Lithology, Well (Traffic Rated Vault Box)



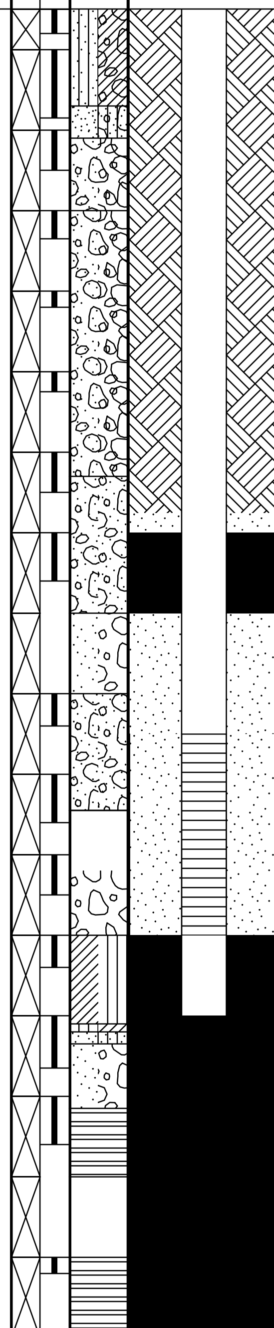
Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to MW-37 soil boring log for description of soils from 0-16'.				*Concrete Pad*
5							
10							
15							
		SW GW	Brwn mf SAND, some (-) mf Gravel, little (-) Silt&Clay. Moist.	5-5-4-5	1	0.1	
		SW GW	Blk mf SAND (cinders) and mf GRAVEL (cinders, coal), trace (+) Silt. Moist.	14-15-50/0.4	2	9.9	
		SW GW	Rust Brwn mfc SAND, little (-) f Gravel, trace (+) Silt. Moist.				
20		SW GW	Red brwn cmf GRAVEL (cinders, slag), little (-) mf Sand, trace (-) silt. Wet.	22-19-11-50/0.3	3	114	
		GW	Blk cmf SAND and mf GRAVEL (cinders), little (+) Silt&Clay, little (-) Organics. Saturated.	50-50/0.2	4	25.8	20-22' - Blk NAPL (strong coal tasr odor, very viscous/malleable) surrounding Sand and Gravel grains *0.5-43.5' - Cement/Bentonite Grout*
			Blk cmf GRAVEL (slag), little (-) fm Sand, trace (+) Silt. Saturated.	50-50/0.3	5	214	22-24' - Saturated w/ GW and blk NAPL (moderate/strong coal tar, acetone odor)
25		SW GW	Blk cmf SAND (cinders, coal), some (-) mf Gravel, trace (+) Silt&Clay. Saturated.				
			No Recovery	50/0.4	6	0.0	24-26' - Saturated w/ GW and NAPL (strong coal tar/ petroleum odor), sporadic blebs of viscous blk NAPL (tacky to touch) throughout, rainbow/metallic sheen on
		GW	Blk mf GRAVEL, little (-) cmf Sand (Gravel and sand composed of cinders, slag), trace (-) Silt. Saturated.	6-7-9-12	7	91.7	
		SP					
30		ML	**ALLUVIAL DEPOSITS**	2-3-4-4	8	30.8	

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-5c Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		CL	Grey f SAND, some (-) Organics (leaves, stem), trace (+) Silt&Clay. Saturated. Grey SILT&CLAY, some (-) f Sand, little (+) f Gravel, trace (-) Organics (leaves). Moist/wet. @ 32.2-32.3' lens of Grey mfc SAND, trace (+) Silt&Clay.	2-2-2-2	9	0.6	grains of gravel and sand. 28-28.6' - Saturated w/ GW and blk NAPL (strong coal tar/weak petroleum odor) 28.6-28.9' - Weak coal tar odor, no visible NAPL
35		SP SM GP	Grey mf SAND, little (-) Silt & Clay. Saturated.	2-6-8-9	10	0.6	
		GP	**LOWER SAND/GRAVEL UNIT** Grey mfc GRAVEL(rounded to sub-angular), little (+) cmf Sand, trace (+) Silt&Clay. Saturated.	3-3-6-10	11	0.0	
			Grey cmf GRAVEL, little (+) cmf Sand, trace (+) Silt&Clay. Saturated.	5-7-11-11	12	5.2	
40				6-22-27-34	13	3.3	
				17-5-15-15	14	1.6	
		GP SP	Grey mf GRAVEL(rounded to sub-angular) and cmf SAND, trace (+) Silt&CLAY. Saturated.	9-19-11-10	15	0.3	*43.5-44' - Choker Sand (#00)* *44-46' - Bentonite Seal*
45			No Recovery	16-16-12-10	16	0.0	*46-47' - Choker Sand (#00)*
		GP SP	Grey mf GRAVEL(rounded to sub-angular) and cmf SAND, trace (+) Silt&Clay. Saturated.	11-12-9-10	17	0.2	
50				9-12-10-12	18	1.4	*47-54' - Filter Sand (#1)*
		SP GP	Grey mfc SAND, some (-) mf Gravel, trace (+) Silt&Clay. Saturated.				
		GP	Greenish Grey cmf GRAVEL, little (+) Silty Clay(possible varves), little (-) mfc Sand (very cohesive). Quartz COBBLE stuck in shoe.	16-58-50/0.3	19	2.0	*49-54' - 0.020" Slot PVC Screen*
55		CL ML	**LACUSTRINE DEPOSITS** Grey CLAY&SILT, little (-) fm Sand. (Varved). Greenish grey in color @ 54.4.	34-0-21-20	20	0.0	*54-56' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump*
		ML CL	Grey SILT&CLAY, some (-) f Sand.	3-6-6-20	21	0.0	
		SP SM	Grey f SAND, little (+) Silt&Clay. Wet.				
		SP GP	**GLACIAL DEPOSITS(Till)** Grey cmf SAND and mf GRAVEL(rounded to sub-angular, flattened and composed of drk grey shale), little (+) Silt&Clay. (cohesive).	26-31-36-39	22	0.2	
60				83/0.5	23	0.0	*56-64' - Bentonite backfill*
			BEDROCK Weathered pieces of drk Grey shale, w/ Silt&Clay deposits on cleavage surfaces. No Recovery. Drk Grey shale, moderately hard.	100/0.4	24	0.0	

Graphic Log (Sample Int, Recovery, Lithology, Well):



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-5d Page 1 of 3

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	10.25/4"	2" PVC	0.020"	74.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Continuous Core Hammer Type: Auto/140 lbs	Development Method:
7/12/07 - 7/17/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 25.0 ft.	Easting: 706701.0 ft. Northing: 1411424.6 ft. TOC Elev: 24.4 ft.
Robert Baldoze	6.25" HSA/4" Coring	CME 75/Track		

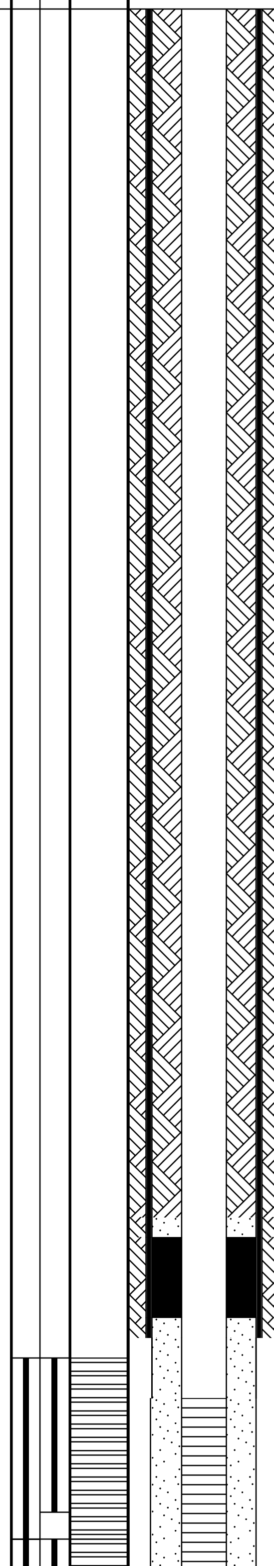
Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-5c soil boring log for description of soils from 0-64'.								*Concrete Pad*
5											
10											
15											
20											
25											
30											

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-5d Page 2 of 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	PID Readings (ppm)	Remarks
35							0.5-61' - Cement/Bentonite Grout
40							
45							
50							
55							
60			Top of bedrock @58.3' based on PZ-5c soil boring log.				61-61.5' - Choker Sand (#00) 61.5-63.5' - Bentonite Seal 63.5-64' - Choker Sand (#00)
65			Dk Grey Shale. Moderately hard, intensely fractured and fairly weathered from 64.5-65.6'. Tight folds w/high angle fractures from 65.6-67'. Calcite and pyrite mineralization on fracture surfaces. Diagonal hairline fractures filled in by calcite @ 65.8', 68'. @ 67.9' Diagonal fracture w/ slickensides and pyrite mineralization on fractured surface.	25.9 0.0	1 2	0.0 0.0	64' - Base of 4" Steel Casing 64-70.5' - Filter Sand (#1) 64-74 - 4" borehole in bedrock 65.5-70.5' - 0.020" Slot PVC Screen

Graphic Log: Sample Int / Recovery / Lithology / Well



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-5d Page 3 of 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
			Dk Grey Shale. Moderately hard, intensely fractured, highly weathered from 69-69.7'. Decomposed bedrock (Grey SILT&CLAY) on weathered surfaces. @ 70.4' Diagonal fracture w/ calcite mineralization on fractured surface.								*70.5-74' - Borehole collapse*

MONITORING WELL LOG

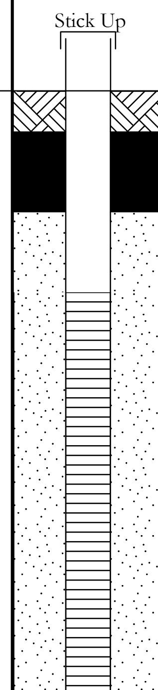
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-6a** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	15.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/25/07 - 7/25/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 7.9 ft.	Easting: 706630.9 ft. Northing: 1411520.9 ft. TOC Elev: 10.2 ft.
Lane Pech	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Graphic Log: Well (Stick Up)	PID Readings (ppm)	Remarks
0			Refer to PZ-6c soil boring log for description of soils from 0-15'.								*0-1' - Concrete Pad*
											1-3' - Bentonite Seal
											3-3.5' - Choker Sand (#00)
5											*3.5-15' - Filter Sand (#1)*
10											*5-15' - 0.020" Slot PVC Screen*
15											



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

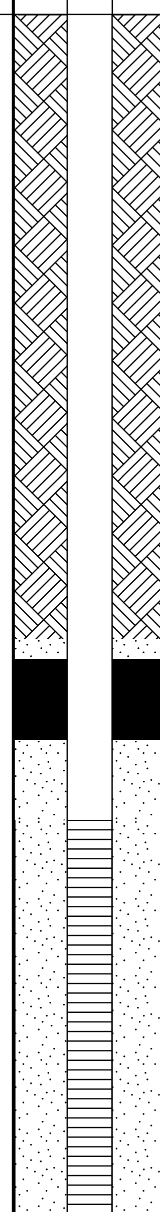
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-6b** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	30.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/26/07 - 7/26/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 7.3 ft.	Easting: 706626.8 ft. Northing: 1411520.8 ft. TOC Elev: 8.9 ft.
Lane Pech	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Stick Up)	PID Readings (ppm)	Remarks
0			Refer to PZ-6c soil boring log for description of soils from 0-30'.								*Concrete Pad*
5											*0.5-15.5' - Cement/Bentonite Grout*
10											
15											*15.5-16' - Choker Sand (#00)* *16-18' - Bentonite Seal* *18-18.5' - Choker Sand (#00)* *18.5-30' - Filter Sand (#1)*
20											
25											*20-30' - 0.020" Slot PVC Screen*
30											



P:\^Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-6c** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	44.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling / Hammer Type	Development Method:
7/25/07 - 7/24/07	Parratt-Wolff	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Datum	Coordinates
Lane Pech	4.25" HSA	CME 75/Track	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 7.8 ft.	Easting: 706629.3 ft. Northing: 1411516.2 ft. TOC Elev: 9.7 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP	**FILL** Brwn f SAND, little (-) Organics (roots), trace (+) Silt.	2-4-14-18	1	1.5	*Concrete Pad*
		SP GP	Brwn f SAND, little (+) mf Gravel (cinders, coal), little (-) Organics, trace (+) Silt. Broken pcs of glass.	7-7-5-7	2	2.1	
5		SP GP	Rust Brwn cmf SAND and mf GRAVEL (cinders, slag). Moist @ 4.7'.	7-12-12-2	3	7	4.2-4.3' - Very viscous blk top (asphalt)
		ML CL	Grey SILT&CLAY, little (+) fm Sand, little (-) mf Gravel (cinders, slag). Saturated.	3-3-50/0.2	4	3.7	
			No Recovery	13-50/0.4	5	0.0	
10		GP SP	Blk Stained mf GRAVEL (cinders, slag) and cmf SAND, trace (-) Silt&Clay.	4-5-6-6	6	1.8	
		GP SP GP SP	**ALLUVIAL DEPOSITS** Grey mf GRAVEL, little (+) mf Sand, trace (+) Silt. (Gravel rounded to sub-angular). Dk Grey mfc GRAVEL, little (-) mfc Sand, trace (-) Silt. Saturated. (Gravel rounded to sub-angular).	WOH-5-6-6	7	3.0	
15		SP	Grey mfc SAND (very loose), trace (+) mf Gravel, trace (-) Silt and Organics (stems). Saturated.	3-4-4-3	8	2.2	*0.5-28.5' - Cement/Bentonite Grout*
		SP PT	Grey mfc SAND, trace (+) f Gravel, trace (-) Silt&Clay and Organics. Brwn-grey ORGANICS (leaves, stems, wood), some (-) mf Sand, little (-) Silt&Clay. Saturated.	3-5-5-3	9	2.3	
20		SP GP	Grey mfc SAND and mf GRAVEL, little (+) Organics (lens), trace (+) Silt&Clay. Saturated. (Gravel rounded to sub-angular).	5-5-3-5	10	3.3	
				2-5-6-5	11	4.1	
		GP SP	**LOWER SAND/GRAVEL UNIT** Grey mfc SAND and mf GRAVEL (rounded to sub-angular), trace (+) Silt&Clay. Saturated.	6-11-11-9	12	4.6	
25		SP GP	Grey mfc GRAVEL and cmf SAND, trace (+) Silt&Clay. Cobble stuck in shoe of sampler. Saturated.	22-19-14-6	13	2.3	
			Grey cmf SAND and mf GRAVEL, trace (+) Silt. (Gravel and c sand composed of mostly dk Grey Shale). Saturated.	11-9-7-7	14	2.4	
		GP SP	Grey mfc GRAVEL and cmf SAND, trace (+) Silt&Clay. Saturated.	6-10-11-8	15	2.4	*28.5-29' - Choker Sand (#00)*
30			No Recovery	10-13-10-8	16	0.0	*29-31' - Bentonite Seal*

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-6c Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP	Grey mfc SAND, trace (+) f Gravel, trace (-) Silt. Saturated.	12-6-6-7	17	1.9	31-31.5' - Choker Sand (#00) 31.5-33' - Filter Sand (#1)
		SP	Grey mf SAND, trace (-) Silt. Saturated.	9-9-8-9	18	2.6	
35				4-4-5-8	19	2.5	33-38' - 0.020" Slot PVC Screen
		SP SC	Same as above. In tip of Shoe Grey CLAY&SILT, trace (+) f Sand. Saturated.	2-4-5-8	20	2.3	
40		SW SM	Grey f SAND, some (-) Silt&Clay. Saturated.	6-14-19-22	21	0.8	
		BR	**BEDROCK**				
		BR	Grey weathered Shale w/ Silt&Clay deposits on fractured and cleavage surfaces. Dk Grey Shale, moderately hard.	13-21-16-24	22	0.3	

MONITORING WELL LOG

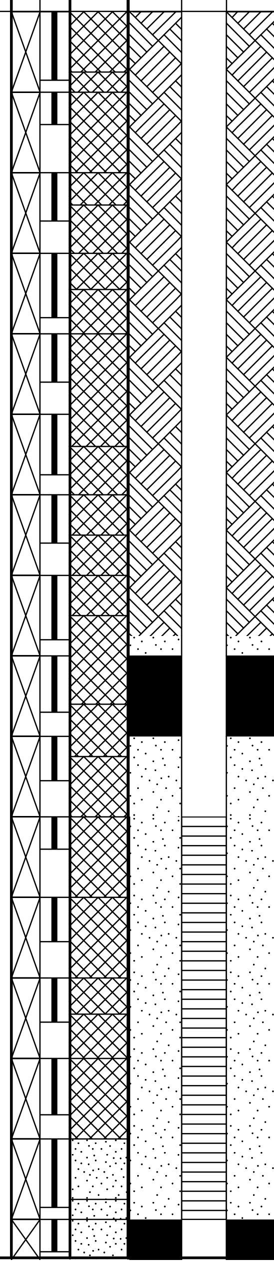
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-7** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	36.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
6/1/07 - 6/5/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.1 ft.	Easting: 706741.0 ft. Northing: 1411577.8 ft. TOC Elev: 30.2 ft.
Robert Baldoze	4.25" HSA	CME 75		

Graphic Log: Sample Int, Recovery, Lithology, Well (Stick Up)



Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Brwn mfc SAND, little(+) fm Gravel, trace(+) Silt. Dry.		1	0.7	*Concrete Pad*
		GW	Grey-tan cmf GRAVEL. Dry. Grey-tan mfc GRAVEL, little(+) mf Sand, trace(+) Silt. Dry.		2	0.2	*0.5-15.5' - Cement/Bentonite Grout*
5		SW	Grey-brwn mfc SAND, little(+) mf Gravel, trace(+) Silt. Dry. Misc. Fill (Red-brwn-tan pieces of refractory brick). Dry.		3	0.3	Encountered concrete obstruction @ approx. 5' BGS at several locations before successfully drilling to target depth
		SW	Grey mf SAND, little(+) Silt&Clay, trace(+) mf Gravel. Moist. Pulverized pieces of SS Cobble @ 6.6'.	15-33-21-27	4	0.0	
			Misc. Fill (Blk stained mfc SAND, little(-) mf Gravel[pieces of coal and cinders], trace(-) Silt).	12-30-26-24	5	0.0	
10			Misc. Fill (Blk-brwn mfc SAND, little(-) mf Gravel[pieces of coal and cinders], trace(-) Silt). Moist. Coarse gravel sized piece of slag @ 10.2'.	11-12-11-11	6	0.0	
			Blk mfc SAND, trace(+) fm Gravel, trace(-) Silt.	8-18-25-20	7	0.0	11.2' - Sulfur odor. Blue tinge observed on Gravel. 12-14' - Blue tinge develops on Gravel pieces upon exposure to ambient air
15			Blk-grey-blue mfc SAND, little(-) fm Gravel, trace(+) Silt&Clay. Gravel sized piece of slag @ 12.2'.	20-20-8-9	8	0.0	14-16' - Blue tinge observed on Gravel.
			Misc. Fill (Tan-beige refractory brick). Blk-grey-blue mfc SAND, little(+) mf Gravel, trace(+) Silt&Clay. Piece of red brick @ 14.5'.	12-17-27-18	9	0.0	*15.5-16' - Choker Sand (#00)* *16-18' - Bentonite Seal*
			Misc. Fill (cmf GRAVEL[slag], little(-) mfc Sand), trace(-) Silt. Wet. Pieces of red brick @ 16.6'.	10-7-3-4	10	0.0	*18-18.5' - Choker Sand (#00)* *18.5-30' - Filter Sand (#1)*
20			Misc. Fill (Blk-orng-brwn mfc SAND, little(-) f Gravel[slag and cinders]). Wet.	4-5-5-5	11	0.0	
			Misc. Fill (Blk-brwn cmf SAND[cinders] and fm GRAVEL[slag and cinders], trace(+) Silt).	3-2-3-4	12	0.0	
▽ 25			Misc. Fill (Grey-blue mfc SAND[cinders], little(+) fm Gravel[cinders], trace(+) Silt).	3-4-5-11	13	0.0	
			Misc. Fill (Grey-beige mfc SAND[cinders], little(+) fm Gravel[cinders], trace(+) Silt). Wet. Misc. Fill (Blk cmf SAND[cinders], little(+) mf Gravel[cinders], trace(-) Silt). Saturated.	6-6-7-4	14	0.0	*20-30' - 0.020" Slot PVC Screen*
		SP	Brwn fm SAND, little(-) Silt&Clay, trace(-) Organics. Piece of white refractory brick in shoe of spoon.	5-6-8-14	15	0.0	
30		SP SP	Brwn-blk fm SAND, little(-) Silt&Clay, trace(-) Organics. Saturated. Piece of white	5-6-5-8	16	0.0	*30-32' - 2' PVC Sump w/*

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-7 Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			refractory brick in shoe of spoon.				*bentonite in annular space btwn borehole and sump*
			ALLUVIAL DEPOSITS				
		SP	Dk Grey f SAND, little(-) Silt&Clay, trace(+) f Gravel. Trace mica flakes throughout.	3-5-5-8	17	0.0	
		SP	Grey-brwn f SAND, little(+) Silt&Clay, trace(+) Organics(leaves), trace(+) f Gravel. Moist. Trace mica flakes throughout.				
35		SP	Grey fm SAND, little(-) Silt&Clay, trace(+) Organics(Brwn leaves). Moist/wet. Mica flakes throughout.	4-4-5-7	18	0.0	
			Grey fm SAND, little(-) Silt&Clay, trace(+) Organics(brwn leaves), trace(-) m Gravel. Moist/wet. Mica flakes throughout.				
			Grey-brwn fm SAND, little(+) Organics(brwn leaves), little(-) Silt&Clay. Moist. Trace mica flakes throughout.				
			Grey-brwn f SAND, some(-) Silt&Clay, little(+) Organics(leaves). Moist. Lenses of Grey mf SAND @ 34.8, 35, and 35.2'.				

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-8a Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	30.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
6/6/07 - 6/6/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.9 ft.	Easting: 706775.9 ft. Northing: 1411572.3 ft. TOC Elev: 27.5 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-8c soil boring log for description of soils from 0-30'.								*Concrete Pad*
											0.5-13.5' - Cement/Bentonite Grout
5											
10											
											13.5-14' - Choker Sand (#00)
15											*14-16' - Bentonite Seal*
											16-16.5' - Choker Sand (#00)
											16.5-28' - Filter Sand (#1)
20											
											18-28' - 0.020" Slot PVC Screen
25											
											28-30' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump
30											

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-8b Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	51.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
6/6/07 - 6/7/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.5 ft.	Easting: 706781.6 ft. Northing: 1411572.0 ft. TOC Elev: 27.0 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-8c soil boring log for description of soils from 0-51'.								*Concrete Pad* *0.5-40.5' - Cement/Bentonite Grout*
5											
10											
15											
20											
25											
30											

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-8b Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
35											
40											*40.5-41' - Choker Sand (#00)*
											41-43' - Bentonite Seal
											43-43.5' - Choker Sand (#00)
45											*43.5-50' - Filter Sand (#1)*
											45-50' - 0.020" Slot PVC Screen
50											*50-51' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump*

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-8c** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	66.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
6/5/07 - 6/6/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.1 ft.	Easting: 706770.5 ft. Northing: 1411572.9 ft. TOC Elev: 27.7 ft.
Robert Baldoze	4.25" HSA	CME 75		

Well: Traffic Rated Vault Box

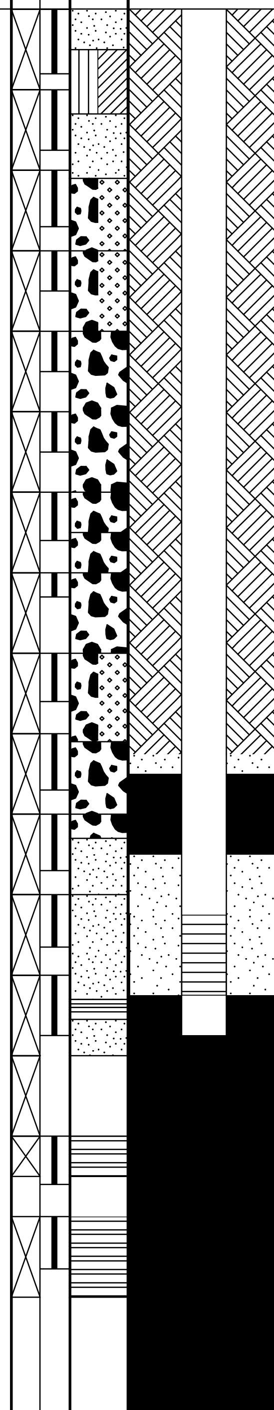
Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to SB-23 soil boring log for description of soils from 0-15'.				*Concrete Pad* *0.5-49.5' - Cement/Bentonite Grout*
5							
10							
15			No recovery.	6-6	1		
		SW	Blk mf SAND, little(+) f Gravel, trace(+) Silt&Clay.	10-13	2	1.6	
			Misc. Fill (Tan-beige refractory brick mixed w/ concrete).	24-22-15-9	3	3.0	
			Misc. Fill (Blk-brwn-orng c Gravel[slag]).				
20			Misc. Fill (Blk-brwn-orng cmf SAND [cinders], some(-) fm Gravel [slag and cinders]). Moist.	7-5-6-5	4	0.0	
			No recovery.	WOH/12"-2-2	5	0.0	
		SP	Misc. Fill (Blk-brwn-orng cmf SAND and fm GRAVEL[cinders], pieces of coal).				
			ALLUVIAL DEPOSITS				
		SP SM	Grey-brwn f SAND, trace(-) Silt&Clay. Brwn ORGANICS from 23.1-23.15'. Saturated.	2-3-4-4	6	0.0	
25		SP SM	Grey f SAND, some(-) Silt&Clay, little(+) Organics(leaves). Moist/wet. Trace mica flakes throughout.	3-3-3-4	7	0.0	
		SP SM	Grey f SAND, some(+) Clayey Silt.	5-6-9-10	8	1.2	
		SP	Saturated. Trace mica flakes throughout.				
		SP	As above, wet.	2-7-7-9	9	1.0	
30		SP	Grey-brwn fm SAND, trace(+) Silt&Clay, trace(+) Organics(leaves). Wet. Mica flakes				

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-8c Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		GW	throughout.	2-2-3-4	10	0.3	
		SP	As above, moist.				
		SP ML	Grey fm SAND, little(+) Clayey Silt, little(-) Organics, little(-) f Gravel.	2-2-5-7	11	0.7	
		CL	Grey cmf GRAVEL, little(+) mf Sand, trace(+) Silt&Clay.				
35		SP GW SW	Grey-brwn fm SAND, little(+) Clayey Silt, little(+) Organics(layered leaves).	10-6-6-8	12	0.1	
		GW SW	Brwn f SAND, some(-) Organics, little(+) Clayey Silt, trace(+) f Gravel. Lens of grey fm SAND. Moist.	3-7-14-2	13	0.4	
		GW	Grey SILT&CLAY, trace(+) f Sand, trace(-) Organics. Moist.	1-2-4-5	14	0.7	
40			Grey fm SAND, little(+) Silt&Clay, grading into Grey mfc SAND, trace(+) Silt&Clay.				
			LOWER SAND/GRAVEL UNIT	2-4-10-13	15	0.0	
			Grey mfc GRAVEL(rounded to sub-angular), some(-) cmf Sand, little(-) Silt&Clay. Saturated.				
		GW GW	Grey cmf GRAVEL(rounded to sub-angular), some(-) cmf Sand, little(-) Silt&Clay. Saturated.	11-16-11-14	16	0.0	
45		GW	Grey cmf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt&Clay. Saturated.	9-11-19-25	17	0.0	
		GW SW	As above, Fe staining throughout.	12-14-13-12	18	0.0	
			Pulverized pieces of Dk Grey Shale w/ Fe staining on laminated surfaces.				
		GW	Cmf GRAVEL(rounded to sub-angular), little(-) cmf Sand, trace(+) Silt&Clay. Red-brwn staining from 47.2-47.4'. Saturated.	19-13-8-6	19	0.0	*49.5-50' - Choker Sand (#00)*
50		GW SP	Brwn-grey mf GRAVEL and cmf SAND, trace(+) Silt&Clay. Saturated.	5-6-9-9	20	0.0	*50-52' - Bentonite Seal* *52-52.5' - Choker Sand (#00)*
		SP	Grey cmf GRAVEL(rounded to sub-angular), little(-) cmf Sand, trace(-) Silt&Clay. Saturated.	3-3-5-7	21	0.0	*52.5-55.5' - Filter Sand (#1)* *53.5-55.5' - 0.020" Slot PVC Screen*
55			Grey mf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt&Clay. Saturated.	5-26-33-29	22	0.0	*55.5-56.5' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump*
		SP	Dk Grey fm SAND, trace(+) Silt&Clay, trace(-) f Gravel. Saturated.	91/0.5'	23	N/A	
			Dk Grey fm SAND, trace(+) Silt&Clay. Saturated. Well sorted.				
			Dk Grey weathered Shale.	15-58-50/0.2'	24	0.0	
60			Dk Grey weathered Shale w/ decomposed bedrock (grey Clayey SILT) on weathered surfaces.	26-25-46-36	25	0.0	*56.5-66' - Bentonite Backfill*
			Dk Grey fm SAND, trace(+) Silt&Clay. Saturated.				
			BEDROCK				
			No recovery.				
65			Grey weathered Shale. Decomposed bedrock (Grey Clayey SILT) on weathered surfaces.				
			Dk Grey weathered Shale. Evidence of laminations.				Auger refusal @ 66'

Graphic Log: Sample Int, Recovery, Lithology, Well



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-8d Page 1 of 3

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	10.25/4"	2" PVC	0.020"	83.4 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Continuous Core	Development Method:
6/7/07 - 6/18/07	Parratt-Wolff	Hammer Type: N/A	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.7 ft.	Easting: 706772.1 ft. Northing: 1411567.4 ft. TOC Elev: 28.1 ft.
Robert Baldoze	6.25" HSA/4" Coring	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
			Refer to PZ-8c soil boring log for description of soils from 0-57'.								*Concrete Pad* *0.5-69.5' - Cement/Bentonite Grout*
5											
10											
15											
20											
25											
30											

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

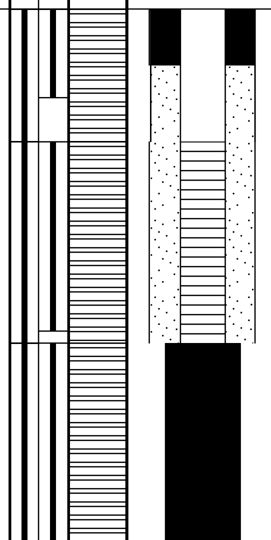
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-8d Page 2 of 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
35											
40											
45											
50											
55											
			Top of bedrock @ 57' based on PZ-8c soil boring.								
60											
65											*68' - Base of 4" Steel Casing*
		BR	Dk Grey Shale. Moderately hard, slightly fractured, slightly weathered. High angle	18.3	1						*68-83.4' - 4" borehole in bedrock*

MONITORING WELL LOG

BROWN AND CALDWELL	**Project Name:** Troy (Water St.) Site - Area 2 **Project Number:** 132071 **Project Location:** Troy, NY	**Permit Number:** N/A	**Well No.** **PZ-8d** **Page** 3 **of** 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Graphic Log (Sample Int, Recovery, Lithology, Well)	PID Readings (ppm)	Remarks
			fractures @ 69.5, 70, and 70.5'. Folded laminae (cleavage) throughout. Calcite mineralization on fracture surfaces @ 69.5'. Intensely fractured, highly weathered from 71-72.4'. Decomposed bedrock (Grey SILT&CLAY) on weathered surfaces.					*69.5-71.5' - Bentonite Seal* *71.5-72' - Choker Sand (#00)* *72-78.4' - Filter Sand (#1)*
75		BR	Dk Grey Shale. Moderately hard, dense. Moderately fractured and slightly weathered from 73.4-76.5'. High angle fractures @ 74.3, 75.1, and 75.8' (parallel to cleavage surfaces). Folded laminae throughout. Calcite and pyrite mineralization @ 74'. Pyrite mineralization w/in folded laminae @ 75.3 and 76.1'. Highly fractured w/ slight weathering on fracture surfaces from 76.1-78.6'.	38.3	2			*73.4-78.4' - 0.020" Slot PVC Screen*
80		BR	Dk Grey Shale. Moderately hard, dense (possibly metamorphosed). Folded cleavages throughout. Slightly fractured, slightly weathered. High angle fractures @ 78.8, 80, 80.6, 81.4, and 82.1'. Approx. 1/8" thick calcite vein @ 82.4' (present in cleavage plane).	70	3			*78.4-83.4' - Bentonite Backfill*



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number:	Well No. **PZ-9** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	20.0 ft.

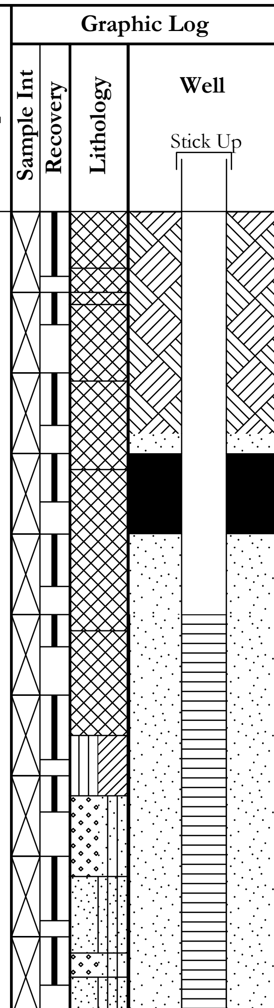
Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/24/07 - 7/24/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 24.0 ft.	Easting: 706776.7 ft. Northing: 1411712.2 ft. TOC Elev: 26.7 ft.
Lane Pech	4.25" HSA	CME 75/Track		

USC Soil Type	Description
	FILL
SP SM	Brwn mcf SAND, trace Silt.
SP GP	Dk Brwn-blk mc SAND and mf GRAVEL(cinders, slag). Moist.
SP	Brwn mfc SAND, little (-) fm Gravel, trace (+) Silt.
SP GP	Dk Brwn mfc SAND, little (+) mf Gravel (refractory brick, cinders), trace (+) silt. Dry.
GP	Rust Brwn-blk cmf GRAVEL (Slag, cinders, coal), some (-) mfc Sand.
SP GP	Blk-tan-yellow cmf SAND and mf GRAVEL (gravel and cm sand composed of coal, coal, refractory brick, ash), trace (-) Silt. Moist.
SP GP	Brwn-blk cmf SAND and mfc GRAVEL (slag, cinders). Moist. Wet @ 12.9'.
	ALLUVIAL DEPOSITS
ML CL	Lgt Brwn SILT&CLAY, some (-) f Sand. Color change to Grey @ 13.4' w/ trace (-) mica flakes. Wet.
SW SM	Lgt Brwn f SAND, some (-) Silt&Clay, trace (-) mica flakes. Wet/saturated.
SP SM	Lgt Brwn-grey fm SAND, little (+) Silt&Clay, trace (-) mica flakes. saturated.
SW SM	Tan -brwn f SAND, some (-) Silt&Clay. Saturated.
SP SM	Brwn-grey fm SAND, little (-)Silt&Clay, trace (-) Organics.

Depth (feet)	Blow Counts	Sample No.	PID Readings (ppm)
0	2-2-3-50/0.2	1	0.0
2	3-4-8-8	2	0.0
4	17-22-50/0.2	3	46.8
6	22-42-18-14	4	0.2
8	7-22-22-12	5	1.3
10	4-5-16-9	6	4.1
12	3-3-4-2	7	0.0
14	2-1-1-1	8	0.2
16	WOH/24"	9	0.0
18	WOH-1-1-1	10	0.0

Graphic Log



Remarks

Concrete Pad

0.5-5.5' - Cement/Bentonite Grout

5.5-6' - Choker Sand (#00)

6-8' - Bentonite Seal

8-8.5' - Choker Sand (#00)

8.5-20' - Filter Sand (#1)

10-20' - 0.020" Slot PVC Screen

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-10** Page 1 of 1

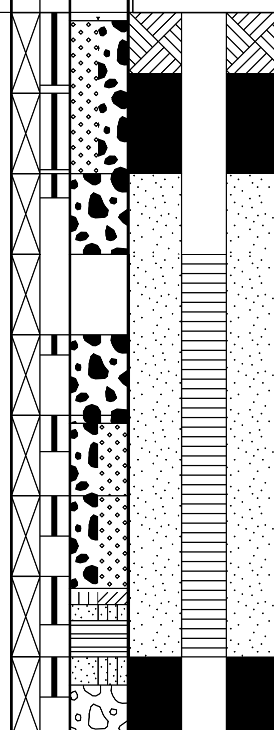
Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	18.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/3/07 - 7/3/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 22.2 ft.	Easting: 707173.8 ft. Northing: 1411741.8 ft. TOC Elev: 21.8 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW GW	**FILL** Asphalt Blk fm SAND, some (-) mf Gravel, trace (+) Silt. (Gravel composed of cinders). Dry.	25-11-14-10	1	0.2	*Concrete Pad*
				11-14-11-11	2	12.3	*1.5-4' - Bentonite Seal*
5		GW	Red brwn cm GRAVEL, little (-) fm Sand, trace (+) Silt. (Gravel composed of slag). Cobble size piece of slag stuck in shoe. Dry.	6-9-12-15	3	7.9	*4-4.5' - Choker Sand (#00)*
			No Recovery	6-9-10-13	4	N/A	*4.5-16' - Filter Sand (#1)*
		GW	Blk cmf GRAVEL (slag), trace (-) fm Sand. Wet.	19-24-14-10	5	1.3	
10 ▽		GW GW SW	Saturated, same as above. Rust Brwn cmf GRAVEL (slag), some (-) cmf Sand, trace (-) Silt. Saturated. Fe staining throughout.	14-16-9-5	6	0.6	*6-16' - 0.020" Slot PVC Screen*
		GW SW	Blk brwn mf GRAVEL and cmf SAND (slag, cinders), trace (-) Silt. Saturated.	4-7-5-5	7	9.2	
15		ML CL	**ALLUVIAL DEPOSITS** Grey SILT&CLAY, some (-) f Sand, trace (+) Organics (leaves), trace (-) mica flakes. Saturated.	3-2-1-4	8	3.1	
		SP SM BR SP SM GP	Grey f SAND, some (-) Silt&Clay, little (+) mf Gravel. Saturated. Weathered drk Grey shale. Grey f SAND, some (-) Silt&Clay, little (+) mf Gravel, trace (-) Organics. Wet. Grey mf GRAVEL, little (+) cmf Sand, trace (+) Silt&Clay. (Gravel rounded to sub-angular, and composed of mostly Grey shale).	1-1-9-8	9	2.9	*16-18' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump*

Graphic Log: Sample Int, Recovery, Lithology, Well (Traffic Rated Vault Box)



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-11 Page 1 of 1

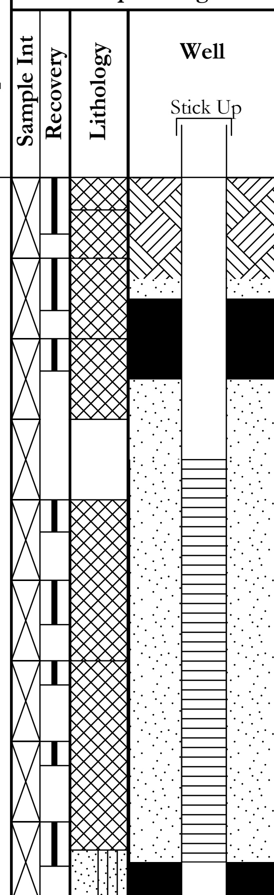
Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	18.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
7/24/07 - 7/24/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 23.2 ft.	Easting: 707151.6 ft. Northing: 1411706.6 ft. TOC Elev: 24.9 ft.
Lane Pech	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP	**FILL**	2-3-6-11	1	0.0	Concrete Pad
		GP	Blk mf SAND, little(+) f Gravel, trace (+) Silt, trace (-) Organics (roots). Moist.				*0.5-2.5' - Cement/Bentonite Grout*
		GP	Blk-brwn mfc GRAVEL (slag, coal), some (-) mfc Sand, trace (+) Silt. Moist.	9-12-9-14	2	3.7	*2.5-3' - Choker Sand (#00)*
			Blk cmf GRAVEL (slag, coal), little (+) mf Sand, trace (+) Silt. Moist.				
5		GP	Same as above. Pcs of red brick stuck in shoe of sampler.	14-23-22-50	3	0.5	*3-5' - Bentonite Seal* *5-5.5' - Choker Sand (#00)*
			No Recovery	17-23-17-10	4	N/A	*5.5-7' - Filter Sand (#1)*
		GP	Blk cmf GRAVEL (slag), little (+) mfc Sand (ash, cinders). Moist. Saturated @ 10.3'.	14-7-8-10	5	2.5	
10				4-7-18-14	6	1.2	
		GP	Brwn fm GRAVEL (slag, cinders), little (-) mfc Sand. Saturated.	5-5-6-5	7	9.8	*7-17' - 0.020" Slot PVC Screen*
15				10-7-4-3	8	4.4	12-14' - Blk sheen on fluids in spoon
				3-2-2-2	9	7.1	14-16' - Blk sheen on surface of water in spoon (water was cold to the touch, weak solvent odor)
		SP SM	**ALLUVIAL DEPOSITS** Grey fm SAND, little (+) Clayey Silt, trace (+) mica flakes. Saturated.				16-16.6' - Blk staining on sand and gravel grains, weak solvent odor 16.6-16.7'- Blk-brwn NAPL (weak solvent odor) coating grains *17-18' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump*

Graphic Log



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

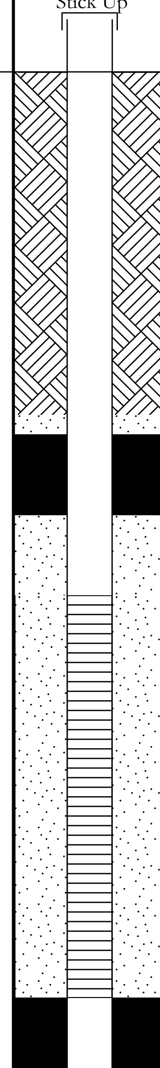
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-12a** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	25.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
6/19/07 - 6/20/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.5 ft.	Easting: 707118.7 ft. Northing: 1411624.3 ft. TOC Elev: 29.6 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Stick Up)	PID Readings (ppm)	Remarks
			Refer to PZ-12c soil boring log for description of soils from 0-25'.								*Concrete Pad*
											0.5-8.5' - Cement/Bentonite Grout
5											
											8.5-9' - Choker Sand (#00)
10											*9-11' - Bentonite Seal*
											11-11.5' - Choker Sand (#00)
											11.5-23' - Filter Sand (#1)
15											
											13-23' - 0.020" Slot PVC Screen
20											
											23-25' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump
25											



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

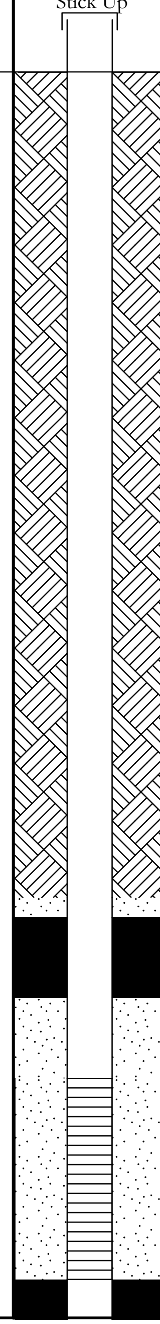
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-12b** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	32.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
6/19/07 - 6/20/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.7 ft.	Easting: 707122.8 ft. Northing: 1411618.7 ft. TOC Elev: 29.9 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
			Refer to PZ-12c soil boring log for description of soils from 0-32'.						Stick Up		*Concrete Pad*
5											*0.5-20.5' - Cement/Bentonite Grout*
10											
15											
20											*20.5-21' - Choker Sand (#00)* *21-23' - Bentonite Seal* *23-23.5' - Choker Sand (#00)* *23.5-30' - Filter Sand (#1)*
25											*25-30' - 0.020" Slot PVC Screen*
30											*30-32' - 2' PVC Sump w/*



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	**Project Name:** Troy (Water St.) Site - Area 2 **Project Number:** 132071 **Project Location:** Troy, NY	**Permit Number:** N/A	**Well No.** **PZ-12b** **Page** 2 **of** 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
											bentonite in annular space btwn borehole and sump

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-12c** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	56.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
6/18/07 - 6/19/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.9 ft.	Easting: 707111.8 ft. Northing: 1411619.5 ft. TOC Elev: 29.7 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0			**FILL** Refer to MW-6R soil boring log for description of soils from 0-14'.				*Concrete Pad* *0.5-35.5' - Cement/Bentonite Grout*
14		GW SW	Grey-brwn mf GRAVEL and mfc SAND, trace(-) Silt. Dry.	8-20-18-7	1	46	14-16' - Moderate paint thinner odor
15		GW SW	Misc. Fill (Brwn-blk-grey mfc GRAVEL[cinders and pieces of coal] and mfc SAND, trace(+) Silt). Moist.				
16				2-2-2-3	2	153	16-18' - Fill materials saturated w/ GW and blk NAPL (strong paint thinner/mineral spirit odor, similar to cleaning solvents)
17		SW GW	Dk Brwn mfc SAND, some(-) f Gravel, trace(+) Silt&Clay. Moist.				
18		GW SW	Misc. Fill (mf GRAVEL[cinders and pieces of coal] and cmf SAND[c Sand grains are cinders]). Wet/saturated.	45-22-16-14	3	152	18-20' - Fill materials saturated w/ GW and blk NAPL (strong paint thinner/acetone odor), fluid in spoon was cold to touch as if evaporating quickly
20			As above, saturated. Cobble size piece of slag in shoe of spoon.		4	149	
22		GW SW	Misc. Fill (mf GRAVEL[cinders and pieces of coal] and cmf SAND[c Sand grains are cinders]). Saturated.	20-18-16-18	5	96.9	20-24' - Fill materials saturated w/ GW and blk NAPL (strong paint thinner odor)
24		ML	**ALLUVIAL DEPOSITS** Grey Clayey SILT, some(-) f Sand, trace(-) Organics, grading into Grey f SAND, some(-) Silt&Clay. Moist/wet.	2-2-2-2	6	5.6	24-26' - Slight/weak paint thinner odor w/in native soils
26		SP SM	Grey f SAND, some(-) Silt&Clay, grading into Grey f SAND, little(+) Silt&Clay, trace(+) Organics.	1-1-2-4	7	8.2	
28		SP SM	Brwn-grey f SAND and ORGANICS(leaves), little(+) Silt&Clay. Lenses of mf SAND @ 27', 27.2, and 27.4'.	4-7-9-19	8	19.5	
30		SP SM PT	As above, w/ lens of Grey mf SAND and f	2-6-10-11	9	8.0	

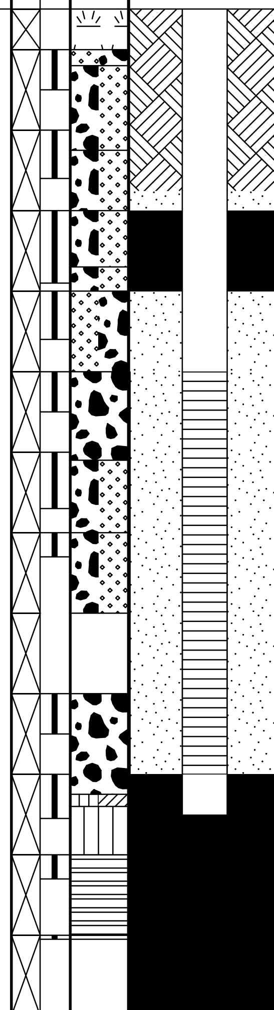
Graphic Log: Sample Int, Recovery, Lithology, Well (Stick Up)

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-12c Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			GRAVEL @ 28.6'. Moist.				
		SW	Brwn ORGANICS (pieces of wood).	4-8-13-22	10	7.2	32.4-34.5' - Brwn NAPL (weak paint thinner odor) coating grains of gravel
		GW	**LOWER SAND/GRAVEL UNIT**				
		GW SW	Grey mf SAND, some(-) f Gravel, trace(+) Silt&Clay, trace(-) Organics(leaves). Moist.	10-18-13-17	11	13.4	34.5-40' - Weak paint thinner odor, no visible NAPL
35		GW SW	Grey mcf GRAVEL, some(-) mf Sand, little(-) Silt&Clay. Wet.				*35.5-36' - Choker Sand (#00)*
		GW SW	Grey cmf GRAVEL(rounded to sub-angular), some(-) cmf Sand, trace(+) Silt&Clay.	2-7-9-10	12	7.3	*36-38' - Bentonite Seal*
		GW SW	Grey mcf GRAVEL, some(+) cmf Sand, little(+) Silt&Clay. Saturated.	3-6-8-12	13	1.5	*38-38.5' - Choker Sand (#00)*
		SW GW	Grey cmf SAND and f GRAVEL, little(-) Silt&Clay.				*38.5-50' - Filter Sand (#1)*
40		GW	Grey cmf SAND and mf GRAVEL(rounded to sub-angular, some flat pieces), trace(+) Silt&Clay.	3-8-12-17	14	1.0	
		GW SW	Grey cmf GRAVEL(rounded to sub-angular), little(-) cmf Sand, trace(-) Silt&Clay.	5-9-10-10	15	16.2	
		GW SW	Grey mf GRAVEL, some(-) cmf Sand, trace(+) Silt&Clay. Saturated.	8-12-15-15	16	1.0	
45			As above. Qtzite Cobble lodged in shoe of spoon.				*40-50' - 0.020" Slot PVC Screen*
			No recovery. Cobble fragment lodged in shoe of spoon.	18-11-8-7	17		
		GW	Grey cmf GRAVEL(rounded to sub-angular), little(+) cmf Sand, trace(+) Silt&Clay. Saturated.	13-19-23-18	18	0.2	
50				6-18-10-13	19	3.0	*50-51' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump*
		ML CL	**GLACIAL DEPOSITS (Till)**				
			Grey SILT&CLAY, little(-) f Sand, trace(+) f Gravel.	11-53-50/0.1	20	0.3	
		ML	Grey Clayey SILT, little(+) f Sand, trace(+) f Gravel.				Split spoon refusal @ 53.1'
		BR	**BEDROCK**				
		BR	Dk Grey weathered Shale. Decomposed bedrock (Grey SILT&CLAY) on weathered surfaces.	50/0.1	21	1.0	
55			Dk Grey weathered Shale. Moderately hard.				*51-56' - Bentonite Backfill*

Graphic Log: Sample Int, Recovery, Lithology, Well



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-12d Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	10.25/4"	2" PVC	0.020"	65.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Continuous Core Hammer Type: N/A	Development Method:
6/20/07 - 6/27/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.9 ft.	Easting: 707117.3 ft. Northing: 1411615.5 ft. TOC Elev: 29.8 ft.
Robert Baldoze	6.25" HSA/4" Coring	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well (Stick Up)	PID Readings (ppm)	Remarks
			Refer to PZ-12c soil boring log for description of soils from 0-55'.								*Concrete Pad*
											0.5-51' - Cement/Bentonite Grout
5											
10											
15											
20											
25											
30											

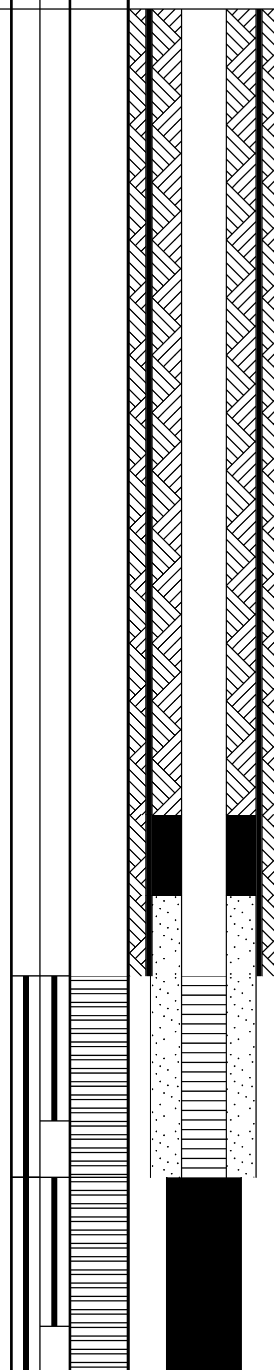
P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-12d** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Remarks
35						
40						
45						
50						
52			Top of Bedrock @ 52' based on PZ-12c soil boring log.			*51-53' - Bentonite Seal*
						53-53.5' - Choker Sand (#00)
55			Dk Grey Shale, moderately hard, slightly metamorphosed. intensely fractured/fairly weathered from 55-56'. Moderately fractured/fairly weathered from 56-58'. (fractured surfaces are polished) @ 57.7' Horizontal fractures filled in by calcite. Shale contains highly deformed cleavage surfaces w/ tight folds. Pyrite mineralization on fractured surfaces @ 57.6' and 57.9'.	15	1	*53.5-55' - Filter Sand (#1)* *55' - Base of 4" Steel Casing* *55-60' - 0.020" Slot PVC Screen*
60			Dk Grey Shale, mod hard/ highly fractured. Tight folding observed from 60.4-61.7'. Closely spaced fractures from 61.7- 63.7', w/ Silt&Clay deposits on fractured surfaces.	25	2	*55-65' - 4" borehole in bedrock* *60-65' - Bentonite Backfill*
65						

Graphic Log: Sample Int, Recovery, Lithology, Well; PID Readings (ppm)



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-13** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	20.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
7/30/07 - 7/30/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 22.4 ft.	Easting: 707332.8 ft. Northing: 1411642.7 ft. TOC Elev: 24.3 ft.
Lane Pech	4.25" HSA	CME 75/Track		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SW	**FILL**	8-10-8-7	1	0.2	
		SM	Blk fm SAND, little (+) Silt&Clay, little (-) f Gravel, trace (+) Organics (roots). Moist.				*Concrete Pad* *0.5-2.5' - Cement/Bentonite Grout*
		GW SW	Blk cmf GRAVEL(slag, cinders), little (+) mf Sand, trace (+) Silt.	3-6-5-7	2	3.4	*2.5-3' - Choker Sand (#00)*
		SW GW	Blk-brwn mf SAND and mf GRAVEL (cinders, slag, coal), trace (+) Silt, trace (-) Organics (roots). Moist.	14-15-13-10	3	0.4	*3-5' - Bentonite Seal*
5		GW GW	Tan-beige misc fill (refractory brick)				
		SW GW	Blk COBBLES (slag), little (-) mf Gravel and cmf Sand, trace (+) silt. Moist.	3-7-14-14	4	0.4	*5-5.5' - Choker Sand (#00)* *5.5-17' - Filter Sand (#1)*
		SW GW	Blk cmf SAND (cinders, coal) and cmf GRAVEL (slag), trace (+) Silt. Moist/wet.	4-4-3-2	5	0.1	
		SW GW	Grey cmf SAND (coal, cinders) and mf GRAVEL (slag, coal, cinders). Wet @ 8.8'.				
10			Same as above. Saturated.	4-4-5-7	6	0.1	
				4-6-10-6	7	0.6	*7-17' - 0.020" Slot PVC Screen*
				4-5-10-9	8	0.1	
15							
				4-4-3-2	9	0.2	
		SW	**ALLUVIAL DEPOSITS**				
		SW	Grey mfc SAND, little (+) f Gravel (gravel rounded to sub-angular and composed of drk grey shale), trace (+) Silt&Clay. Saturated.	4-5-3-4	10	0.8	*17-20' Bentonite Backfill*
20			Grey cmf SAND, little (+) fm Gravel (rounded to sub-angular), trace (+) silt&Clay, trace (-) Organics (wood). Saturated.				

Graphic Log: Sample Int, Recovery, Lithology, Well (Stick Up)

MONITORING WELL LOG

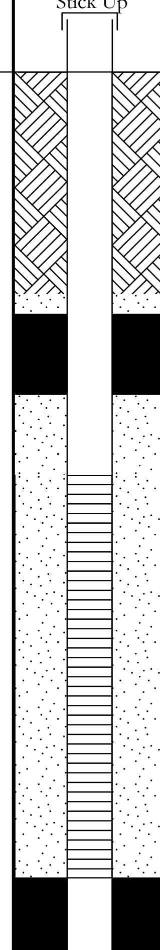
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-14** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	22.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Split Spoon	Development Method:
7/18/07 - 7/18/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83	Easting: 707278.8 ft.
Robert Baldoze	4.25" HSA	CME 75/Track	Vert Datum: NGVD29 Ground Surface Elev: 28.3 ft.	Northing: 1411561.6 ft. TOC Elev: 30.8 ft.

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Stick Up)	PID Readings (ppm)	Remarks
			Refer to DSB-1 soil boring log for description of soils from 0-22'.								*Concrete Pad*
											0.5-5.5' - Cement/Bentonite Grout
5											*5.5-6' - Choker Sand (#00)*
											6-8' - Bentonite Seal
											8-8.5' - Choker Sand (#00)
10											
											8.5-20' - Filter Sand (#1)
15											*10-20' - 0.020" Slot PVC Screen*
20											*20-22' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump*



P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

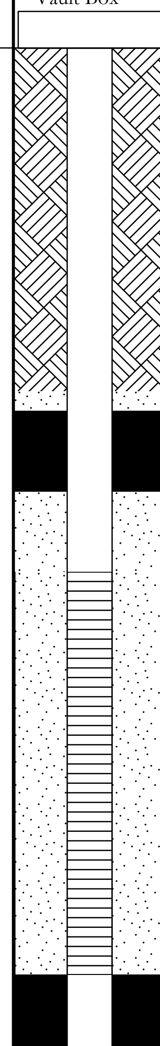
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-15a** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	25.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
5/25/07 - 5/25/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.2 ft.	Easting: 706876.3 ft. Northing: 1411386.2 ft. TOC Elev: 28.7 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-15c soil boring log for description of soils from 0-25'.								*Concrete Pad*
											0.5-8.5' - Cement/Bentonite Grout
5											
											8.5-9' - Choker Sand (#00)
10											*9-11' - Bentonite Seal*
											11-11.5' - Choker Sand (#00)
											11.5-23' - Filter Sand (#1)
15											
											13-23' - 0.020" Slot PVC Screen
20											
											23-25' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump
25											



MONITORING WELL LOG

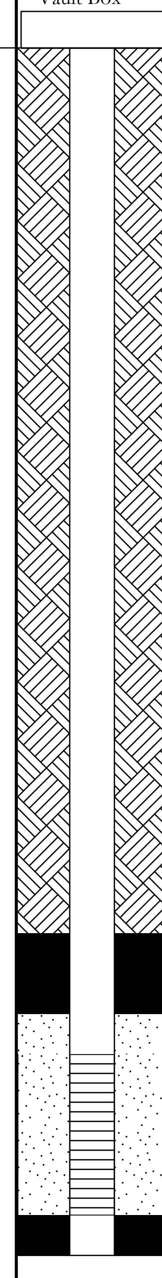
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-15b Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	30.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
5/23/07 - 5/23/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.1 ft.	Easting: 706876.0 ft. Northing: 1411392.5 ft. TOC Elev: 28.8 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-15c soil boring log for description of soils from 0-30'.								*Concrete Pad*
											0.5-22' - Cement/Bentonite Grout
5											
10											
15											
20											
											22-24' - Bentonite Seal
25											*24-29' - Filter Sand (#1)*
											25-29' - 0.020" Slot PVC Screen
30											*29-30' - 1' PVC Sump w/ bentonite in annualr space btwn borehole and sump*



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-15c** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	56.8 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/22/07 - 5/23/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.1 ft.	Easting: 706874.3 ft. Northing: 1411397.3 ft. TOC Elev: 28.5 ft.
Robert Baldoze	4.25" HSA	CME 75		

Graphic Log — Well: Traffic Rated Vault Box

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to MW-22 soil boring log for description of soils from 0-12'.				*Concrete Pad* *0.5-43' - Cement/Bentonite Grout*
5							
10							
		SW GW	Misc. Fill (Blk-brwn fm SAND[cinders], some(-) mf Gravel[cinders]), trace(+) Silt.	17-21-46-39	1	8.8	
		GP SW	Misc. Fill (Tan-beige refractory brick and c GRAVEL[slag]). Moist.	9-16-14-8	2	7.2	
15		GW SW	Misc. Fill (Blk-brwn mfc SAND[cinders], little(+) mf Gravel[cinders]), trace(+) Silt. Moist.				
		SW	Misc. Fill (Blk-brwn cmf GRAVEL[slag], little(+) mfc Sand[cinders]), trace(-) Silt. Pulverized pieces of coal in shoe.	6-6-7-4	3	3.4	
		SW	Misc. Fill (Blk mfc SAND[cinders], little(-) fm Gravel[cinders, pieces of coal]), trace(+) Silt. Tan-beige refractory brick @ 17.2'. Moist/wet @ 17.1'.	8-17-16-21	4	1.6	
20		GW	As above, saturated.	10-18-15-26	5	90.1	
		GW	Misc. Fill (Red-brwn mf GRAVEL[cinders], little(-) mfc Sand), trace(-) Silt.	18-10-5-4	6	24.9	20.8-22.8' - Fill materials saturated w/ GW and NAPL (mod/strong mixed moth ball/tar odor) 22.8-24.9' - Sporadic lenses of blk NAPL (mod/weak mixed tar/moth ball odor)
		SW	Misc. Fill (f GRAVEL[cinders] and mfc SAND[cinders], trace(+) Silt. Saturated.				
			ALLUVIAL DEPOSITS				
25		SP SM	Grey f SAND, some(-) Clayey Silt, trace(+) Organics(stems). Trace mica flakes throughout.	1-1-2-2	7	9.9	
		SP SM	Grey f SAND, little(+) Clayey Silt. Trace mica flakes throughout.	1-1-1-1	8	5.6	
		SW	Grey fm SAND, little(-) Silt, trace(+) Organics(stems).	1-2-4-5	9	1.3	
		SP SM	Grey mfc SAND, little(-) Silt, trace(-) f Gravel.				
30		SW	Grey-brwn f SAND, some(-) Clayey Silt,	3-3-5-8	10	59	30-31' - Brwn NAPL

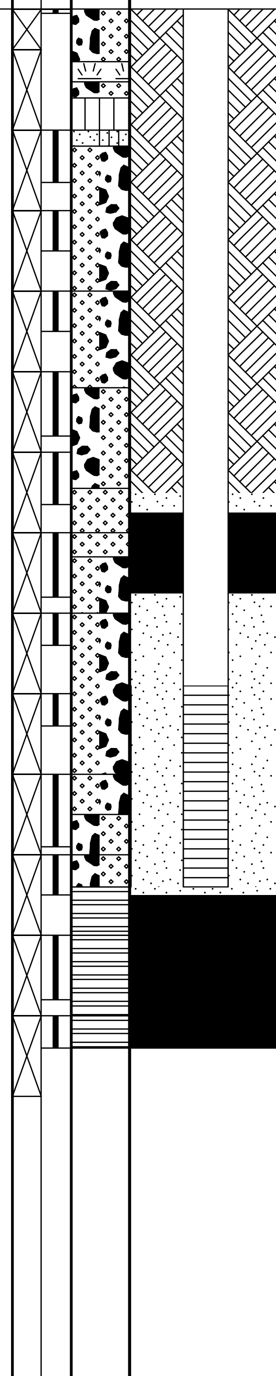
P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-15c Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		GW GW SW	little(+) Organics(stems and roots). Trace mica flakes throughout. Lens of mf SAND w/in interval.	4-6-7-7	11	148	observed w/in organic material (stems and wood)
35		GW SW ML SP	Grey cmf SAND, some(-) f Gravel, little(+) Organics(stems and wood). Grey mf GRAVEL(rounded to sub-angular) and cmf SAND, trace(+) Silt. Saturated.	3-3-6-10	12	3.8	32.8-33.2' - Brwn NAPL (moderate tar odor) coating grains of gravel
		SM SW GW	Brwn ORGANICS(leaves), little(-) f Sand, trace(+) Clayey Silt. Grey cmf GRAVEL, little(-) cmf Sand, trace(+) Silt.	11-9-4-6	13	7.8	36-38' - weak tar odor, no visible NAPL
		SW GW	Grey Clayey SILT, some(-) f Sand, trace(+) Organics(stems).	2-3-5-5	14	1.9	
40			Grey-brwn f SAND, little(+) Clayey Silt, trace(+) Organics(stems).	5-16-9-15	15	8.1	40-44' - weak tar odor, no visible NAPL
		GW SW	**LOWER SAND/GRAVEL UNIT** Grey cmf SAND and mf GRAVEL(rounded to sub-angular), trace(+) Clayey Silt, trace(-) Organics(stems).	10-15-9-9	16	3.0	
45		SW SW SW	Grey cmf SAND and mf GRAVEL(rounded to sub-angular), little(-) Clayey Silt. Saturated.	15-12-9-9	17	5.6	*43-43.5' - Choker Sand (#00)* *43.5-45.5' - Bentonite Seal*
		GW SW GW	Grey cmf GRAVEL, some(-) cmf Sand, little(+) Clayey Silt. Gravel and sand grains held together in Clayey Silt matrix.	21-15-10-7	18	6.6	*45.5-46' - Choker Sand (#00)*
			Grey cmf SAND, little(+) cmf Gravel, trace(+) Silt. Grey cmf SAND, little(+) mf Gravel, trace(+) Silt. Saturated.	11-11-13-19	19	4.9	*46-53' Filter Sand (#1)*
50		SW GW	Grey cmf SAND and mf GRAVEL(rounded to sub-angular), little(+) Clayey Silt.	3-6-13-14	20	4.3	*47.8-52.8' - 0.020" Slot PVC Screen*
		GW SW	Grey cmf SAND and mf GRAVEL(rounded to sub-angular), trace(-) Clayey Silt. Saturated.	12-15-15-18	21		
55		GW SW	Grey cmf SAND and mf GRAVEL, trace(+) Clayey Silt. Saturated. Grey cmf GRAVEL(rounded to sub-angular) and cmf SAND, trace(-) Silt.	38-24-25-31	22		*53-56.8' - Bentonite Backfill*
			Grey cmf GRAVEL(rounded to sub-angular), some(-) cmf Sand, trace(+) Silt.	24-50/0.3	23		Split spoon refusal @ 56.8'
			BEDROCK Highly weathered pieces of Dk Grey Shale. Weathered pieces of Grey Shale (pieces are cm Sand and mf Gravel sized). Wet. Moderately hard Grey Shale.				

Graphic Log: Sample Int, Recovery, Lithology, Well



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-16a Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	24.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
5/8/07 - 5/8/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.2 ft.	Easting: 707009.8 ft. Northing: 1410997.6 ft. TOC Elev: 28.9 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-16c soil boring log for description of soils from 0-24'.								*Concrete Pad*
5											*0.5-7.5' - Cement/Bentonite Grout*
											7.5-8' - Choker Sand (#00)
											8-10' - Bentonite Seal
10											*10-10.5' - Choker Sand (#00)*
											10.5-24' - Filter Sand (#1)
15											*12-24' - 0.020" Slot PVC Screen*
20											

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-16b Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	32.5 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
5/8/07 - 5/8/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.3 ft.	Easting: 707009.3 ft. Northing: 1410982.6 ft. TOC Elev: 29.0 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-16c soil boring log for description of soils from 0-32.5'.								Concrete Pad
5											0.5-26.5' - Cement/Bentonite Grout
10											
15											
20											
25											26.5-27' - Choker Sand (#00) 27-29' - Bentonite Seal
30											29-29.5' - Choker Sand (#00) 29.5-32.5' - Filter Sand (#1)

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-16b** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
											30.5-32.5' - 0.020" Slot PVC Screen

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-16c** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	40.4 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/4/07 - 5/4/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.2 ft.	Easting: 707009.2 ft. Northing: 1410989.9 ft. TOC Elev: 28.7 ft.
Robert Baldoze	4.25" HSA	CME 75		

Graphic Log: Sample Int, Recovery, Lithology, Well (Traffic Rated Vault Box)

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to SB-156 soil boring log for description of soils from 0-10'.				*Concrete Pad*
5							
10			Concrete.	2-4-8-15	1	0.0	*0.5-30.5' - Cement/Bentonite Grout*
		SW SM	Blk fm SAND, little(+) Silt&Clay, trace(-) f Gravel. Moist.				
		ML CL	Grey SILT&CLAY, trace(+) f Sand. Moist.	9-5-4-3	2	0.7	
		ML CL	As above, w/ trace f Gravel. Moist.				
		ML CL	Grey SILT&CLAY, little(-) f Gravel (cinders), trace(-) f Sand.	3-4-9-7	3	0.0	
15			**ALLUVIAL DEPOSITS**				
		CL ML	Grey CLAY&SILT, trace(+) Organics, trace(-) f Gravel, trace(-) f Sand. Moist.	3-5-7-5	4	0.0	
				5-6-7-7	5	0.1	
20		CL ML	As above, grading into Grey-brwn SILT&CLAY, trace(-) f Gravel, trace(-) f Sand. Wet.	3-2-3-4	6	0.0	
		ML CL	Grey-blk SILT&CLAY, little(+) fm Sand, little(+) f Gravel.	4-8-8-8	7	0.2	
		ML CL	As above. Saturated @ 22'.				
				5-5-5-7	8	0.3	
25		CL ML	Green-grey CLAY&SILT, trace(-) f Sand. Wet. Varves throughout interval from 24.5 to 26.6'.				
				4-4-6-6	9	0.3	
		CL ML	Grey CLAY&SILT, trace(+) f Sand, trace(+) f Gravel, trace(-) Organics.				
		CL ML	Grey CLAY&SILT, trace(+) f Sand, trace(+) mf Gravel, trace(-) Organics.	4-6-6-7	10	0.0	
30		ML CL	Blk SILT&CLAY, little(+) f Sand, mica flakes throughout.	1-5-7-10	11	0.0	*30.5-31' - Choker Sand (#00)*
		SP	Blk f SAND, some (-) Silt&Clay, trace (+)				

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-16c** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SM	Organics. Sporadic lens of mf Sand throughout.				
		SP SM	Grey-brwn f SAND, little(-) Silt&Clay, trace(+) Organics, grading into Grey-brwn f SAND, trace(+) Silt&Clay, trace(-) Organics. Moist.	3-4-5-6	12	0.0	*31-33' - Bentonite Seal*
		SW GW	Grey cmf SAND, some (-) f Gravel, trace (+) Silt.	1-2-7-6	13	0.0	*33-33.5' - Choker Sand (#00)*
35		SW SW	Grey-brwn f SAND, little (-) Organics, trace (+) Silt&Clay. Mica flakes throughout.	1-3-5-7	14	0.0	*33.5-39' - Filter Sand (#1)* Strong organic odor
		PT	Brwn ORGANICS, some(-) f Sand, little(-) Silt&Clay. Mica flakes throughout.				*34-39' - 0.020" Slot PVC Screen*
		PT	Grey mcf SAND, some(-) fm Gravel (rounded to sub-angular), little(-) Silt.	39-50/0.3	15	0.0	Split spoon refusal @ 38.8' *39-40' Bentonite Backfill*
40		BR	Brwn ORGANICS (leaves, pieces of wood), some(-) f Sand, little(-) Silt&Clay. Wet/Saturated.	50/0.4	16	0.0	Auger refusal @ 40'
			As above, moist.				
			BEDROCK Weathered Dk Grey Shale/Slate. Wet/Moist.				

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-16d Page 1 of 3

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	10.25/4"	2" PVC	0.020"	66.5 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Continuous Core Hammer Type: N/A	Development Method:
5/17/07 - 5/30/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.5 ft.	Easting: 707016.1 ft. Northing: 1410988.7 ft. TOC Elev: 28.9 ft.
Robert Baldoze	6.25" HSA/4" Coring	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-16c soil boring log for description of soils from 0-41'.								*Concrete Pad*
											0.5-51.5' - Cement/Bentonite Grout
5											
10											
15											
20											
25											
30											

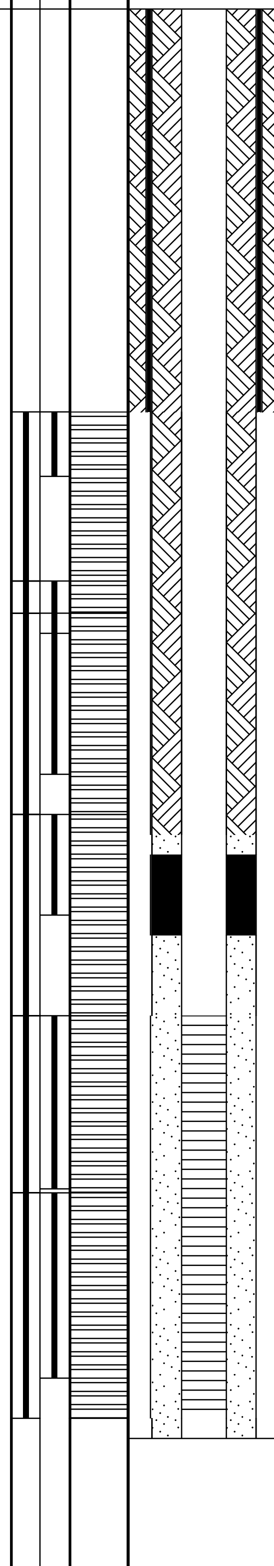
P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-16d Page 2 of 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Remarks
35						
40			Top of bedrock @ 39.0' based on PZ-16c soil boring log.			
			Dk Grey Shale, moderately hard, slightly weathered, slightly fractured. Tan-brwn Qtzite Cobble @ 41.1'(presumably introduced to boring during installation of 4" casing). Dk Grey Shale resumes @ 41.7', deformation folding observed w/in core. Secondary pyrite mineralization on fractured surface @ 41.4', calcite mineralization on fracture surface @ 42'.	15.9	1	*41' - Base of 4" Steel Casing*
45			Mfc GRAVEL (rounded to sub-angular) for initial foot of core run (presumably material introduced to corehole during lowering of corebarrel. Approx. 1/2' of Grey mod hard Shale at end of core run, pyrite mineralization observed on diagonal fracture surface, horizontal hairline fracture (calcite filled), tightly folded cleavage throughout.	41.7	2	
				26.7	3	*41-66.5' - 4" borehole in bedrock*
50			Qtz Cobble and pieces of gravel at start of run followed by Grey mod hard Shale, tightly folded cleavage. Highly fragmented Shale from 48-50'.	7.5	4	*51.5-52' - Choker Sand (#00)* *52-54' - Bentonite Seal*
55			Dk Grey Shale, mod hard, intensely fractured, highly weathered. Recognizable cleavage planes are steeply dipping (near vertical), potentially explaining fragmented appearence of core. Near vertical fracture @ 51.3' w/ calcite mineralization on surface of fracture. Minor amt of decomposed bedrock (Grey SILT&CLAY) from 52.1-52.9'. Most fracture surfaces are polished.	33	5	*54-54.5' - Choker Sand (#00)* *54.5-66.5' - Filter Sand (#1)*
60			Dk Grey Shale, mod hard, mod/slightly weathered. High angle fractures @ 56.3', 56.5', 57.5' and 58.5'. Minor amt of mineralization observed on fracture surfaces. Highly fragmented, highly weathered shale from 59.5-60.2' (Gravel/Sand size fragments and decomposed bedrock). Calcite and pyrite mineralization on fracture surfaces @ 56.5' and 58.5'. Tight deformation folds @ 56.5' and 59.2'.	50	6	*56-66' - 0.020" Slot PVC Screen*
65			Dk Grey Shale, mod hard, slightly weathered. High angle fractures @ 60.9', 61.2', 61.8', 63.5', 63.8' and 64.4'. Pyrite mineralization observed on most fracture surfaces, minor amt of calcite on surfaces. Offset of deformation folds observed			Single spec of sheen observed on bedrock fragment @ approx. 64.2'

Graphic Log: Sample Int, Recovery, Lithology, Well; PID Readings (ppm)



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-16d Page 3 of 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Graphic Log: Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
			throughout. Slickenslides on fracture surfaces @ 60.9' and 61.9. Most fracture surfaces are shiny. Substantial calcite deposit at end of run.								

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-17a Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	38.8 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
5/16/07 - 5/16/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.0 ft.	Easting: 706909.1 ft. Northing: 1411531.8 ft. TOC Elev: 27.1 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
			Refer to PZ-17b soil boring log for description of soils from 0-30' and from 34-38.8'.								*Concrete Pad* *0.5-30.5' - Cement/Bentonite Grout*
5											
10											
15											
20											
25											
30			Blk stained Misc. Fill (cmf SAND and mf	10-9-5-5	1						30-30.7' - Fill material

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-17a

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
		SP SM	GRAVEL[cinders]), trace(+) Silt&Clay, trace misc. fill (pieces of coal and red brick). Saturated.	8-5-4-5	2		saturated w/ GW and NAPL (slightly tacky, stong petroleum odor/moderate tar odor), blk sheen observed
		SP SM	**ALLUVIAL DEPOSITS** Grey f SAND, some(-) Clayey Silt, trace(-) Organics(leaves).				*30.5-31' - Choker Sand (#00)* *31-33' - Bentonite Seal* *33-33.5' - Choker Sand (#00)*
35			Grey Clayey SILT, some(-) f Sand, trace(+) Organics(leaves).				*33.5-38.8' - Filter Sand (#1)* *34.8-36.8' - 0.020" Slot PVC Screen* *36.8-38.8' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump*

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-17b** Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	57.9 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/10/07 - 5/11/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.1 ft.	Easting: 706909.1 ft. Northing: 1411540.1 ft. TOC Elev: 27.7 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
0			**FILL** Refer to MW-21 soil boring log for description of soils from 0-10'.				*Concrete Pad* *0.5-37.5' - Cement/Bentonite Grout*
10		SW	Grey fm SAND, liitle(+) Gravel, trace(+) Silt. Bentonite Chips, presumably backfill from nearby historical boring.	0-5-8-3	1		
		SW	Blk stained cmf SAND, little(-) f Gravel, trace(-) Silt.	5-9-11-16	2		12.3-14' - Sheen, moderate moth ball (naphthalene) odor
				7-4-3-6	3		14-14.8' - sporadic occurrences of viscous blk NAPL
15		SW	Blk stained mcf SAND, little(+) f Gravel, little(-) Silt&Clay, trace(+) Organics. Wet.	2-3-6-6	4	125	14.8-18' - NAPL (mod/strong naphthalene odor) coating grains of gravel and sand, blebs of
		SW	As above, saturated.	5-5-7-8	5	118.3	viscous NAPL (roofing tar consistency) throughout
20		SW GW	Misc. Fill (Blk stained cmf SAND[cinders] and mf GRAVEL[cinders]), little(-) Silt&Clay.	3-3-4-3	6	119	18-22' - Fill materials saturated w/ GW and NAPL (strong naphthalene odor)
		SW SM	Brwn-yellow mf SAND, little(+) Silt&Clay, trace(+) Organics.	3-3-6-12	7	136	22-26' - Fill materials saturated w/ GW and green-blk NAPL (mixed petroleum/naphthalene odor)
		SW GW GW	Misc. Fill (Green-blk stained cmf SAND and mf GRAVEL[cinders]), trace(+) Silt&Clay, trace misc. fill (pieces of coal and red brick).	5-21-30-27	8	157	
25			As above, w/ chunks of slag throughout.	13-24-37-50/0.2	9	88	26-30' - Fill materials saturated w/ GW and NAPL (strong petroleum/slight tar odor), sheen observed
				58/0.5	10	54	
30			**ALLUVIAL DEPOSITS**	9-16-13-7	11		Top of Alluvial deposit

Graphic Log: Sample Int, Recovery, Lithology, Well — Traffic Rated Vault Box

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

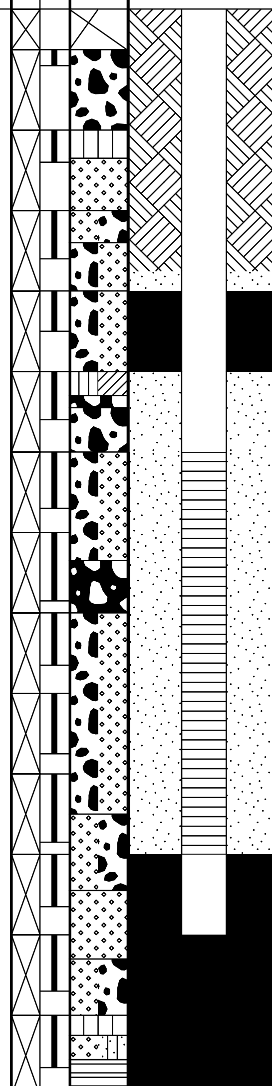
MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-17b** Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			No recovery.				based on PZ-17a soil boring, due to better recovery
		GW	Misc. Fill (cinders, pieces of slag, mf sand).	7-7-13-14	12	90.7	
		ML	Grey Clayey SILT, little(-) f Sand, trace(+) Organics.	6-7-11-17	13	44.9	34-36' - NAPL blebs (strong petroleum odor, tacky to touch) sporadically w/in finer grained material underlying fill
35		SW	Cmf SAND, trace(+) Silt&Clay.				
		SW	**LOWER SAND/GRAVEL UNIT**	1-4-9-9	14	9.1	
		GW GW	Grey mcf SAND, some(-) f Gravel, little(-) Silt&Clay. Loosely held together.				*37.5-38' - Choker Sand (#00)*
		SW GW SW	Grey-green mf GRAVEL(rounded to sub-angular), some(-) cmf Sand, little(+) Silt&Clay. Moist, compact, dense.	4-6-14-7	15	8	*38-40' - Bentonite Seal*
40		ML CL	Grey cmf GRAVEL, some(-) cmf Sand, little(+) Silt&Clay. Wet, compact.	4-10-15-18	16	4.3	*40-40.5' - Choker Sand (#00)*
		GW	Lens of Grey SILT&CLAY, some(-) f Sand, little(-) Organics.				
		GW SW	Qtz COBBLE	11-11-11-24	17	2.3	*40.5-52' - Filter Sand (#1)*
			Cmf GRAVEL(rounded to sub-angular), little(-) cmf Sand, trace(+) Silt&Clay. Wet/saturated.	15-32-32-25	18	1.2	
45		GW SW	Grey cmf GRAVEL(rounded to sub-angular) and cmf SAND, trace(+) Silt&Clay. Saturated.	22-22-18-17	19	17.5	
			Pulverized pieces of Qtz COBBLE.				*42-52' - 0.020" Slot PVC Screen*
			Grey cmf GRAVEL(rounded to sub-angular) and cmf SAND, trace(+) Silt. Saturated.	32-17-19-22	20	10.2	
50				13-13-12-15	21	4.6	
		SW GW	Grey cmf SAND, some(-) mf Gravel(rounded to sub-angular, flat pieces), trace(+) Silt&Clay.	7-3-3-8	22	0.9	*52-54' - 2' PVC Sump w/ bentonite in annulat space btwn borehole and sump*
		SW	Grey mfc SAND, little(-) f Gravel, trace(+) Silt&Clay. Saturated.	10-10-8-8	23	0.8	
55		SW GW	Grey cmf SAND and mf GRAVEL, trace(+) Silt&Clay.				
		ML	**GLACIAL DEPOSITS (Till)**	5-8-12-50/0.4	24	1.0	*Bentonite Backfill*
		SW	Grey Clayey SILT, little(-) f Sand. Saturated.				
		SM	Grey cmf SAND, little(+) f Gravel, little(-) Clayey Silt.				
			BEDROCK				
			Weathered pieces of Dk Grey Shale/Slate. Pulverized pieces of Shale in shoe.				

Graphic Log

Sample Int | Recovery | Lithology | Well



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-17c Page 1 of 3

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	10.25/4"	2" PVC	0.020"	71.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: Continuous Core Hammer Type: N/A	Development Method:
5/21/07 - 5/22/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.1 ft.	Easting: 706900.1 ft. Northing: 1411540.2 ft. TOC Elev: 27.7 ft.
Robert Baldoze	6.25" HSA/4" Coring	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
			Refer to PZ-17b soil boring log for description of soils from 0-60'.								*Concrete Pad* *0.5-56.5' - Cement/Bentonite Grout*
5											
10											
15											
20											
25											
30											

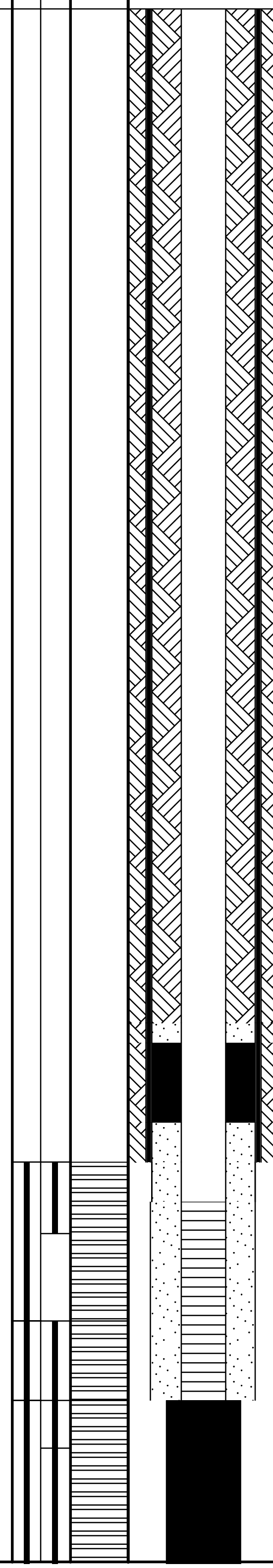
P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-17c** Page 2 of 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	PID Readings (ppm)	Remarks
35							
40							
45							
50							
55							*56.5-57' - Choker Sand (#00)*
			Top of bedrock @ 57.1' based on PZ-17b soil boring log.				*57-59' - Bentonite Seal*
60		BR	Dk Grey Shale, mod hard, slightly weathered, slightly fractured. Folded cleavage throughout. Horizontal fracture w/ calcite deposit on surface of fracture @ approx. 61'.	35.4	1	0.0	*59-59.5' - Choker Sand (#00)* *60' - Base of 4" Steel Casing* *59.5-66' - Filter Sand (#1)* *61-66' - 0.020" Slot PVC Screen*
65		BR	Dk Grey Shale, mod hard, dense w/ tight deformation folds. Intensely fractured w/ decomposed bedrock (Grey SILT&CLAY) on fracture surfaces approx. 0.8' into run. End of run more competent (mod hard, mod fractured).		2	0.0	
		BR	Dk Grey Shale, mod hard, mod fractured, slightly weathered. Folded cleavage throughout. Offset of folds observed along diagonal fracture. Slickenlines on fracture	49.2	3	0.0	*60-71' - 4" borehole in bedrock* *66-71' - Bentonite Backfill*

Graphic Log



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-17c Page 3 of 3

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
			surface @ approx. 67'. horizontal hairline fracture (calcite filled) @ 68'. Intensely fractured, highly weathered w/ decomposed bedrock on fracture surfaces from 69-70'.								

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-18a Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	12.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
5/10/07 - 5/10/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.9 ft.	Easting: 707120.9 ft. Northing: 1411078.6 ft. TOC Elev: 28.5 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
			Refer to PZ-18b soil boring log for description of soils from 0-12'.								*Concrete Pad* *0.5-2.5' - Bentonite Seal* *2.5-3' - Choker Sand (#00)* *3-11' - Filter Sand (#1)*
5											*4-11' - 0.020" Slot PVC Screen*
10											*11-12' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump*

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-18b** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	19.0 ft.

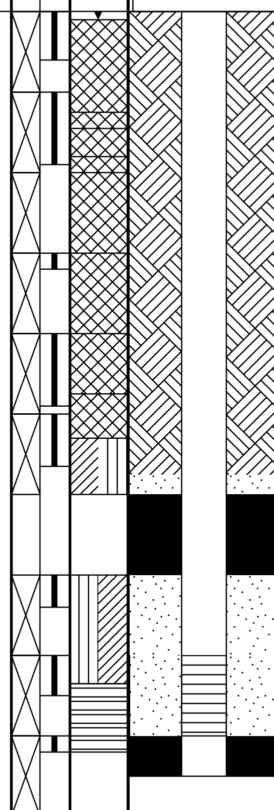
Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon Hammer Type: Auto/140 lbs	Development Method:
5/9/07 - 5/10/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.8 ft.	Easting: 707118.0 ft. Northing: 1411085.1 ft. TOC Elev: 28.4 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)
			FILL			
		SW	Asphalt.	12-14-18	1	1.2
			Brwn-grey fm SAND, little(-) cmf Gravel, trace(+) Silt. Dry.			
		SW	Brwn-grey mfc SAND, little(-) fm Gravel, trace(-) Silt. Moist.	3-3-3-8	2	43.4
		SW	Grey mcf SAND, little(+) cmf Gravel, trace(+) Silt. Wet.			
5		OL	ORGANICS, little(+) Silt&Clay, trace(-) f Sand. Saturated.	18-22-10-6	3	
			No recovery.			
		SW	Grey cmf SAND, little(+) Silt&Clay, trace(+) fm Gravel. Saturated.	4-5-11-11	4	42.5
		SW	Tan-brwn-orng cmf SAND, trace(+) Silt, trace Misc. Fill (pieces of red brick). Saturated.	5-8-10-11	5	136
10		GW SW	Tan-brwn mf GRAVEL and mf SAND, little(+) Silt&Clay	6-14-9-6	6	143
			LACUSTRINE DEPOSITS			
		CL ML	Tan-brwn CLAY&SILT (layered/varved), trace(-) f Sand.			
15		ML CL	Grey SILT&CLAY, little(-) f Gravel, trace(+) f Sand. Wet.	1-1-17-44	7	
				45-50/0.2	8	
			BEDROCK			
			Dk Grey weathered Shale. Moist.			
			As above, dry.	50/0.4	9	

Graphic Log

Well: Traffic Rated Vault Box



Remarks

Concrete Pad
0.5-11.5' - Cement/Bentonite Grout

2.9-3.6' - NAPL (slight moth ball odor) coating grains of gravel
3.6-4' - Organic material saturated w/ water and blk NAPL
6-8' - Sporadic blk NAPL (moderate kerosene odor) coating sand and gravel grains

Lens of blk NAPL (slight petroleum odor) @ approx. 9.5'
10-10.6' - NAPL (moderate mixed petroleum/tar odor) coating sand and gravel grains
11.5-12' - Choker Sand (#00)
No samples for decription (shelby tube collected from 12-14')
12-14' - Bentonite Seal
14-14.5' - Choker Sand (#00)
14.5-18' - Filter Sand (#1)
16.7-18.4' - Brwn NAPL staining (no odor observed on cleavage surfaces of weathered bedrock when broken apart). Slight sheen/greasy luster observed on NAPL stained surfaces.
16-18' - 0.020" Slot PVC Screen
19-20' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump

P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-19a** Page 1 of 2

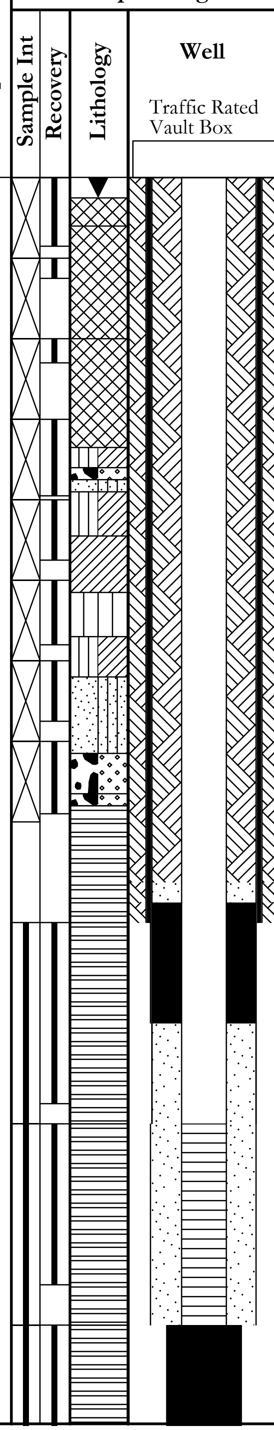
Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	10.25/4"	2" PVC	0.020"	33.5 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" SS/4" Cont. Core Hammer Type: Auto/140 lbs	Development Method:
5/9/07 - 5/17/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 29.0 ft.	Easting: 707267.0 ft. Northing: 1411397.8 ft. TOC Elev: 28.5 ft.
Robert Baldoze	6.25" HSA/4" Coring	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts / RQD (%)	Sample No.	PID Readings (ppm)	Remarks
			FILL	8-5-7-7	1	0.6	*Concrete Pad*
		SW	Asphalt.				*0.5-17.5' - Cement/Bentonite Grout*
		SW	Brwn-blk-grey mfc SAND, little(+) mf Gravel, trace(+) Silt. Moist.	4-7-13-23	2	3.5	
			Yellow-green-grey fm SAND, little(-) f Gravel, trace(+) Clayey Silt, trace Organics. Moist.	36-21-13-11	3	3.6	
5		SW	Grey mf SAND, little(-) f Gravel, trace(+) Silt&Clay. Wet.	6-4-12-18	4		
			ALLUVIAL DEPOSITS				
		ML CL	Grey SILT&CLAY, little(+) f Sand.				6.7-7.2' - Blk NAPL (slight naphthalene odor) coating grains on fracture surfaces w/in Silt and Clay material
		GW SW	Grey mf GRAVEL, some(-) mfc Sand, little(-) Silt&Clay.	5-4-5-11	5		
10		SP SM	Green-grey fm SAND, some(-) Silt&Clay.	6-9-8-6	6		
		ML CL	Green-grey SILT&CLAY, little(+) f Sand. Moist.				
			LACUSTRINE DEPOSITS				
		CL ML	Green-grey Silty CLAY, little(-) f Sand, trace(+) Organics. Compacted, varving observed.	5-7-7-10	7		12.4-14.3' - Slight petroleum odor
		ML CL	Green-grey Clayey SILT, little(+) f Sand. Wet.	8-17-18-50/0.3	8		
15		SP SM	Green-grey SILT&CLAY, little(-) f Sand. Moist, compacted.				14.3-15.3' - Sheen, moderate petroleum odor
		GW SW	Green-grey f SAND, little(+) Clayey Silt. Wet/saturated, non-cohesive (very loose).				
			GLACIAL DEPOSITS (Till)				*17.5-18' - Choker Sand (#00)*
		GW SW	Grey mfc GRAVEL and mf SAND, trace(+) Silt. Compact.	73.3	1		*18.5' - Base of 4" Steel Casing*
20			As above, less compact.				*18-21' - Bentonite Seal*
			BEDROCK				
			Weathered pieces of Dk Grey Shale/Slate (split-spoon sample).				*21-21.5' - Choker Sand (#00)*
			Begin Core Desc. - Dk Grey Shale. Mod hard, slightly weathered. High-angle hairline fractures (calcite filled) @ 18.5', 18.9' and 20.1. High-angle hairline fracture (clay filled) @ 22.4'. High-angle fractures w/ Fe staining on surfaces @ 19', 19.5' and 21.3'. High-angle fracture w/ pyrite deposits on surface @ 22.6'. Folded laminae (cleavage) observed throughout.	26.7	2		*21.5-28.5' - Filter Sand (#1)*
25							*23.5-28.5' - 0.020" Slot PVC Screen*
			Dk Grey Shale. Moderately hard. Mod fractured, slight weathering on fracture surfaces from 23.5-25.5'. Folded laminae throughout. Diagonal fractures w/ pyrite deposits @ 24', 25' and 25.6'.	35	3		*28.5-33.5' - Bentonite Backfill*
30							

Graphic Log: Sample Int / Recovery / Lithology / Well (Traffic Rated Vault Box)



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-19a

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts RQD (%)	Sample No.	Graphic Log: Sample Int	Recovery	Lithology	Well	PID Readings (ppm)	Remarks
			Dk Grey Shale. Mod hard, mod fractured, slightly weathered from 28.5-32.5'. Diagonal, drilling induced fractures (parallel to folds) @ 28.9', 29.5', 30', 30.3' and 30.7'. Diagonal hairline fractures (calcite filled) @ 29.4' and 30.4'. Highly weathered/decomposed (SILT&CLAY deposits on cleavage surfaces) bedrock @ 32.5'.								*18.5-33.5' - 4" borehole in bedrock*

MONITORING WELL LOG

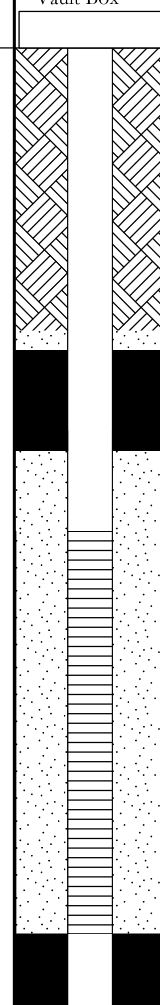
BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-20** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	24.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A	Development Method:
4/30/07 - 4/30/07	Parratt-Wolff	Hammer Type: N/A	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.4 ft.	Easting: 706954.6 ft. Northing: 1411309.1 ft. TOC Elev: 28.0 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
			Refer to DSB-7 soil boring log for description of soils from 0-24'.								*Concrete Pad*
5											*0.5-7' - Cement/Bentonite Grout*
											7-7.5' - Choker Sand (#00)
											7.5-10' - Bentonite Seal
10											*10-10.5' - Choker Sand (#00)*
											10.5-22' - Filter Sand (#1)
15											*12-22' - 0.020" Slot PVC Screen*
20											
											22-24' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump



P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-21 Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	24.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
6/15/07 - 6/15/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 28.2 ft.	Easting: 707144.5 ft. Northing: 1411294.0 ft. TOC Elev: 27.8 ft.
Robert Baldoze	4.25" HSA	CME 75		

Graphic Log: Sample Int, Recovery, Lithology, Well (Traffic Rated Vault Box)

USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
	FILL				
SW GW	Misc. Fill (Brwn-orng mf SAND, little(+) f Gravel[cinders and pieces of coal], trace(+) Clayey Silt). Dry.	17-12-9-9	1	0.8	*Concrete Pad*
SW GW	Brwn-grey-orng mf SAND, little(+) mf Gravel, trace(+) Clayey Silt. Moist. Lt Grey refractory brick @ 2.8'.	6-6-4-4	2	1.9	*0.5-8' - Cement/Bentonite Grout*
SW SM	Brwn-grey mfc SAND, little(+) Silt&Clay, little(-) f Gravel (Fe staining around gravel grains). Moist.	8-9-13-18	3	127	4-6' - Weak mixed paint thinner/tar/turpentine odor
GW	Misc. Fill (m GRAVEL[cinders and slag]).	7-12-18-8	4	67.9	6-6.8' - Blk NAPL (moderate mineral spirit/turpentine odor) coating fill materials (slag and cinders)
GW SW	Misc. Fill (Blk stained mf GRAVEL[cinders and slag], some(-) mfc Sand, trace(+) Clayey Silt). Moist/wet. Piece of red brick @ 6.8', tan-beige refractory brick @ 6.9'.	7-8-11-15	5	N/A	*8-8.5' - Choker Sand (#00)* *8.5-10.5' - Bentonite Seal*
	No recovery.				
SW GW	Misc. Fill (Blk stained mfc SAND[cinders] and mf GRAVEL[cinders and slag]). Wet.	3-7-8-6	6	0.9	10-10.4' - Blk NAPL (mod mineral spirit/turpentine odor) coating fill materials *10.5-11' - Choker Sand (#00)*
	LACUSTRINE DEPOSITS				
CL ML	Green-grey CLAY&SILT, little(-) f Sand, trace(+) Organics(stems). Dry/moist. Compact/dense. Varves/laminations throughout interval from 10.4-13.3'.	3-3-6-8	7	0.3	*11-22.8' - Filter Sand (#1)*
CL ML	Green CLAY&SILT, trace(+) f Sand. Dry. Very compact. Varves observed throughout interval from 13.3-15.4'. Horizontal and vertical fractures (lined w/ Lt Grey CLAY&SILT) throughout. Increased moisture w/in fractures.	5-6-8-8	8	0.0	*12.8-22.8' - 0.020" Slot PVC Screen*
	GLACIAL DEPOSITS (Till)				
SW GW	Dk Grey cmf SAND and mf GRAVEL, little(+) Clay&Silt, trace(-) Organics(blk mottles). Wet/saturated. Gravel and coarse grained Sand are weathered pieces of Dk Grey Shale.	3-4-6-9	9	0.6	
SW SC	Dk Grey cmf SAND, some(-) Clay&Silt, little(+) f Gravel(weathered Shale fragments), trace(-) Organics. Wet.	3-4-4-5	10	1.5	
GW GC	Dk Grey mf GRAVEL(weathered Shale fragments) and cmf SAND, some(+) Silt&Clay. Cohesive (Gravel and Sand held together in Silt&Clay matrix). Saturated.	2-2-3-2	11	0.0	
GW SW	Mf GRAVEL(weathered Shale fragments) and cmf SAND, little(-) Silt&Clay. Sporadic blk staining around larger Gravel grains.	4-25-50/0.3	12	0.0	
	BEDROCK				
BR	Dk Grey weathered Shale. Fe staining on cleavage surfaces. Decomposed bedrock (Grey SILT&CLAY) on weathered surfaces.				

Depth (feet): 5, 10, 15, 20

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-22a** Page 1 of 1

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	28.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A / Hammer Type: N/A	Development Method:
6/12/07 - 6/12/07	Parratt-Wolff	Hammer Type: N/A	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.4 ft.	Easting: 706803.1 ft. Northing: 1411565.7 ft. TOC Elev: 27.1 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
0			Refer to PZ-22c soil boring log for description of soils from 0-28'.								*Concrete Pad*
											0.5-11.5' - Cement/Bentonite Grout
5											
10											
											11.5-12' - Choker Sand (#00)
											12-14' - Bentonite Seal
											14-14.5' - Choker Sand (#00)
15											*14.5-26' - Filter Sand (#1)*
20											*16-26' - 0.020" Slot PVC Screen*
25											
											26-28' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump

P:\\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-22b Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	43.0 ft.

Start/Finish Date	Drilling Contractor:	Sampling: N/A Hammer Type: N/A	Development Method:
6/12/07 - 6/13/07	Parratt-Wolff		Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.5 ft.	Easting: 706807.2 ft. Northing: 1411656.7 ft. TOC Elev: 26.9 ft.
Robert Baldoze	4.25" HSA	CME 75		

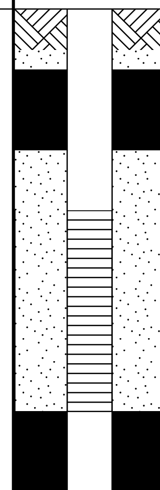
Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Sample Int	Recovery	Lithology	Well (Traffic Rated Vault Box)	PID Readings (ppm)	Remarks
			Refer to PZ-22c soil boring log for description of soils from 0-43'.								*Concrete Pad* *0.5-32' - Cement/Bentonite Grout*
5											
10											
15											
20											
25											
30											

P:\Clients\National_Grid\Nimo_Troy\132071(SI&IRMs)\Logs

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-22b Page 2 of 2

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample Int	Graphic Log: Recovery	Graphic Log: Lithology	Graphic Log: Well	PID Readings (ppm)	Remarks
											32-32.5' - Choker Sand (#00)
											32.5-34.5' - Bentonite Seal
35											*34.5-35' - Choker Sand (#00)*
											35-41' - Filter Sand (#1)
											36-41' - 0.020" Slot PVC Screen
40											
											41-43' - 2' PVC Sump w/ bentonite in annular space btwn borehole and sump



MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. PZ-22c Page 1 of 2

Geologist/Office	Checked By:	Borehole Diameter:	Screen Diameter and Type:	Slot Size:	Total Boring Depth (ft)
T. Chaturgan/	RLO	8.25"	2" PVC	0.020"	59.5 ft.

Start/Finish Date	Drilling Contractor:	Sampling: 3" Split Spoon	Development Method:
6/8/07 - 6/12/07	Parratt-Wolff	Hammer Type: Auto/140 lbs	Surge & Pump method using a submersible pump

Driller:	Drilling Method:	Drilling Equipment:	Horiz Datum/Proj: NAD83 Vert Datum: NGVD29 Ground Surface Elev: 27.5 ft.	Easting: 706804.9 ft. Northing: 1411570.6 ft. TOC Elev: 26.9 ft.
Robert Baldoze	4.25" HSA	CME 75		

Depth (feet)	Elevation (feet)	USC Soil Type	Description	Blow Counts	Sample No.	PID Readings (ppm)	Remarks
			FILL Refer to SB-23 soil boring log for description of soils from 0-15'.				*Concrete Pad* *0.5-45.5' - Cement/bentonite Grout*
5							
10							
15		SW GW	Grey-brwn mf SAND, some(-) mf Gravel, trace(+) Silt&Clay. Moist.	6-4-6-17	1	0.1	
		SW GW	Misc. Fill (Blk Cobble sized piece of slag).				
		GW	Misc. Fill (Grey-blk cmf SAND[cinders] and mf GRAVEL[cinders and pieces of coal]).	10-9-7-4	2	0.4	
			Misc. Fill (Red-brwn mf GRAVEL[slag and cinders], little(-) mf Sand, trace(+) Silt&Clay). Wet/saturated @16'.	2-1-2-1	3	0.0	
20		SP SM	Misc. Fill (Blk-brwn-orng mfc SAND, little(+) mf Gravel[cinders and pieces of coal]).	WOH/18"-2	4	0.0	
		SP SM	Misc. Fill (Blk-orng mfc SAND[cinders] and mf Gravel[cinders], trace(-) Silt&Clay). Moist/wet. Color change to Blk-grey @ 17.9'.	WOH/24"	5	0.0	
25		SP SM SP SM	**ALLUVIAL DEPOSITS** Tan-brwn f SAND, some(-) Clayey Silt, grading into Tan-brwn f SAND, little(-) Silt&Clay. Wet @ 20.5', saturated @ 21'. Trace mica flakes throughout.	WHO/24"	6	0.0	
		SP SM	Tan-brwn f SAND, some(+) Silt&Clay, trace(+) Organics(stems and leaves).	6-7-7-7	7	0.8	
		SP SM	Grey fm SAND, little(+) Silt&Clay.	1-3-6-7	8	0.9	
30		SP SP	Brwn f SAND (w/ Grey mottles), some(-) Silt&Clay. Saturated.				

Graphic Log: Sample Int, Recovery, Lithology, Well (Traffic Rated Vault Box)

MONITORING WELL LOG

BROWN AND CALDWELL	Project Name: Troy (Water St.) Site - Area 2 Project Number: 132071 Project Location: Troy, NY	Permit Number: N/A	Well No. **PZ-22c** Page 2 of 2

Depth (feet): 35, 40, 45, 50, 55

USC Soil Type: SP, SM, ML, CL, SW, GW, GW, SW, GW, SW, GW, SW, GW, SW, SW, GW, SW, GW, GW, SW, SW, GW

Description

Grey-brwn f SAND, little(+) Silt&Clay. Saturated.

Grey-brwn f SAND, some(-) Silt&Clay. Moist/wet. Fe staining throughout.

Grey-brwn f SAND, some(-) Silt&Clay, grading into Grey f SAND, little(-) Silt&Clay. Wet. Fe staining throughout. Trace mica flakes throughout.

Dk brwn f SAND, little(+) Organics(leaves), little(-) Silt&Clay. Moist.

Brwn-grey f SAND, little(+) Organics(layered leaves), little(-) Silt&Clay, trace(-) f Gravel. Moist. Lenses of mf SAND throughout. Trace mica flakes throughout.

Grey-brwn f SAND, some(-) Silt&Clay, little (+) Organics(leaves and stems). Trace mica flakes throughout.

Dk Grey SILT&CLAY, some(-) f Sand, little(+) Organics(stems and leaves), trace(+) m Gravel. Trace mica flakes throughout.

LOWER SAND/GRAVEL UNIT

Grey mcf SAND, some(+) mf Gravel(rounded to sub-angular), little(-) Silt&Clay. Moist.

Grey mf GRAVEL(rounded to sub-angular) and cmf SAND, little(-) Silt&Clay. Wet.

Green-grey mfc GRAVEL, little(+) cmf Sand, little(+) Clayey Silt, trace(+) Organics. Saturated.

Grey mfc GRAVEL(rounded to sub-angular, some flat pieces), some(-) cmf Sand, little(-) Silt&Clay. Saturated.

No recovery.

Grey cmf GRAVEL(rounded and flat, some sub-angular pieces), some(-) cmf Sand, trace(+) Silt&Clay. Saturated. Brwn staining @ 43.5', no odor. SS Cobble in shoe of spoon.

Pulverized pieces of SS Cobble.

Grey cmf SAND, little(+) mf Gravel(rounded to sub-angular), trace(+) Silt&Clay.

Brwn Pegmatite/Granite COBBLE in shoe of spoon.

Grey cmf SAND, some(-) mcf Gravel(rounded to sub-angular), trace(+) Silt&Clay. Saturated.

GLACIAL DEPOSITS (Till)

Dk Grey weathered SHALE fragments, little(+) mf Sand, little(-) Silt&Clay.

Dk Grey weathered SHALE fragments

Dk Grey mf GRAVEL(rounded to sub-angular) and cmf SAND, little(+) Silt&Clay. Compact/cohesive, dense. Gravel and sand held together in silt&clay matrix.

Dk Grey mfc SAND and mf GRAVEL(rounded to sub-angular), some(-) Silt&Clay. Very compact/cohesive, dense.

BEDROCK

Dk Grey Shale. Moderately hard.

Blow Counts	Sample No.	PID Readings (ppm)
2-2-4-6	9	0.5
5-10-17-25	10	0.0
3-7-10-9	11	0.0
3-6-4-8	12	0.0
2-8-8-7	13	0.0
1-1-2-5	14	N/A
8-8-13-17	15	0.0
12-12-7-12	16	0.0
14-14-17-19	17	0.0
11-12-14-10	18	0.0
12-12-16-16	19	0.0
8-26-31-28	20	0.0
18-50/0.3	21	0.0
10-12-50/0.2	22	0.0
52/0.5	23	0.0

Remarks

45.5-46' - Choker Sand (#00)

46-48' - Bentonite Seal

48-48.5' Choker Sand (#00)

48.5-55' - Filter Sand (#1)

50-55' - 0.020" Slot PVC Screen

55-56' - 1' PVC Sump w/ bentonite in annular space btwn borehole and sump

Split spoon refusal @ 58.2'

APPENDIX C

Test Pit Logs

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	**TEST PIT NUMBER**	**TP-217** (Southern end)
PROJECT NUMBER	132071.104	**BC REPRESENTATIVE**	J. Marolda T. Chaturgan
GENERAL LOCATION	North of Former By-Products Building	**CONTRACTOR**	Parratt Wolff
DATE	08/01/07	**OTHERS**	David Herman (NYSDEC)
TIME OPENED	08:24	**TIME CLOSED**	14:00
DEPTH TO WATER (ft. BGS)	11	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	>11	**TOTAL LENGTH (ft.)**	42 (Oriented N-S)
TOTAL DEPTH (ft. BGS)	13	**NAPL OBSERVED**	Yes
ANALYTICAL SAMPLES	1-2.5': PAHs by 8270 4.5-6': PAHs by 8270	**REMARKS**	3.5-4.5' – Brittle tar material (strong tar odor).

Orientation: Eastern wall (Southern section of test pit)

0-1.5': Brwn mc SAND and cmf GRAVEL, trace (+) Organics.

1.5-3.5': Mics. Fill (Refractory brick, slag cinders)

3.5-4.5': Grey-brwn Clayey Silt.

4.5-6': Misc. Fill (Red brick)

6': White Clayey material, strong sulfur odor

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	TEST PIT NUMBER	**TP-217** (Northern end)

Orientation: Eastern wall of test pit

9-11': Blk stained cmf SAND and cmf GRAVEL, trace (+) Silt, saturated. (Strong coal tar odor and moderate solvent odor)

11': Beige-tan Clayey SILT/ SILT&CLAY, trace (+) f Sand, wet.

Orientation: Eastern wall (Northern section of test pit)

0-3.5': Same description as seen in southern section of test pit.

3.5-4.5': Brittle tar material (strong tar odor).

BROWN AND
CALDWELL

TEST PIT LOG

SITE LOCATION	**Troy, New York**	**TEST PIT NUMBER**	**TP-218**
PROJECT NUMBER	132071.104	**BC REPRESENTATIVE**	J. Marolda T. Chaturgan
GENERAL LOCATION	East Of Former By – Products Building	**CONTRACTOR**	Parratt Wolff
DATE	08/01/07	**OTHERS**	David Herman (NYSDEC)
TIME OPENED	15:00	**TIME CLOSED**	17:10
DEPTH TO WATER (ft. BGS)	> 7	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	2.5	**TOTAL LENGTH (ft.)**	12 (Oriented N-S)
TOTAL DEPTH (ft. BGS)	7	**NAPL OBSERVED**	No
ANALYTICAL SAMPLES	3.5-4.5' BGS: PAHs by 8270	**REMARKS**	Encountered subsurface structure in northern section of test pit, 2.5' bgs. Water flowing into test pit from concrete structure.

Orientation: Eastern wall of test pit

0.5': Brwn cmf GRAVEL, little (+) mfc Sand, trace (+) Silt&Clay.

1': Blk stained, same as above.

2.5': Lt Brwn CLAY&SILT, trace (+) f Sand, wet.

5': Greenish Gray CLAY&SILT, trace (-) f Sand. (Varved)

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	TEST PIT NUMBER	TP-218

Orientation: Northern wall of test pit

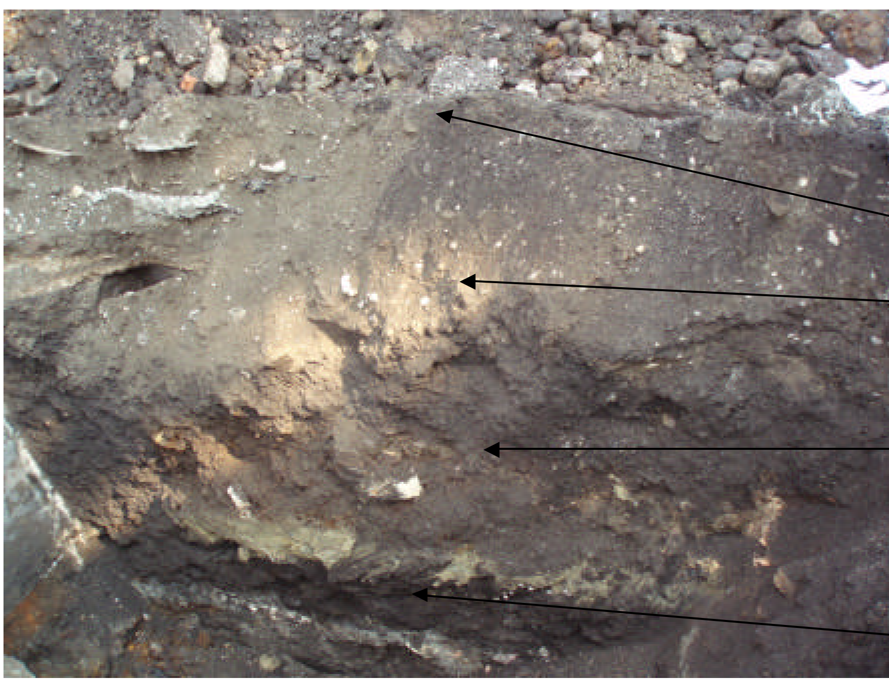
2.5-7': Concrete structure on northern wall of test pit 2.5' bgs.

4': Water flowing from concrete structure into test pit.

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	**TEST PIT NUMBER**	**TP-219**
PROJECT NUMBER	132071.104	**BC REPRESENTATIVE**	J. Marolda T. Chaturgan
GENERAL LOCATION	Approx. 37' NE of MW-16	**CONTRACTOR**	Parratt Wolff
DATE	08/02/07	**OTHERS**	David Herman (NYSDEC)
TIME OPENED	08:30	**TIME CLOSED**	11:13
DEPTH TO WATER (ft. BGS)	Not encountered	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	Not encountered	**TOTAL LENGTH (ft.)**	10
TOTAL DEPTH (ft. BGS)	7	**NAPL OBSERVED**	Yes
ANALYTICAL SAMPLES		**REMARKS**	Encountered very viscous Blk NAPL (strong fuel odor) inside north and south sections of test pit. No NAPL observed outside of structure. Concrete structure is ±32' long, ±10' wide, ±6' deep



Orientation: Northern wall (Outside of concrete structure)

0-0.5': Asphalt.

0.5-1.5': Brown mfc SAND and cmf GRAVEL, trace (-) Silt.

1.5-2.5': Tan Beige cmf GRAVEL and cmf SAND, trace (+) Silt.

2.5': Gray solidified lime (sporadic blue green tinge).

B R O W N AND
C A L D W E L L

TEST PIT LOG

SITE LOCATION	Troy, New York	TEST PIT NUMBER	TP-219

Orientation: Southwest Corner (Inside of the concrete structure)

4.5': Viscous Blk NAPL (Strong fuel odor).

Orientation: View looking east (Outside of concrete structure)

Exterior wall of concrete structure (junk box).

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	TEST PIT NUMBER	TP-219

Orientation: View looking southeast

Northwest outside corner of test pit (junk box).

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	**TEST PIT NUMBER**	TP-220
PROJECT NUMBER	132071.104	**BC REPRESENTATIVE**	J. Marolda T. Chaturgan
GENERAL LOCATION	North of e-Lot Building	**CONTRACTOR**	Parratt Wolff
DATE	08/07/07	**OTHERS**	David Herman (NYSDEC)
TIME OPENED	17:43	**TIME CLOSED**	19:30
DEPTH TO WATER (ft. BGS)	Not encountered	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	Not encountered	**TOTAL LENGTH (ft.)**	17
TOTAL DEPTH (ft. BGS)	7	**NAPL OBSERVED**	Yes
ANALYTICAL SAMPLES		**REMARKS**	Encountered a 6" concrete sub-slab 2' bgs w/ very viscous Blk NAPL. Excavation was moved 47' north of e-Lot building to confirm subsurface structure.

2': 6" Fragment of concrete sub-slab, w/ very viscous Blk NAPL.

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	TEST PIT NUMBER	TP-220

Orientation: View looking west

2-7': Misc Fill (glass, sheet metal, pieces of wood, brick, chicken wire, sand and gravel), mixed in with very viscous tar.

7': Very viscous Blk NAPL oozing in from walls of test pit.

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	**TEST PIT NUMBER**	TP-221
PROJECT NUMBER	132071.104	**BC REPRESENTATIVE**	J. Marolda T. Chaturgan
GENERAL LOCATION	North of TP-220 and East of PZ-22 cluster.	**CONTRACTOR**	Parratt Wolff
DATE	08/03/07	**OTHERS**	David Herman (NYSDEC)
TIME OPENED	07:38	**TIME CLOSED**	12:45
DEPTH TO WATER (ft. BGS)	Approx. 7ft within structure	**EQUIPMENT**	Backhoe excavator
DEPTH TO NATIVE SOILS (ft. BGS)	Not encountered	**TOTAL LENGTH (ft.)**	22
TOTAL DEPTH (ft. BGS)	9	**NAPL OBSERVED**	No
ANALYTICAL SAMPLES		**REMARKS**	7.0': Water in pit (weak to moderate petroleum odor). Remains of roofing insulation present in pit at this depth. (Fibrous)

Orientation: Eastern wall of test pit

0-0.5': Asphalt

0.5-2.5': Mics. Fill (red brick, trace mfc Sand)

2.5-9': 12" Concrete wall that extends to 9'.

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	TEST PIT NUMBER	TP-221

Orientation: Eastern wall of test pit

2.5': Subsurface structures, w/ misc fill material (red brick, roofing material)

Orientation: Southern wall of test pit

7.0': Water in pit (weak to moderate petroleum odor). Pieces of roofing insulation present in pit at this depth. (Fibrous)

8.0-9.0': Black stained mfc SAND trace (+) silt, composed of cinders and clinkers. Slight petroleum odor with strong unidentified odor

9.0': Concrete base of substructure.

BROWN AND CALDWELL

TEST PIT LOG

SITE LOCATION	Troy, New York	TEST PIT NUMBER	TP-221

Orientation: West

Fill material from test pit, composed mostly of red brick.

APPENDIX D

Packer Pressure Test Results

BOREHOLE PACKER HYDRAULIC CONDUCTIVITY DATA

Location	Borehole Diameter (inches)	Borehole Radius (R) (cm)	Test Interval (ft)	Length (L) (ft)	Length (L) (cm)	Injection Rate (q) (gal/min)	Injection Rate (q) (cm3/sec)	Gauge Pressure (psi)	Approx. Depth to GW (ft)	Calculated Total Head (H) (ft)	Calculated Total Head (H) (cm)	Hydraulic Conductivity (k) (cm/sec)
PZ-19a	***4***	5.1	***18.5 - 23.5***	5	152	***0.02***	1	***10***	***14.0***	37.10	1,131	4.0E-06
	4	5.1	***18.5 - 23.5***	5	152	***0.02***	1	***15***	***14.0***	48.65	1,483	3.0E-06
	4	5.1	***18.5 - 23.5***	5	152	**<** ***0.05***	3	***10***	***14.0***	37.10	1,131	< 9.9E-06
	4	5.1	***23.5 - 28.5***	5	152	***2.5***	158	***10***	***14.0***	37.10	1,131	5.0E-04
	4	5.1	***23.5 - 28.5***	5	152	***3.24***	204	***15***	***14.0***	48.65	1,483	4.9E-04
	4	5.1	***23.5 - 28.5***	5	152	***1.2***	76	***10***	***14.0***	37.10	1,131	2.4E-04
	4	5.1	***28.5 33.5***	5	152	**<** ***0.05***	3	***15***	***14.0***	48.65	1,483	< 7.6E-06
	4	5.1	***28.5 - 33.5***	5	152	**<** ***0.05***	3	***20***	***14.0***	60.20	1,835	< 6.1E-06
	4	5.1	***28.5 - 33.5***	5	152	**<** ***0.05***	3	***15***	***14.0***	48.65	1,483	< 7.6E-06

Notes:

1. Field data ***(in bold italics*** **)** obtained from borehole tests.
2. Calculations made in accordance with US Bureau of Reclamation, (1990), Earth Manual, Method No. USBR 7310-89.

$$k = \frac{q}{2p\ LH} \ln \frac{L}{r}$$

where:
k = hydraulic conductivity (cm/sec)
q = constant flow water injection rate (cm^3/sec); 3 cm^3/sec used as constant for intervals that did not take any water
L = test interval length (cm)
H = differential head during test (cm). Calculated by adding gravity head (Hg) + distance from gage to static groundwater level and pressure head of injected water (H_p)
r = radius of borehole (cm)

BOREHOLE PACKER HYDRAULIC CONDUCTIVITY DATA

Location	Borehole Diameter (inches)	Borehole Radius (R) (cm)	Test Interval (ft)			Length (L) (ft)	Length (L) (cm)	Injection Rate (q) (gal/min)	Injection Rate (q) (cm3/sec)	Gauge Pressure (psi)	Approx. Depth to GW (ft)	Calculated Total Head (H) (ft)	Calculated Total Head (H) (cm)	Hydraulic Conductivity (k) (cm/sec)
PZ-16D	***4***	5.1	***41***	-	***46***	5	152	***0.22***	14	***13***	***30.1***	60.11	1,832	2.7E-05
	4	5.1	***41***	-	***46***	5	152	***0.38***	24	***23***	***30.1***	83.23	2,537	3.4E-05
	4	5.1	***41***	-	***46***	5	152	***0.06***	4	***13***	***30.1***	60.13	1,833	7.3E-06
	4	5.1	***41***	-	***51***	10	305	***0.1***	6	***14***	***30.1***	62.44	1,903	7.1E-06
	4	5.1	***41***	-	***51***	10	305	***0.43***	27	***24***	***30.1***	85.54	2,607	2.2E-05
	4	5.1	***41***	-	***51***	10	305	***0.19***	12	***14***	***30.1***	62.44	1,903	1.3E-05
	4	5.1	***51***		***56***	5	152	***< 0.05***	3	***16***	***30.1***	67.06	2,044	< 5.5E-06
	4	5.1	***51***		***56***	5	152	***< 0.05***	3	***28***	***30.1***	94.78	2,889	< 3.9E-06
	4	5.1	***51***		***56***	5	152	***< 0.05***	3	***16***	***30.1***	67.06	2,044	< 5.5E-06
	4	5.1	***56***		***60.4***	4.4	134	***< 0.05***	3	***17.5***	***30.1***	70.525	2,150	< 5.7E-06
	4	5.1	***56***		***60.4***	4.4	134	***0.02***	1	***30.5***	***30.1***	100.56	3,065	1.6E-06
	4	5.1	***56***		***60.4***	4.4	134	***0.01***	1	***17.5***	***30.1***	70.525	2,150	1.1E-06
	4	5.1	***41***		***60.4***	19	591	***0.02***	1	***15***	***30.1***	64.75	1,974	8.2E-07
	4	5.1	***41***		***60.4***	19	591	***0.08***	5	***26.5***	***30.1***	91.315	2,783	2.3E-06
	4	5.1	***41***		***60.4***	19	591	***< 0.05***	3	***15***	***30.1***	64.75	1,974	< 2.0E-06
	4	5.1	***61***		***66***	5	152	***0.09***	6	***19.5***	***30.1***	75.145	2,290	8.8E-06
	4	5.1	***61***		***66***	5	152	***0.08***	5	***32***	***30.1***	104.02	3,171	5.7E-06
	4	5.1	***61***		***66***	5	152	***0.02***	1	***19.5***	***30.1***	75.145	2,290	2.0E-06

Notes:
1. Field data ***(in bold italics)*** obtained from borehole tests.
2. Calculations made in accordance with US Bureau of Reclamation, (1990), Earth Manual, Method No. USBR 7310-89.

$$k = \frac{q}{2p\ LH} \ln \frac{L}{r}$$

where:
k = hydraulic conductivity (cm/sec)
q = constant flow water injection rate (cm^3/sec); 3 cm^3/sec used as constant for intervals that did not take any water
L = test interval length (cm)
H = differential head during test (cm). Calculated by adding gravity head (Hg) + distance from gage to static groundwater level and pressure head of injected water (H_p)
r = radius of borehole (cm)

BOREHOLE PACKER HYDRAULIC CONDUCTIVITY DATA

Location	Borehole Diameter (inches)	Borehole Radius (R) (cm)	Test Interval (ft)	Length (L) (ft)	Length (L) (cm)	Injection Rate (q) (gal/min)	Injection Rate (q) (cm3/sec)	Gauge Pressure (psi)	Approx. Depth to GW (ft)	Calculated Total Head (H) (ft)	Calculated Total Head (H) (cm)	Hydraulic Conductivity (k) (cm/sec)
PZ-17C	***4***	5.1	***60 - 66***	6	183	***4.8***	303	***19***	***28.0***	71.93	2,192	4.3E-04
	4	5.1	***60 - 66***	6	183	***13.4***	846	***33***	***28.0***	104.27	3,178	8.3E-04
	4	5.1	***60 - 66***	6	183	***10.7***	675	***19***	***28.0***	71.89	2,191	9.6E-04
	4	5.1	***60 - 66***	6	183	**<** ***0.05***	3	***20***	***28.0***	74.20	2,262	< 4.4E-06
	4	5.1	***60 - 66***	6	183	**<** ***0.05***	3	***36***	***28.0***	111.16	3,388	< 2.9E-06
	4	5.1	***60 - 66***	6	183	**<** ***0.05***	3	***20***	***28.0***	74.20	2,262	< 4.4E-06

Notes:

1. Field data ***(in bold italics*** **)** obtained from borehole tests.
2. Calculations made in accordance with US Bureau of Reclamation, (1990), Earth Manual, Method No. USBR 7310-89.

$$k = \frac{q}{2p\ LH} \ln \frac{L}{r}$$

where:

k = hydraulic conductivity (cm/sec)

q = constant flow water injection rate (cm^3/sec); 3 cm^3/sec used as constant for intervals that did not take any water

L = test interval length (cm)

H = differential head during test (cm). Calculated by adding gravity head (Hg) + distance from gage to static groundwater level and pressure head of injected water (H_p)

r = radius of borehole (cm)

BOREHOLE PACKER HYDRAULIC CONDUCTIVITY DATA

Location	Borehole Diameter (inches)	Borehole Radius (R) (cm)	Test Interval (ft)			Length (L) (ft)	Length (L) (cm)	Injection Rate (q) (gal/min)	Injection Rate (q) (cm3/sec)	Gauge Pressure (psi)	Approx. Depth to GW (ft)	Calculated Total Head (H) (ft)	Calculated Total Head (H) (cm)	Hydraulic Conductivity (k) (cm/sec)
PZ-12D	***4***	5.1	***55***	***-***	***60***	5	152	***3.38***	213	***17***	***29.4***	68.71	2,094	3.6E-04
	4	5.1	***55***	***-***	***60***	5	152	***3.8***	240	***30***	***29.4***	98.70	3,008	2.8E-04
	4	5.1	***55***	***-***	***60***	5	152	***3.2***	202	***17***	***29.4***	68.67	2,093	3.4E-04
	4	5.1	***60***	***-***	***65***	5	152	***0.15***	9	***19***	***29.4***	73.29	2,234	1.5E-05
	4	5.1	***60***		***65***	5	152	***0.21***	13	***33***	***29.4***	105.63	3,220	1.5E-05
	4	5.1	***60***		***65***	5	152	***0.05***	3	***19***	***29.4***	73.29	2,234	5.0E-06

Notes:

1. Field data ***(in bold italics*** **)** obtained from borehole tests.
2. Calculations made in accordance with US Bureau of Reclamation, (1990), Earth Manual, Method No. USBR 7310-89.

$$k = \frac{q}{2p\ LH} \ln \frac{L}{r}$$

where:
k = hydraulic conductivity (cm/sec)
q = constant flow water injection rate (cm^3/sec); 3 cm^3/sec used as constant for intervals that did not take any water
L = test interval length (cm)
H = differential head during test (cm). Calculated by adding gravity head (Hg) + distance from gage to static groundwater level and pressure head of injected water (H_p)
r = radius of borehole (cm)

BOREHOLE PACKER HYDRAULIC CONDUCTIVITY DATA

Location	Borehole Diameter (inches)	Borehole Radius (R) (cm)	Test Interval (ft)	Length (L) (ft)	Length (L) (cm)	Injection Rate (q) (gal/min)	Injection Rate (q) (cm3/sec)	Gauge Pressure (psi)	Approx. Depth to GW (ft)	Calculated Total Head (H) (ft)	Calculated Total Head (H) (cm)	Hydraulic Conductivity (k) (cm/sec)
PZ-5D	***4***	5.1	***64.5 - 69***	4.5	137	***1.82***	115	***20***	***27.4***	73.59	2,243	2.0E-04
	4	5.1	***64.5 - 69***	4.5	137	***14.4***	909	***35***	***27.4***	108.25	3,299	1.1E-03
	4	5.1	***64.5 - 69***	4.5	137	***12.4***	782	***20***	***27.4***	73.60	2,243	1.3E-03

Notes:

1. Field data ***(in bold italics*** **)** obtained from borehole tests.
2. Calculations made in accordance with US Bureau of Reclamation, (1990), Earth Manual, Method No. USBR 7310-89.

$$k = \frac{q}{2p\ LH} \ln \frac{L}{r}$$

where:
k = hydraulic conductivity (cm/sec)
q = constant flow water injection rate (cm^3/sec); 3 cm^3/sec used as constant for intervals that did not take any water
L = test interval length (cm)
H = differential head during test (cm). Calculated by adding gravity head (Hg) + distance from gage to static groundwater level and pressure head of injected water (H_p)
r = radius of borehole (cm)

BOREHOLE PACKER HYDRAULIC CONDUCTIVITY DATA

Location	Borehole Diameter (inches)	Borehole Radius (R) (cm)	Test Interval (ft)	Length (L) (ft)	Length (L) (cm)	Injection Rate (q) (gal/min)	Injection Rate (q) (cm3/sec)	Gauge Pressure (psi)	Approx. Depth to GW (ft)	Calculated Total Head (H) (ft)	Calculated Total Head (H) (cm)	Hydraulic Conductivity (k) (cm/sec)
PZ-8D	***4***	5.1	***69 - 73.4***	4.4	134	< ***0.05***	3	***21.4***	***31.0***	80.38	2,450	< 5.0E-06
	4	5.1	***69 - 73.4***	4.4	134	< ***0.05***	3	***38***	***31.0***	118.78	3,620	< 3.4E-06
	4	5.1	***69 - 73.4***	4.4	134	< ***0.05***	3	***21.4***	***31.0***	80.43	2,452	< 5.0E-06
	4	5.1	***73.4 - 78.4***	5	152	***1.18***	74	***23***	***31.0***	84.13	2,564	1.0E-04
	4	5.1	***73.4 - 78.4***	5	152	***4.4***	278	***40***	***31.0***	123.40	3,761	2.6E-04
	4	5.1	***73.4 - 78.4***	5	152	***3.1***	196	***23***	***31.0***	84.13	2,564	2.7E-04
	4	5.1	***78.4 - 83.4***	5	152	***0.05***	3	***24***	***31.0***	86.44	2,635	4.3E-06
	4	5.1	***78.4 - 83.4***	5	152	< ***0.05***	3	***43***	***31.0***	130.33	3,972	< 2.8E-06
	4	5.1	***78.4 - 83.4***	5	152	< ***0.05***	3	***24***	***31.0***	86.44	2,635	< 4.3E-06

Notes:

1. Field data ***(in bold italics)*** obtained from borehole tests.
2. Calculations made in accordance with US Bureau of Reclamation, (1990), Earth Manual, Method No. USBR 7310-89.

$$k = \frac{q}{2\pi LH} \ln \frac{L}{r}$$

where:

k = hydraulic conductivity (cm/sec)

q = constant flow water injection rate (cm^3/sec); 3 cm^3/sec used as constant for intervals that did not take any water

L = test interval length (cm)

H = differential head during test (cm). Calculated by adding gravity head (Hg) + distance from gage to static groundwater level and pressure head of injected water (H_p)

r = radius of borehole (cm)

APPENDIX E

Geotechnical Analyses of Soil Samples

p-w labs

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

June 28, 2007

Mr. James Marolda
Brown & Caldwell
234 Hudson Avenue
Albany, New York 12210

Re: L-07050
Geotech Analyses
Troy Project

Dear Mr. Marolda:

Enclosed are the results of laboratory testing performed at your request on three each bulk material samples delivered to our laboratory on June 22, 2007 for the above referenced project. Results include:

1. Natural Moisture Content ASTM D2216
   Laboratory I.D. #22352-22354 — 3 each

2. Sieve Analysis ASTM D422 & D1140
   Laboratory I.D. #22352-22354 — 3 each

3. Hydrometer Analysis D422
   Laboratory I.D. #22352-22354 — 3 each

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on July 28, 2007. Please notify PW Laboratories, Inc. by letter or telephone prior to July 28, 2007 if you would prefer to pick up the sample(s) or that the sample(s) be retained by PW Laboratories, Inc. for an additional period of time.

Thank you for this opportunity to work with you.

Very truly yours,

PW LABORATORIES, INC.

Virginia J. Thoma
Manager - Laboratory Services
VJT/bll
Encs:

p-w labs

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

June 28, 2007

L-07050
Geotech Analysis
Troy Project

NATURAL MOISTURE CONTENT
ASTM D2216

Lab I.D. #	Sample #	Depth (feet)	Moisture Content as a Percent of Dry Weight
22352	DSB-3	18.0 - 20.0	31.2
22353	DSB-3	41.0 - 42.0	10.0
22354	DSB-3	51.0 - 52.0	7.0

pw labs

PW Laboratories, Inc.
5879 Fisher Road
P.O. Box 56
East Syracuse, New York 13057
Phone (315) 437-1420
Fax (315) 437-1752
pwlabsinc@hotmail.com

SIEVE ANALYSIS OF SOIL / AGGREGATE

PROJECT TITLE Laboratory Testing
Geotech Analysis
Troy Project

PROJECT # L-07050
TEST METHOD ASTM D422 & D1140

REPORT # 5
REPORT DATE June 28, 2007

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Sample	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
22352	DSB-3	18.0 - 20.0	--	--	--	--	--	--	100	99.9	99.7	99.1	96.4	86.9	71.5	
22353	DSB-3	41.0 - 42.0	100	94.0	89.2	75.6	69.1	57.6	50.5	34.4	19.1	16.2	13.2	10.9	8.8	
22354	DSB-3	51.0 - 52.0	100	83.5	83.5	81.9	77.3	71.2	67.2	55.0	38.6	34.4	29.3	25.6	22.5	

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

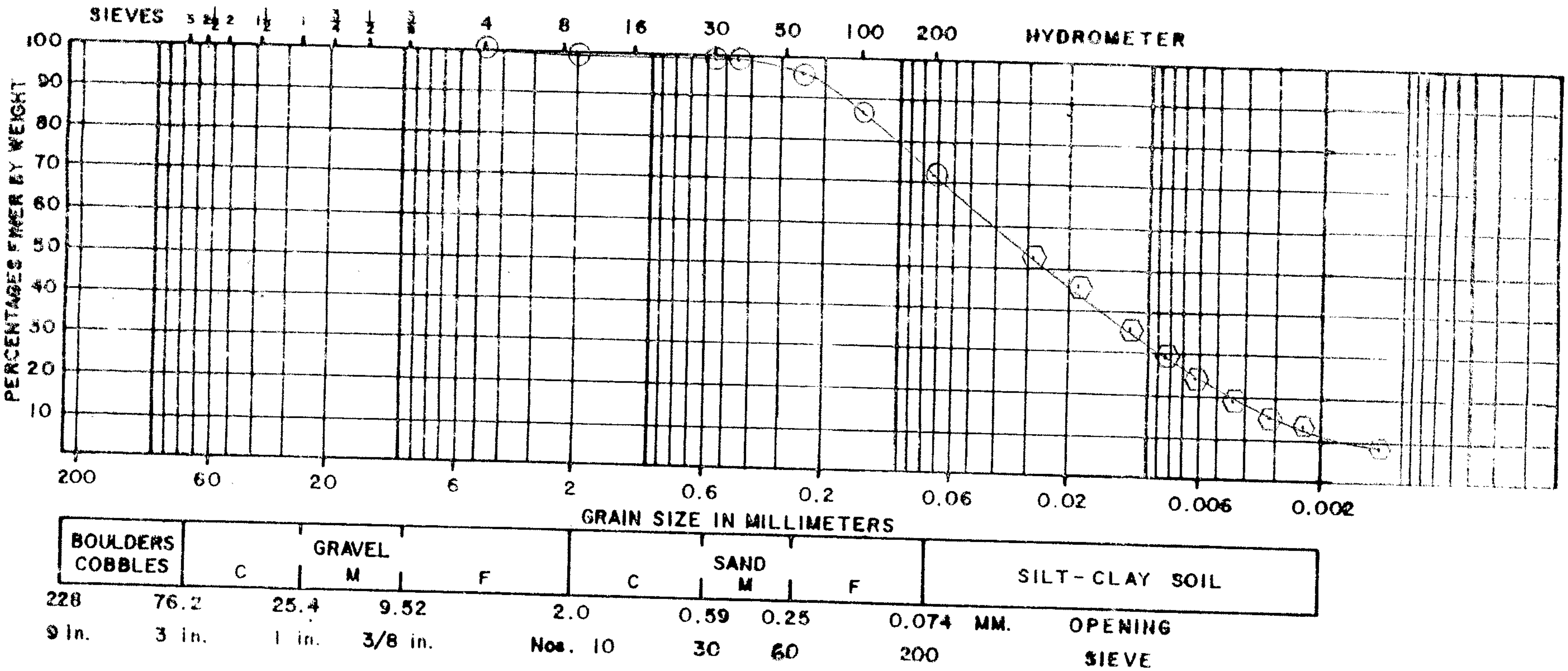
Performed By: SC, PE, JB, VJT

Checked By: V.J. Thoma

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 13
Date June 28, 2007

GRAIN SIZE ANALYSIS



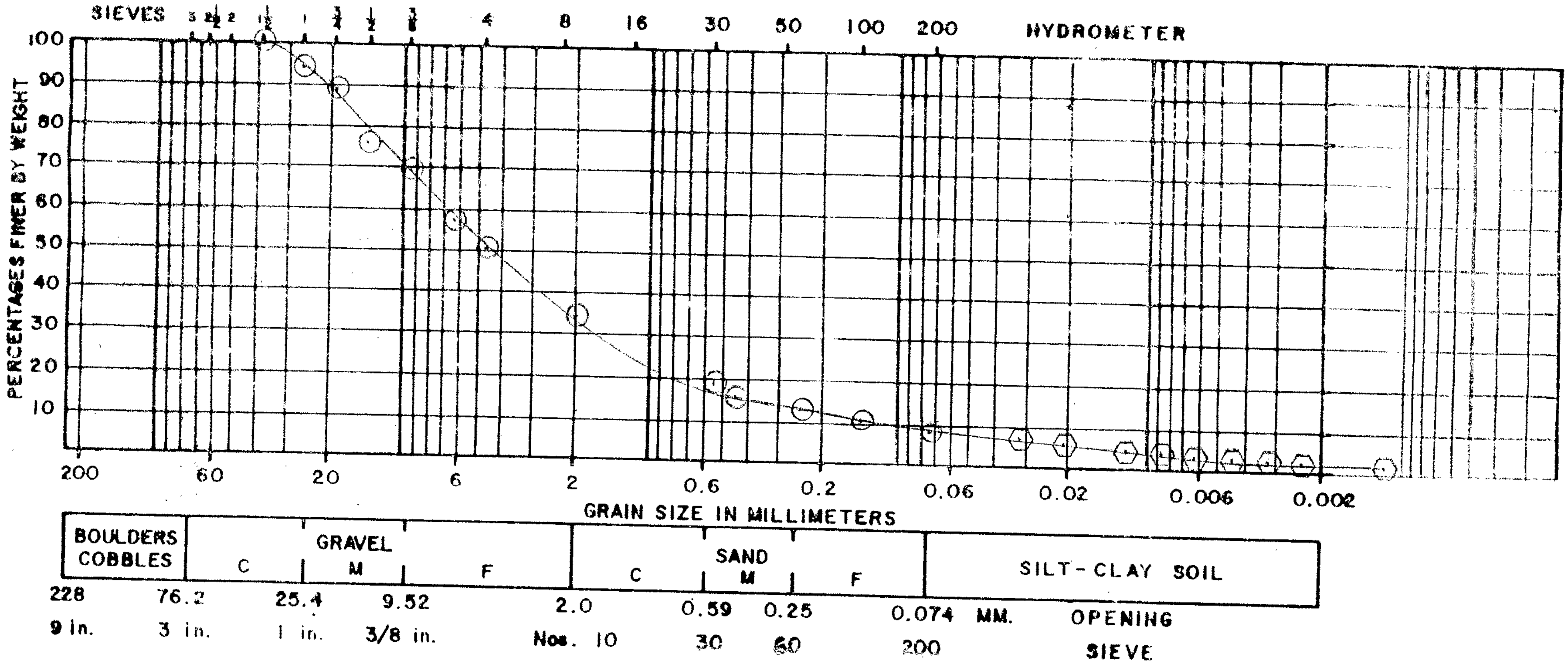
L-07050	Lab I.D. # 22352
Geotech Analyses	Boring # DSB-3
Troy Project	Depth (feet) 18.0 - 20.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 14
Date June 28, 2007

GRAIN SIZE ANALYSIS



L-07050		Lab I.D. #	22353
Geotech Analyses		Boring #	DSB-3
Troy Project		Depth (feet)	41.0 - 42.0

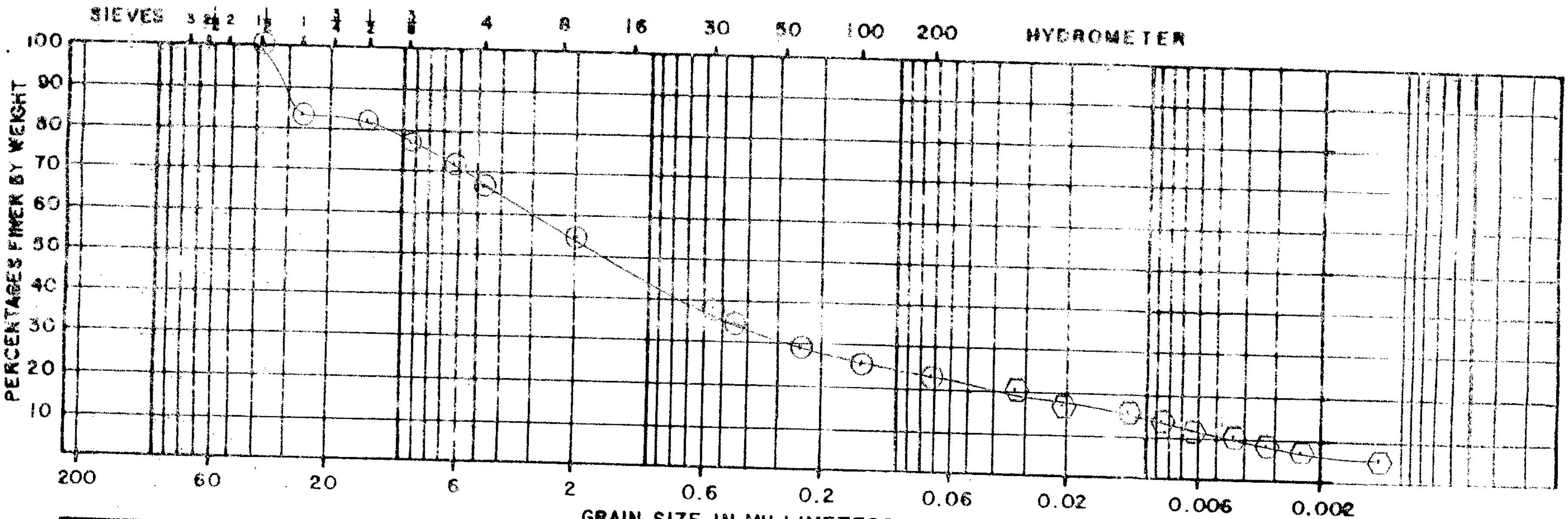
⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

\\Pw1\c_Clients_Jobs\BROWN and Caldwell\2007\07050- Troy\Hydrometer\Hydrometer Graph 22352

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 15
Date June 28, 2007

GRAIN SIZE ANALYSIS



BOULDERS COBBLES	GRAVEL C	GRAVEL M	GRAVEL F	SAND C	SAND M	SAND F	SILT-CLAY SOIL

228 | 76.2 | 25.4 | 9.52 | 2.0 | 0.59 | 0.25 | 0.074 MM. OPENING

9 in. | 3 in. | 1 in. | 3/8 in. | Nos. 10 | 30 | 60 | 200 SIEVE

L-07050	Lab I.D. # 22354
Geotech Analyses	Boring # DSB-3
Troy Project	Depth (feet) 51.0 - 52.0

○ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

June 18, 2007

Mr. James Marolda
Brown & Caldwell
234 Hudson Avenue
Albany, New York 12210

Re: L-07050
Geotech Analyses
Troy Project

Dear Mr. Marolda:

Enclosed are the results of laboratory testing performed at your request on four each bulk material samples delivered to our laboratory on June 11, 2007 for the above referenced project. Results include:

1. Natural Moisture Content ASTM D2216
   Laboratory I.D. #22265-22268 — 4 each

2. Sieve Analysis ASTM D422 & D1140
   Laboratory I.D. #22265-22268 — 4 each

3. Hydrometer Analysis D422
   Laboratory I.D. #22265-22268 — 4 each

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on July 18, 2007. Please notify PW Laboratories, Inc. by letter or telephone prior to July 18, 2007 if you would prefer to pick up the sample(s) or that the sample(s) be retained by PW Laboratories, Inc. for an additional period of time.

Thank you for this opportunity to work with you.

Very truly yours,

PW LABORATORIES, INC.

Virginia J. Thoma

Virginia J. Thoma
Manager - Laboratory Services
VJT/bll
Encs:

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

June 18, 2007

L-07050
Geotech Analysis
Troy Project

NATURAL MOISTURE CONTENT
ASTM D2216

Lab I.D. #	Sample #	Depth (feet)	Moisture Content as a Percent of Dry Weight
22265	PZ-8	15.0 - 17.0	22.7
22266	PZ-8	23.0 - 25.0	34.6
22267	PZ-8	41.0 - 43.0	10.8
22268	PZ-8	53.0 - 55.0	23.6

pw labs

PW Laboratories, Inc
5879 Fisher Road
P.O. Box 5
East Syracuse, New York 1305
Phone (315) 437-142
Fax (315) 437-175
pwlabsinc@hotmail.com

SIEVE ANALYSIS OF
SOIL / AGGREGATE

PROJECT TITLE: Laboratory Testing
Geotech Analysis
Troy Project

PROJECT # L-07050
TEST METHOD ASTM D422 & D1140

REPORT # 4
REPORT DATE June 18, 2007

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Sample	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
22265	PZ-8	15.0-17.0	--	--	100	99.3	97.3	88.4	82.9	60.9	38.5	34.4	28.5	23.1	17.7	
22266	PZ-8	23.0-25.0	--	--	--	--	--	--	100	99.9	99.4	99.0	97.2	82.2	60.6	
22267	PZ-8	41.0-43.0	100	88.5	75.7	58.8	52.5	45.2	42.2	34.2	23.9	20.5	16.1	13.3	10.6	
22268	PZ-8	53.0-55.0	--	--	--	--	--	--	100	99.9	99.4	96.6	47.1	16.6	9.7	

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

Performed By: SC

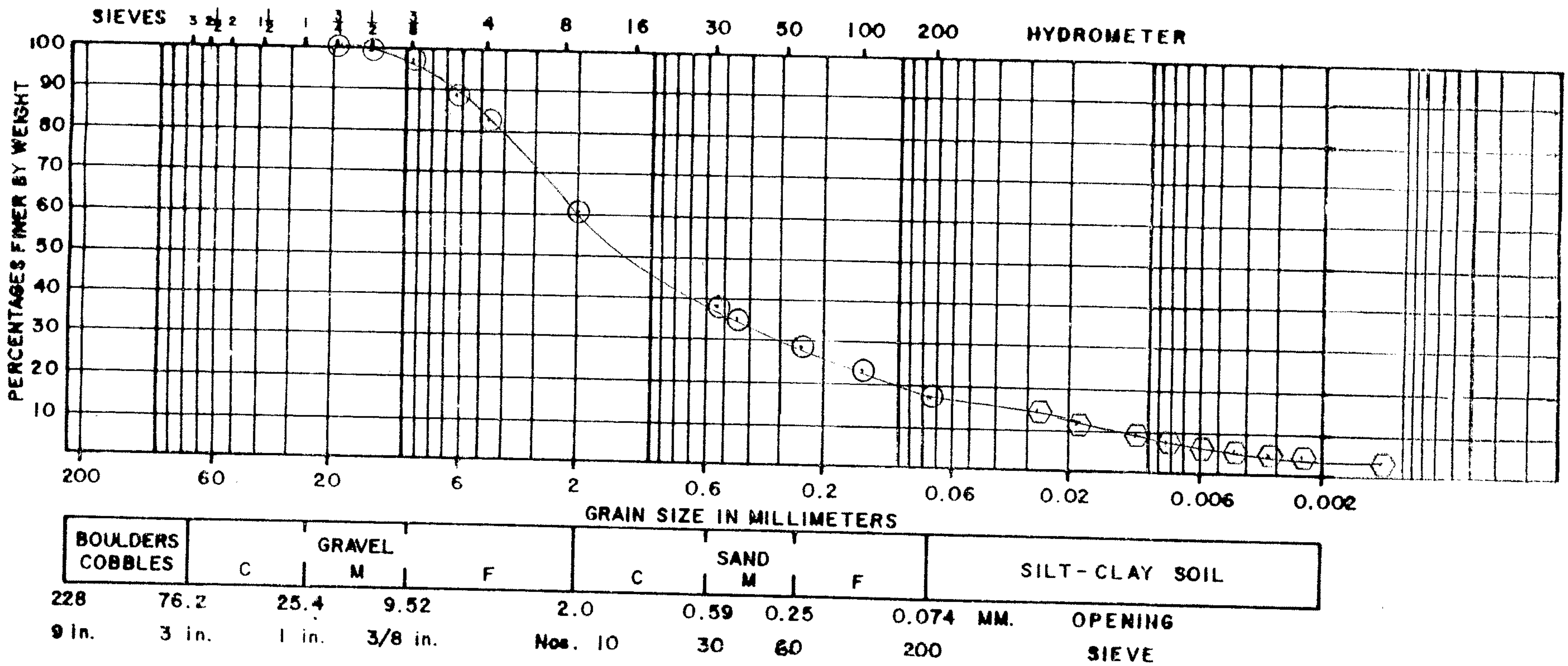
Checked By: V.J. Thoma

pw1/c/program files/ microsoft office/templates/laboratory reports/Sieve 22265- 22268

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.:	L-07050
Report No:	9
Date	June 18, 2007

GRAIN SIZE ANALYSIS



L-07050		Lab I.D. #	22265
Geotech Analyses		Boring #	PZ-8
Troy Project		Depth (feet)	15.0- 17.0

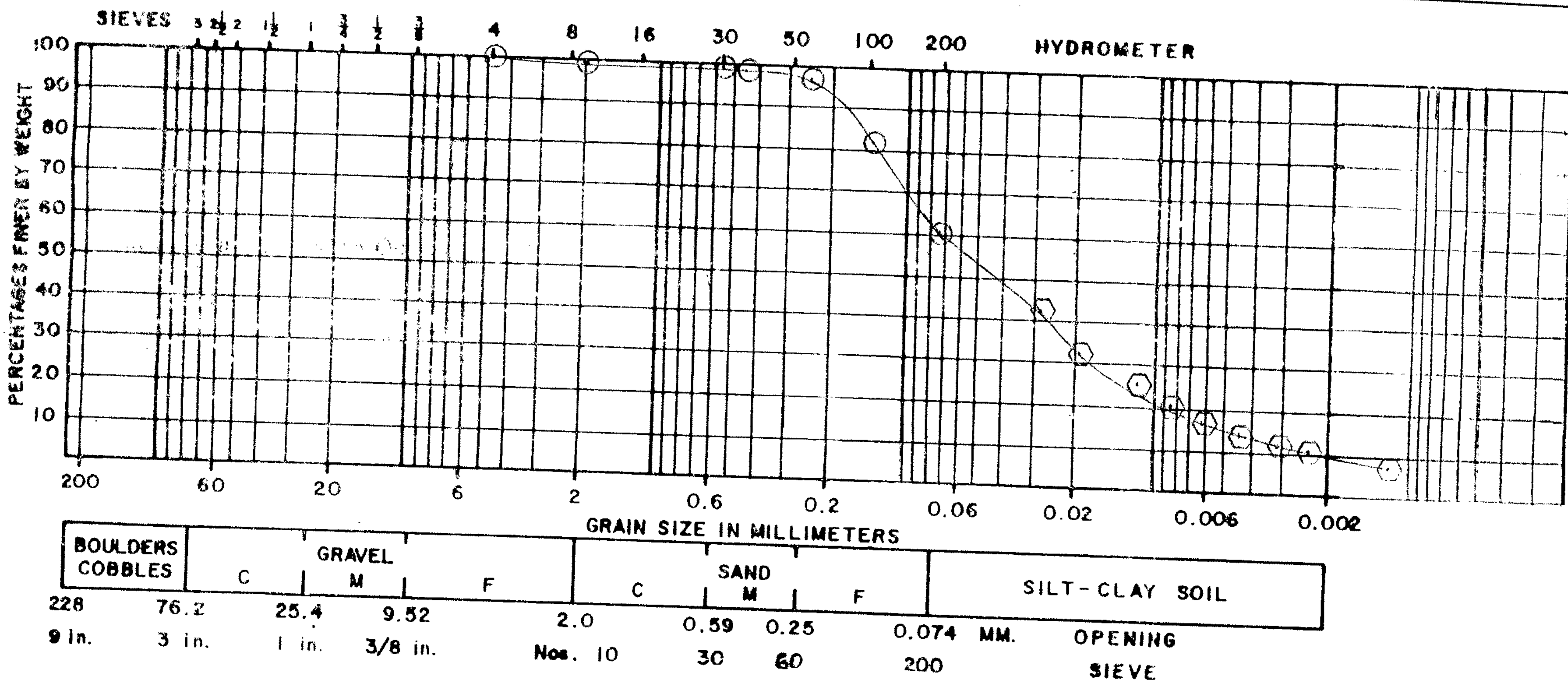
Sieve Analysis ASTM D422 & D1140
Hydrometer Analysis ASTM D422

Hydrometer Graph 22265

labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 10
Date June 18, 2007

GRAIN SIZE ANALYSIS



L-07050	
Geotech Analyses	Lab I.D. # 22266
Troy Project	Boring # PZ-8
	Depth (feet) 23.0- 25.0

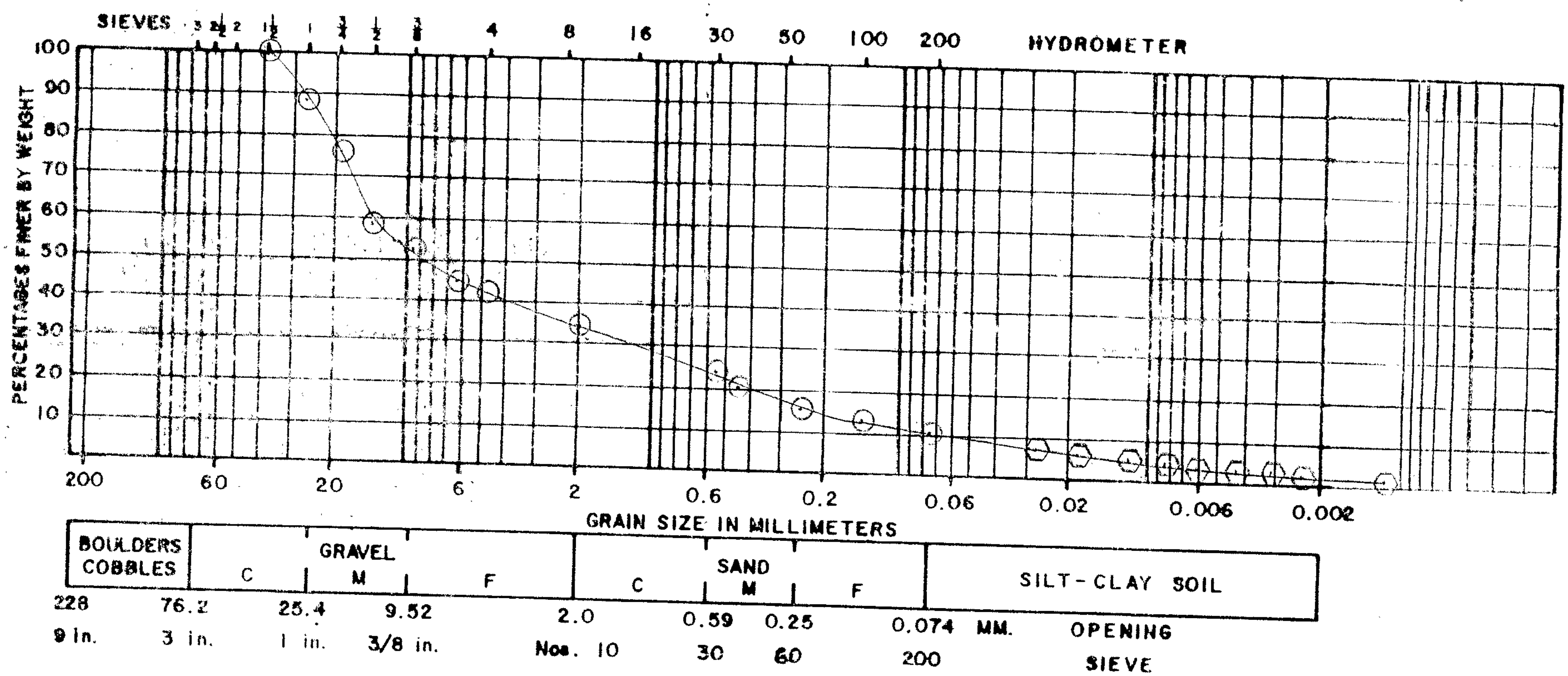
⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

Hydrometer Graph 22266

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 11
Date June 18, 2007

GRAIN SIZE ANALYSIS



L-07050
Geotech Analyses
Troy Project

Lab I.D. # 22267
Boring # PZ-8
Depth (feet) 41.0- 43.0

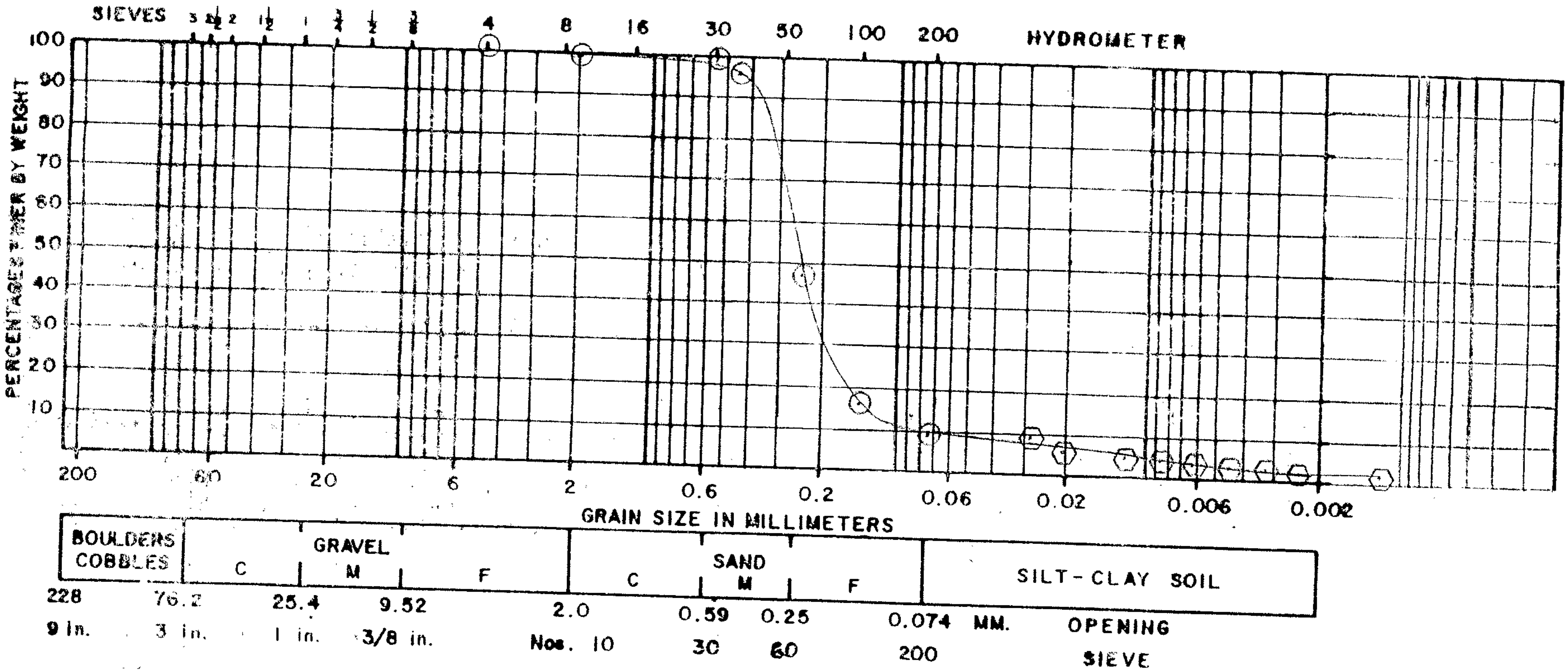
⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

Hydrometer Graph 22267

pw labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 12
Date June 18, 2007

GRAIN SIZE ANALYSIS



L-07050			
Geotech Analyses		Lab I.D. #	22268
Troy Project		Boring #	PZ-8
		Depth (feet)	53.0- 55.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

Hydrometer Graph 22268

p-w labs

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

June 4, 2007

Mr. James Marolda
Brown & Caldwell
234 Hudson Avenue
Albany, New York 12210

Re: L-07050
Geotech Analyses
Troy Project

Dear Mr. Marolda:

Enclosed are the results of laboratory testing performed at your request on three each bulk material samples delivered to our laboratory on May 29, 2007 for the above referenced project. Results include:

1. Natural Moisture Content
   Laboratory I.D. #22177-22179 — 3 each

2. Sieve Analysis ASTM D422 & D1140
   Laboratory I.D. #22177-22179 — 3 each

3. Hydrometer Analysis D422
   Laboratory I.D. #22177-22179 — 3 each

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on July 4, 2007. Please notify PW Laboratories, Inc. by letter or telephone prior to July 4, 2007 if you would prefer to pick up the sample(s) or that the sample(s) be retained by PW Laboratories, Inc. for an additional period of time.

Thank you for this opportunity to work with you.

Very truly yours,

PW LABORATORIES, INC.

Virginia J. Thoma

Virginia J. Thoma
Manager - Laboratory Services
VJT/klw
encs:

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

June 4, 2007

L-07050
Geotech Analysis
Troy Project

NATURAL MOISTURE CONTENT
ASTM D2216

Lab I.D. #	Sample #	Depth (feet)	Moisture Content as a Percent of Dry Weight
22177	PZ-15	14.0-16.0	13.4
22178	PZ-15	24.0-26.0	28.3
22179	PZ-15	44.0-46.0	9.6

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

SIEVE ANALYSIS OF SOIL / AGGREGATE

PROJECT TITLE Laboratory Testing
Geotech Analysis
Troy Project

PROJECT # L-07050
TEST METHOD ASTM D422 & D1140

REPORT # 1
REPORT DATE June 4, 2007

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Sample	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
22177	PZ-15	14.0-16.0	100	90.7	81.9	75.6	69.6	61.4	56.6	44.3	30.8	27.2	20.8	16.1	11.3	
22178	PZ-15	24.0-26.0	--	--	--	--	--	--	100	99.9	99.4	99.0	96.2	79.0	51.5	
22179	PZ-15	44.0-46.0	--	--	100	92.2	83.3	67.0	60.0	42.4	24.5	20.9	16.9	14.0	11.0	

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

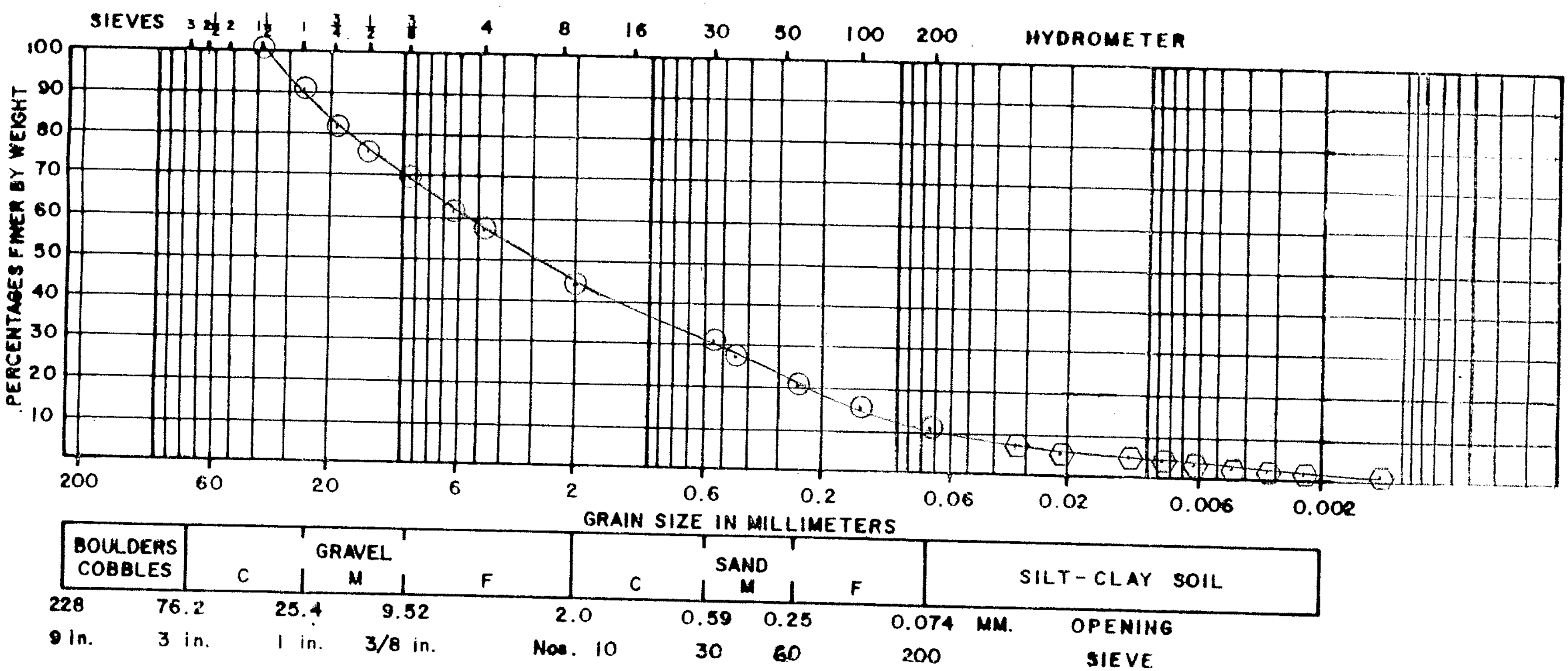
Performed By: SC, VJT

Checked By: V.J. Thoma

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.:	L-07050
Report No:	6
Date	June 4, 2007

GRAIN SIZE ANALYSIS



L-07050		Lab I.D. #	22177
Geotech Analyses		Boring #	Pz-15
Troy Project		Depth (feet)	14.0 - 16.0

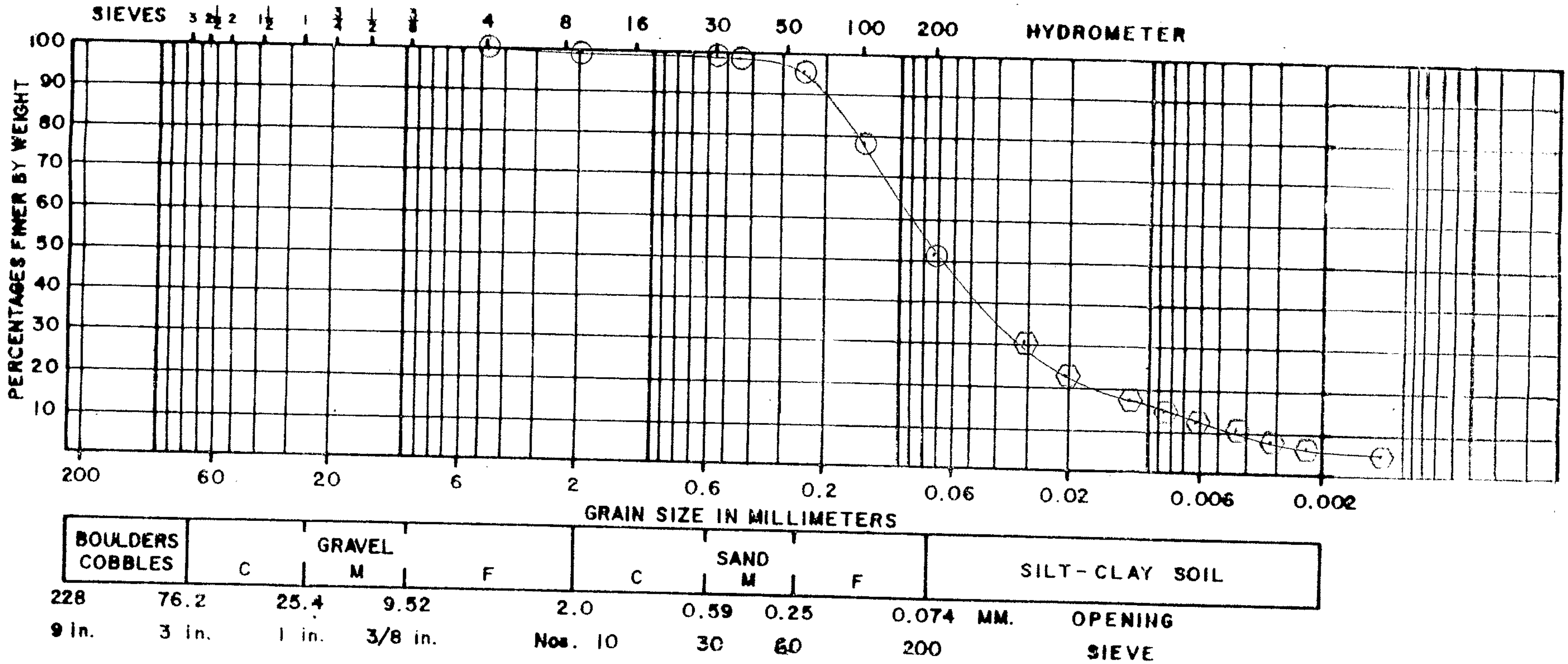
Sieve Analysis ASTM D422 & D1140

Hydrometer Analysis ASTM D422

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 7
Date June 4, 2007

GRAIN SIZE ANALYSIS



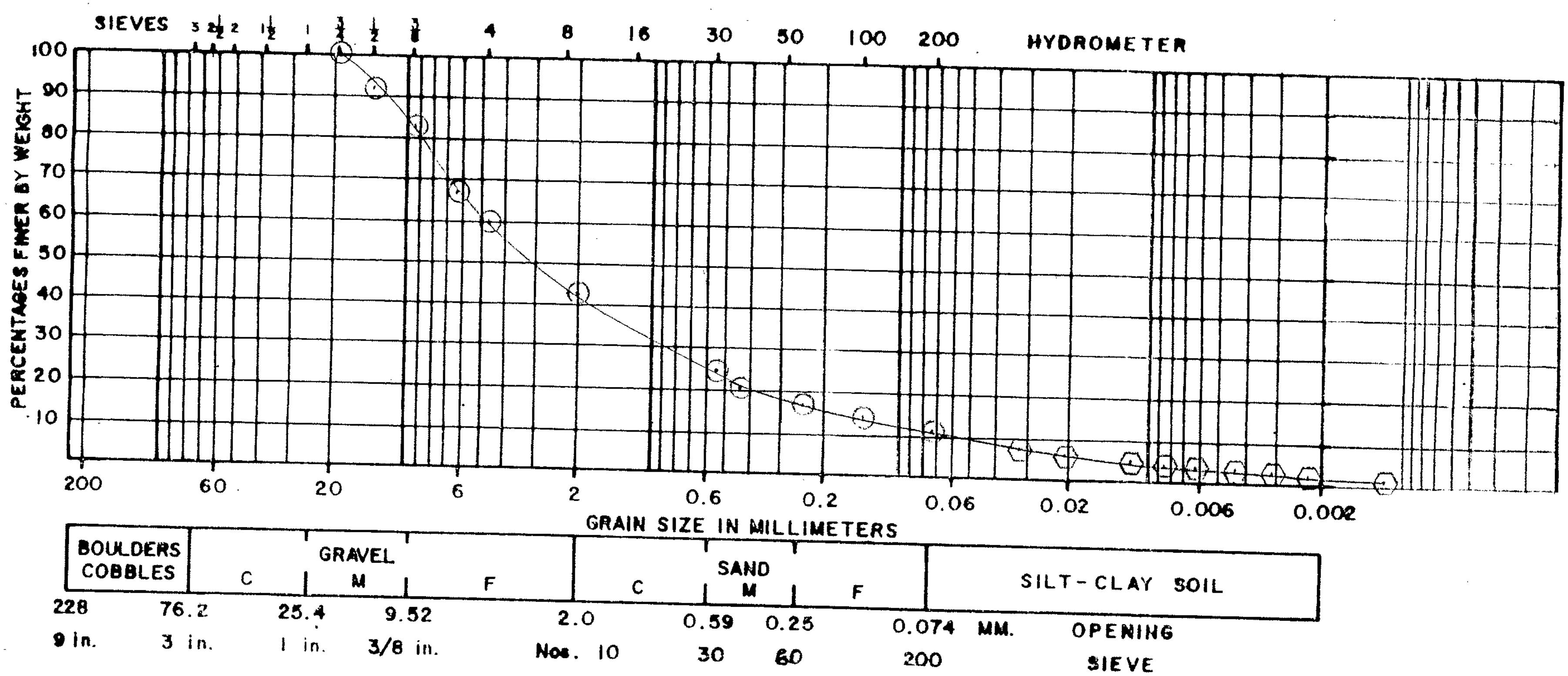
L-07050		Lab I.D. #	22178
Geotech Analyses		Boring #	Pz-15
Troy Project		Depth (feet)	24.0 - 26.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 8
Date June 4, 2007

GRAIN SIZE ANALYSIS



L-07050	Lab I.D. # 22179
Geotech Analyses	Boring # Pz-15
Troy Project	Depth (feet) 44.0 - 46.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

\\Pw1\c_Clients_Jobs\BROWN and Caldwell\2007\07050- Troy\Hydrometer\Hydrometer Graph 22178

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 31, 2007

Mr. James Marolda
Brown & Caldwell
234 Hudson Avenue
Albany, New York 12210

Re: L-07050
Geotech Analyses
Troy Project

Dear Mr. Marolda:

Enclosed are the results of laboratory testing performed at your request on a Shelby tube soil sample delivered to our laboratory on May 14, 2007 for the above referenced project. Results include:

1.	Natural Moisture Content ASTM D2216 Laboratory I.D. #22145	1 each
2.	Sieve Analysis ASTM D422 & D1140 Laboratory I.D. #22145	1 each
3.	Hydrometer Analysis D422 Laboratory I.D. #22145	1 each
4.	Atterberg Limits ASTM D4318 Laboratory I.D. #22145	1 each
5.	Specific Gravity ASTM D854 Laboratory I.D. #22145	1 each
6.	Hydraulic Conductivity-Flexible Wall ASTM D5084 Laboratory I.D. #22145	1 each
7.	Bulk (Natural) Soil Density-Corps of Engineers EM-1110 2-1906 Appendix II, Displacement Method Laboratory I.D. #22145	1 each
8.	Porosity - Corps of Engineers EM-1110 2-1906 Appendix II Laboratory I.D. #22145	1 each

May 31, 2007
Brown & Caldwell

Re: L-07050
Geotech Analyses
Troy Project

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on June 31, 2007. Please notify PW Laboratories, Inc. by letter or telephone prior to June 31,007 if you would prefer to pick up the sample(s) or that the sample(s) be retained by PW Laboratories, Inc. for an additional period of time.

Additional reports will be forwarded to you as they are completed.

Thank you for this opportunity to work with you.

Very truly yours,

PW LABORATORIES, INC.

Virginia J. Thoma

Virginia J. Thoma
Manager - Laboratory Services
VJT/bll
Encs:

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 31, 2007

L-07050
Geotech Analysis
Troy Project

NATURAL MOISTURE CONTENT
ASTM D2216

Lab I.D. #	Sample #	Depth (feet)	Moisture Content as a Percent of Dry Weight
22145	PZ-18	12.0 - 18.0	19.6

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

SIEVE ANALYSIS OF SOIL / AGGREGATE

PROJECT TITLE Laboratory Testing
Geotech Analysis
Troy Project

PROJECT # L-07050
TEST METHOD ASTM D422 & D1140

REPORT # 2
REPORT DATE May 31, 2007

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Sample	Depth (feet)	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200			
22145	PZ-18	12.0 - 14.0	100	97.9	93.8	87.7	84.8	74.5	60.8	55.6	45.8	37.8	28.8			

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

Performed By: AM

Checked By: V.J. Thoma

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 31, 2007

L-07050
Geotech Analysis
Troy Project

BULK (NATURAL) SOIL DENSITY(PCF)
CORPS OF ENGINEERS EM-1110-2-1906
APPENDIX II, DISPLACEMENT METHOD

Lab I.D. #	Sample I.D.	Depth (feet)	Bulk (Natural) Soil Density (PCF) Dry Density		Moist Density
22145	PZ-18	12.0 - 14.0	109.9		131.4

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 31, 2007

L-07050
Geotech Analysis
Troy Project

ATTERBERG LIMITS
ASTM D4318

Lab ID #	Sample #	Depth (feet)	Plastic Limit	Liquid Limit	Plasticity Index
22145	PZ-18	12.0-14.0	Non-Plastic	--	--

p-w labs

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 31, 2007

L-07050
Geotech Analysis
Troy Project

SPECIFIC GRAVITY OF SOILS
ASTM D854

Lab I.D. #	Sample #	Depth (feet)	(D854) Minus No. 4 Fraction Specific Gravity of Solids (G)
22145	PZ-18	12.0 - 14.0	2.76

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 31, 2007

L-07050
Geotech Analysis
Troy Project

POROSITY
Corps of Engineers
EM-1110-2-1906 Appendix II

Lab ID #	Sample	Depth (feet)	Porosity (%)
22145	PZ-18	12.0 - 14.0	36.2

p-w labs

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Measurement of Hydaulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

ASTM D5084

Report Date: May 29, 2007 Test Start Date: May 18, 2007

Project No. L-07050 Project Title: Brown & Caldwell - Troy Project

Test Sample Location PZ-18 Lab I.D. # 22145

ST No -- Depth/Lift/Elev: 12.0-14.0 Type of Sample:

Method of Compaction -- Undisturbed X Remolded --

Percent Compaction -- Moisture Content (% of Dry Weight)

Initial Degree of Saturation (B Value) (%) -- Optimum -- Initial 21.8

Final Degree of Saturation (B Value) (%) 100 Dry Unit Weight (PCF)

Permeant Liquid Used Deaired Deionized H_2O Maximum -- Initial 108.9

Final Moisture Content (% of Dry Weight) 21.3 Final Dry Unit Weight (PCF) 111.8

Confining Pressure (PSI) 71.0 Test (head) Pressure (PSI) 68.0 Tail (back) Pressure (PSI) 64.0

Initial Gradient 25.8 Initial Height (cm) 10.90 Initial Diameter (cm) 6.95

Final Gradient 28.8 Final Height (cm) 9.76 Final Diameter (cm) 7.25

Final Four Determinations k (cm/sec)

1.98×10^{-6}	2.02×10^{-6}
2.00×10^{-6}	2.05×10^{-6}

Mean Value of Final Four Consecutive Determinations: Coefficient of Permeability k (cm/sec): 2.01×10^{-6}

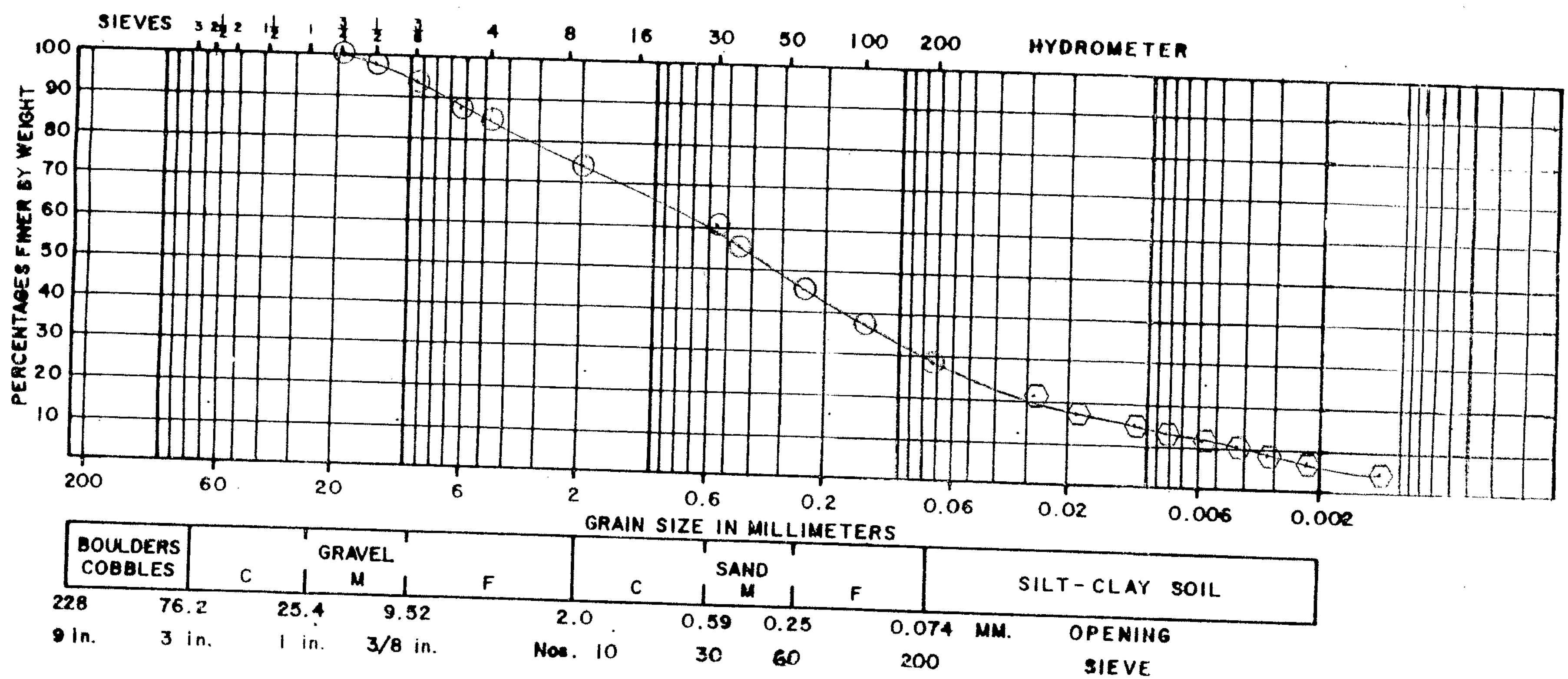
Project Specfications --

Notes:

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 5
Date May 31, 2007

GRAIN SIZE ANALYSIS



L-07050	Lab I.D. # 22145
Geotech Analysis	Boring # PZ-18
Troy Project	Depth (feet) 12.0 - 14.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 4, 2007

Mr. James Marolda
Brown & Caldwell
234 Hudson Avenue
Albany, New York 12210

Re: L-07050
Geotech Analyses
Troy Project

Dear Mr. Marolda:

Enclosed are the results of laboratory testing performed at your request on four each bulk material samples delivered to our laboratory on April 27, 2007 for the above referenced project. Results include:

1. Natural Moisture Content
   Laboratory I.D. #21966-21969 — 4 each

2. Sieve Analysis ASTM D422 & D1140
   Laboratory I.D. #21966-21969 — 4 each

3. Hydrometer Analysis D422
   Laboratory I.D. #21966-21969 — 4 each

All requested tests have been completed on the previously received sample(s) for the above project. All sample remains are scheduled to be disposed of on June 4, 2007. Please notify PW Laboratories, Inc. by letter or telephone prior to June 4, 2007 if you would prefer to pick up the sample(s) or that the sample(s) be retained by PW Laboratories, Inc. for an additional period of time.

Thank you for this opportunity to work with you.

Very truly yours,

PW LABORATORIES, INC.

Virginia J. Thoma

Virginia J. Thoma
Manager - Laboratory Services
VJT/klw
encs:

p-w labs
PW LABORATORIES, INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

May 4, 2007

L-07050
.Geotech Analyses
Troy Project

NATURAL MOISTURE CONTENT
ASTM D2216

Lab I.D. #	Sample #	Depth (feet)	Moisture Content as a Percent of Dry Weight
21966	DSB-16	28.0 - 30.0	16.8
21967	DSB-16	32.0 - 33.0	21.9
21968	DSB-16	42.0 - 44.0	9.8
21969	DSB-16	@ 57.0	7.4

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

SIEVE ANALYSIS OF SOIL / AGGREGATE

PROJECT TITLE: Geotech Analyses
Troy Project

PROJECT # L-07050
TEST METHOD ASTM D422 & D1140

REPORT # 1
REPORT DATE May 4, 2007

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Sample	Depth (feet)	2"	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200
21966	DSB-16	28.0 - 30.0	--	--	--	100	95.7	91.8	84.1	79.7	66.2	44.5	38.5	29.7	23.6	17.1
21967	DSB-16	32.0 - 33.0	--	--	100	97.6	97.6	97.2	97.1	97.1	96.9	96.1	95.4	93.0	87.1	72.9
21968	DSB-16	42.0 - 44.0	100	90.5	81.4	69.4	54.1	50.2	44.0	39.4	29.2	16.8	14.4	11.7	10.0	7.7
21969	DSB-16	@ 57.0	--	--	100	98.1	95.2	92.5	86.2	83.7	75.6	65.6	62.4	56.0	50.3	43.6

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

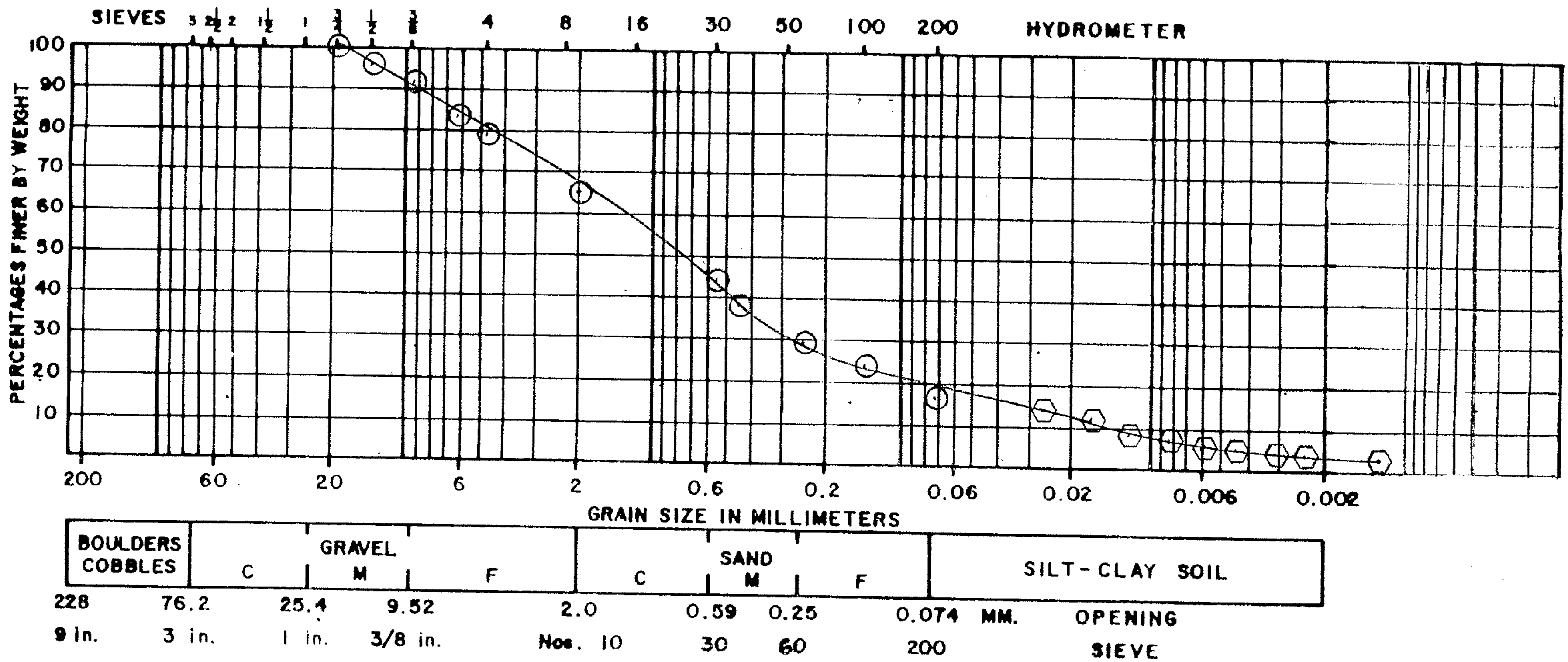
Performed By: JB

Checked By: V.J. Thoma

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.:	L-07050
Report No:	1
Date	May 4, 2007

GRAIN SIZE ANALYSIS



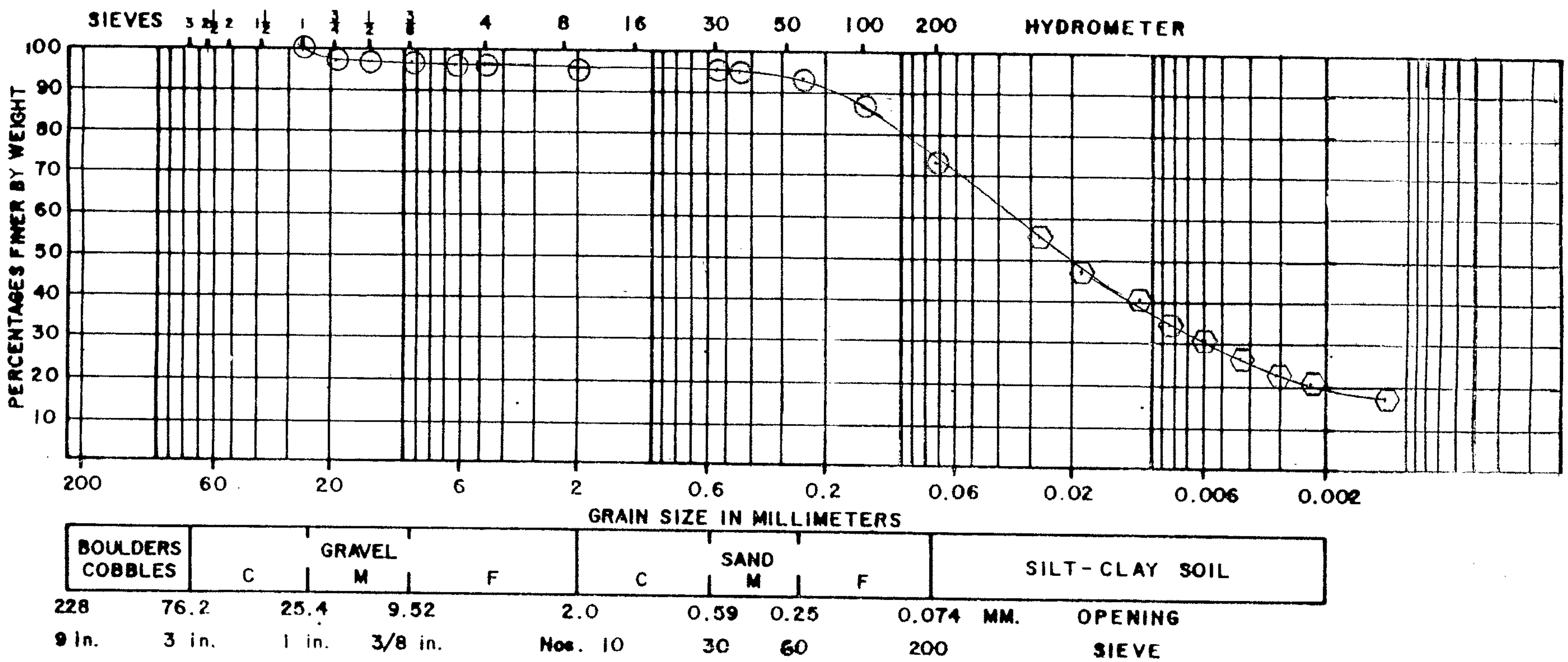
L-07050		Lab I.D. #	21966
Geotech Analyses		Boring #	DSB-16
Troy Project		Depth (feet)	28.0 - 30.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.:	L-07050
Report No:	2
Date	May 4, 2007

GRAIN SIZE ANALYSIS



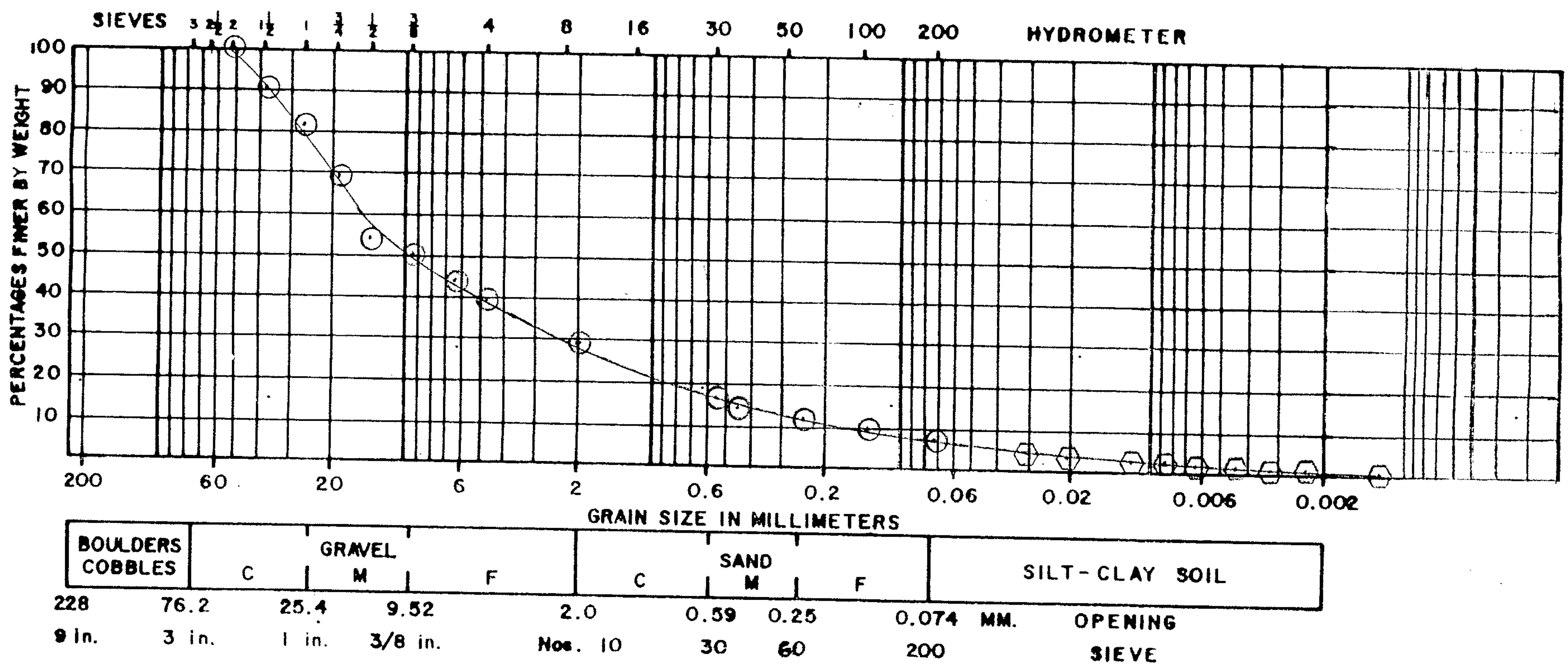
L-07050		Lab I.D. #	21967
Geotech Analyses		Boring #	DSB-16
Troy Project		Depth (feet)	32.0 - 33.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 3
Date May 4, 2007

GRAIN SIZE ANALYSIS



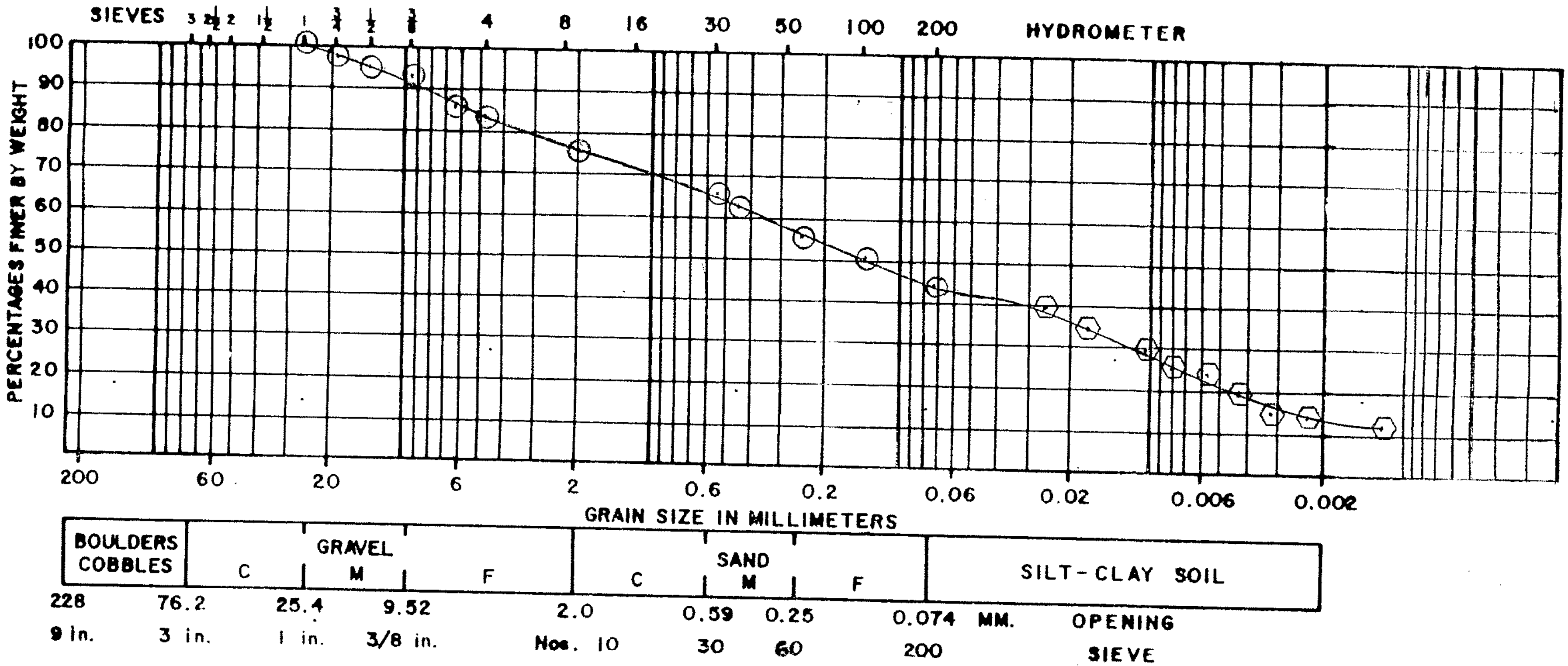
L-07050		Lab I.D. #	21968
Geotech Analyses		Boring #	DSB-16
Troy Project		Depth (feet)	42.0 - 44.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

p-w labs
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

Job No.: L-07050
Report No: 4
Date May 4, 2007

GRAIN SIZE ANALYSIS



L-07050
Geotech Analyses
Troy Project

Lab I.D. # 21969
Boring # DSB-16
Depth (feet) 57.0

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

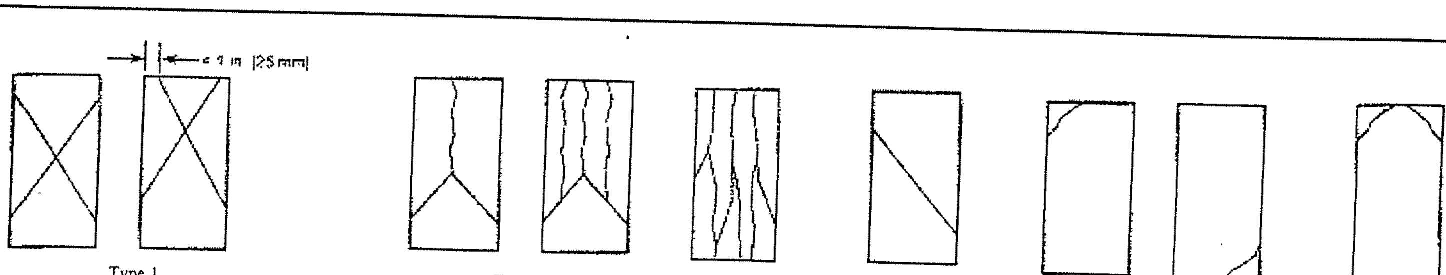
PW LABORATORIES,INC.
P.O. BOX 56, 5879 FISHER ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • 866-7PW-LABS • Fax 315-437-1752

COMPRESSION TEST REPORT
Standard Concrete Cylinders 6" x 12"
Cylinder Data

Project # L-07052
Specification ASTM C39
Report No. 1
Date April 27, 2007
Client B&R Excavating
Project Greenfield Pump Station
Structure Identification Pump Pad
Section Poured Northwest corner

Cylinders Made By PE Concrete Temperature 73° Slump 3 1/4" Entrained Air Content 6.5%
Design Strength 4000 psi Batch Ticket # -- Truck Number 90
Concrete Supplier Cranesville Clark Division

Cylinder Number	Date Cast	Age (Days)	Field Cure (Days)	Diameter of Cylinder	Cross Sectional Area of Cylinder	Maximum Load (lbs.)	Compressive Strength (Psi)	Type of Fracture
1	4/20/07	7	1	5.99	28.18	106910	3790	3
2	4/20/07	14	1	6.00	28.27	122880	4350	2
3	4/20/07	21	1					
4	4/20/07	28	1					
5	4/20/07	Hold	1					



Type 1
Reasonably well-formed cones on both ends, less than 1 in. (25 mm) of cracking through caps

Type 2
Well-formed cone on one end, vertical cracks running through caps, not well-defined cone on other end

Type 3
Columnar vertical cracking through both ends, not well-formed cones

Type 4
Diagonal fracture with no cracking through ends; tap with hammer to distinguish from Type 1

Type 5
Side fractures at top of bottom (occur commony with unbonded caps)

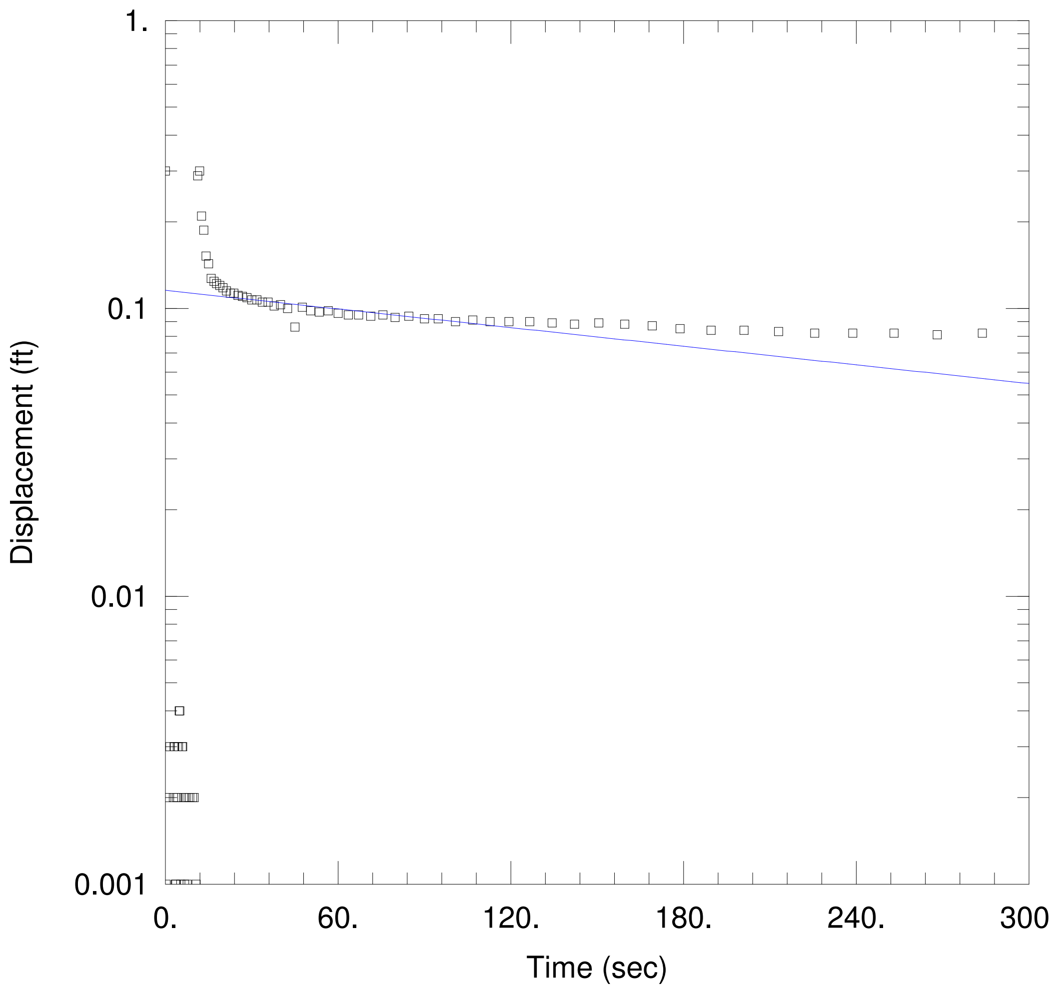
Type 6
Similar to Type 5 but end of cylinder is pointed

Remarks

pw1/c/program files/ microsoft office/templates/laboratory reports/COMPRESSION TEST REPORT 4.27.07

APPENDIX F

In-Situ Hydraulic Conductivity Test Results



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\MW-14.aqt
Date: 11/09/07 Time: 15:08:45

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: MW-14
Test Date: 8/24/07

AQUIFER DATA

Saturated Thickness: 7.02 ft
Anisotropy Ratio (Kz/Kr): 1.

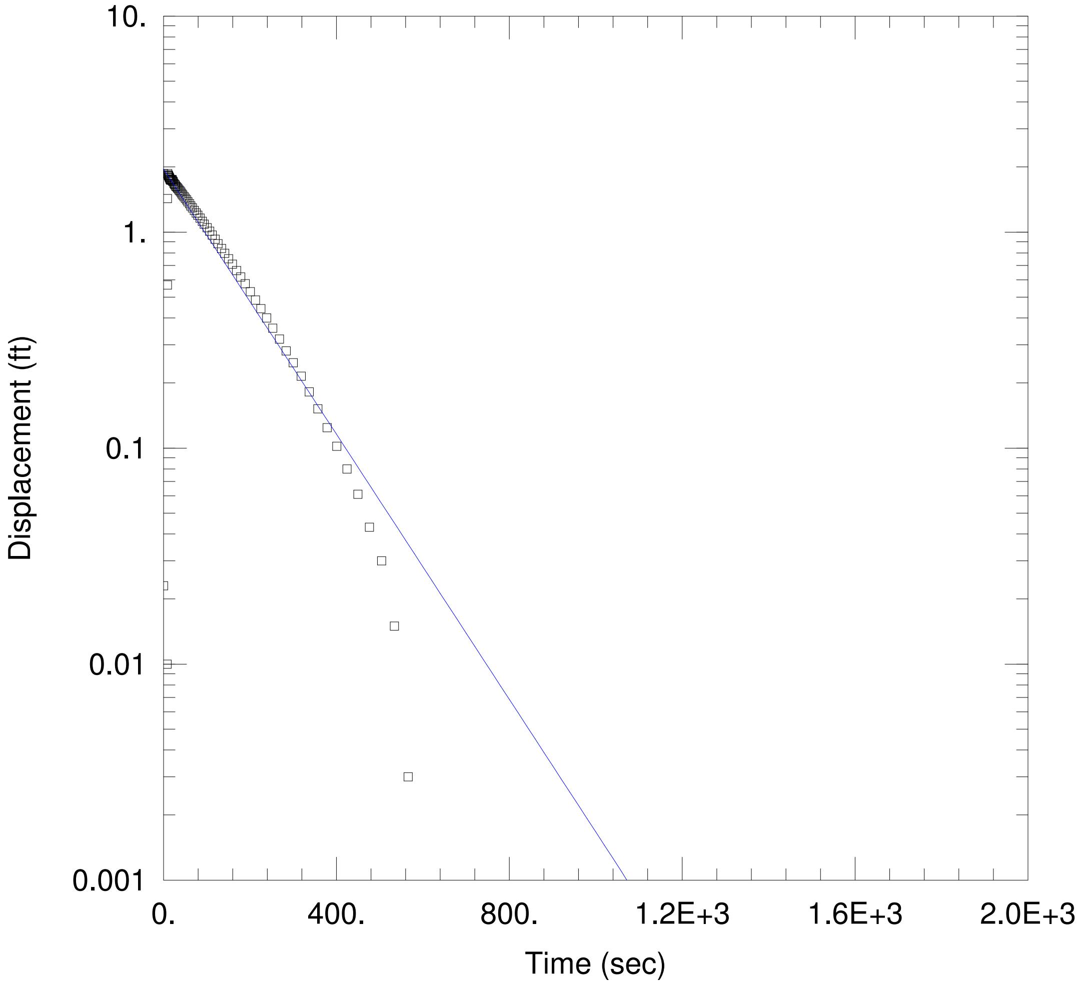
WELL DATA (MW-14)

Initial Displacement: 0.3 ft
Total Well Penetration Depth: 6.02 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 6.02 ft
Screen Length: 6.02 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.0001264 cm/sec
y0 = 0.1155 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\MW-21.aqt
Date: 11/09/07 Time: 15:09:15

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: MW-21
Test Date: 8/24/07

AQUIFER DATA

Saturated Thickness: 38.22 ft Anisotropy Ratio (Kz/Kr): 1.

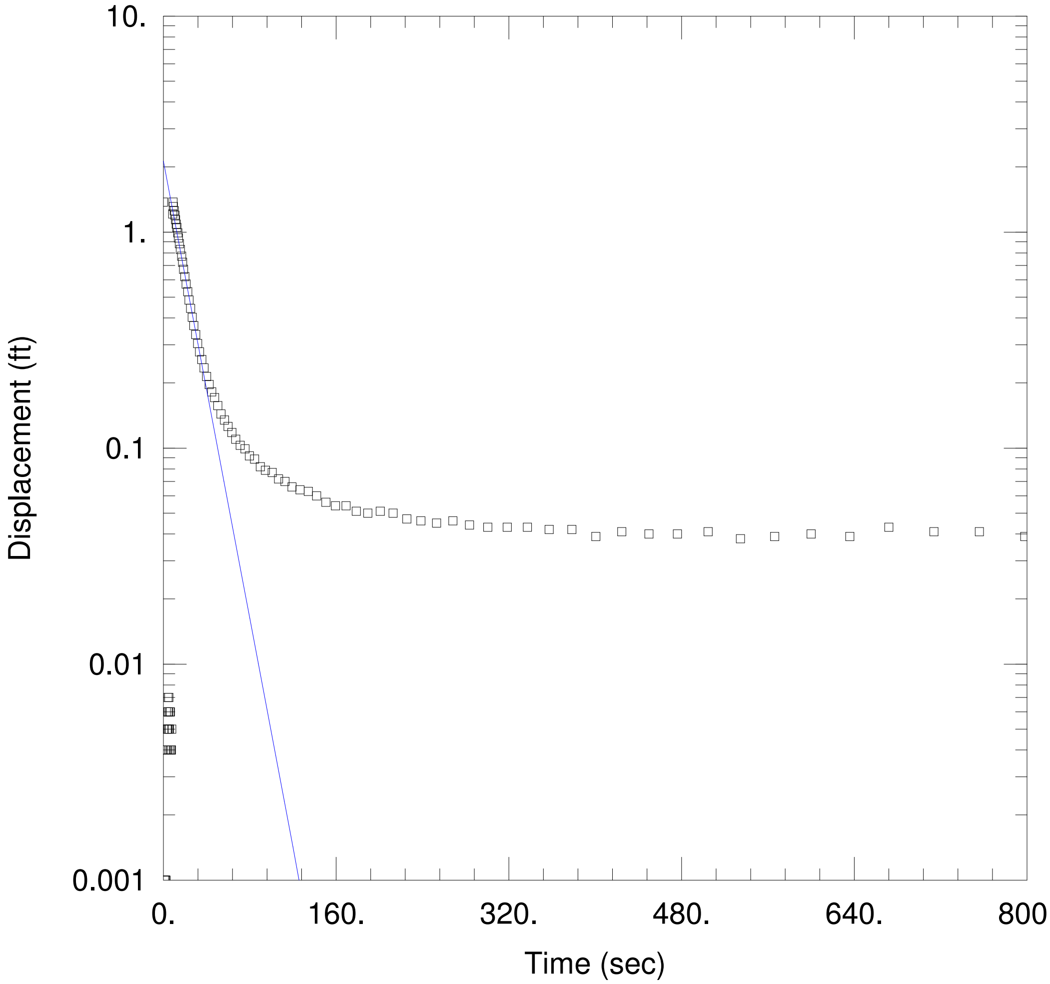
WELL DATA (MW-21)

Initial Displacement: 1.861 ft
Total Well Penetration Depth: 11.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 11.12 ft
Screen Length: 11.12 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0002358 cm/sec y0 = 1.956 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\MW-27.aqt
Date: 11/09/07 Time: 15:10:02

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: MW-27
Test Date: 8/24/07

AQUIFER DATA

Saturated Thickness: 38.96 ft
Anisotropy Ratio (Kz/Kr): 1.

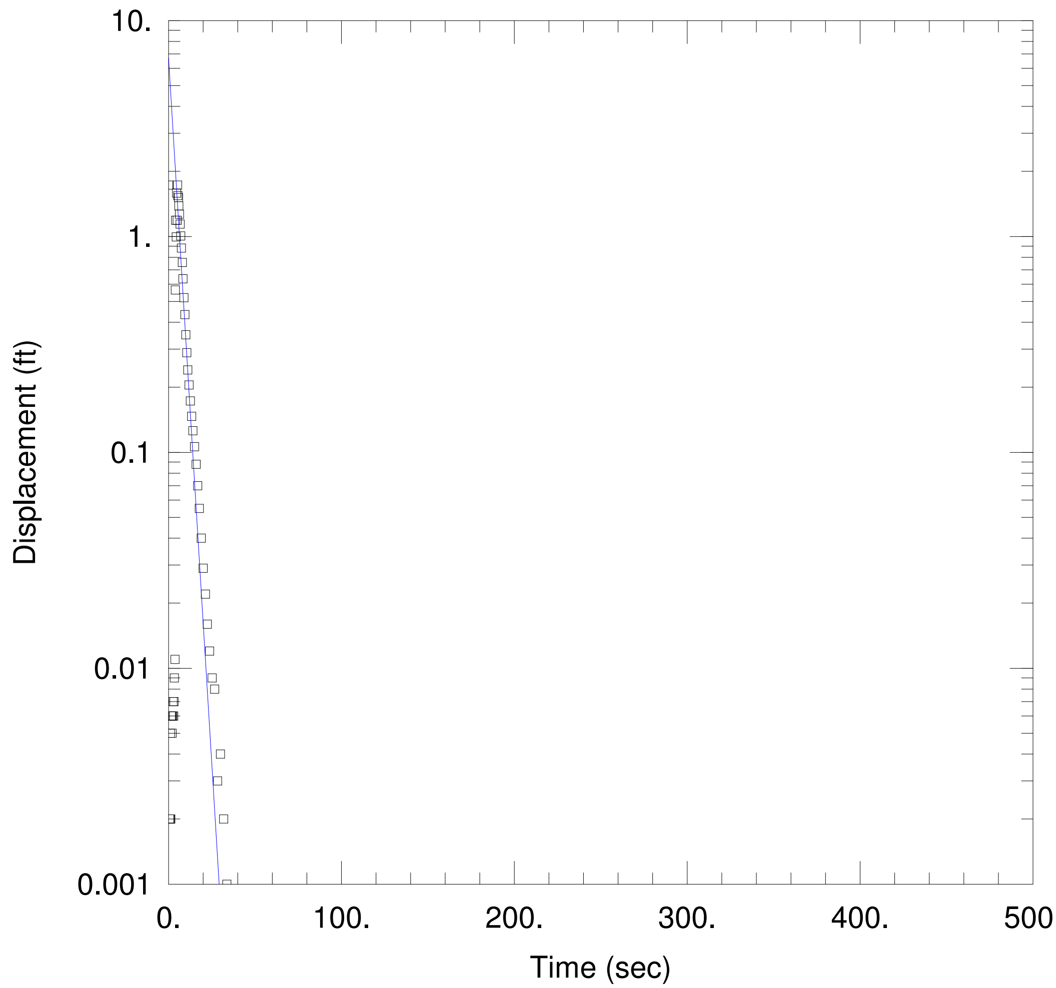
WELL DATA (MW-27)

Initial Displacement: 1.375 ft
Total Well Penetration Depth: 12.86 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 12.86 ft
Screen Length: 12.86 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.00183 cm/sec
y0 = 2.129 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\MW-35.aqt
Date: 11/09/07 Time: 15:10:20

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: MW-35
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 34.5 ft Anisotropy Ratio (Kz/Kr): 1.

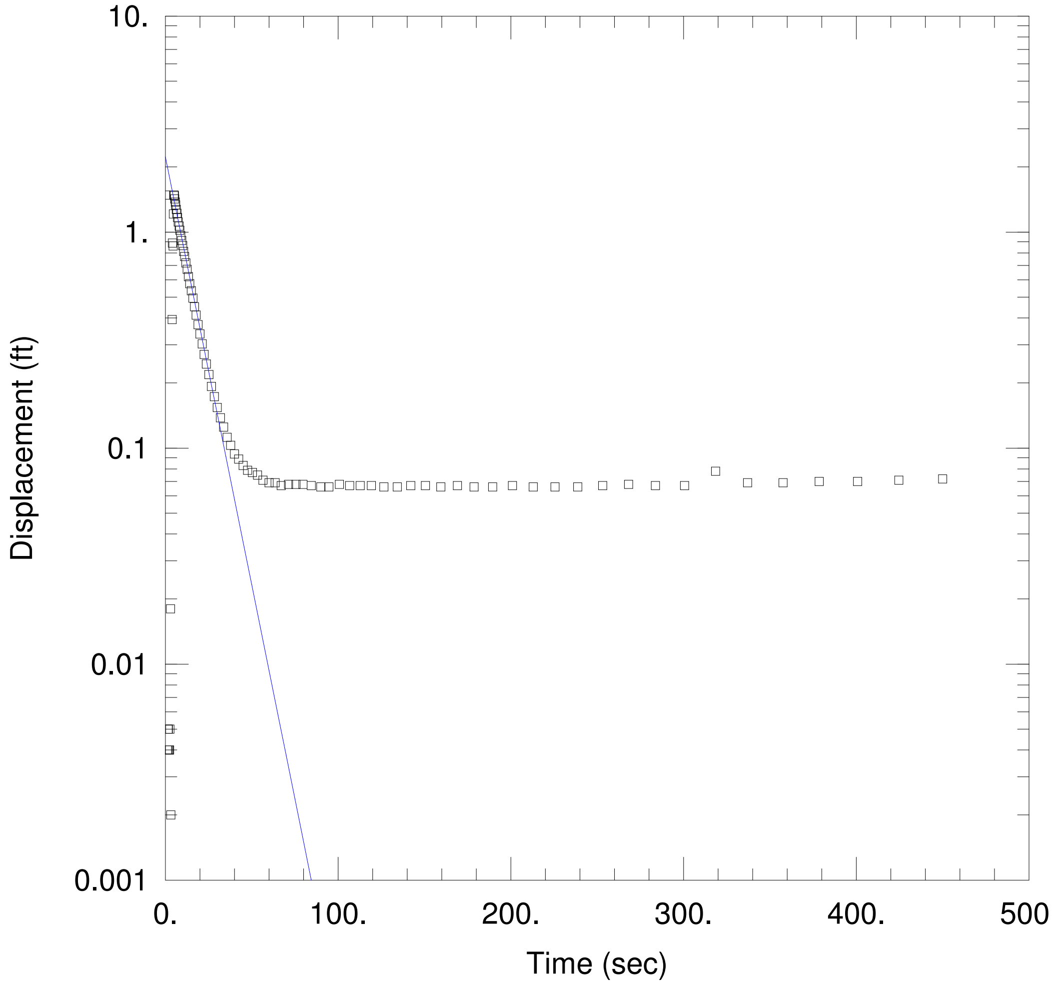
WELL DATA (MW-35)

Initial Displacement: 1.729 ft Static Water Column Height: 5.5 ft
Total Well Penetration Depth: 5.5 ft Screen Length: 5.5 ft
Casing Radius: 0.0833 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.01624 cm/sec y0 = 6.683 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-2.aqt
Date: 11/09/07 Time: 15:11:06

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-2
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 32.65 ft
Anisotropy Ratio (Kz/Kr): 1.

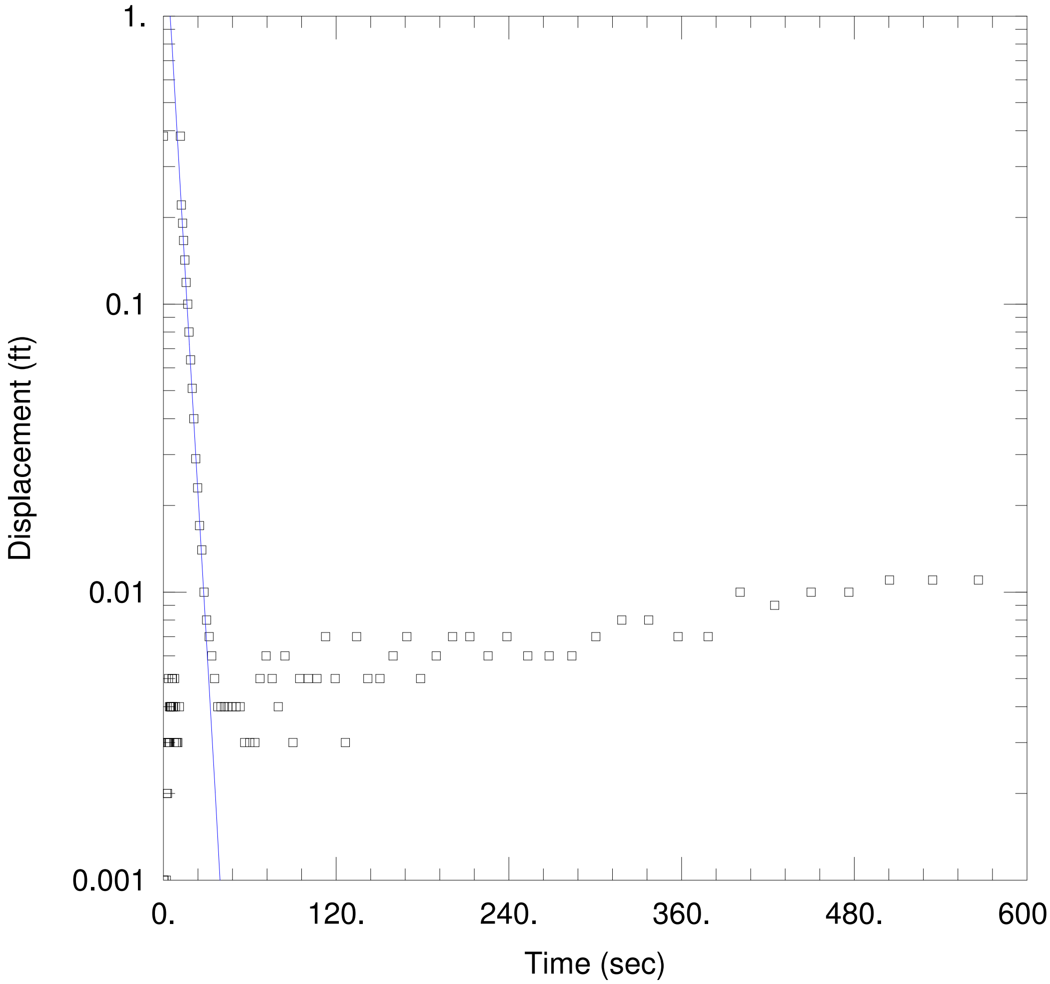
WELL DATA (PZ-2)

Initial Displacement: 1.485 ft
Static Water Column Height: 4.15 ft
Total Well Penetration Depth: 4.15 ft
Screen Length: 4.15 ft
Casing Radius: 0.0833 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.00588 cm/sec
y0 = 2.224 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-3.aqt
Date: 11/09/07 Time: 15:11:25

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-3
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 32.35 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-3)

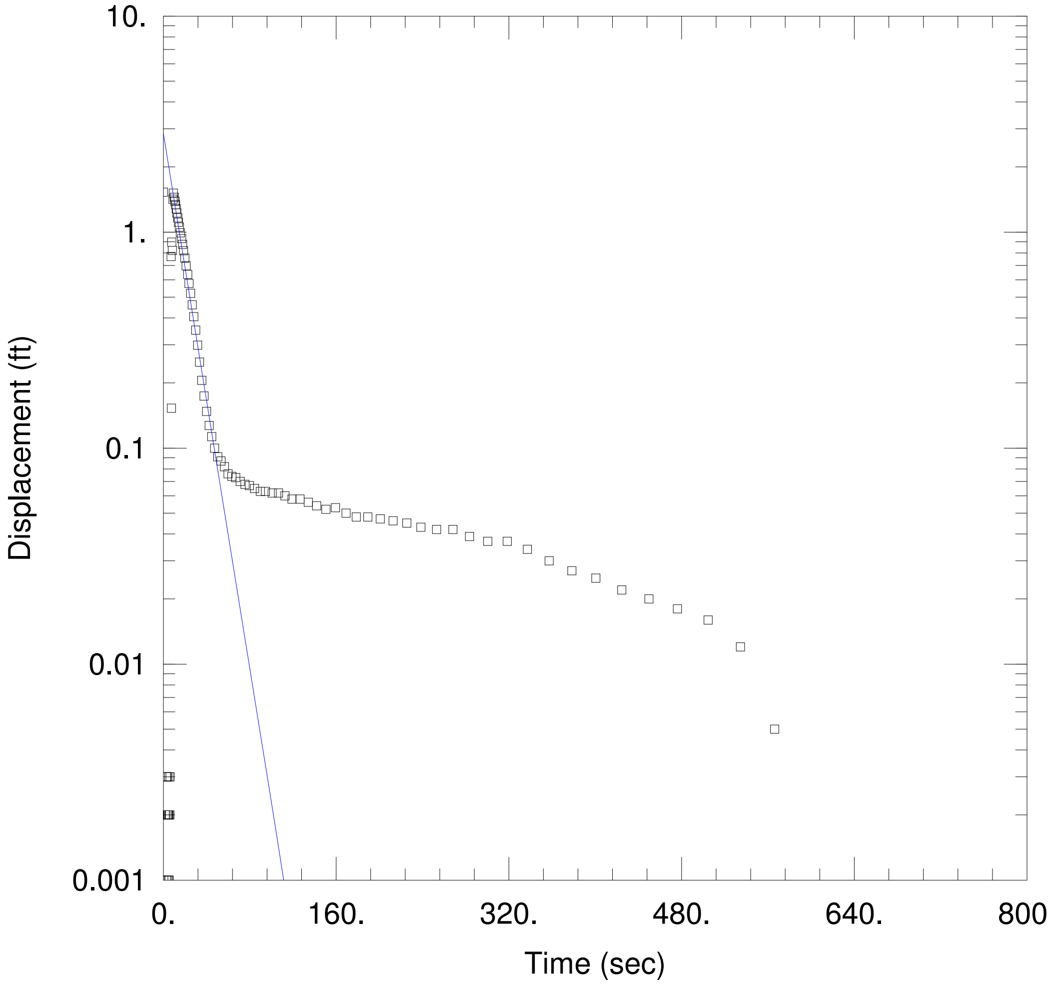
Initial Displacement: 0.383 ft
Total Well Penetration Depth: 4.35 ft
Casing Radius: 0.0833 ft

Static Water Column Height: 4.35 ft
Screen Length: 4.35 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.01246 cm/sec y0 = 2.61 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-4.aqt
Date: 11/09/07 Time: 15:11:43

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-4
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 33.38 ft
Anisotropy Ratio (Kz/Kr): 1.

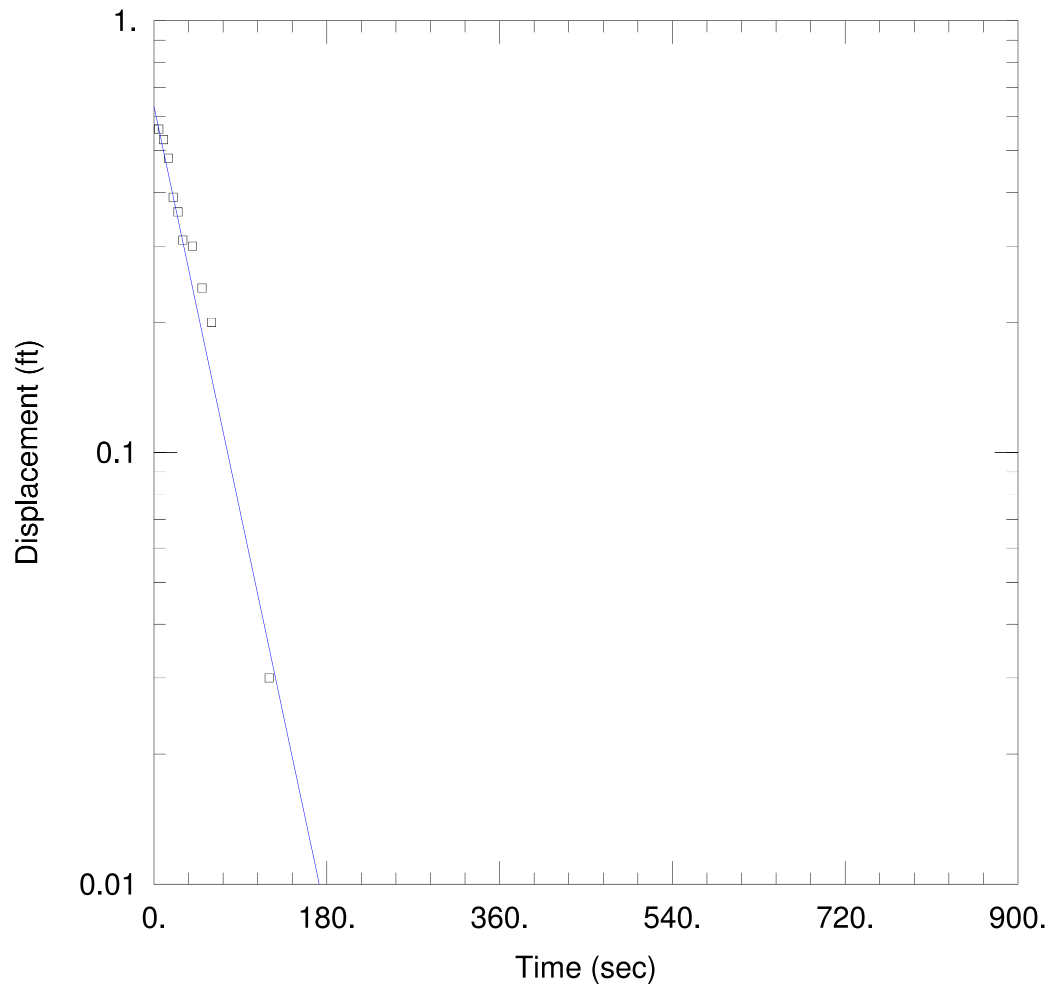
WELL DATA (PZ-4)

Initial Displacement: 1.53 ft
Total Well Penetration Depth: 8.38 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 8.38 ft
Screen Length: 8.38 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.002902 cm/sec
y0 = 2.858 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-5A.aqt
Date: 11/09/07 Time: 15:12:00

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-5A
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 35.12 ft
Anisotropy Ratio (Kz/Kr): 1.

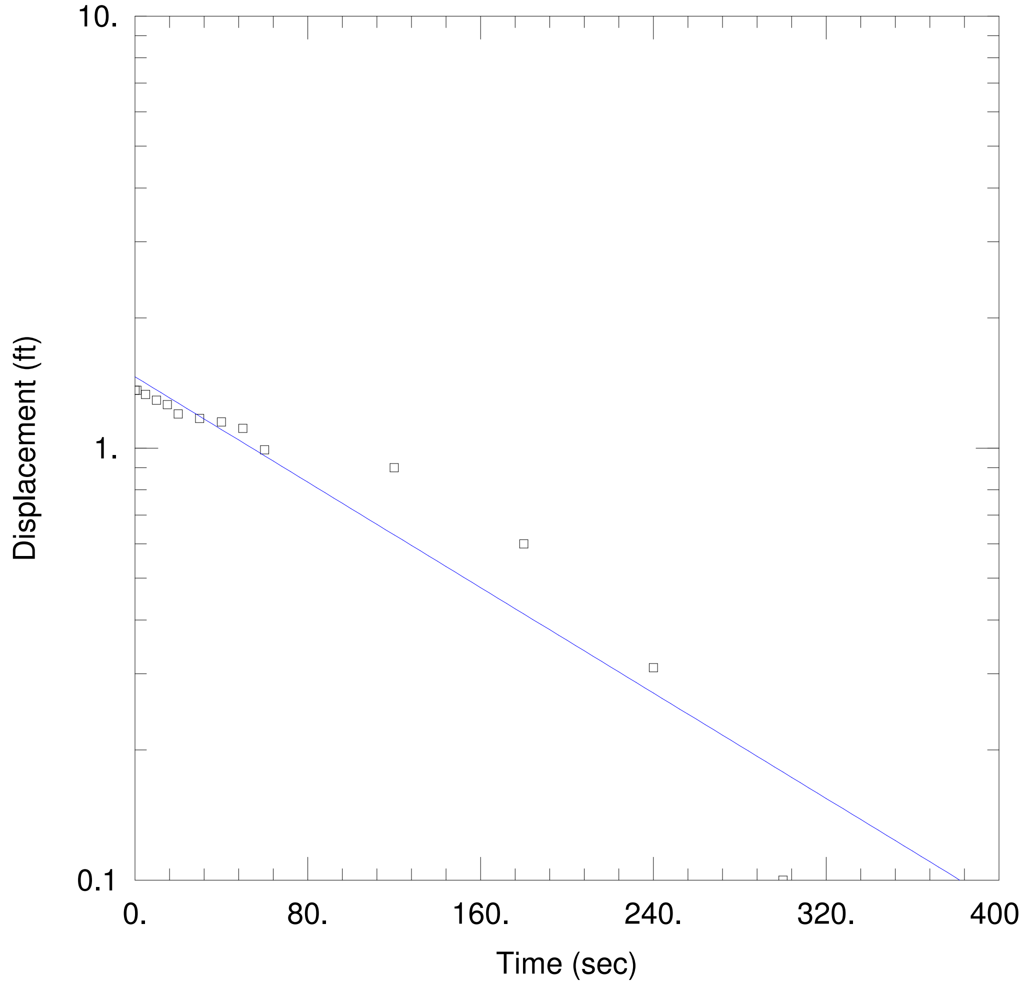
WELL DATA (MW-5A)

Initial Displacement: 0.56 ft
Static Water Column Height: 2.82 ft
Total Well Penetration Depth: 2.82 ft
Screen Length: 2.82 ft
Casing Radius: 0.0833 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.001942 cm/sec
y0 = 0.6325 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-5B.aqt
Date: 11/09/07 Time: 15:12:18

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-5B
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 33.01 ft
Anisotropy Ratio (Kz/Kr): 1.

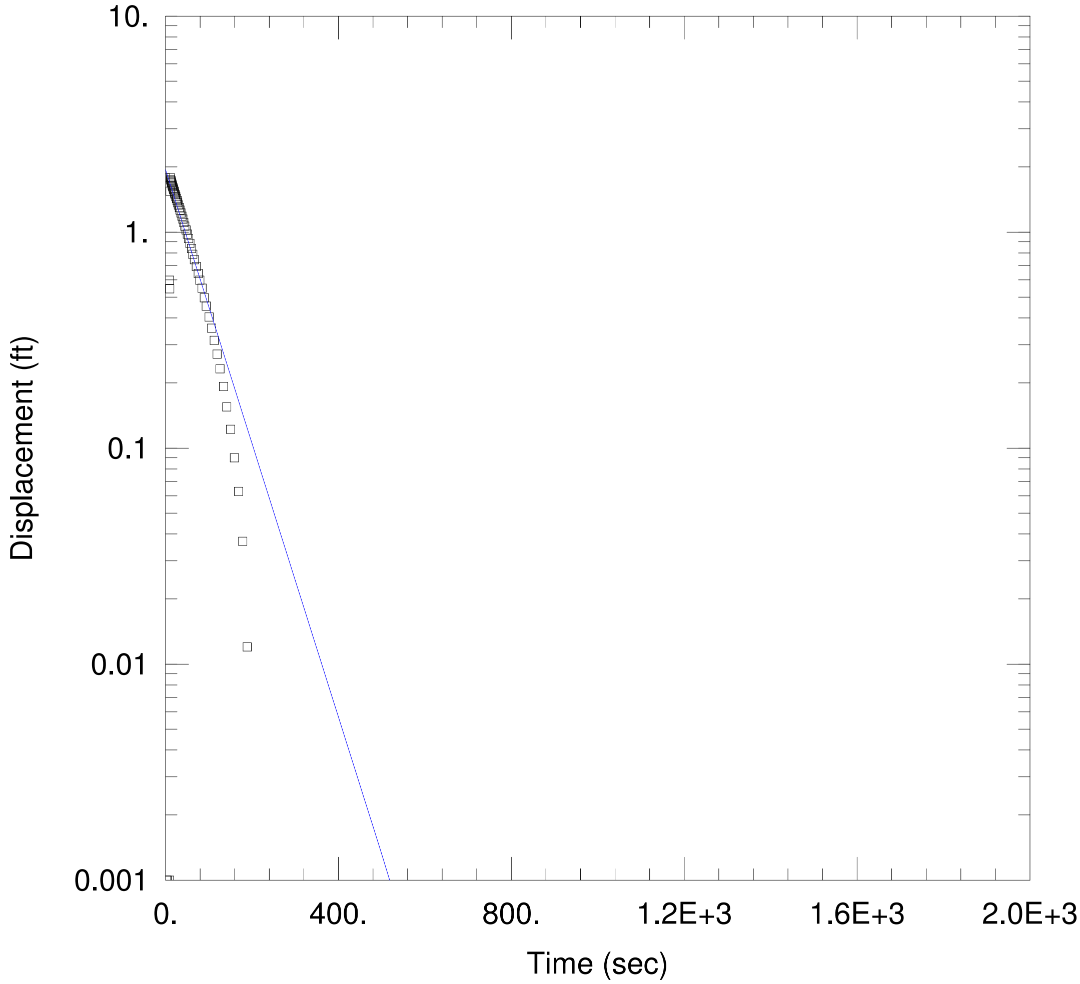
WELL DATA (PZ-5B)

Initial Displacement: 1.36 ft
Total Well Penetration Depth: 8.71 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 8.71 ft
Screen Length: 2. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.0006756 cm/sec
y0 = 1.462 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-5D.aqt
Date: 11/09/07 Time: 15:12:54

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-5D
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

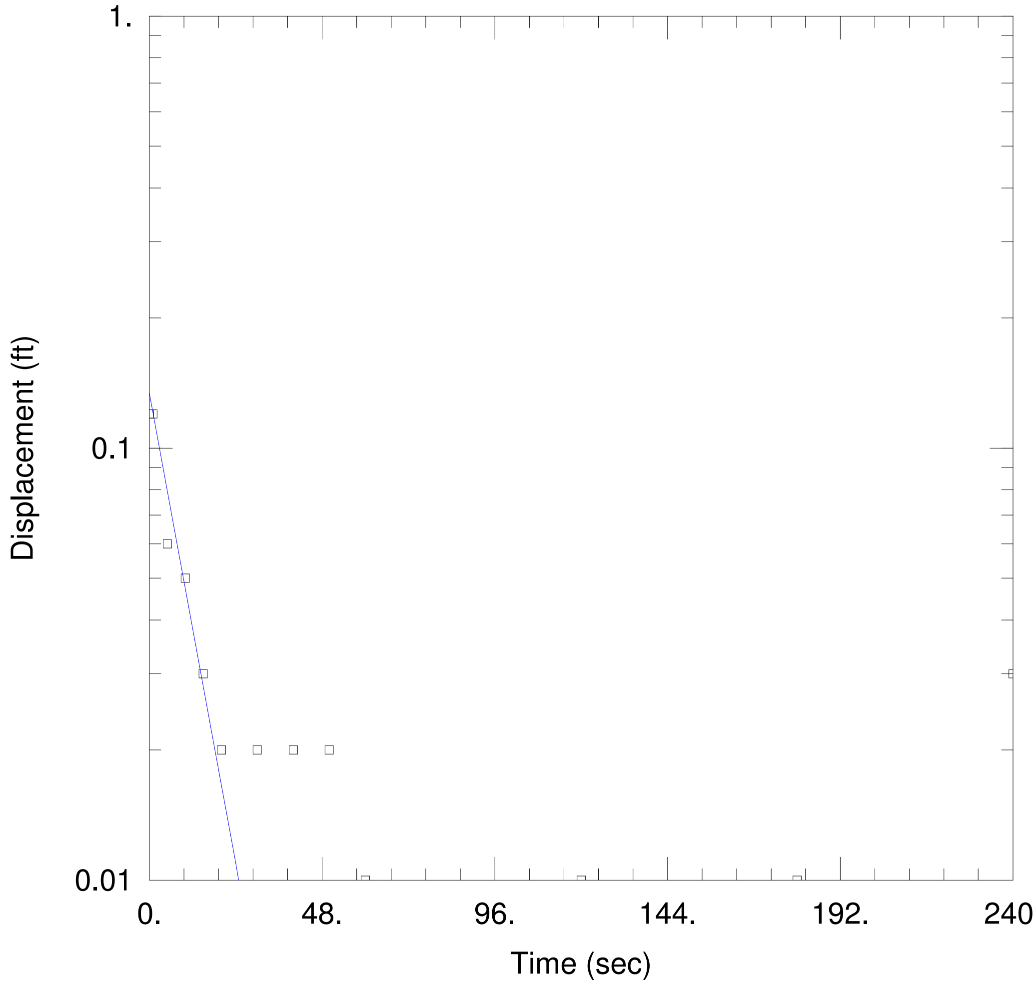
WELL DATA (PZ-5D)

Initial Displacement: 1.784 ft
Total Well Penetration Depth: 45.57 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 45.57 ft
Screen Length: 5. ft
Well Radius: 0.1667 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.001634 cm/sec
y0 = 1.942 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-6A.aqt
Date: 11/09/07 Time: 15:13:13

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-6A
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 32.32 ft
Anisotropy Ratio (Kz/Kr): 1.

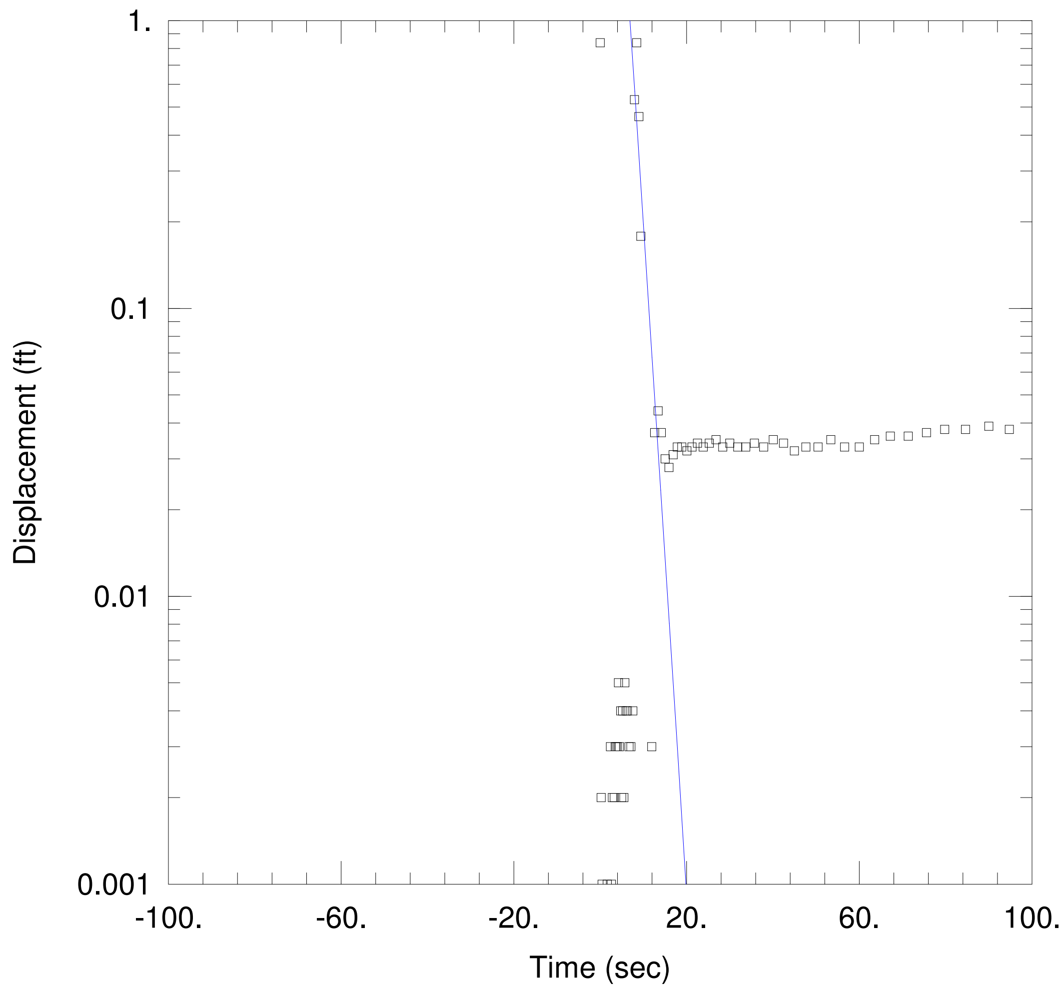
WELL DATA (PZ-6A)

Initial Displacement: 0.12 ft
Total Well Penetration Depth: 6.92 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 6.92 ft
Screen Length: 6.92 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.004841 cm/sec
y0 = 0.1337 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-6B.aqt
Date: 11/09/07 Time: 15:13:31

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-6B
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 32.52 ft
Anisotropy Ratio (Kz/Kr): 1.

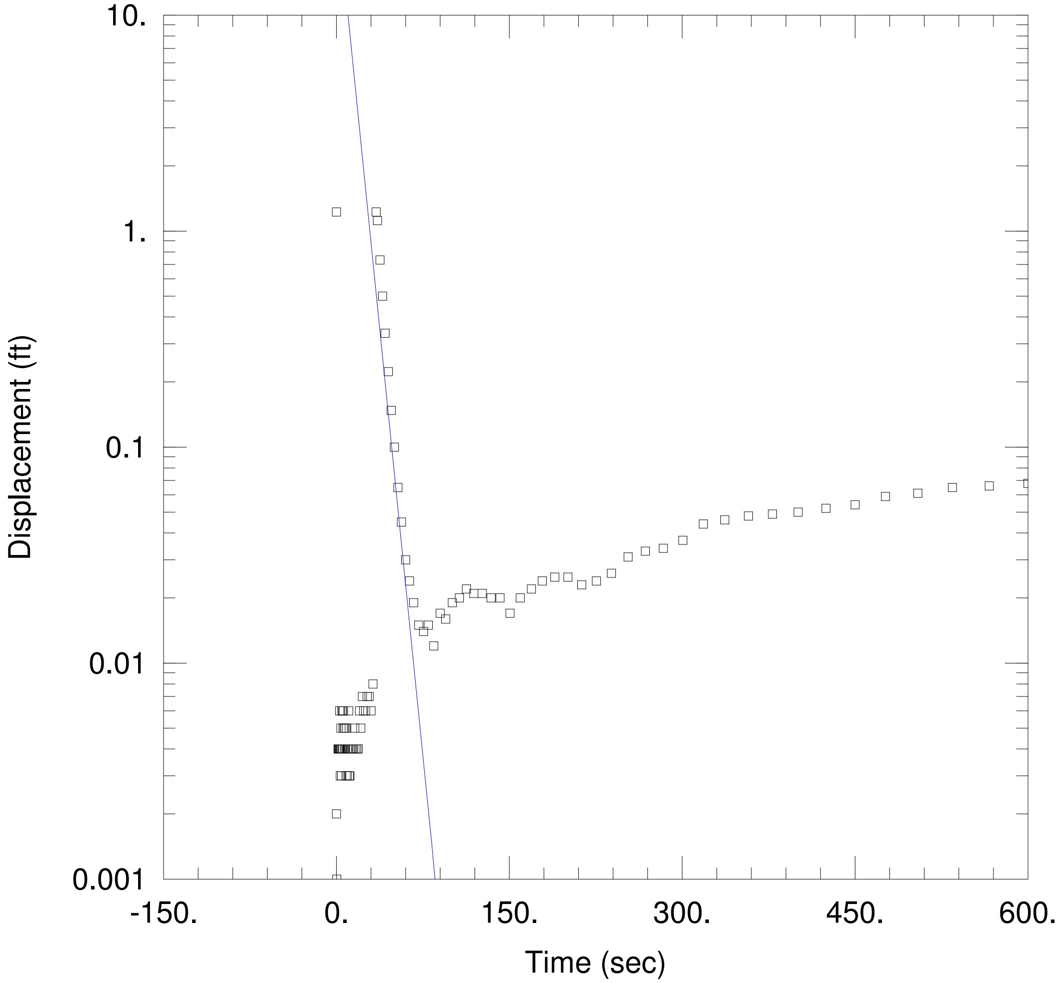
WELL DATA (PZ-6B)

Initial Displacement: 0.838 ft
Total Well Penetration Depth: 22.12 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 22.12 ft
Screen Length: 10. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.01915 cm/sec
y0 = 40.03 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-6C.aqt
Date: 11/09/07 Time: 15:13:48

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-6C
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 31.98 ft
Anisotropy Ratio (Kz/Kr): 1.

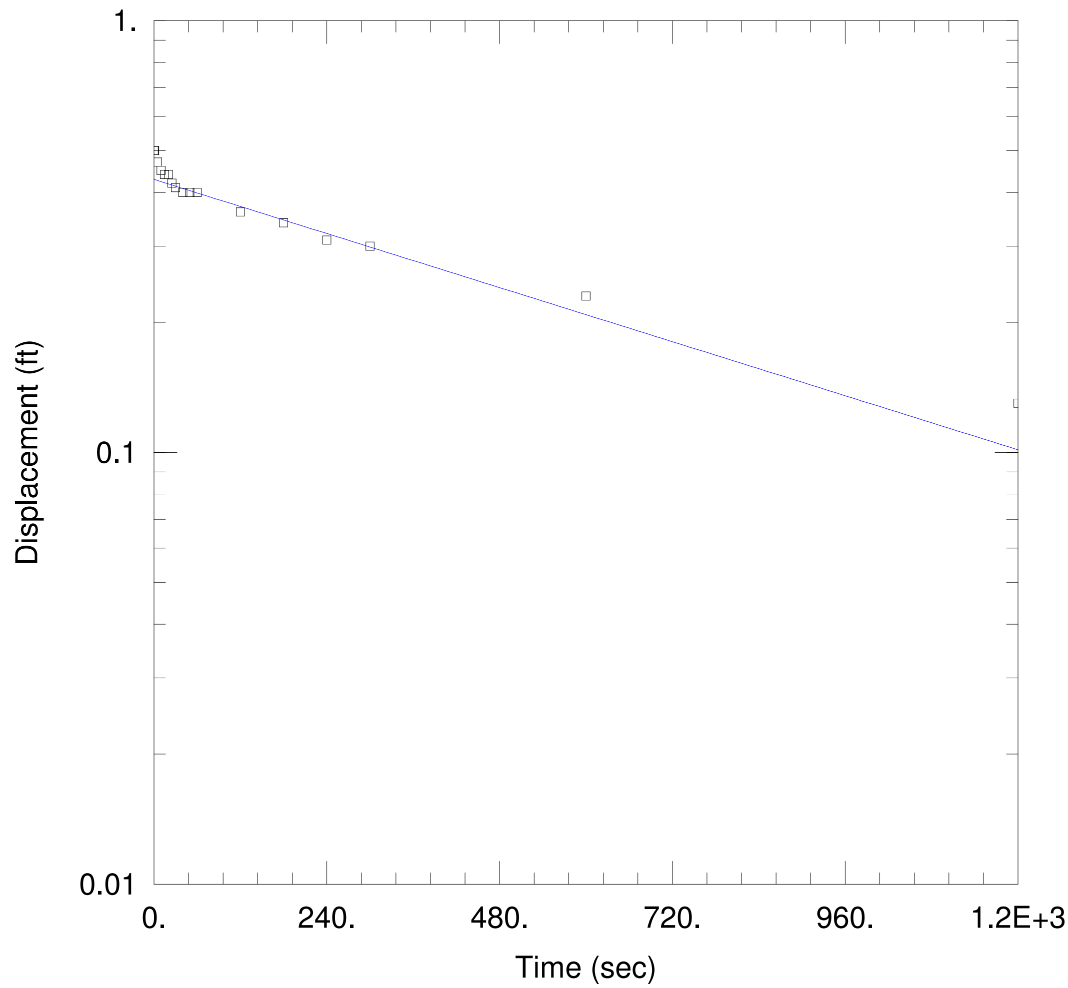
WELL DATA (PZ-6C)

Initial Displacement: 1.224 ft
Total Well Penetration Depth: 29.58 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 29.58 ft
Screen Length: 5. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.006976 cm/sec
y0 = 33.82 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-7.aqt
Date: 11/09/07 Time: 15:14:05

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-7
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 31.84 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-7)

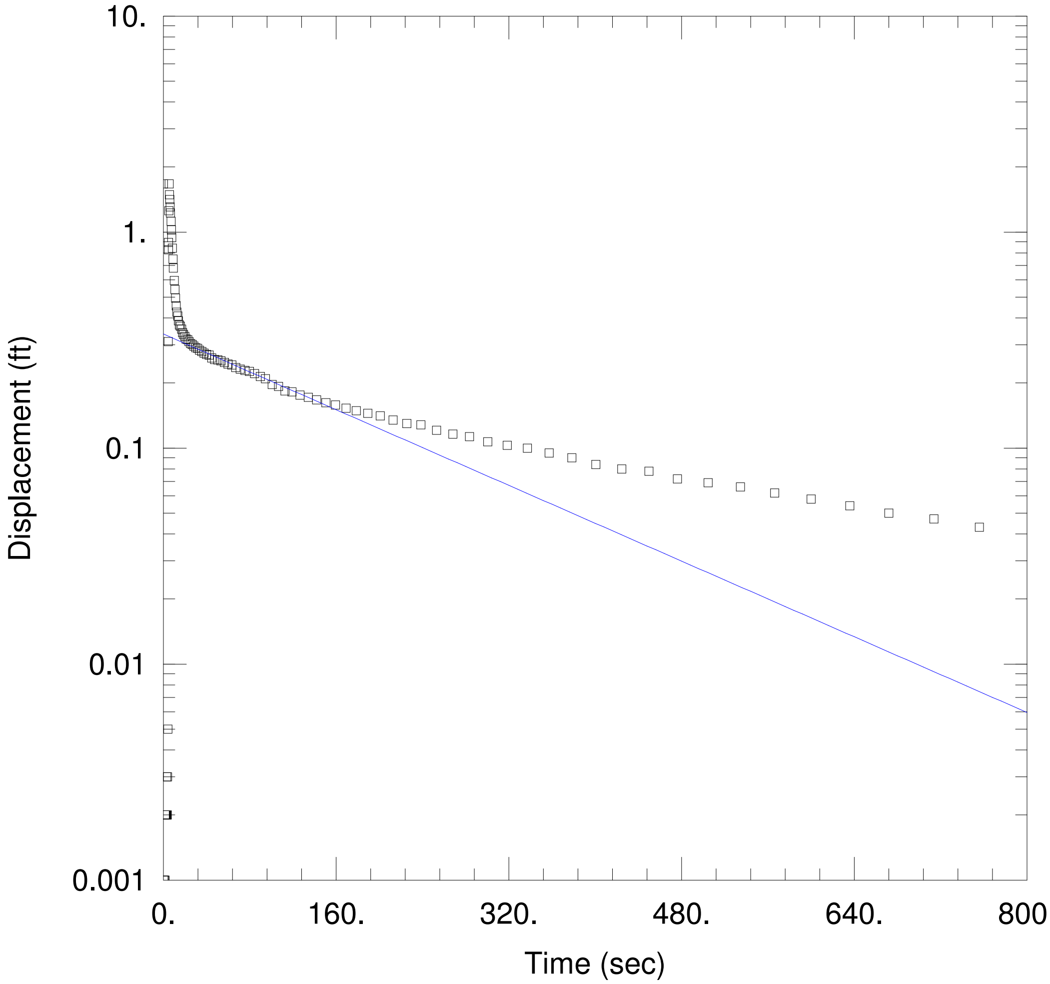
Initial Displacement: 0.5 ft
Total Well Penetration Depth: 4.84 ft
Casing Radius: 0.0833 ft

Static Water Column Height: 4.84 ft
Screen Length: 4.84 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 7.039E-5 cm/sec y0 = 0.4285 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-8A.aqt
Date: 11/09/07 Time: 15:14:22

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-8A
Test Date: 8/21/07

AQUIFER DATA

Saturated Thickness: 34.35 ft Anisotropy Ratio (Kz/Kr): 1.

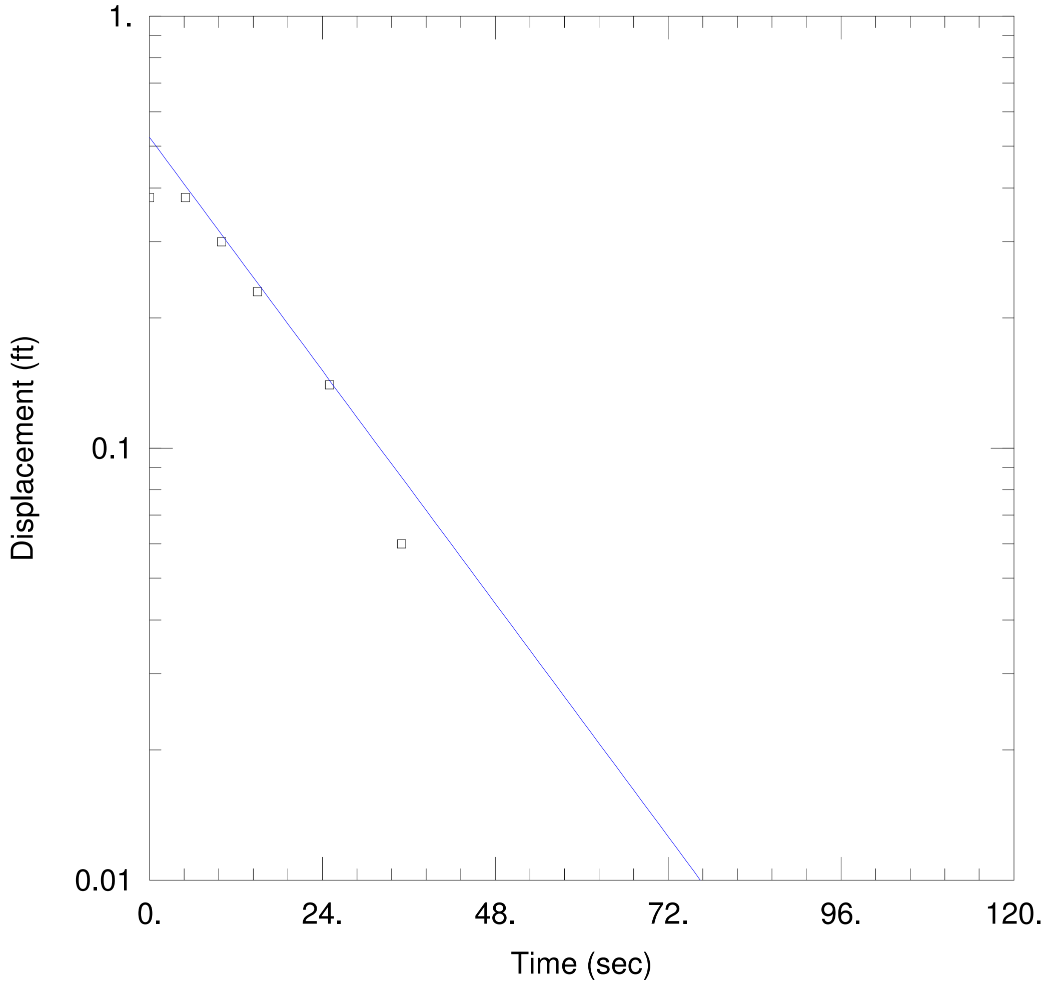
WELL DATA (PZ-8A)

Initial Displacement: 1.672 ft
Total Well Penetration Depth: 5.35 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 5.35 ft
Screen Length: 5.35 ft
Well Radius: 0.33 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0002781 cm/sec y0 = 0.3371 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-8B.aqt
Date: 11/09/07 Time: 15:14:50

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-8B
Test Date: 8/21/07

AQUIFER DATA

Saturated Thickness: 31.5 ft
Anisotropy Ratio (Kz/Kr): 1.

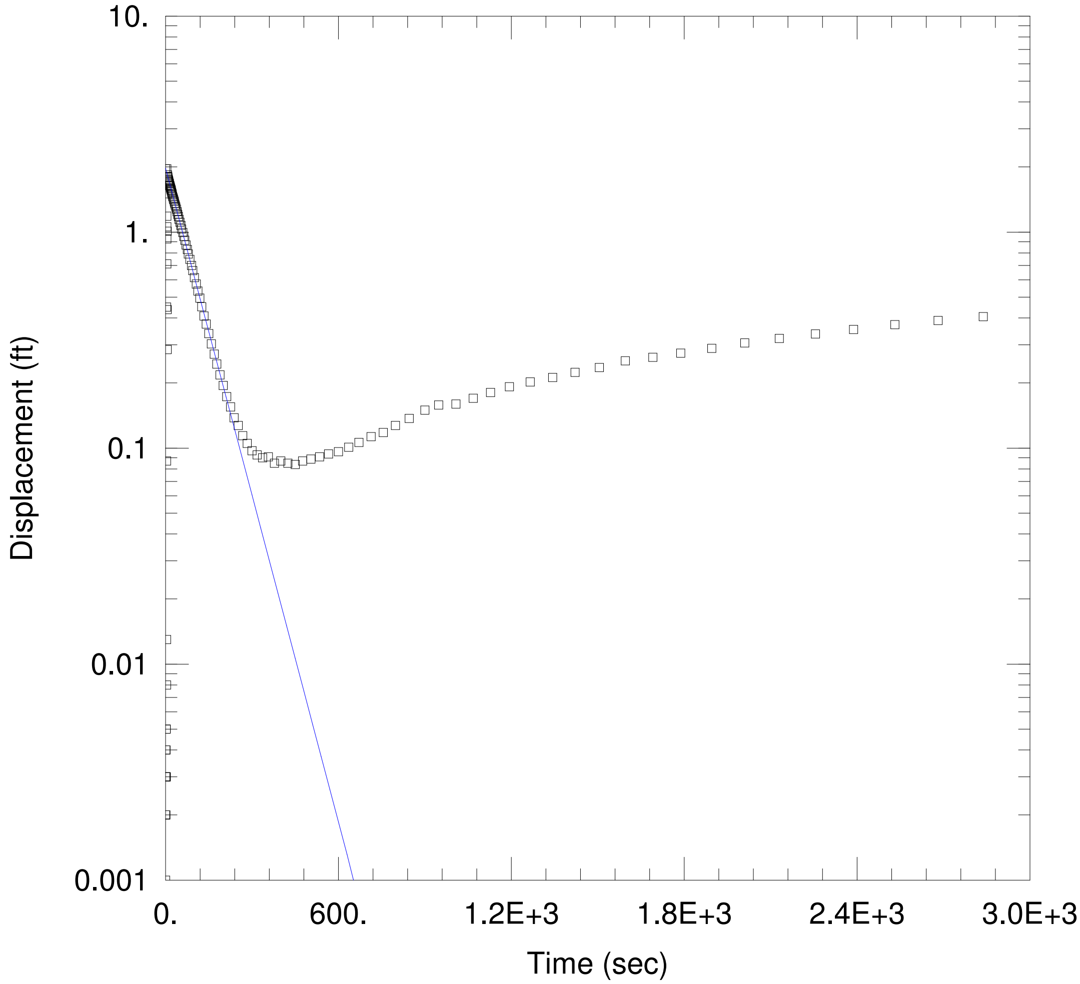
WELL DATA (PZ-8B)

Initial Displacement: 0.38 ft
Total Well Penetration Depth: 24.5 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 24.5 ft
Screen Length: 5. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.00297 cm/sec
y0 = 0.5235 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-8D.aqt
Date: 11/09/07 Time: 15:15:26

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-8D
Test Date: 8/21/07

AQUIFER DATA

Saturated Thickness: 5. ft Anisotropy Ratio (Kz/Kr): 1.

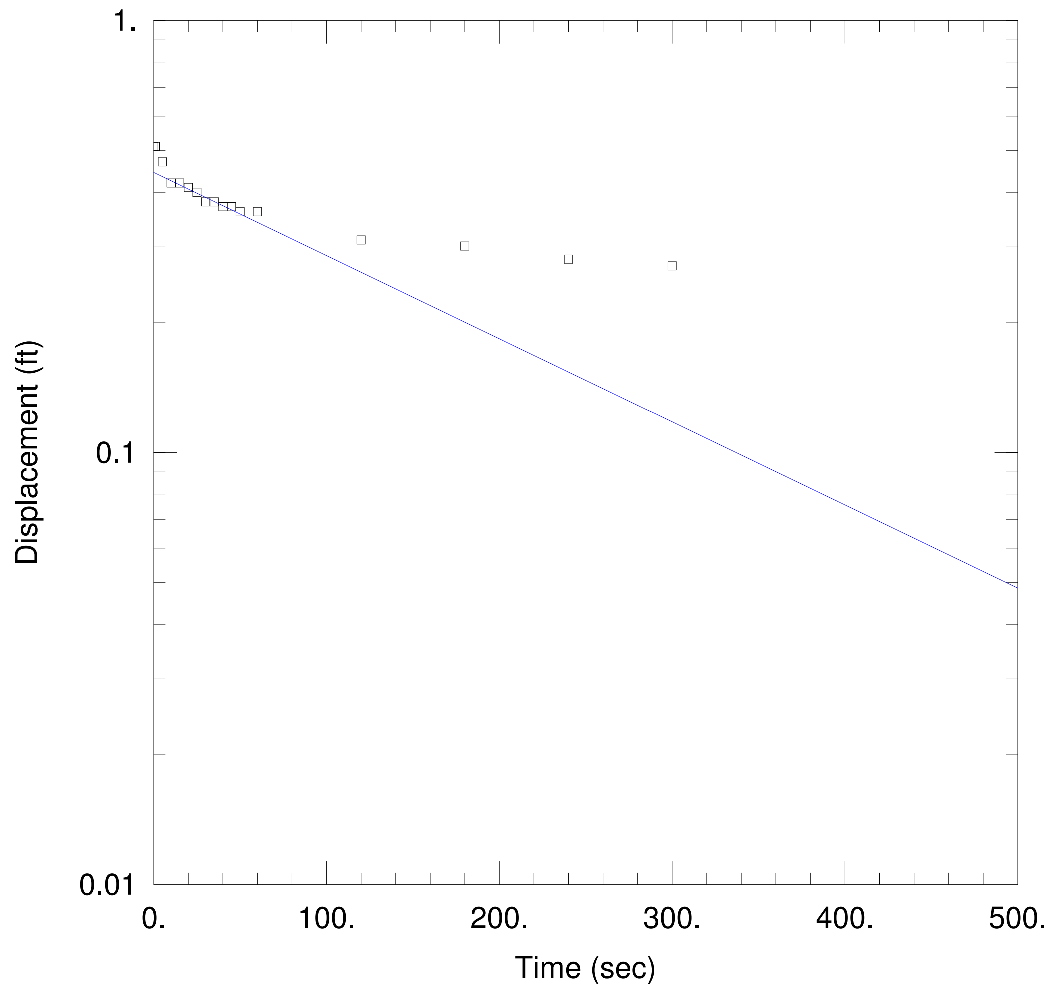
WELL DATA (PZ-8D)

Initial Displacement: 1.962 ft
Total Well Penetration Depth: 51.75 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 51.75 ft
Screen Length: 5. ft
Well Radius: 0.1667 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.001302 cm/sec y0 = 1.975 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-9.aqt
Date: 11/09/07 Time: 15:15:41

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-9
Test Date: 8/23/07

AQUIFER DATA

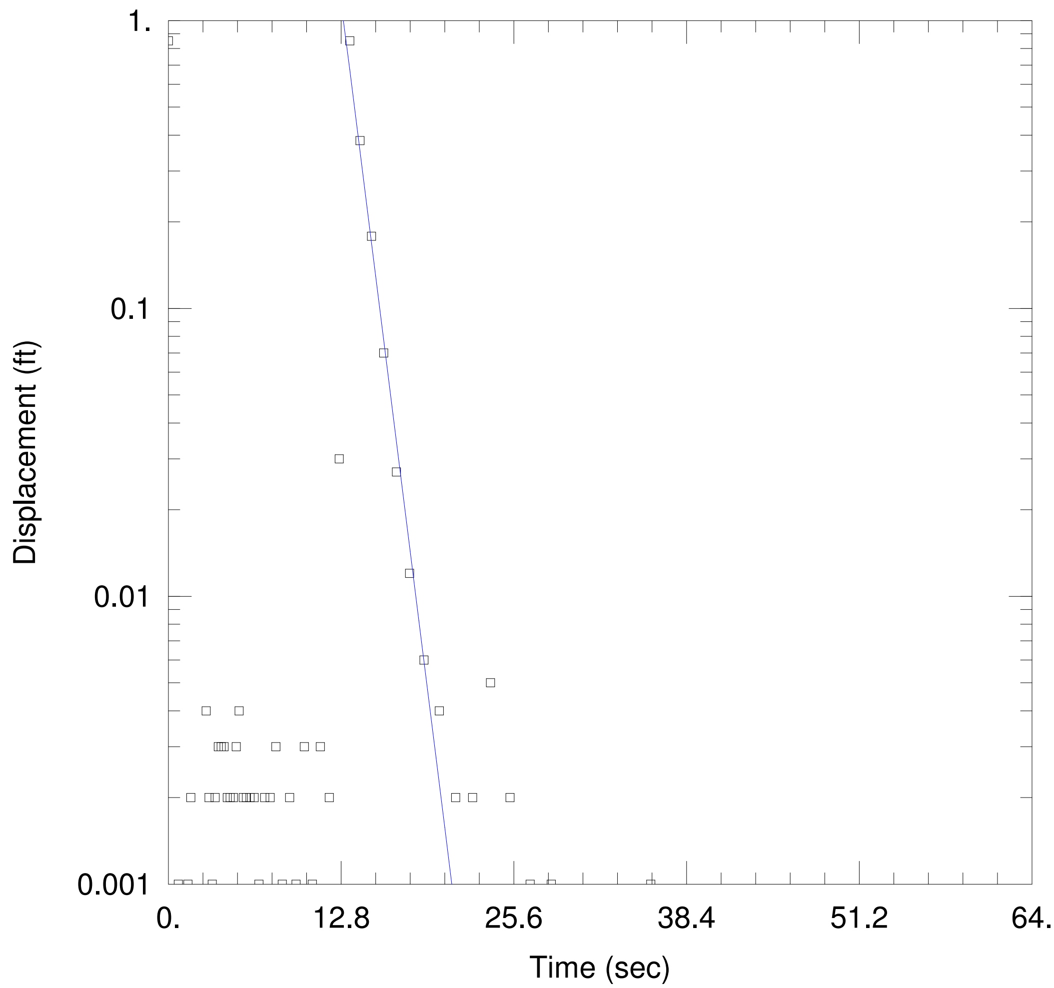
Saturated Thickness: 37.68 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-9)

Initial Displacement: 0.51 ft
Total Well Penetration Depth: 4.88 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 4.88 ft
Screen Length: 4.88 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.0002581 cm/sec
y0 = 0.4441 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-10.aqt
Date: 11/09/07 Time: 15:19:09

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-10
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 32.38 ft Anisotropy Ratio (Kz/Kr): 1.

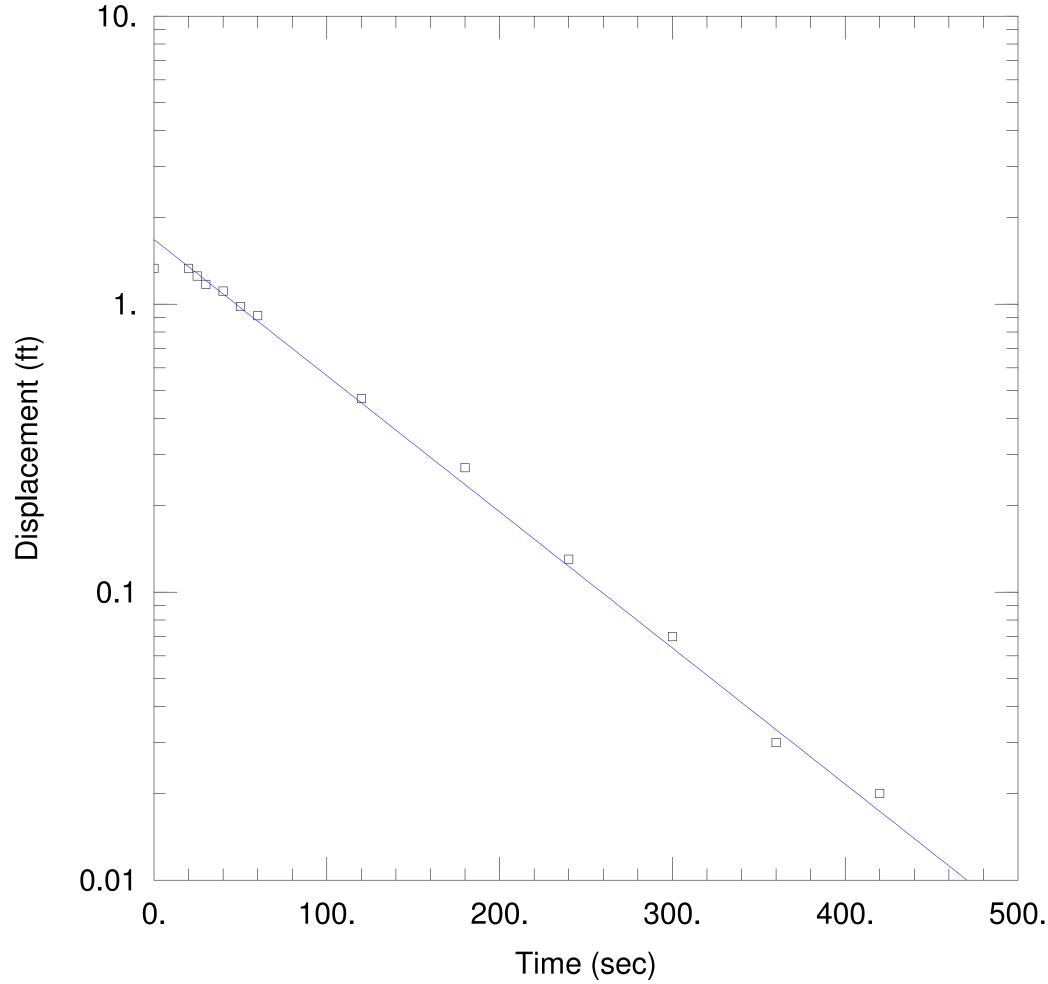
WELL DATA (PZ-10)

Initial Displacement: 0.851 ft Static Water Column Height: 6.38 ft
Total Well Penetration Depth: 6.38 ft Screen Length: 6.38 ft
Casing Radius: 0.0833 ft Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.04215 cm/sec y0 = 7.137E+4 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-11.aqt
Date: 11/09/07 Time: 15:19:26

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-11
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 30.96 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-11)

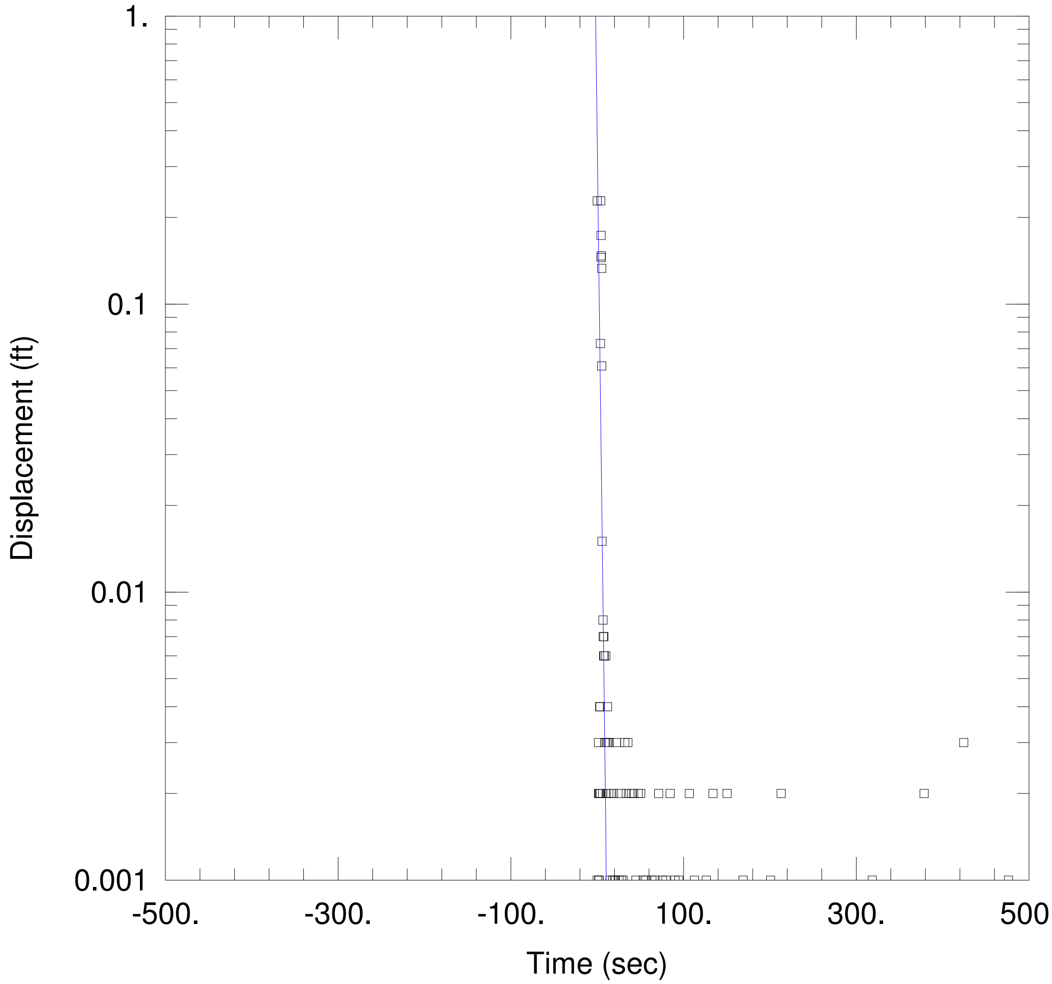
Initial Displacement: 1.33 ft
Total Well Penetration Depth: 5.96 ft
Casing Radius: 0.0833 ft

Static Water Column Height: 5.96 ft
Screen Length: 5.96 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0005576 cm/sec y0 = 1.675 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-12A.aqt
Date: 11/09/07 Time: 15:19:42

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-12A
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 35.91 ft Anisotropy Ratio (Kz/Kr): 1.

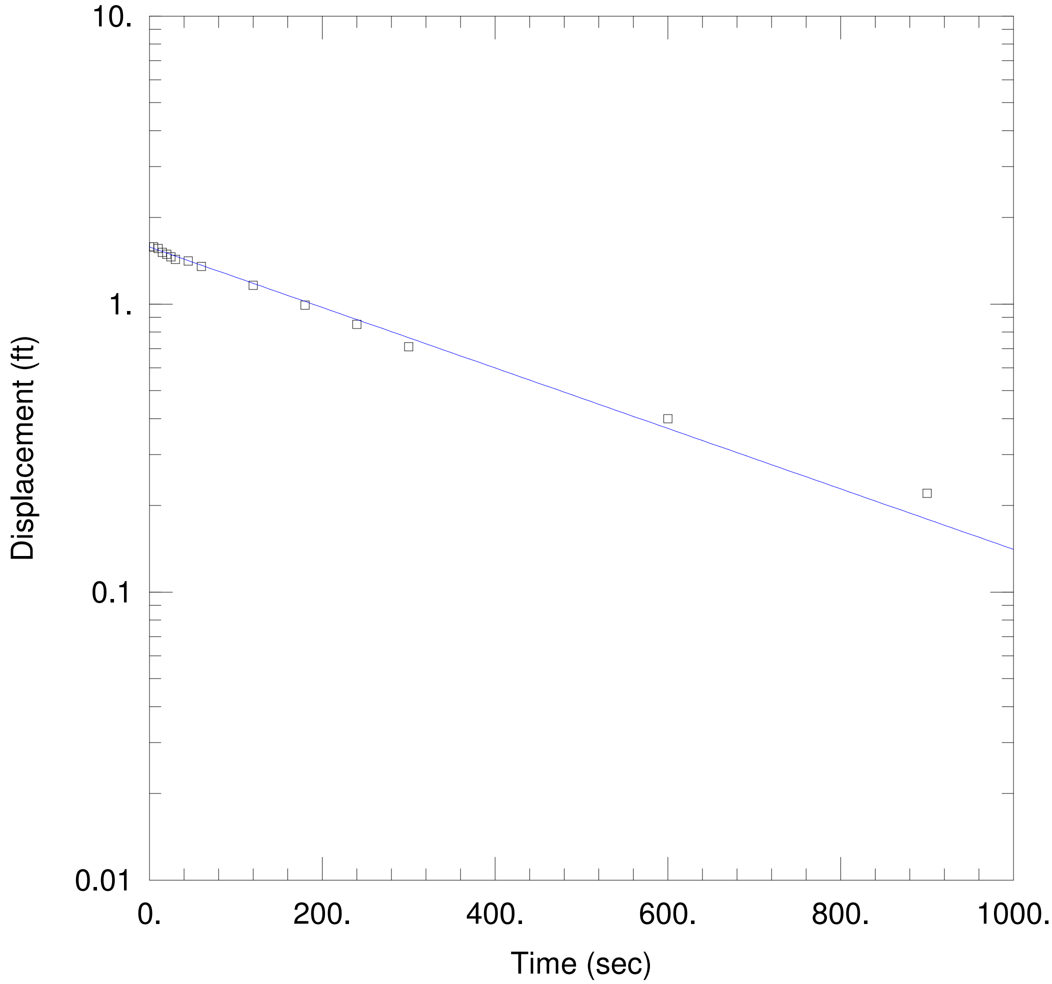
WELL DATA (PZ-12A)

Initial Displacement: 0.228 ft Static Water Column Height: 6.91 ft
Total Well Penetration Depth: 6.91 ft Screen Length: 6.91 ft
Casing Radius: 0.0833 ft Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0257 cm/sec y0 = 0.378 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-12B.aqt
Date: 11/09/07 Time: 15:19:59

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-12B
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 29.61 ft
Anisotropy Ratio (Kz/Kr): 1.

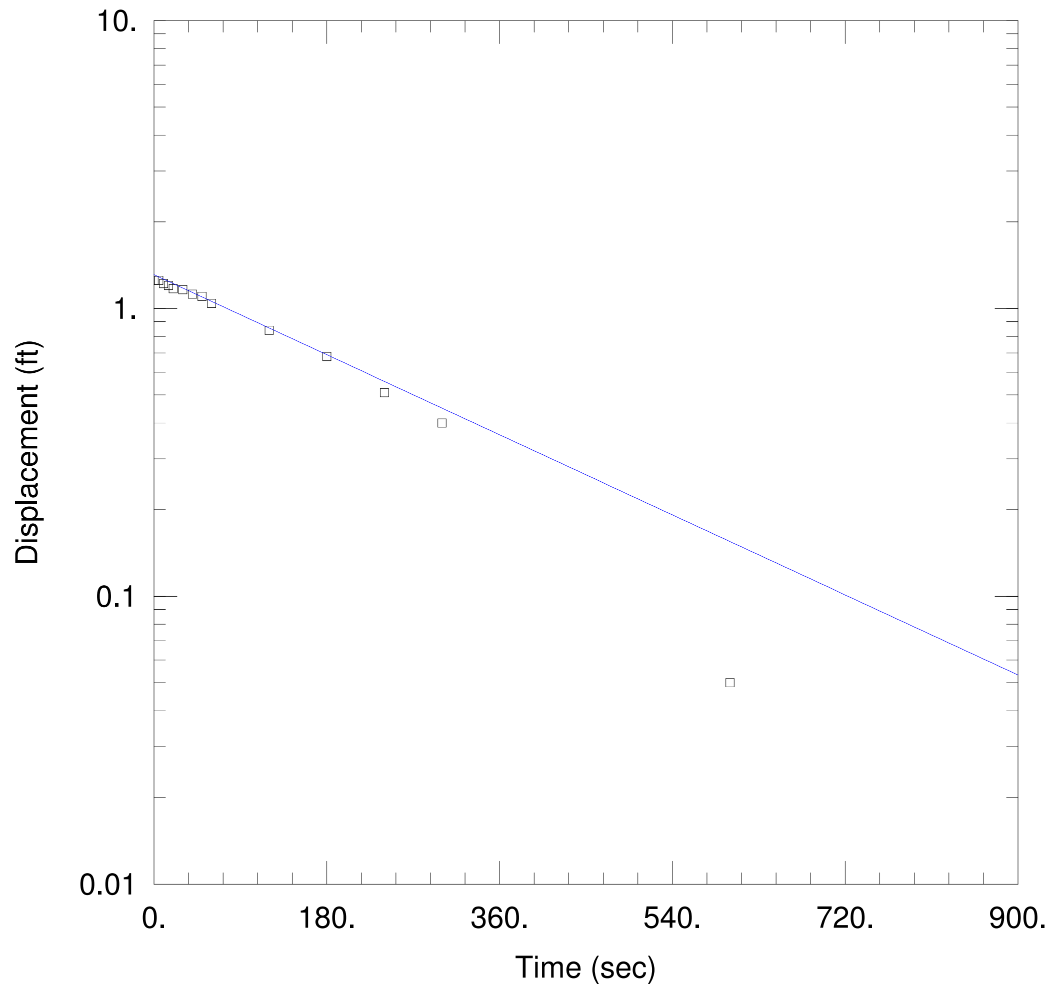
WELL DATA (PZ-12B)

Initial Displacement: 1.58 ft
Static Water Column Height: 7.61 ft
Total Well Penetration Depth: 7.61 ft
Screen Length: 5. ft
Casing Radius: 0.0833 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.0001387 cm/sec
y0 = 1.577 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-12C.aqt
Date: 11/09/07 Time: 15:20:16

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-12C
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 26.14 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-12C)

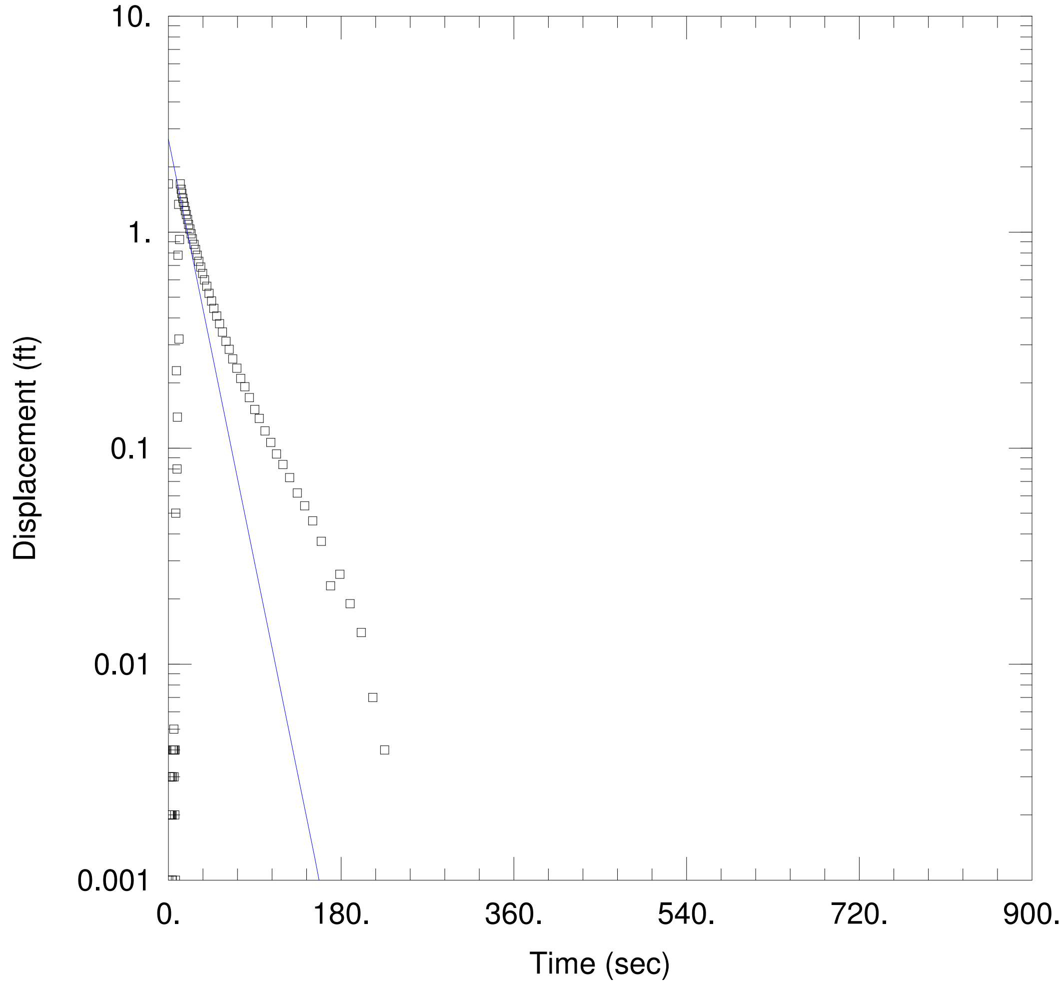
Initial Displacement: 1.25 ft
Total Well Penetration Depth: 24.14 ft
Casing Radius: 0.0833 ft

Static Water Column Height: 24.14 ft
Screen Length: 10. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0001281 cm/sec y0 = 1.31 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-12D.aqt
Date: 11/09/07 Time: 15:20:35

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-12D
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

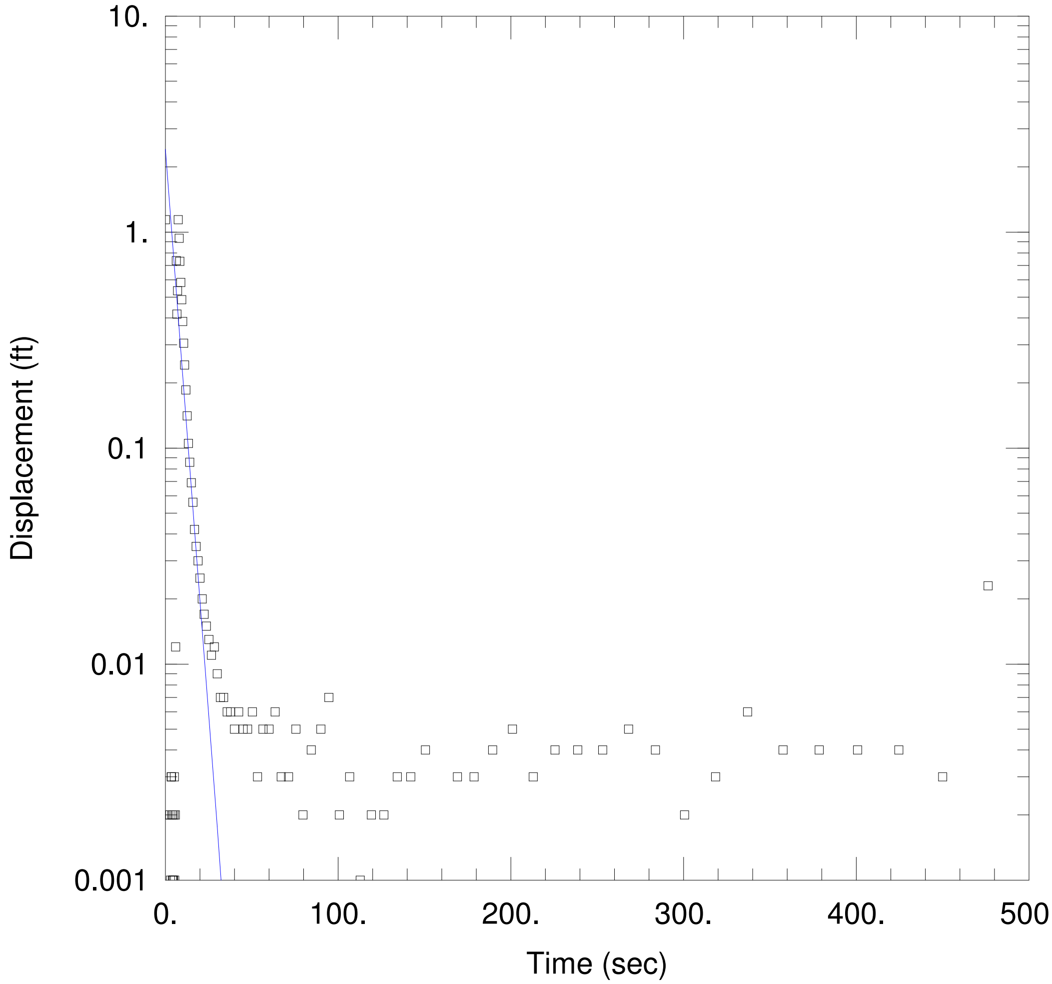
WELL DATA (PZ-12D)

Initial Displacement: 1.673 ft
Total Well Penetration Depth: 33.63 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 33.63 ft
Screen Length: 5. ft
Well Radius: 0.1667 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.004348 cm/sec
y0 = 2.686 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-13.aqt
Date: 11/09/07 Time: 15:20:52

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-13
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 19.99 ft
Anisotropy Ratio (Kz/Kr): 1.

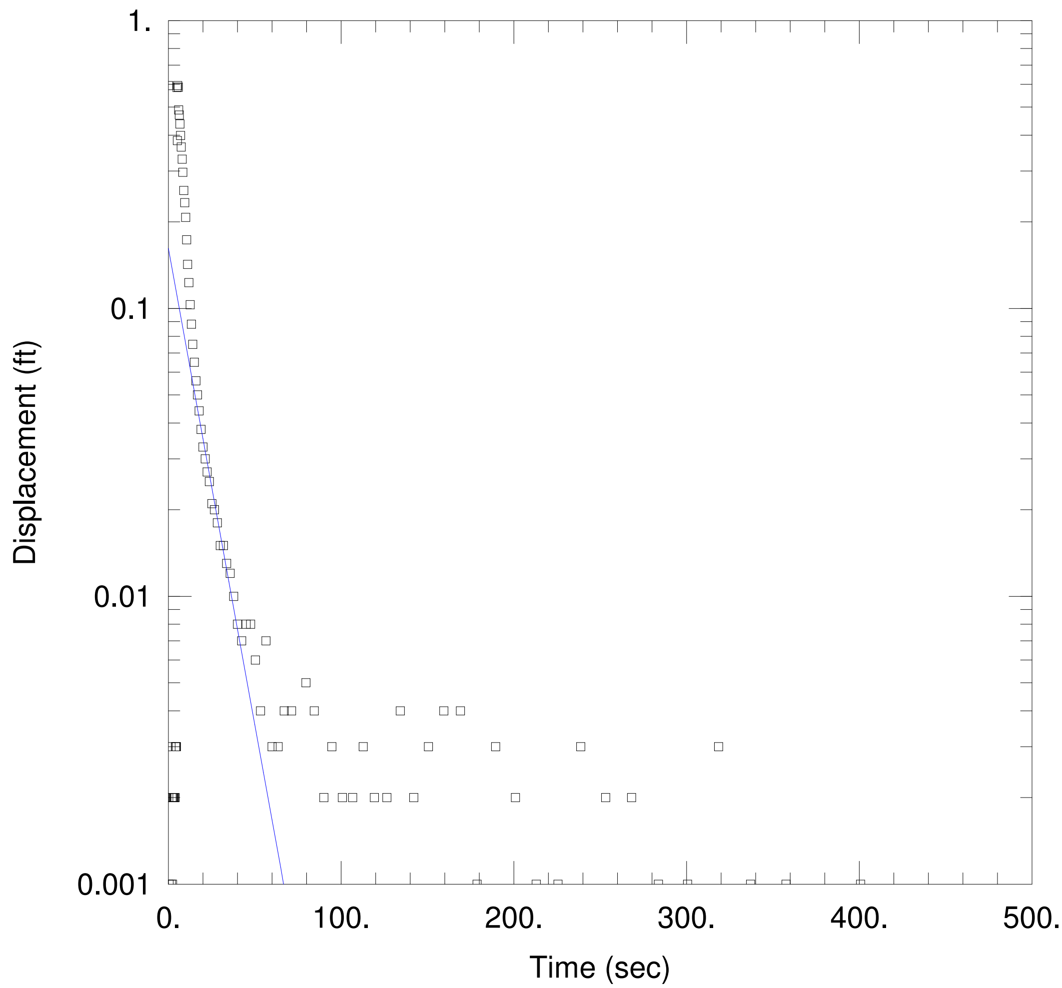
WELL DATA (PZ-13)

Initial Displacement: 1.141 ft
Static Water Column Height: 6.99 ft
Total Well Penetration Depth: 6.99 ft
Screen Length: 6.99 ft
Casing Radius: 0.0833 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.01109 cm/sec
y0 = 2.412 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-14.aqt
Date: 11/09/07 Time: 15:21:08

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-14
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 15.9 ft Anisotropy Ratio (Kz/Kr): 1.

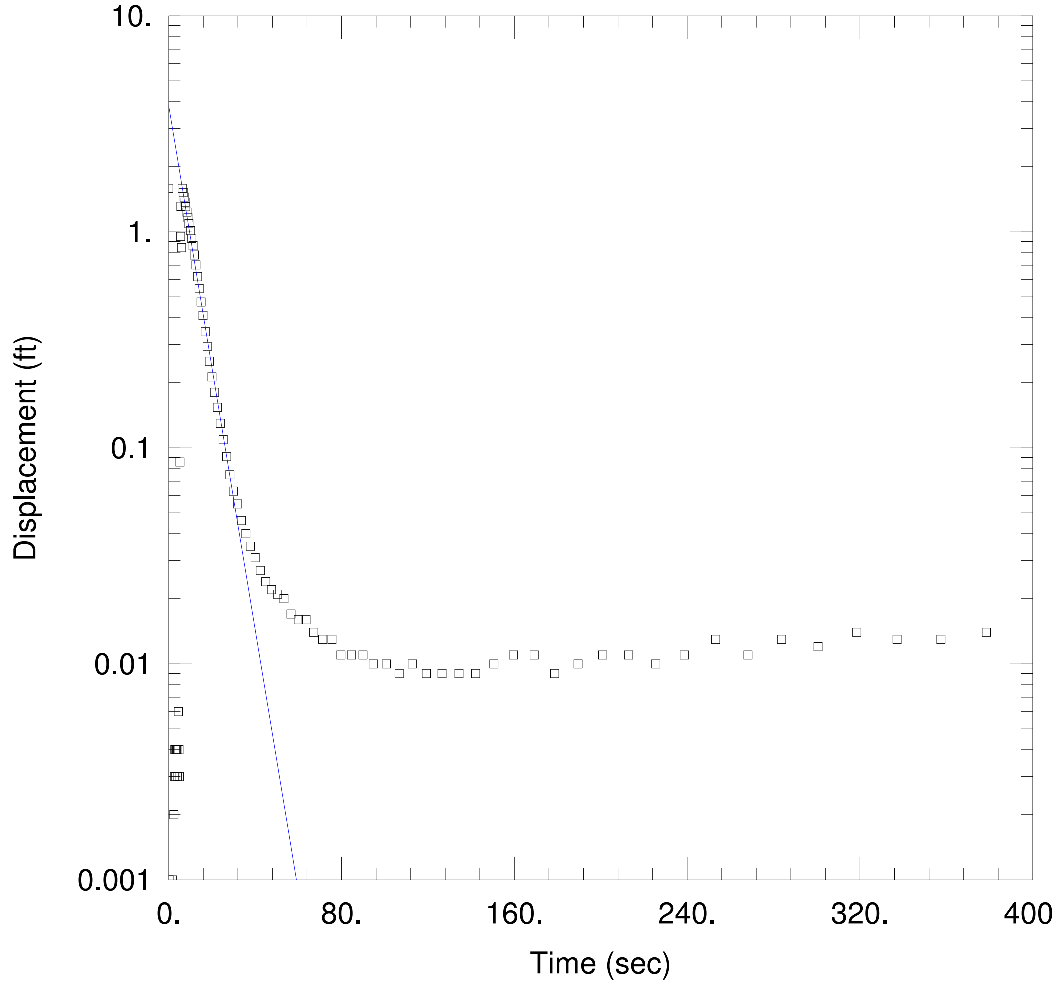
WELL DATA (PZ-14)

Initial Displacement: 0.594 ft Static Water Column Height: 3.9 ft
Total Well Penetration Depth: 3.9 ft Screen Length: 3.9 ft
Casing Radius: 0.0833 ft Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.005096 cm/sec y0 = 0.1616 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-15A.aqt
Date: 11/09/07 Time: 15:21:27

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-15A
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 33.78 ft
Anisotropy Ratio (Kz/Kr): 1.

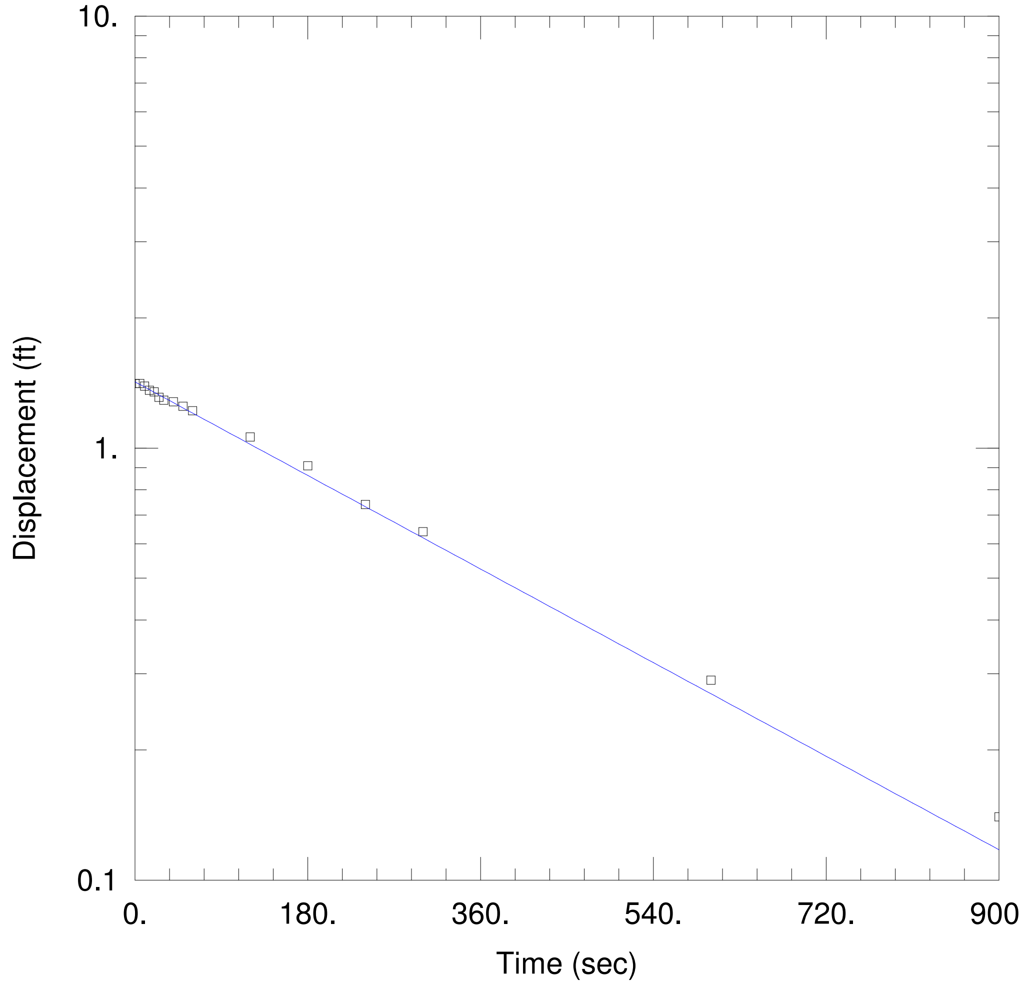
WELL DATA (PZ-15A)

Initial Displacement: 1.589 ft
Static Water Column Height: 3.98 ft
Total Well Penetration Depth: 3.98 ft
Screen Length: 3.98 ft
Casing Radius: 0.0833 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.00922 cm/sec
y0 = 3.831 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-15C.aqt
Date: 11/09/07 Time: 15:21:44

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-15C
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 26.71 ft
Anisotropy Ratio (Kz/Kr): 1.

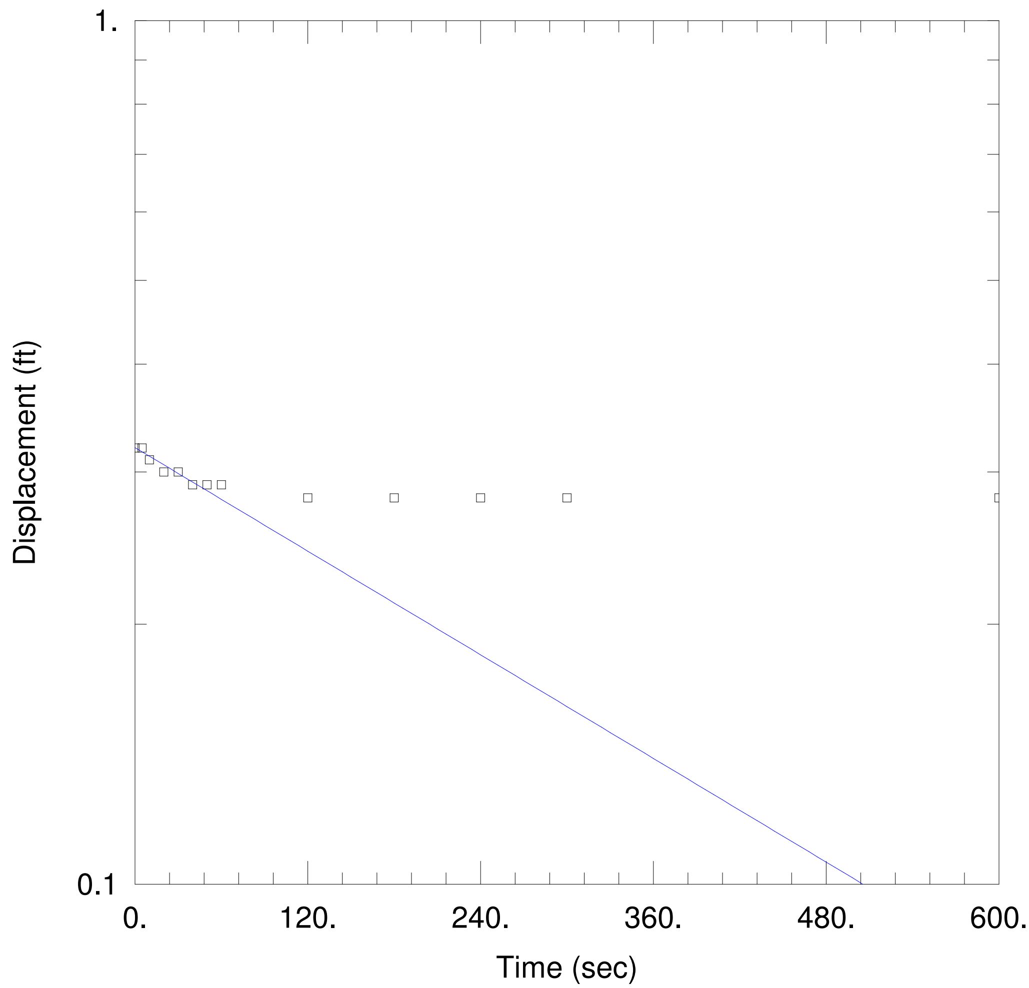
WELL DATA (PZ-15C)

Initial Displacement: 1.41 ft
Total Well Penetration Depth: 26.71 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 26.71 ft
Screen Length: 5. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.0001994 cm/sec
y0 = 1.423 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-16A.aqt
Date: 11/09/07 Time: 15:21:59

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-16A
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 17.98 ft
Anisotropy Ratio (Kz/Kr): 1.

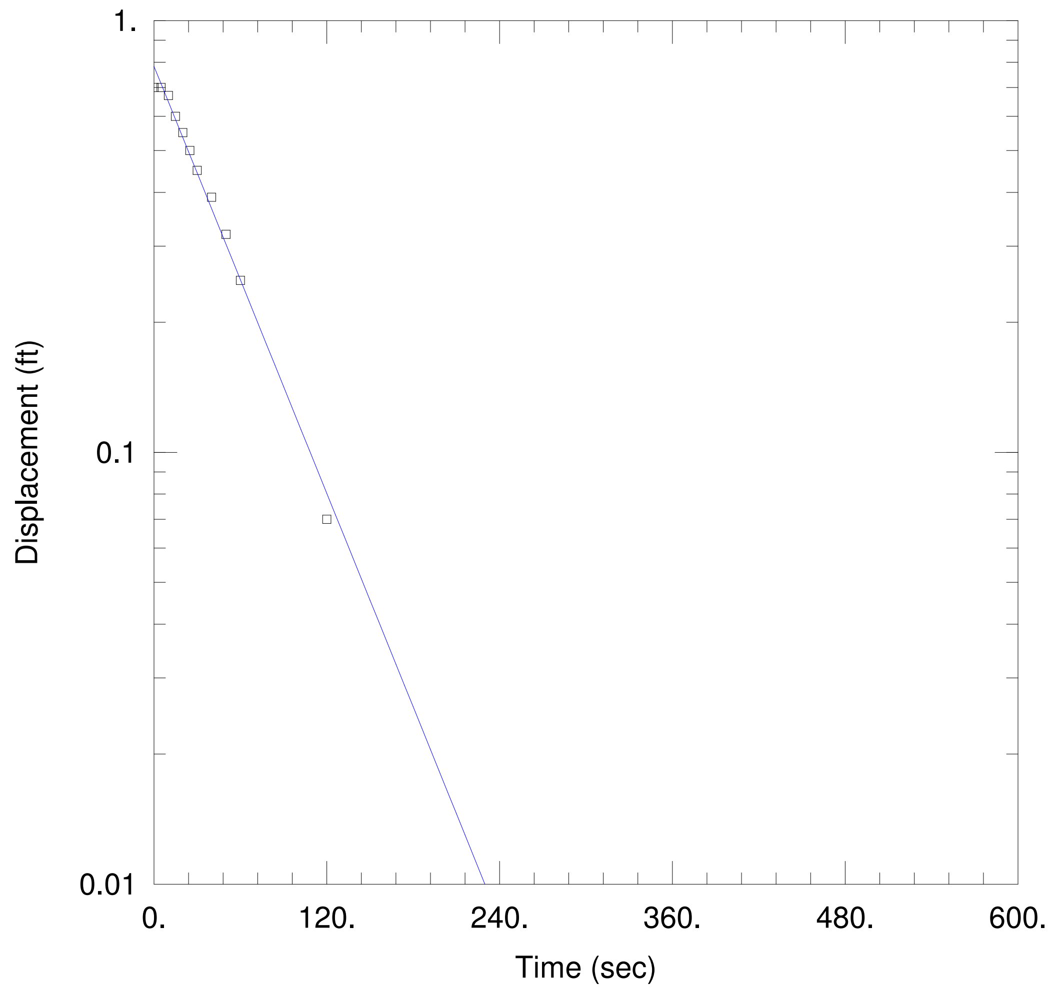
WELL DATA (PZ-16A)

Initial Displacement: 0.32 ft
Static Water Column Height: 2.98 ft
Total Well Penetration Depth: 2.98 ft
Screen Length: 2.98 ft
Casing Radius: 0.0833 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.00018 cm/sec
y0 = 0.3203 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-16B.aqt
Date: 11/09/07 Time: 15:22:13

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-16B
Test Date: 8/22/07

AQUIFER DATA

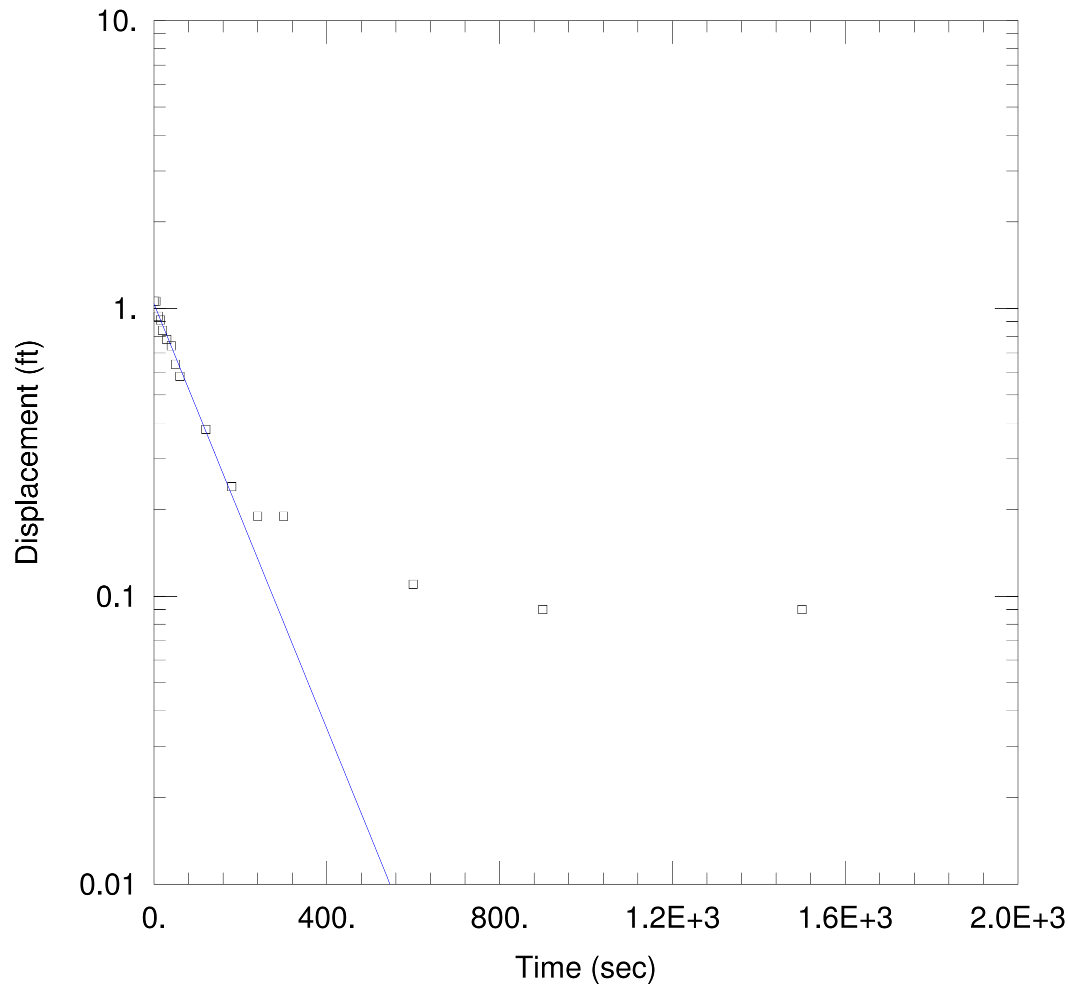
Saturated Thickness: 13.35 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-16B)

Initial Displacement: 0.7 ft
Total Well Penetration Depth: 6.85 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 6.85 ft
Screen Length: 2. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.001825 cm/sec
y0 = 0.7834 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-16C.aqt
Date: 11/09/07 Time: 15:22:29

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-16C
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 13.16 ft Anisotropy Ratio (Kz/Kr): 1.

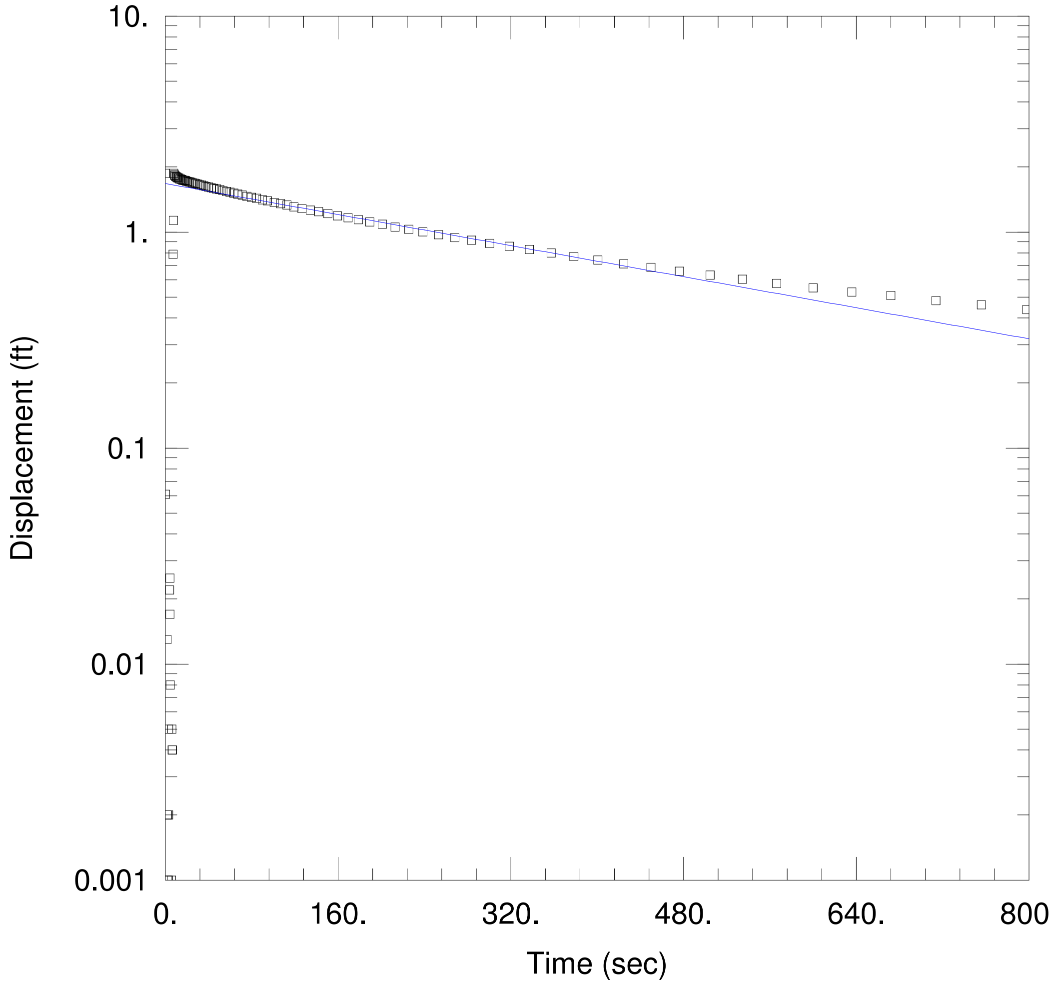
WELL DATA (PZ-16C)

Initial Displacement: 1.06 ft Static Water Column Height: 13.16 ft
Total Well Penetration Depth: 13.16 ft Screen Length: 5. ft
Casing Radius: 0.0833 ft Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0006112 cm/sec y0 = 1.037 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-16D.aqt
Date: 11/09/07 Time: 15:22:44

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-16D
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 12.1 ft
Anisotropy Ratio (Kz/Kr): 1.

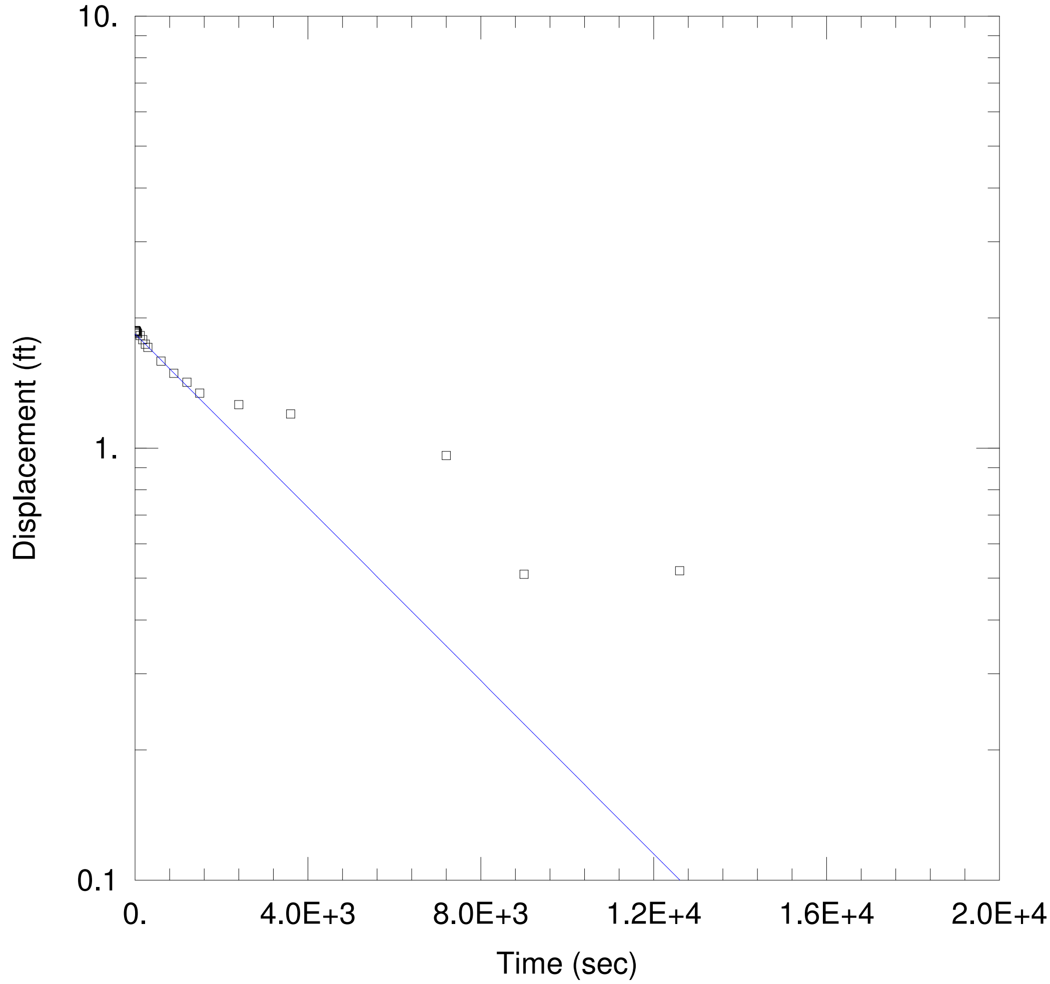
WELL DATA (PZ-16D)

Initial Displacement: 1.869 ft
Total Well Penetration Depth: 39.1 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 39.1 ft
Screen Length: 10. ft
Well Radius: 0.1667 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.0001048 cm/sec
y0 = 1.678 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-17A.aqt
Date: 11/09/07 Time: 15:23:01

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-17A
Test Date: 8/24/07

AQUIFER DATA

Saturated Thickness: 31.08 ft
Anisotropy Ratio (Kz/Kr): 1.

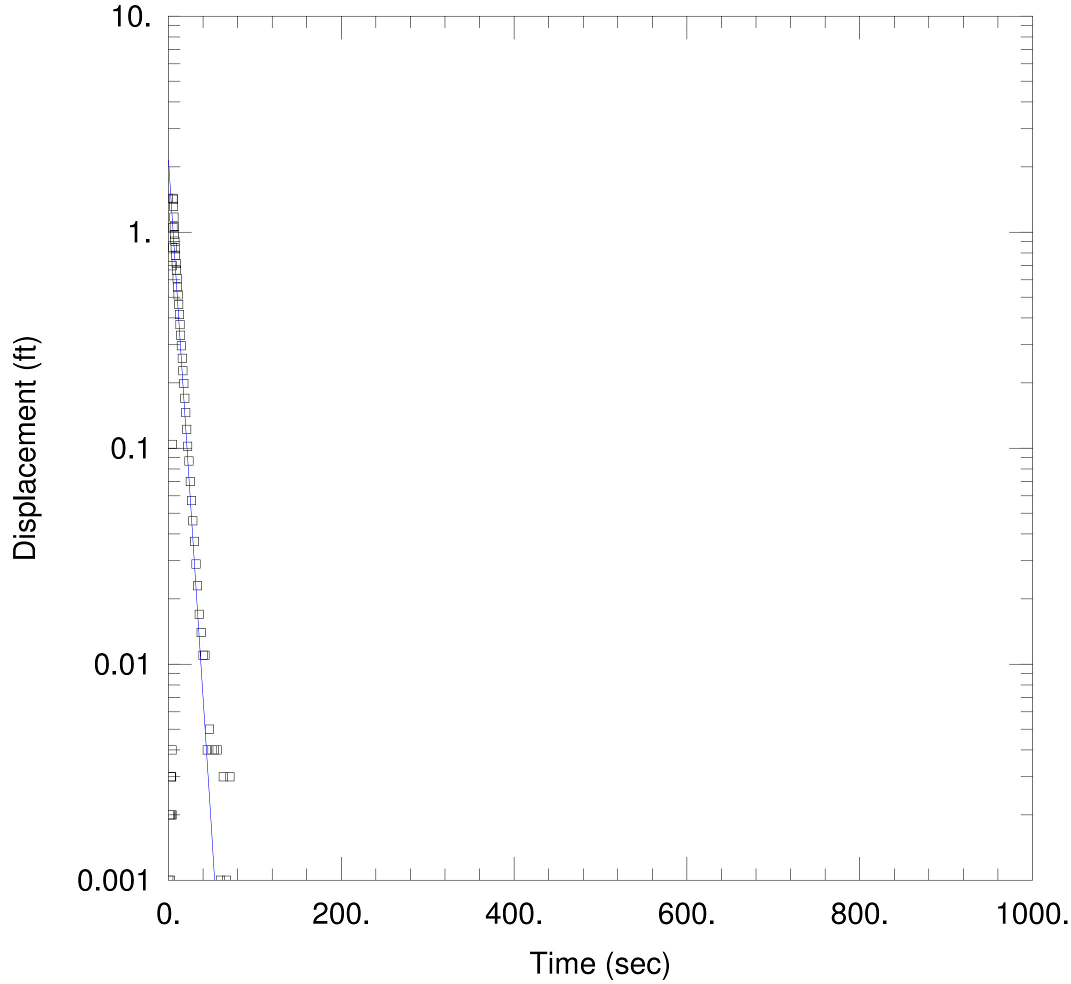
WELL DATA (PZ-17A)

Initial Displacement: 1.87 ft
Static Water Column Height: 10.88 ft
Total Well Penetration Depth: 10.88 ft
Screen Length: 2. ft
Casing Radius: 0.0833 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 2.221E-5 cm/sec
y0 = 1.836 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-17B.aqt
Date: 11/09/07 Time: 15:23:19

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-17B
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 31.8 ft Anisotropy Ratio (Kz/Kr): 1.

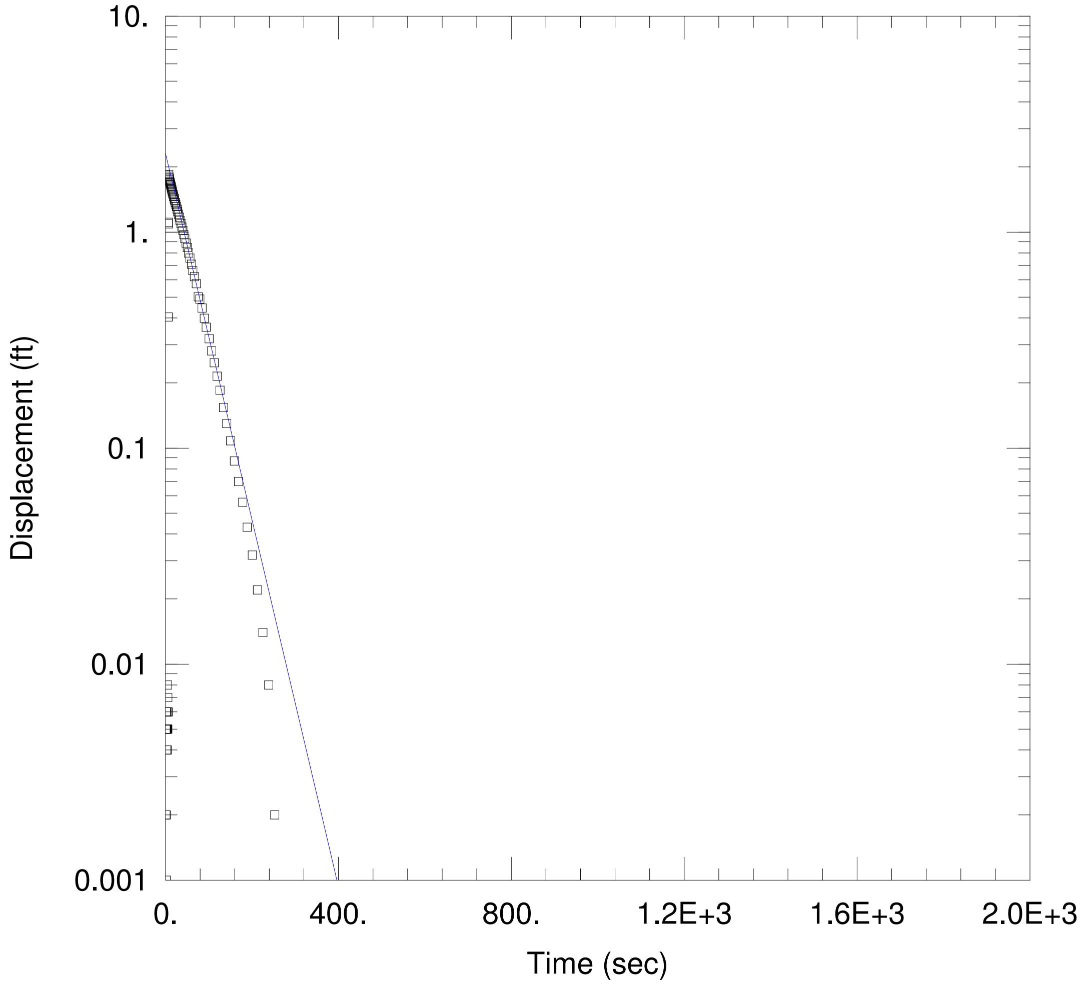
WELL DATA (PZ-17B)

Initial Displacement: 1.433 ft
Total Well Penetration Depth: 26.8 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 26.8 ft
Screen Length: 10. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.005155 cm/sec y0 = 2.158 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-17C.aqt
Date: 11/09/07 Time: 15:23:37

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-17C
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 31.8 ft
Anisotropy Ratio (Kz/Kr): 1.

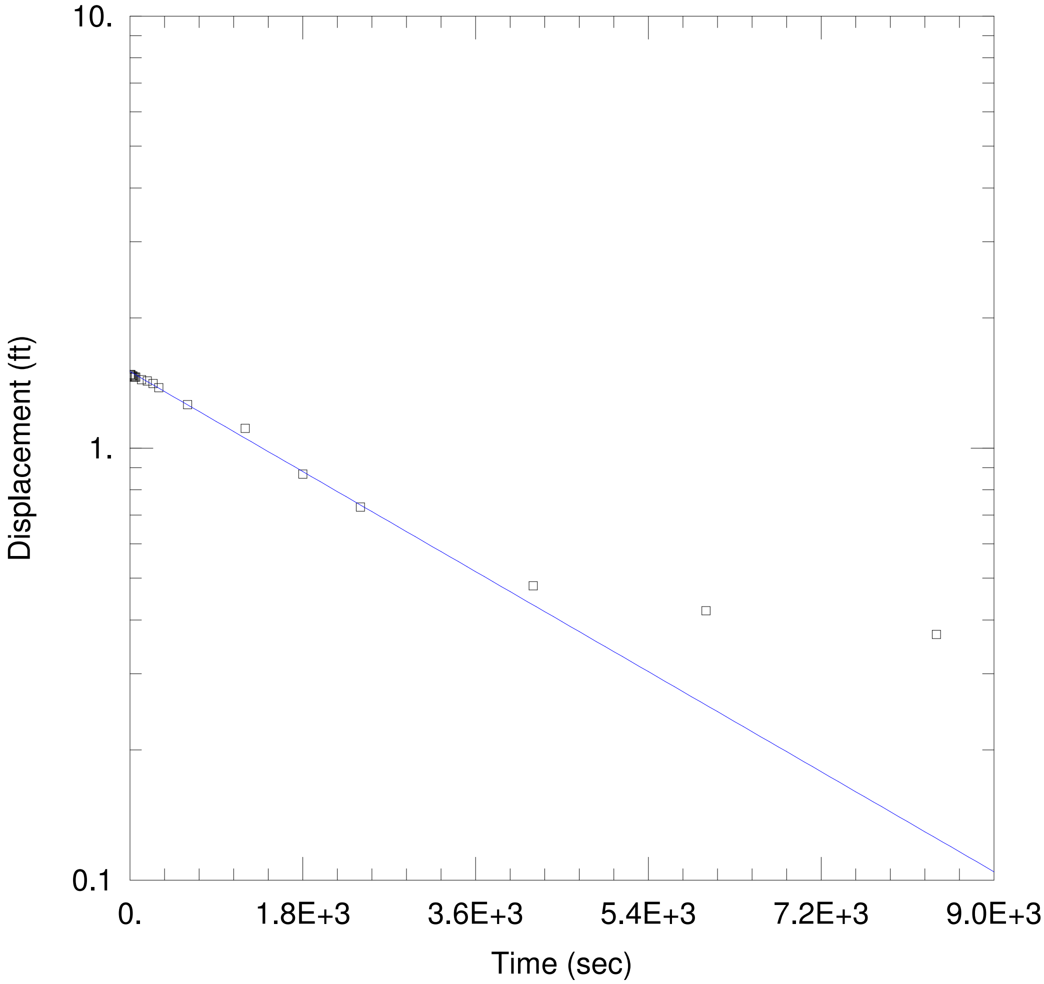
WELL DATA (New Well)

Initial Displacement: 1.844 ft
Total Well Penetration Depth: 40.8 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 40.8 ft
Screen Length: 5. ft
Well Radius: 0.1667 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.001691 cm/sec
y0 = 2.306 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-18A.aqt
Date: 11/09/07 Time: 15:23:53

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-18A
Test Date: 8/24/07

AQUIFER DATA

Saturated Thickness: 7.38 ft
Anisotropy Ratio (Kz/Kr): 1.

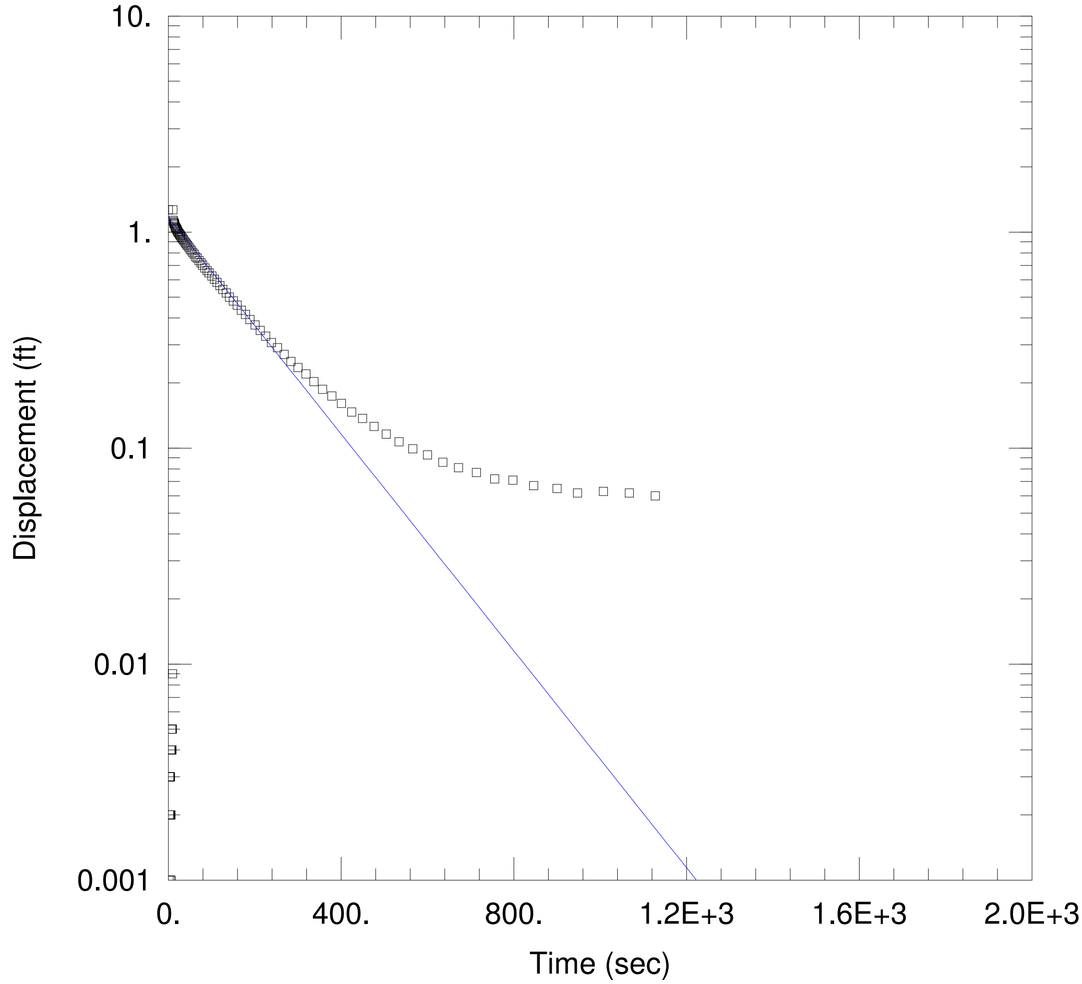
WELL DATA (PZ-18A)

Initial Displacement: 1.48 ft
Total Well Penetration Depth: 1.68 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 1.68 ft
Screen Length: 1.68 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 3.086E-5 cm/sec
y0 = 1.503 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-18B.aqt
Date: 11/09/07 Time: 15:24:09

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-18B
Test Date: 8/24/07

AQUIFER DATA

Saturated Thickness: 4.14 ft
Anisotropy Ratio (Kz/Kr): 1.

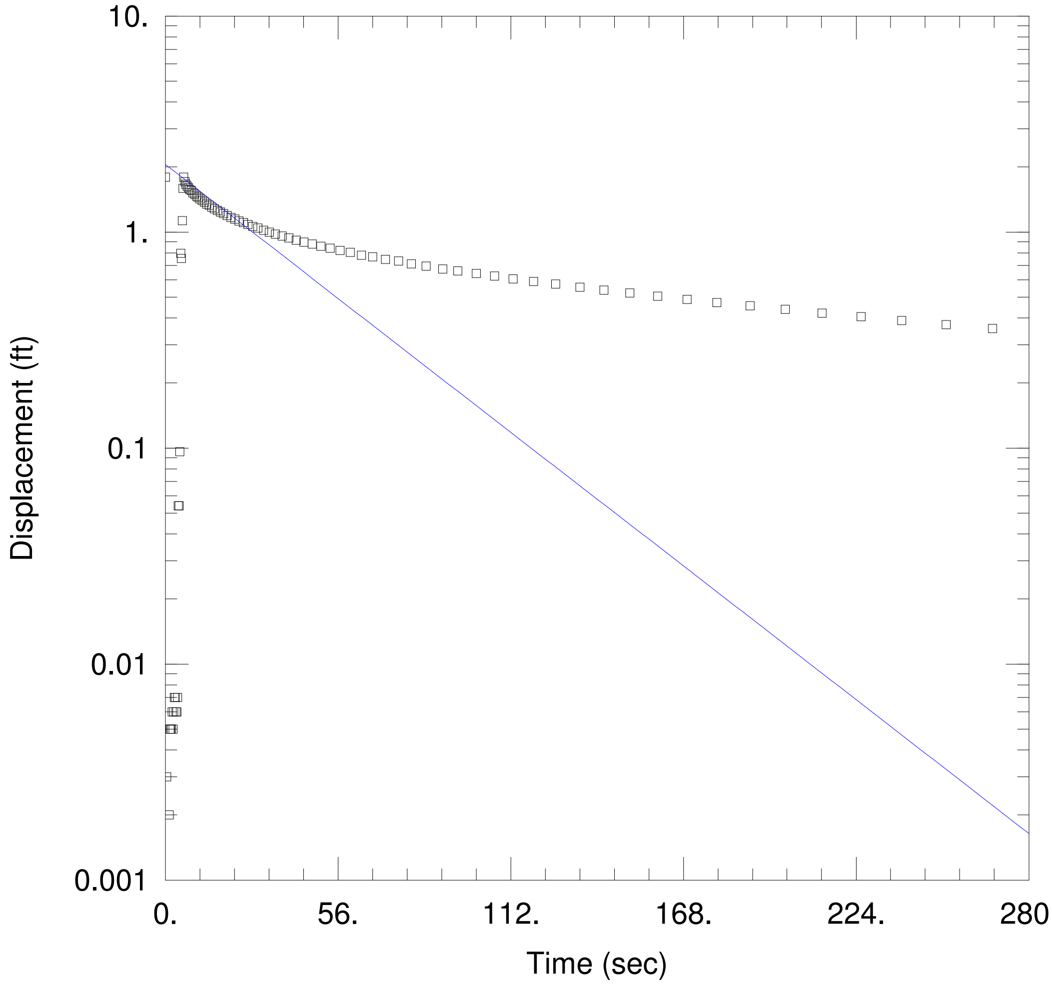
WELL DATA (PZ-18B)

Initial Displacement: 1.266 ft
Static Water Column Height: 5.44 ft
Total Well Penetration Depth: 5.44 ft
Screen Length: 2. ft
Casing Radius: 0.0833 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.0007615 cm/sec
y0 = 1.171 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-19.aqt
Date: 11/09/07 Time: 15:24:24

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-19
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 5. ft
Anisotropy Ratio (Kz/Kr): 1.

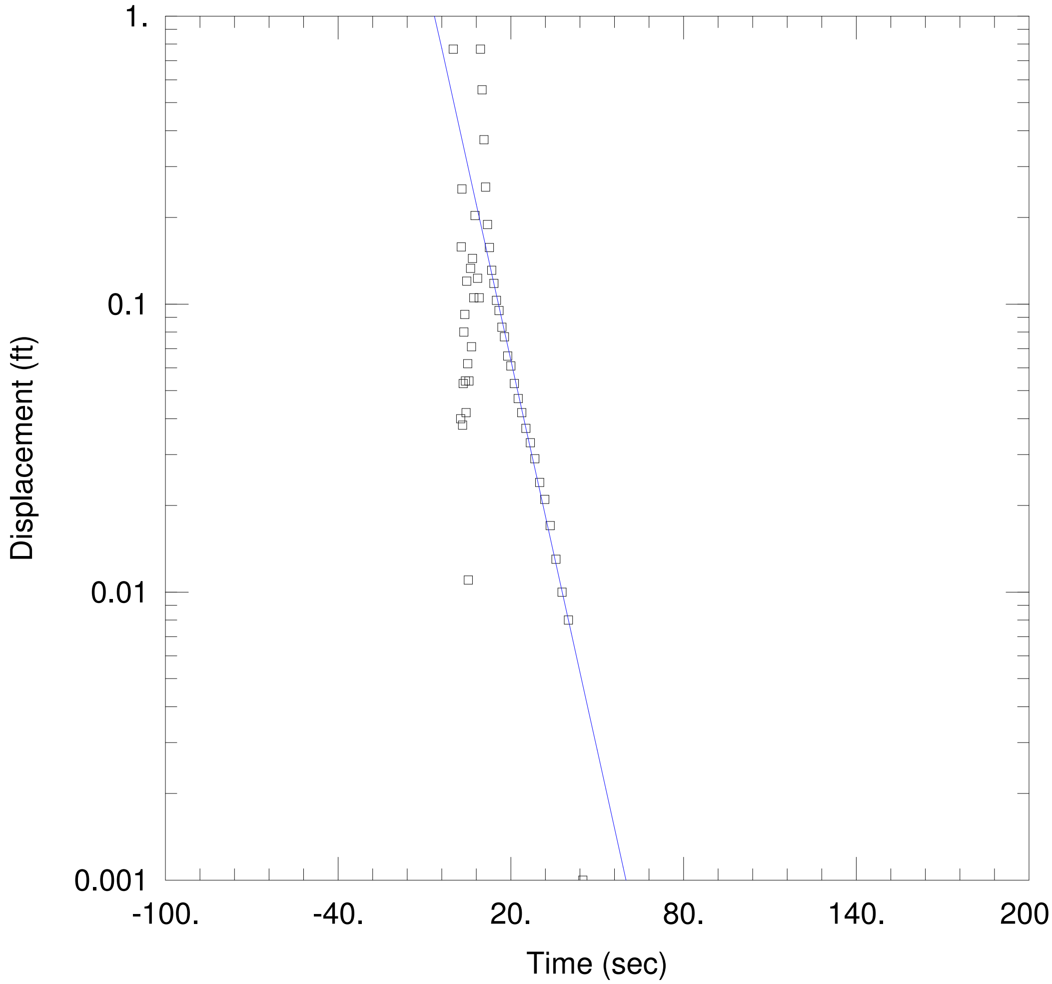
WELL DATA (PZ-19)

Initial Displacement: 1.792 ft
Total Well Penetration Depth: 17.41 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 17.41 ft
Screen Length: 5. ft
Well Radius: 0.1667 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.002854 cm/sec
y0 = 2.054 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-20.aqt
Date: 11/09/07 Time: 15:24:41

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-20
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 33.99 ft
Anisotropy Ratio (Kz/Kr): 1.

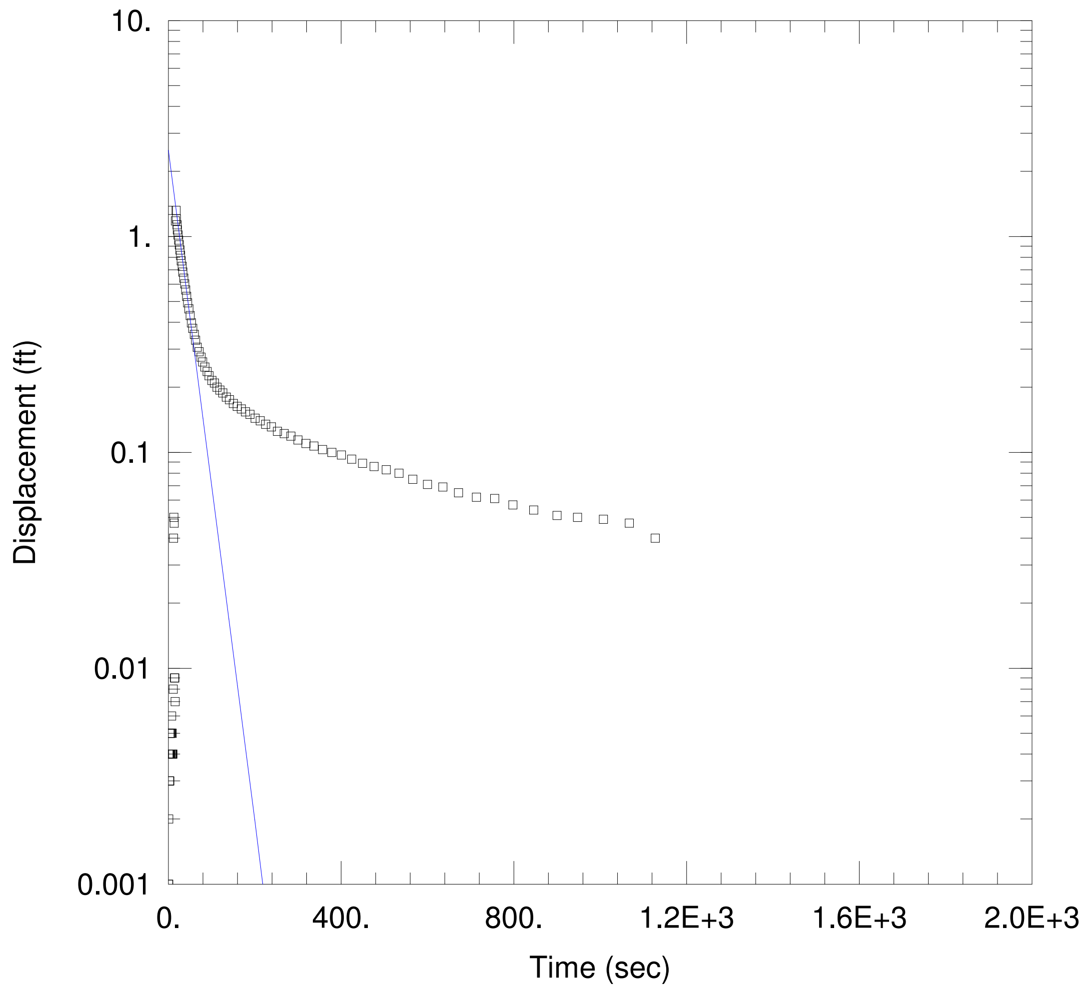
WELL DATA (PZ-20)

Initial Displacement: 0.767 ft
Total Well Penetration Depth: 5.49 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 5.49 ft
Screen Length: 5.49 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.005615 cm/sec
y0 = 0.51 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-21.aqt
Date: 11/09/07 Time: 15:24:58

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-21
Test Date: 8/22/07

AQUIFER DATA

Saturated Thickness: 13.86 ft
Anisotropy Ratio (Kz/Kr): 1.

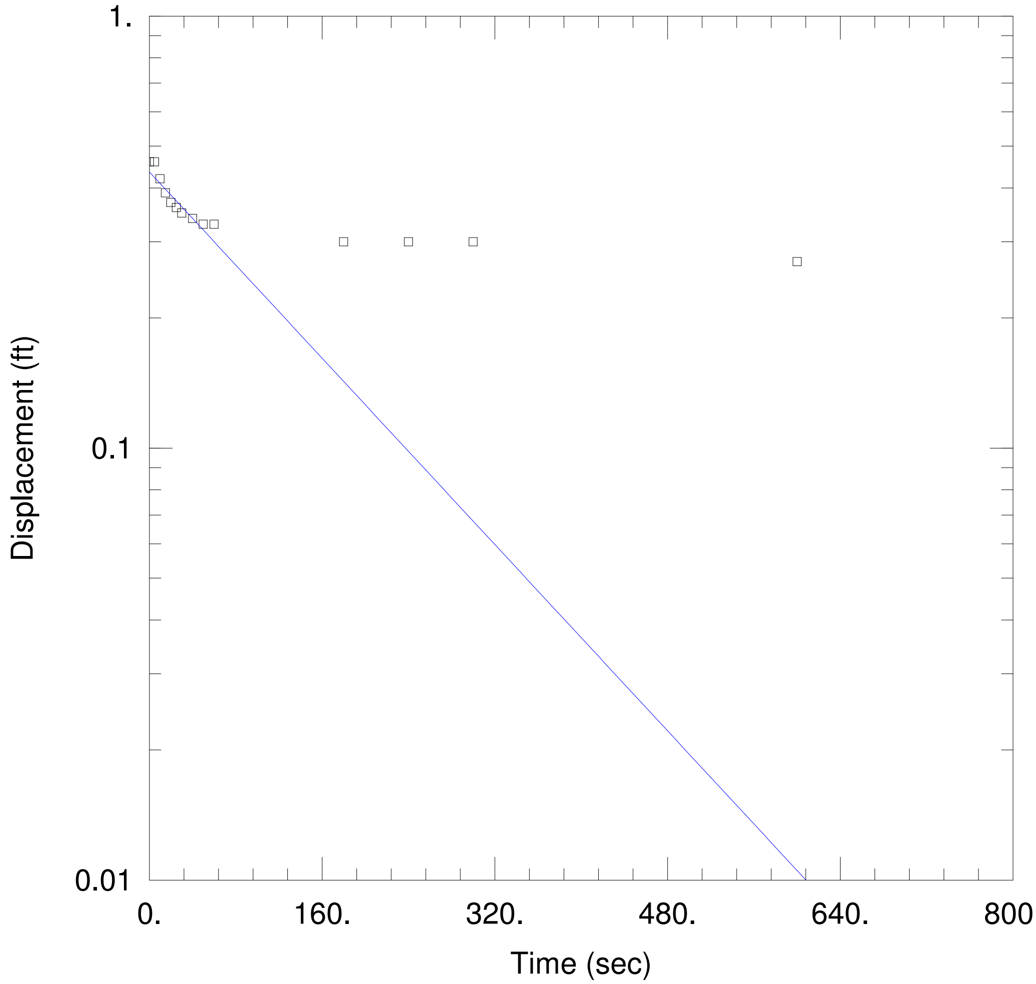
WELL DATA (PZ-21)

Initial Displacement: 1.319 ft
Static Water Column Height: 13.86 ft
Total Well Penetration Depth: 13.86 ft
Screen Length: 10. ft
Casing Radius: 0.0833 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.001547 cm/sec
y0 = 2.508 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-22A.aqt
Date: 11/09/07 Time: 15:25:17

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-22A
Test Date: 8/23/07

AQUIFER DATA

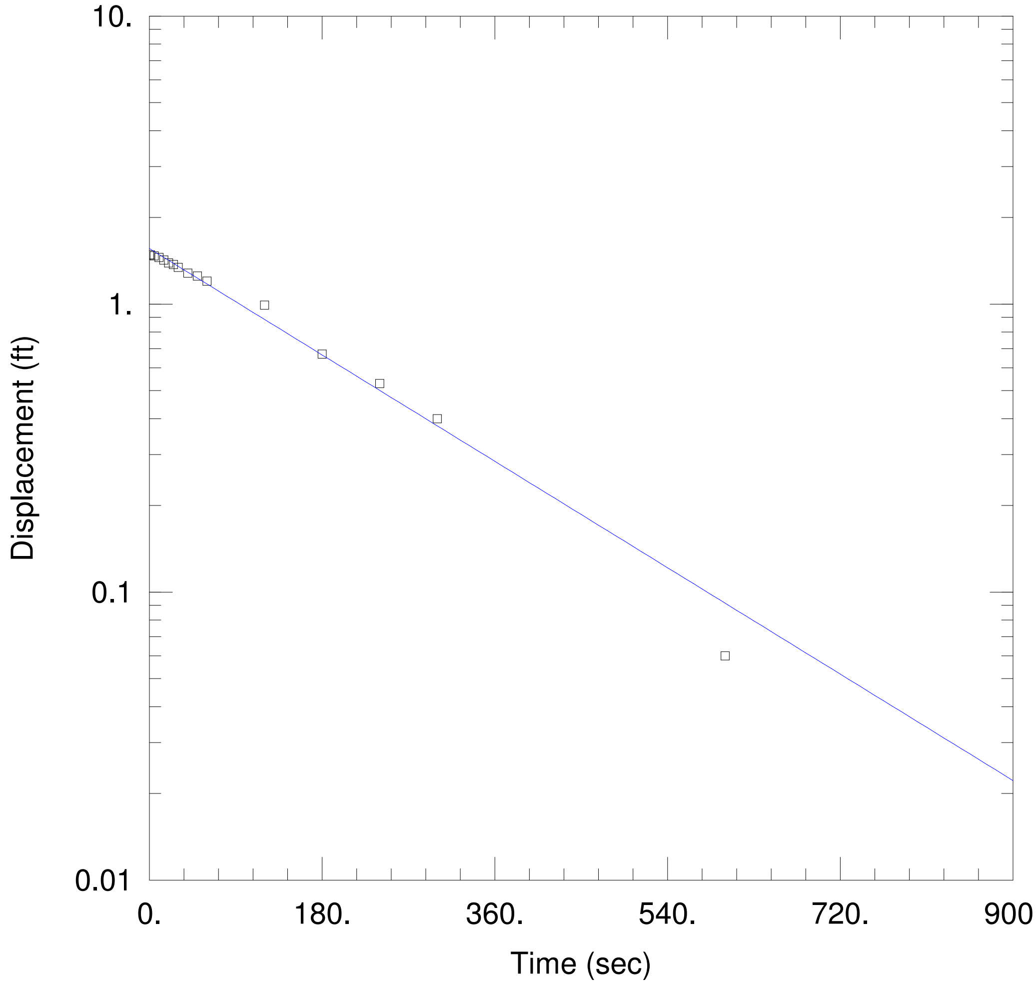
Saturated Thickness: 36.04 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (PZ-22A)

Initial Displacement: 0.46 ft
Total Well Penetration Depth: 4.24 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 4.24 ft
Screen Length: 4.24 ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.0003946 cm/sec
y0 = 0.4357 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-22B.aqt
Date: 11/09/07 Time: 15:25:35

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-22B
Test Date: 8/23/07

AQUIFER DATA

Saturated Thickness: 32.22 ft Anisotropy Ratio (Kz/Kr): 1.

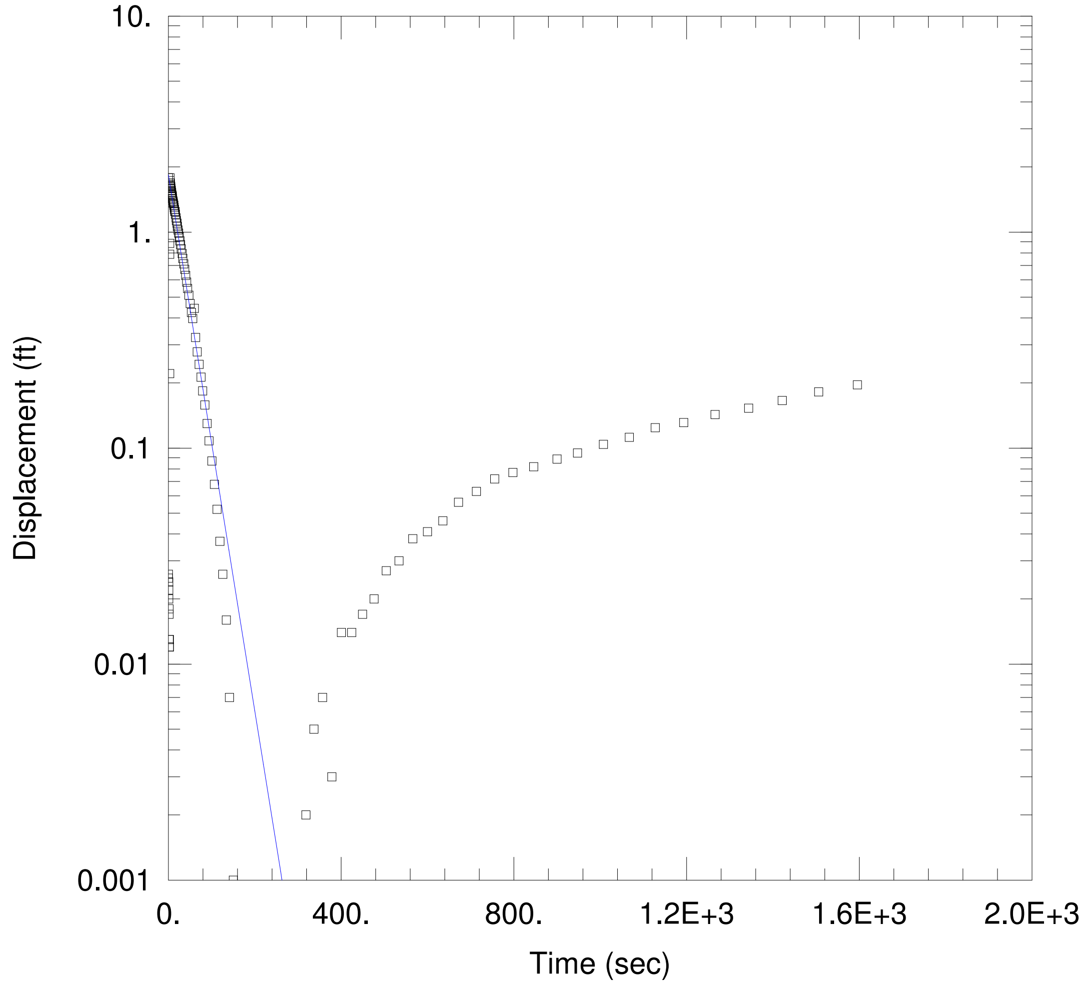
WELL DATA (PZ-22B)

Initial Displacement: 1.48 ft
Total Well Penetration Depth: 15.42 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 15.42 ft
Screen Length: 5. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.0002711 cm/sec y0 = 1.559 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\PZ-22C.aqt
Date: 11/09/07 Time: 15:26:17

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: PZ-22C
Test Date: 8/21/07

AQUIFER DATA

Saturated Thickness: 31.79 ft
Anisotropy Ratio (Kz/Kr): 1.

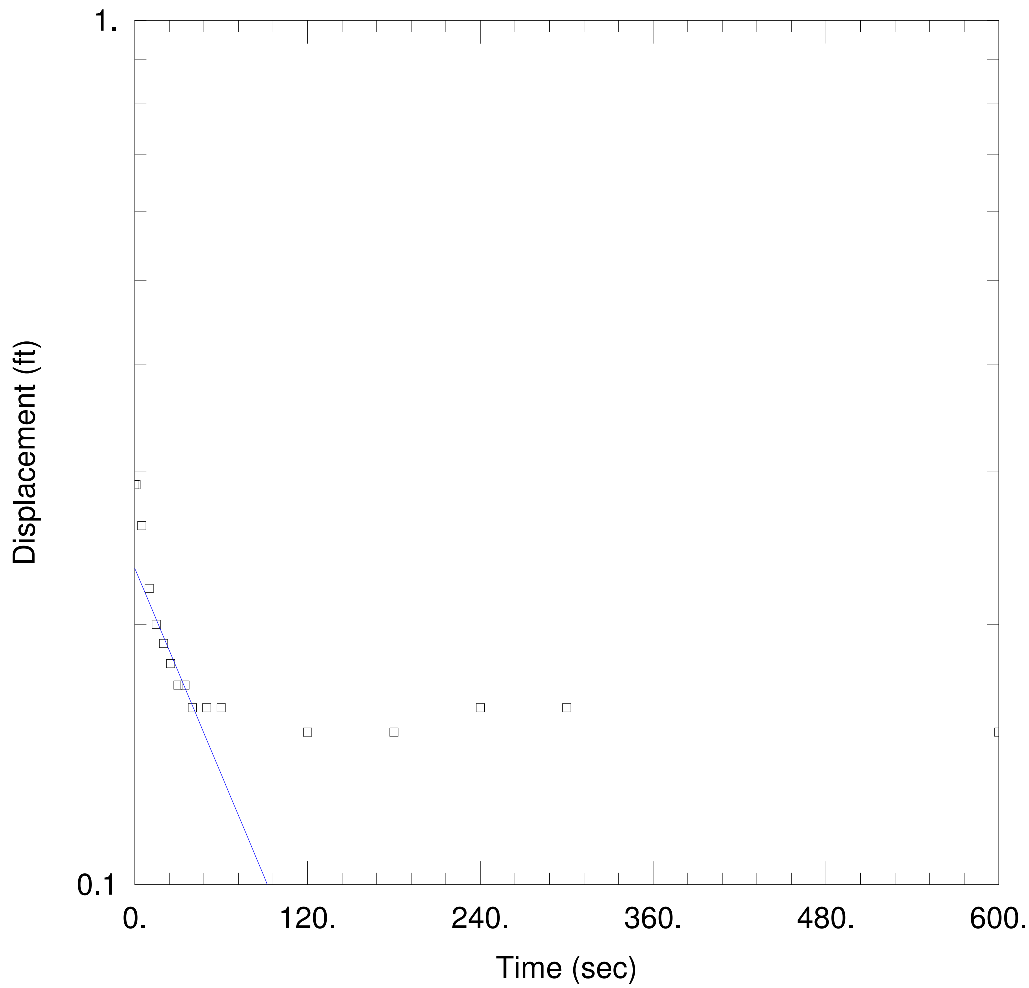
WELL DATA (PZ-22C)

Initial Displacement: 1.783 ft
Total Well Penetration Depth: 28.99 ft
Casing Radius: 0.0833 ft
Static Water Column Height: 28.99 ft
Screen Length: 5. ft
Well Radius: 0.3333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev

K = 0.001638 cm/sec
y0 = 1.836 ft



WELL TEST ANALYSIS

Data Set: P:\National_Grid\Nimo_Troy\Hydro\Slug Tests\AQT\RW-2.aqt
Date: 11/09/07 Time: 15:26:36

PROJECT INFORMATION

Company: Brown and Caldwell
Client: National Grid - Troy
Project: 132071
Location: Troy, NY
Test Well: RW-2
Test Date: 8/24/07

AQUIFER DATA

Saturated Thickness: 4.16 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RW-2)

Initial Displacement: 0.29 ft
Total Well Penetration Depth: 2.66 ft
Casing Radius: 0.1667 ft
Static Water Column Height: 2.66 ft
Screen Length: 2.66 ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.002735 cm/sec y0 = 0.2322 ft

APPENDIX G

NAPL Gauging Results

NAPL GAUGING - SEPTEMBER 5-6, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
Transects														
Transect 1														
PZ-2	18.5-28.5	28.30	26.64	30.5	-3.86	31.97	-3.67	0.19	26.23	26.4	0.17	NA	NA	Black-yellow silt/ NAPL on top of water. Strong petroleum odor.
PZ-3	19-29	27.24	27.75	31	-3.25	30.43	-3.19	0.06	NA	24.75	NA	NA	NA	Weak petroleum odor.
MW-23	12.5-28	27.99	27.73	29	-1.27	28.29	-0.30	0.97	NA	25.61	NA	NA	NA	Hard bottom.
Transect 2														
PZ-4	5-15	8.55	6.14	17	-10.86	19.25	-10.70	0.16	NA	6.85	NA	NA	NA	
PZ-5a	16-26	23.59	24.14	28	-3.86	27.51	-3.92	-0.06	NA	20.95	NA	NA	NA	The black silty water from the bailer had a sheen on the surface. Weak coal tar/ petroleum odor.
PZ-5b	32-34	23.36	23.75	34	-10.25	33.66	-10.30	-0.05	NA	21.05	NA	NA	NA	Hard bottom. Pressure was built up in well.
PZ-5c	49-54	24.21	24.75	56	-31.25	55.58	-31.37	-0.12	NA	23.57	NA	52.68*****	NA	Grey silt with moderate coal tar odor from 52.68' to 55.58'. *****Threaded rod did not confirm presence of D-NAPL.
PZ-5d	65.5-70.5	24.35	24.96	70.5	-45.54	70.46	-46.11	-0.57	NA	21.69	NA	NA	NA	Hard bottom.
MW-37	14-34	24.23	23.69	36	-12.31	35.2	-10.97	1.34	NA	20.92	NA	NA	NA	
Transect 3														
PZ-6a	5-15	10.24	7.94	15	-7.06	16.8	-6.56	0.50	NA	8.1	NA	NA	NA	
PZ-6b	20-30	8.90	7.28	30	-22.72	31.46	-22.56	0.16	NA	6.75	NA	NA	NA	
PZ-6c	33-38	9.68	7.82	38	-30.18	39.65	-29.97	0.21	NA	7.49	NA	NA	NA	
PZ-7	20-30	30.15	28.06	32	-3.94	33.42	-3.27	0.67	NA	28.56	NA	NA	NA	
PZ-8a	18-28	27.53	27.88	30	-2.12	29.51	-1.98	0.14	NA	22.96	NA	NA	NA	Hard bottom.
PZ-8b	45-50	27.00	27.52	51	-23.48	50.21	-23.21	0.27	NA	25.46	NA	NA	NA	Hard bottom.
PZ-8c	53.5-55.5	27.65	28.11	56.5	-28.39	55.88	-28.23	0.16	NA	26.11	NA	NA	NA	
PZ-8d (BR PZ)	73.4-78.4	28.10	27.72	78.4	-50.68	77.18	-49.08	1.60	NA	26.29	NA	NA	NA	

NAPL GAUGING - SEPTEMBER 5-6, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
Transect 4														
PZ-9	10-20	26.66	24.04	20	4.04	21.92	4.74	0.70	NA	17.86	NA	NA	NA	
MW-9R	14-34	29.76	26.43	36	-9.57	38.91	-9.15	0.42	NA	26.4	NA	NA	NA	
Transect 5														
PZ-10	6-16	21.83	22.15	18	4.15	15.61	6.22	2.07	NA	9.75	NA	NA	NA	Hard bottom.
PZ-11	7-17	24.92	23.22	18	5.22	19.85	5.07	-0.15	NA	12.86	NA	NA	NA	
PZ-12a	13-23	29.63	27.53	25	2.53	26.95	2.68	0.15	NA	18.26	NA	NA	NA	
PZ-12b	25-30	29.87	27.74	32	-4.26	34.07	-4.20	0.06	NA	24.23	NA	NA	NA	
PZ-12c	40-50	29.72	27.90	51	-23.10	52.97	-23.25	-0.15	NA	27.86	NA	NA	NA	
PZ-12d (BR PZ)	55-60	29.81	27.93	60	-32.07	62	-32.19	-0.12	NA	27.86	NA	NA	NA	
MW-6R	12-32	30.33	27.10	34	-6.90	36.5	-6.17	0.73	19.25	19.83	0.58	NA	NA	Brown-yellow NAPL on probe from surface of water. Brown-Yellow NAPL also present on bailer collected from the bottom of the well. Slightly greasy to the touch. Strong petroleum odor (smelled old like used car oil).
Transect 6														
PZ-13	7-17	24.30	22.42	17	5.42	19.16	5.14	-0.28	NA	12.06	NA	NA	NA	
PZ-14	10-20	30.54	28.27	22	6.27	24.1	6.44	0.17	NA	18.51	NA	NA	NA	

NAPL GAUGING - SEPTEMBER 5-6, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
Other Nests														
PZ-15a	13-23	28.73	29.15	25	4.15	24.53	4.20	0.05	NA	19.15	NA	NA	NA	
PZ-15c	47.8-52.8	28.54	29.12	52.8	-23.68	51.2	-22.66	1.02	NA	25.99	NA	NA	NA	Soft bottom (approx 2' of grey silt). No odor.
PZ-16a	12-24	28.87	29.18	24	5.18	23.2	5.67	0.49	NA	19.28	NA	NA	NA	
PZ-16b	30.5-32.5	29.01	29.33	32.5	-3.17	31.97	-2.96	0.21	NA	25.85	NA	NA	NA	
PZ-16c	34-39	28.73	29.22	39	-9.78	38.55	-9.82	-0.04	NA	26.23	NA	NA	NA	
PZ-16d (BR PZ)	56-66	28.93	29.48	66.5	-37.02	66	-37.07	-0.05	NA	27.02	NA	NA	NA	Moderate surface odor (rotten egg smell).
MW-21	10-30	27.44	27.16	32	-4.84	30.63	-3.19	1.65	NA	19.09	NA	NA	NA	Hard bottom. Yellow-brown NAPL on probe from surface of water. Strong coal tar/ petroleum odor.
PZ-17a	34.8-36.8	27.13	27.98	38.8	-10.82	38.29	-11.16	-0.34	NA	24.82	NA	NA	NA	Hard bottom.
PZ-17b	42-52	27.68	28.05	54	-25.95	53.79	-26.11	-0.16	NA	24.57	NA	NA	NA	Hard bottom.
PZ-17c (BR PZ)	61-66	27.66	28.06	66	-37.94	65.71	-38.05	-0.11	NA	24.53	NA	NA	NA	Hard bottom.
PZ-18a	4-11	28.54	28.87	12	16.87	11.56	16.98	0.11	NA	10.11	NA	NA	NA	Weak petroleum odor. Fe stained silt on probe.
PZ-18b	16-18	28.40	28.78	19	9.78	18.57	9.83	0.05	NA	12.7	NA	NA	NA	Hard bottom. Weak/moderate petroleum odor.
MW-8	8-18	28.93	29.23	18	11.23	16.75	12.18	0.95	NA	11.97	NA	NA	NA	
PZ-19a (BR PZ)	23.5-28.5	28.49	29.03	28.5	0.53	27.38	1.11	0.58	NA	11.06	NA	NA	NA	
PZ-22a	16-26	27.05	27.44	28	-0.56	27.5	-0.45	0.11	NA	22.06	NA	NA	NA	Hard bottom.
PZ-22b	36-41	26.91	27.53	43	-15.47	41.65	-14.74	0.73	NA	25.91	NA	NA	NA	Soft bottom.
PZ-22c	50-55	26.85	27.48	56	-28.52	53.92	-27.07	1.45	NA	25.94	NA	NA	NA	Soft bottom.
												NA	NA	
Other												NA	NA	
PZ-20	12-22	28.01	28.36	24	4.36	24.04	3.97	-0.39	NA	16.58	NA	NA	NA	Hard bottom.
PZ-21	12.8-22.8	27.77	28.17	22.8	5.37	22.76	5.01	-0.36	NA	9.13	NA	NA	NA	

NAPL GAUGING - SEPTEMBER 5-6, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
Well Replacements														
MW-14	4.5-14.5	27.93	28.22	14.5	13.72	14.34	13.59	-0.13	NA	8.58	NA	NA	NA	Hard bottom.
MW-35	13-23	27.23	27.53	25	2.53	24.48	2.75	0.22	NA	17.55	NA	NA	NA	Hard botom.
Pre-SI Wells														
MW-2	9-24	30.80	27.20	26	1.20	29.1	1.70	0.50	NA	18.07	NA	NA	NA	
MW-3	17.3-37.3	26.28	22.70	39.3	-16.60	42.02	-15.74	0.86	NA	23.53	NA	NA	NA	Hard bottom.
MW-4	36-51	30.45	27.10	53	-25.90	54.38	-23.93	1.97	NA	28.51	NA	NA	NA	Hard bottom.
MW-5	17.5-32.5	28.79	28.70	34.5	-5.80	NA	NA	NA	NA	NA	NA	NA	NA	Well not located (buried).
MW-7	10-25	27.24	26.91	25	1.91	NA	NA	NA	NA	NA	NA	NA	NA	Well not located (buried).
MW-10R	5-20	14.27	11.08	22	-10.92	24.38	-10.11	0.81	NA	12.43	NA	NA	NA	Slight coal tar odor.
MW-11	5-10	27.28	23.79	10	13.79	12.98	14.30	0.51	NA	10.87	NA	NA	NA	
MW-12	18-38	28.41	27.88	40	-12.12	37.67	-9.26	2.86	NA	26.59	NA	NA	NA	Hard bottom. Dead larvae on surface of water (large quantity of larvae removed with bailer).
MW-13	13-33	29.06	28.56	35	-6.44	34.64	-5.58	0.86	NA	27.04	NA	NA	NA	
MW-15	15-35	29.79	29.22	37	-7.78	35.92	-6.13	1.65	NA	27.65	NA	NA	NA	Rusty-brown silt on probe.
MW-16	12-32	27.88	27.75	34	-6.25	32.93	-5.05	1.20	NA	14.61	NA	NA	NA	
MW-17	7-27	28.39	25.94	29	-3.06	33.4	-5.01	-1.95	NA	17.08	NA	NA	NA	
MW-18	5-20	29.04	28.93	29.3	-0.37	29.41	-0.37	0.00	NA	15.64	NA	NA	NA	
MW-19	15-30	28.68	28.70	32	-3.30	32.25	-3.57	-0.27	NA	19.11	NA	NA	NA	
MW-20	6-11	27.92	28.07	11	17.07	10.54	17.38	0.31	NA	8.09	NA	NA	NA	Hard bottom.
MW-24	17-32	28.29	27.89	34	-6.11	34	-5.71	0.40	NA	25.09	NA	NA	NA	Hard bottom.
MW-25	15-30	28.05	27.65	32	-4.35	32.96	-4.91	-0.56	NA	25.43	NA	NA	NA	Rust-orange sediment at bottom.
MW-26	17-32	26.86	26.54	34	-7.46	33.81	-6.95	0.51	NA	24.23	NA	NA	NA	Rust-orange sediment (approx 2" @ bottom).
MW-27	6-31	27.39	27.00	33	-6.00	30.2	-2.81	3.19	NA	18.45	NA	NA	NA	Hard bottom.

NAPL GAUGING - SEPTEMBER 5-6, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
														.
MW-28R	13-28	29.89	26.58	30	-3.42	32.12	-2.23	1.19	NA	18.33	NA	NA	NA	Hard bottom.
MW-29	20-40	28.71	29.00	40	-11.00	39	-10.29	0.71	26.975	26.98	0.005	NA	NA	Yellow NAPL coated probe when lowered to water surface. Rainbow sheen on surface of water removed with the bailer. Moderate petroleum smell (slight "sweet" odor).
MW-30						NA	NA	NA	NA	NA	NA	NA	NA	Well not located (buried).
MW-31	15-35	29.20	29.14	35	-5.86	33.86	-4.66	1.20	NA	26.94	NA	NA	NA	Moderate petroleum/ paint thinner odor.
MW-32	12-32	27.89	27.63	34	-6.37	33.61	-5.72	0.65	NA	22.11	NA	NA	NA	Hard bottom.
MW-33	16-36	28.34	27.95	38	-10.05	38.16	-9.82	0.23	NA	20.03	NA	NA	NA	Brown-black NAPL at the bottom of well (approx 0.1' on threaded rod). Moderate coal tar odor.
MW-34	14-34	27.74	27.56	36	-8.44	NA	NA	NA	NA	NA	NA	NA	NA	Well not located (buried).
MW-36	12-32	31.92	28.00	40	-12.00	42.64	-10.72	1.28	NA	29.82	NA	NA	NA	Relatively hard bottom.
MW-38	12-32	30.32	27.93	34	-6.07	NA	NA	NA	NA	18.47	NA	NA	NA	
MW-39	12-32	29.99	26.83	34	-7.17	21.3	8.69	15.86	NA	18.98	NA	19.06	2.24	Entire probe and end of tape were covered with very black viscous DNAPL Strong coal tar/ petroleum odor. Sample could not be obtained with bailer. True depth of DNAPL is hard to identify.
MW-124B	15-25	29.61	26.52	26.5	0.02	27.44	2.17	2.15	NA	18.75	NA	NA	NA	
MW-134B	20.5-30.5	28.52	24.57	32	-7.43	31.25	-2.73	4.70	NA	26.73	NA	NA	NA	
PZ-1	15-31	27.41	27.80	31	-3.20	29.44	-2.03	1.17	NA	23.41	NA	NA	NA	Hard bottom.
RW-1	3-13	30.93	27.69	14	13.69	16.17	14.76	1.08	NA	10.77	NA	NA	NA	Yellow-brown coating from water surface on probe. Strong petroleum odor. Water removed with bailer had a rainbow sheen on the surface and a moderate sulfur smell.
RW-2	3-9.5	30.60	27.59	10	17.59	11.89	18.71	1.13	NA	9.06	NA	NA	NA	Hard bottom.

Notes:
NA - Not applicable
(a) - BGS - below ground surface
(b) - MW - monitoring well. PZ - piezometer

PRELIMINARY NAPL GAUGING - NOVEMBER 27-28, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
Transects														.
Transect 1														
PZ-2	18.5-28.5	28.30	26.64	30.5	-3.86	31.96	-3.66	0.20	NA	24.73	NA	NA	NA	Hard bottom, moderate petroleum odor. Bailed water contained black particals (organics?)
PZ-3	19-29	27.24	27.75	31	-3.25	30.42	-3.18	0.07	NA	23.13	NA	NA	NA	Hard bottom, strong odor.
MW-23	12.5-28	27.99	27.73	29	-1.27	28.31	-0.32	0.95	NA	24.43	NA	NA	NA	Hard bottom.
Transect 2														
PZ-4	5-15	8.55	6.14	17	-10.86	19.35	-10.80	0.06	NA	8.83	NA	NA	NA	Soft bottom.
PZ-5a	16-26	23.59	24.14	28	-3.86	27.53	-3.94	-0.08	NA	22.91	NA	NA	NA	Hard bottom, strong odor. Grey-black water in bailer.
PZ-5b	32-34	23.36	23.75	34	-10.25	33.35	-9.99	0.26	NA	24.3	NA	NA	NA	Hard bottom, slight coal tar odor. Brown-orange water in bailer.
PZ-5c	49-54	24.21	24.75	56	-31.25	52.84	-28.63	2.62	NA	25.04	NA	NA	NA	Hard bottom, strong coal tar odor. Grey-black silt on probe. Grey-black water in bailer.
PZ-5d	65.5-70.5	24.35	24.96	70.5	-45.54	70.47	-46.12	-0.58	Probe indicated trace on surface*****	25.21	NA	NA	NA	Soft bottom. Bailed surface water was clean. *****Trace LNAPL indication from probe not confirmed.
MW-37	14-34	24.23	23.69	36	-12.31	30.58	-6.35	5.96	NA	20.62	NA	NA	NA	Soft bottom, slight coal tar odor.
Transect 3														
PZ-6a	5-15	10.24	7.94	15	-7.06	16.77	-6.53	0.53	NA	10.57	NA	NA	NA	Moderate soft bottom, slight odor.
PZ-6b	20-30	8.90	7.28	30	-22.72	31.47	-22.57	0.15	NA	9.89	NA	NA	NA	Hard bottom.
PZ-6c	33-38	9.68	7.82	38	-30.18	39.65	-29.97	0.21	NA	10.67	NA	NA	NA	Hard bottom.
PZ-7	20-30	30.15	28.06	32	-3.94	33.82	-3.67	0.27	NA	27.71	NA	NA	NA	Hard bottom, slight odor.
PZ-8a	18-28	27.53	27.88	30	-2.12	29.54	-2.01	0.11	NA	27.1	NA	NA	NA	Hard bottom, slight odor.
PZ-8b	45-50	27.00	27.52	51	-23.48	50.25	-23.25	0.23	NA	27.4	NA	NA	NA	Hard bottom.
PZ-8c	53.5-55.5	27.65	28.11	56.5	-28.39	55.92	-28.27	0.12	NA	26.65	NA	NA	NA	Hard bottom.
PZ-8d (BR PZ)	73.4-78.4	28.10	27.72	78.4	-50.68	77.23	-49.13	1.55	NA	28.15	NA	NA	NA	Hard bottom.

PRELIMINARY NAPL GAUGING - NOVEMBER 27-28, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
Transect 4														
PZ-9	10-20	26.66	24.04	20	4.04	21.61	5.05	1.01	NA	17.61	NA	NA	NA	Hard bottom.
MW-9R	14-34	29.76	26.43	36	-9.57	38.92	-9.16	0.41	NA	25.75	NA	NA	NA	Hard bottom, strong odor.
Transect 5														
PZ-10	6-16	21.83	22.15	18	4.15	15.69	6.14	1.99	NA	9.19	NA	NA	NA	Soft bottom.
PZ-11	7-17	24.92	23.22	18	5.22	19.86	5.06	-0.16	NA	12.25	NA	NA	NA	Hard bottom.
PZ-12a	13-23	29.63	27.53	25	2.53	26.94	2.69	0.16	NA	17.51	NA	NA	NA	Hard bottom, slight odor.
PZ-12b	25-30	29.87	27.74	32	-4.26	34.2	-4.33	-0.07	Probe indicated trace on surface*****	23.99	NA	NA	NA	Soft bottom, strong fuel odor. *****Trace LNAPL indication from probe not confirmed.
PZ-12c	40-50	29.72	27.90	51	-23.10	52.98	-23.26	-0.16	NA	27.57	NA	NA	NA	Hard bottom, slight odor.
PZ-12d (BR PZ)	55-60	29.81	27.93	60	-32.07	62.22	-32.41	-0.34	NA	27.59	NA	NA	NA	Soft bottom.
MW-6R	12-32	30.33	27.10	34	-6.90	36.44	-6.11	0.79	Probe indicated trace on surface	18.48	NA	NA	NA	Soft bottom. Golden-yellow sheen seen on probe. Sheen floating on surface of water of bailer taken at top of water column. Bailer from deeper interval has more sheen.
Transect 6														
PZ-13	7-17	24.30	22.42	17	5.42	18.82	5.48	0.06	NA	11.41	NA	NA	NA	Hard bottom.
PZ-14	10-20	30.54	28.27	22	6.27	24.09	6.45	0.18	NA	17.82	NA	NA	NA	Hard bottom, trace odor.

PRELIMINARY NAPL GAUGING - NOVEMBER 27-28, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
Other Nests														
PZ-15a	13-23	28.73	29.15	25	4.15	24.54	4.19	0.04	NA	18.81	NA	NA	NA	Hard bottom.
PZ-15c	47.8-52.8	28.54	29.12	52.8	-23.68	51.27	-22.73	0.95	NA	28.68	NA	NA	NA	Soft bottom, slight odor. Grey-black silt on probe.
PZ-16a	12-24	28.87	29.18	24	5.18	23.34	5.53	0.35	NA	16.43	NA	NA	NA	Moderately soft bottom.
PZ-16b	30.5-32.5	29.01	29.33	32.5	-3.17	31.98	-2.97	0.20	NA	25.05	NA	NA	NA	Moderately soft bottom, slight petroleum odor.
PZ-16c	34-39	28.73	29.22	39	-9.78	38.71	-9.98	-0.20	NA	24.1	NA	NA	NA	Moderately soft bottom.
PZ-16d (BR PZ)	56-66	28.93	29.48	66.5	-37.02	65.99	-37.06	-0.04	NA	16.7	NA	NA	NA	Hard bottom, slight odor.
MW-21	10-30	27.44	27.16	32	-4.84	30.64	-3.20	1.64	NA	NA	NA	NA	NA	Well was submerged under water the day water levels were taken. Hard bottom, coal tar odor. Probe was covered in DNAPL after a total depth measurement of the well. Bailer was stained with NAPL following use, contents LNAPL, trace amount of DNAPL, and a rainbow sheen.
PZ-17a	34.8-36.8	27.13	27.98	38.8	-10.82	38.47	-11.34	-0.52	NA	25.52	NA	NA	NA	Soft bottom, moderate petroluem odor.
PZ-17b	42-52	27.68	28.05	54	-25.95	53.94	-26.26	-0.31	NA	26.89	NA	NA	NA	Soft bottom, trace odor.
PZ-17c (BR PZ)	61-66	27.66	28.06	66	-37.94	65.77	-38.11	-0.17	NA	26.46	NA	NA	NA	Soft bottom, moderate odor.
PZ-18a	4-11	28.54	28.87	12	16.87	11.56	16.98	0.11	Probe indicated trace on surface*	9.69	NA	NA	NA	Hard bottom, strong petroleum odor. *Trace LNAPL indication from probe not confirmed.
PZ-18b	16-18	28.40	28.78	19	9.78	18.53	9.87	0.09	NA	12.09	NA	NA	NA	Hard bottom, moderate odor (petroleum?).
MW-8	8-18	28.93	29.23	18	11.23	16.81	12.12	0.89	NA	10.79	NA	NA	NA	Moderately hard bottom, slight odor.
PZ-19a (BR PZ)	23.5-28.5	28.49	29.03	28.5	0.53	27.41	1.08	0.55	NA	9.83	NA	NA	NA	Moderately hard bottom, slight odor.
PZ-22a	16-26	27.05	27.44	28	-0.56	27.49	-0.44	0.12	Probe indicated trace on surface*	19.26	NA	NA	NA	Hard bottom, strong odor. *Trace LNAPL indication from probe not confirmed.
PZ-22b	36-41	26.91	27.53	43	-15.47	41.8	-14.89	0.58	NA	27.36	NA	NA	NA	Hard bottom.
PZ-22c	50-55	26.85	27.48	56	-28.52	54	-27.15	1.37	NA	27.46	NA	NA	NA	Soft bottom.

PRELIMINARY NAPL GAUGING - NOVEMBER 27-28, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
<u>Other</u>														.
PZ-20	12-22	28.01	28.36	24	4.36	24.16	3.85	-0.51	NA	16.06	NA	NA	NA	Moderately soft bottom.
PZ-21	12.8-22.8	27.77	28.17	22.8	5.37	22.85	4.92	-0.45	NA	8.08	NA	NA	NA	Soft bottom, slight odor.
<u>Well Replacements</u>														
MW-14R	4.5-14.5	27.93	28.22	14.5	13.72	14.34	13.59	-0.13	NA	7.45	NA	NA	NA	Hard bottom, slight odor.
MW-35R	13-23	27.23	27.53	25	2.53	24.48	2.75	0.22	NA	11.23	NA	NA	NA	Hard bottom, slight fuel odor.
<u>Pre-SI Wells</u>														
MW-2	9-24	30.80	27.20	26	1.20	29.23	1.57	0.37	NA	17.17	NA	NA	NA	Soft bottom, trace odor.
MW-3	17.3-37.3	26.28	22.70	39.3	-16.60	42.04	-15.76	0.84	NA	25.07	NA	NA	NA	Hard bottom, strong odor.
MW-4	36-51	30.45	27.10	53	-25.90	54.4	-23.95	1.95	NA	30.61	NA	NA	NA	Hard bottom, slight petroleum odor.
MW-5	17.5-32.5	28.79	28.70	34.5	-5.80	33.56	-4.77	1.03	NA	24.47	NA	NA	NA	Hard bottom, slight odor.
MW-7	10-25	27.24	26.91	25	1.91	24.24	3.00	1.09	NA	14.85	NA	NA	NA	Moderately soft bottom, slight odor.
MW-10R	5-20	14.27	11.08	22	-10.92	24.48	-10.21	0.71	NA	14.87	NA	NA	NA	Soft bottom, slight coal tar odor.
MW-11	5-10	27.28	23.79	10	13.79	12.94	14.34	0.55	NA	9.86	NA	NA	NA	Hard bottom, trace odor.
MW-12	18-38	28.41	27.88	40	-12.12	NA	NA	NA	NA	NA	NA	NA	NA	Could not be located.
MW-13	13-33	29.06	28.56	35	-6.44	34.78	-5.72	0.72	NA	26.11	NA	NA	NA	Soft bottom.
MW-15	15-35	29.79	29.22	37	-7.78	NA	NA	NA	NA	NA	NA	NA	NA	Could not be located.
MW-16	12-32	27.88	27.75	34	-6.25	32.93	-5.05	1.20	NA	13.6	NA	NA	NA	Hard bottom, slight odor.
MW-17	7-27	28.39	25.94	29	-3.06	30.75	-2.36	0.70	NA	16.59	NA	NA	NA	Soft bottom.
MW-18	5-20	29.04	28.93	29.3	-0.37	29.41	-0.37	0.00	NA	14.89	NA	NA	NA	Hard bottom, moderate to strong odor.
MW-19	15-30	28.68	28.70	32	-3.30	32.26	-3.58	-0.28	NA	18.9	NA	NA	NA	Hard bottom.
MW-20	6-11	27.92	28.07	11	17.07	10.5	17.42	0.35	NA	7.33	NA	NA	NA	Hard bottom, strong odor (fuel?).
MW-24	17-32	28.29	27.89	34	-6.11	34	-5.71	0.40	Probe indicated trace on surface*	23.38	NA	NA	NA	Hard bottom, slight odor. Orange water from bailer. *Trace LNAPL indication from probe not confirmed.
MW-25	15-30	28.05	27.65	32	-4.35	32.98	-4.93	-0.58	NA	24.16	NA	NA	NA	Hard bottom, rust colored sediment on probe.
MW-26	17-32	26.86	26.54	34	-7.46	33.59	-6.73	0.73	NA	23.86	NA	NA	NA	Hard bottom, rust colored sediment on probe.
MW-27	6-31	27.39	27.00	33	-6.00	29.61	-2.22	3.78	NA	17.23	NA	NA	NA	Soft bottom, moderate odor.

PRELIMINARY NAPL GAUGING - NOVEMBER 27-28, 2007
SUPPLEMENTAL INVESTIGATION
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

Location ID	Screened Interval (ft., BGS)[a]	Reference Elevation (ft., NGVD)	Ground Surface Elevation - at installation (ft., NGVD)	Constructed PZ/MW[b] Bottom (ft., BGS)	Constructed PZ/MW[b] Bottom (ft., NGVD)	Measured PZ/MW Bottom (ft., below reference elevation)	Measured PZ/MW Bottom (ft., NGVD)	Difference: Measured Resistance - Constructed PZ/MW Bottom (ft.)	Depth to LNAPL (ft., below reference elevation)	Depth to Water (ft., BGS)	LNAPL Thickness (ft.)	Depth to DNAPL (ft., below reference elevation)	DNAPL Thickness (ft.)	Remarks
MW-28R	13-28	29.89	26.58	30	-3.42	32.25	-2.36	1.06	Probe indicated trace on surface*	17.74	NA	NA	NA	Moderately soft bottom. *Trace LNAPL indication from probe not confirmed.
MW-29	20-40	28.71	29.00	40	-11.00	38.96	-10.25	0.75	Probe indicated trace on surface*	26.08	NA	NA	NA	Soft bottom, strong petroleum odor. *Trace LNAPL indication from probe not confirmed.
MW-30							NA	NA	NA	NA	NA	NA	NA	Well not located (buried).
MW-31	15-35	29.20	29.14	35	-5.86	33.91	-4.71	1.15	NA	25.97	NA	NA	NA	Hard bottom, strong fuel odor.
MW-32	12-32	27.89	27.63	34	-6.37	33.62	-5.73	0.64	NA	12.21	NA	NA	NA	Hard bottom.
MW-33	16-36	28.34	27.95	38	-10.05	NA	NA	NA	NA	NA	NA	NA	NA	Could not be located.
MW-34	14-34	27.74	27.56	36	-8.44	35.33	-7.59	0.85	NA	19.48	NA	NA	NA	Soft bottom, moderate odor.
MW-36	12-32	31.92	28.00	40	-12.00	42.68	-10.76	1.24	NA	27.86	NA	NA	NA	Soft bottom, slight fuel odor.
MW-38	12-32	30.32	27.93	34	-6.07	35.87	-5.55	0.52	NA	17.88	NA	NA	NA	Moderately soft bottom, slight fuel odor.
MW-39	12-32	29.99	26.83	34	-7.17	NA	NA	NA	NA	13.27	NA	NA	NA	Soft bottom, strong coal tar odor. Bailer was blocked from decending, possibly hardened tar. Threaded rod came back coated in DNAPL. Blockage prevented a proper total depth measurement.
MW-124B	15-25	29.61	26.52	26.5	0.02	27.54	2.07	2.05	NA	18.12	NA	NA	NA	Moderately soft bottom, slight old petroleum odor.
MW-134B	20.5-30.5	28.52	24.57	32	-7.43	31.25	-2.73	4.70	NA	27.67	NA	NA	NA	Modertaely hard bottom. Rust colored sediment on probe.
PZ-1	15-31	27.41	27.80	31	-3.20	29.41	-2.00	1.20	NA	22.16	NA	NA	NA	Moderately soft bottom, slight odor.
RW-1	3-13	30.93	27.69	14	13.69	16.17	14.76	1.08	Probe indicated trace on surface*	8.73	NA	NA	NA	Hard bottom, strong odor. Bailer was clean. *Trace LNAPL indication from probe not confirmed.
RW-2	3-9.5	30.60	27.59	10	17.59	11.86	18.74	1.16	NA	7.8	NA	NA	NA	Hard bottom.

Notes:
NA - Not applicable
(a) - BGS - below ground surface
(b) - MW - monitoring well. PZ - piezometer

APPENDIX H

Analytical Data and Data Usability Summary Report - Soil Samples

Apx H
CD-Rom
LAB DAtA

ENVIRONMENTAL
Data Services, Inc.

DATA USABILITY REPORT
NATIONAL GRID TROY MGP SITE

BROWN AND CALDWELL
LANCASTER LABORATORIES, LANCASTER, PA
SAMPLE DELIVERY GROUP (SDG) TRY01

EDS ID	Client ID	Laboratory ID	Matrix
1	TP-217(3.5-4.5)	51183-01	Soil
1MS	TP-217(3.5-4.5)MS	51183-02	Soil
1MSD	TP-217(3.5-4.5)MSD	51183-03	Soil
2	TP-218(1-2.5)	51183-04	Soil
2DL	TP-218(1-2.5)DL	51183-04DL	Soil
3	TP-217(4.5-6)	51183-05	Soil
4	DUP080107	51183-06	Soil
4DL	DUP080107DL	51183-06DL	Soil
5	EB080107	51183-07	Water

Deliverables

The above referenced data package for the samples collected at the National Grid Troy MGP site contains all required deliverables consistent with the requirements of the EPA Region II guidelines. The sample specific analyses performed included Semivolatile Organic Compounds (SVOCs). These analyses were performed in accordance with United States Environmental Protection Agency (USEPA) *"Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions"*.

Specific method references are as follows:

Analysis	Method References
SVOCs	USEPA SW-846 Method 8270C

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods and the USEPA Region II Data Review Standard Operating Procedures (SOPs) as follows:

- SOP Number HW-22, Revision 2, June 2001: Validating Semivolatile Organic Compounds by SW-846 Method 8270C;
- and the reviewer's professional judgment.

The validation report pertains to the samples indicated in each individual section:

Chains-of-Custody

- The Chains-of-Custody (COCs) were reviewed for completeness and accuracy. There were no discrepancies observed with the samples presented on the COC, and all other tests specified on the COC were performed for the designated samples.

Organics

The following items/criteria were reviewed for this report:

- SDG Narrative and deliverables compliance
- Chains-of-Custody (COC)
- Organic analysis data sheets (Form Is)
- Holding times and sample preservation
- Surrogate Compound recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Lab Check Sample/Lab Check Duplicate (LCS/LCSD) recoveries
- Positive results reported for method blanks and field blanks
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning
- Initial and continuing calibration summaries
- Internal standard area and retention time summary forms
- Blind Field Duplicate sample precision
- GC column difference results

The items listed above were technically and contractually in compliance with the method and QAPP criteria, with the exceptions discussed in the text below. The data have been validated according to the procedures outlined above and qualified accordingly. This report presents QC outliers that resulted in qualification of data only unless otherwise indicated.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedences of QC criteria.

Semivolatile Organics Compounds (SVOCs)

- The following table lists blank contamination and the samples associated with the blanks. Detected sample concentrations of common phthalate esters (common laboratory contaminants) less than ten times (10x) the highest associated blank (after taking sample dilution levels, percent moisture and sample volume into account) are negated and qualified with a "U". For all other compounds, an action level of five times (5x) the highest associated blank concentration is used.

Blank ID	Compound	Concentration	Affected Sample(s)	Qualifier
EB080107	None	ND	-	-

- Results for various samples and their associated blind field duplicates were evaluated for field duplicate precision. Compounds not positively identified are reported with a (U) qualifier adjacent to the reporting limit in these tables. The relative percent difference (RPD) for these compounds is reported as "NC" in this table. Fluorene has been qualified estimated (J) in both samples.

Compound	TP-218 ug/kg	DUP080107 ug/kg	RPD	Qualifier
Naphthalene	260	310	18%	None
Acenaphthylene	1600	2300	36%	None
Acenaphthene	120	140	15%	None
Fluorene	2400	390	144%	J
Phenanthrene	3200	3100	3%	None
Anthracene	1600	1900	17%	None
Fluoranthene	7700	8200	6%	None
Pyrene	7800	8400	7%	None
Benzo (a) anthracene	5700	6600	15%	None
Chrysene	4900	5600	13%	None
Benzo (b) fluoranthene	6700	8200	20%	None
Benzo (k) fluoranthene	2500	2900	15%	None
Benzo (a) pyrene	4000	5400	30%	None
Indeno (1,2,3-cd) pyrene	2400	3200	29%	None
Dibenz (a,h) anthracene	970	1100	13%	None
Benzo (g,h,i) perylene	2300	3200	33%	None

- EDS sample ID #s 2 and 4 exhibited high concentrations of target analytes and were flagged (E) by the laboratory. These samples were reanalyzed at a 5X dilution. The original results were replaced by the dilution results on the original Form Is by the reviewer. The original Form Is should be used for reporting purposes.

Package Summary:

All data are valid and usable with qualifications as noted in this review.

Signed: Nancy Weaver Dated: 11/30/07

Nancy Weaver
Senior Chemist

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TP217

Lab Name: Lancaster Laboratories Contract: ______

Lab Code: LANCAS Case No.: ______ SAS No.: ______ SDG No.: ______

Matrix: (soil/water) SOIL Lab Sample ID: 5118301

Sample wt/vol: 30 (g/mL) G Lab File ID: ch0475.d

Level: (low/med) LOW Date Received: 08/02/07

% Moisture: not dec: 22 dec: Date Extracted: 08/15/07

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/16/07

Injection Volume: 1 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Extraction: Sonc

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) LOQ UG/KG	Q
91-20-3	Naphthalene	770	
208-96-8	Acenaphthylene	370	
83-32-9	Acenaphthene	220	U
86-73-7	Fluorene	280	
85-01-8	Phenanthrene	170	J
120-12-7	Anthracene	250	
206-44-0	Fluoranthene	480	
129-00-0	Pyrene	570	
56-55-3	Benzo(a)anthracene	180	J
218-01-9	Chrysene	200	J
205-99-2	Benzo(b)fluoranthene	150	J
207-08-9	Benzo(k)fluoranthene	77	J
50-32-8	Benzo(a)pyrene	110	J
193-39-5	Indeno(1,2,3-cd)pyrene	65	J
53-70-3	Dibenz(a,h)anthracene	220	U
191-24-2	Benzo(g,h,i)perylene	75	J

8879

FORM I SV-1

lw 11/28/07

2

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TP218

Lab Name: Lancaster Laboratories Contract:______

Lab Code: LANCAS Case No.:_______ SAS No.:_________ SDG No.:__________

Matrix: (soil/water) SOIL Lab Sample ID: 5118304

Sample wt/vol: 30 (g/mL) G Lab File ID: ch0304.d

Level: (low/med) LOW Date Received: 08/02/07

% Moisture: not dec: 14 dec: Date Extracted: 08/08/07

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/09/07

Injection Volume: 1 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Extraction: Sonc

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) LOQ UG/KG	Q	
91-20-3--------	Naphthalene	260		
208-96-8-------	Acenaphthylene	1600		
83-32-9--------	Acenaphthene	120	J	
86-73-7--------	Fluorene	2400		J
85-01-8--------	Phenanthrene	3200		
120-12-7-------	Anthracene	1600		
206-44-0-------	Fluoranthene	~~7100~~	~~E~~	7700
129-00-0-------	Pyrene	~~7700~~	~~E~~	7800
56-55-3--------	Benzo(a)anthracene	~~5500~~	~~E~~	5700
218-01-9-------	Chrysene	~~5100~~	~~E~~	4900
205-99-2-------	Benzo(b)fluoranthene	~~6900~~	~~E~~	6700
207-08-9-------	Benzo(k)fluoranthene	2500		
50-32-8--------	Benzo(a)pyrene	4000		
193-39-5-------	Indeno(1,2,3-cd)pyrene	2400		
53-70-3--------	Dibenz(a,h)anthracene	970		
191-24-2-------	Benzo(g,h,i)perylene	2300		

6187

JW 11/28/07

20L

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TP218DL

Lab Name: Lancaster Laboratories   Contract: ______

Lab Code: LANCAS   Case No.: ________   SAS No.: ________   SDG No.: ________

Matrix: (soil/water) SOIL   Lab Sample ID: 5118304DL

Sample wt/vol: 30 (g/mL) G   Lab File ID: ch0348.d

Level: (low/med) LOW   Date Received: 08/02/07

% Moisture: not dec: 14 dec: Date Extracted: 08/08/07

Concentrated Extract Volume: 1000 (uL)   Date Analyzed: 08/12/07

Injection Volume: 1 (uL)   Dilution Factor: 5.0

GPC Cleanup: (Y/N) N   pH: Extraction: Sonc

use original results

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) LOQ UG/KG	Q
91-20-3--------	Naphthalene	260	J D
208-96-8-------	Acenaphthylene	1700	D
83-32-9--------	Acenaphthene	970	U
86-73-7--------	Fluorene	2600	D
85-01-8--------	Phenanthrene	3300	D
120-12-7-------	Anthracene	1400	D
206-44-0-------	Fluoranthene	7700	D
129-00-0-------	Pyrene	7800	D
56-55-3--------	Benzo(a)anthracene	5700	D
218-01-9-------	Chrysene	4900	D
205-99-2-------	Benzo(b)fluoranthene	6700	D
207-08-9-------	Benzo(k)fluoranthene	2600	D
50-32-8--------	Benzo(a)pyrene	4100	D
193-39-5-------	Indeno(1,2,3-cd)pyrene	2300	D
53-70-3--------	Dibenz(a,h)anthracene	880	J D
191-24-2-------	Benzo(g,h,i)perylene	2200	D

0141

FORM I SV-1

MW 11/28/07

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

4T217

Lab Name: Lancaster Laboratories Contract:______

Lab Code: LANCAS Case No.:_______ SAS No.:________ SDG No.:_________

Matrix: (soil/water) SOIL Lab Sample ID: 5118305

Sample wt/vol: 30 (g/mL) G Lab File ID: ch0305.d

Level: (low/med) LOW Date Received: 08/02/07

% Moisture: not dec: 13 dec: Date Extracted: 08/08/07

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/09/07

Injection Volume: 1 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Extraction: Sonc

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) LOQ UG/KG	Q
91-20-3	Naphthalene	150	J
208-96-8	Acenaphthylene	330	
83-32-9	Acenaphthene	200	U
86-73-7	Fluorene	200	U
85-01-8	Phenanthrene	43	J
120-12-7	Anthracene	68	J
206-44-0	Fluoranthene	43	J
129-00-0	Pyrene	63	J
56-55-3	Benzo(a)anthracene	84	J
218-01-9	Chrysene	65	J
205-99-2	Benzo(b)fluoranthene	50	J
207-08-9	Benzo(k)fluoranthene	200	U
50-32-8	Benzo(a)pyrene	200	U
193-39-5	Indeno(1,2,3-cd)pyrene	200	U
53-70-3	Dibenz(a,h)anthracene	200	U
191-24-2	Benzo(g,h,i)perylene	79	J

8172

FORM I SV-1

MW
11/28/07

4

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FD801

Lab Name: Lancaster Laboratories Contract:______

Lab Code: LANCAS Case No.:_______ SAS No.:________ SDG No.:_________

Matrix: (soil/water) SOIL Lab Sample ID: 5118306

Sample wt/vol: 30 (g/mL) G Lab File ID: ch0306.d

Level: (low/med) LOW Date Received: 08/02/07

% Moisture: not dec: 15 dec: Date Extracted: 08/08/07

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/09/07

Injection Volume: 1 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Extraction: Sonc

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) LOQ UG/KG	Q	
91-20-3--------	Naphthalene	310		
208-96-8-------	Acenaphthylene	2300		
83-32-9--------	Acenaphthene	140	J	
86-73-7--------	Fluorene	390		J
85-01-8--------	Phenanthrene	3100		
120-12-7-------	Anthracene	1900		
206-44-0-------	Fluoranthene	~~7500~~	~~E~~	8200
129-00-0-------	Pyrene	~~8400~~	~~E~~	8400
56-55-3--------	Benzo(a)anthracene	~~6200~~	~~E~~	6600
218-01-9-------	Chrysene	~~5700~~	~~E~~	5600
205-99-2-------	Benzo(b)fluoranthene	~~8200~~	~~E~~	8200
207-08-9-------	Benzo(k)fluoranthene	2900		
50-32-8--------	Benzo(a)pyrene	~~5100~~	~~E~~	5400
193-39-5-------	Indeno(1,2,3-cd)pyrene	3200		
53-70-3--------	Dibenz(a,h)anthracene	1100		
191-24-2-------	Benzo(g,h,i)perylene	3200		

8198

FORM I SV-1

MW
11/28/07

4DL

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FD801DL

Lab Name: Lancaster Laboratories Contract:

Lab Code: LANCAS Case No.: SAS No.: SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 5118306DL

Sample wt/vol: 30 (g/mL) G Lab File ID: ch0349.d

Level: (low/med) LOW Date Received: 08/02/07

% Moisture: not dec: 15 dec: Date Extracted: 08/08/07

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/12/07

Injection Volume: 1 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: Extraction: Sonc

Use ORIGINAL results

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) LOQ UG/KG	Q
91-20-3	Naphthalene	300	J D
208-96-8	Acenaphthylene	2400	D
83-32-9	Acenaphthene	980	U
86-73-7	Fluorene	370	J D
85-01-8	Phenanthrene	3300	D
120-12-7	Anthracene	1700	D
206-44-0	Fluoranthene	8200	D
129-00-0	Pyrene	8400	D
56-55-3	Benzo(a)anthracene	6600	D
218-01-9	Chrysene	5600	D
205-99-2	Benzo(b)fluoranthene	8200	D
207-08-9	Benzo(k)fluoranthene	3300	D
50-32-8	Benzo(a)pyrene	5400	D
193-39-5	Indeno(1,2,3-cd)pyrene	3200	D
53-70-3	Dibenz(a,h)anthracene	1100	D
191-24-2	Benzo(g,h,i)perylene	3100	D

0238

FORM I SV-1

MW 6/28/07

5

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

| EB801 |

Lab Name: Lancaster Laboratories Contract:______

Lab Code: LANCAS Case No.:________ SAS No.:________ SDG No.:________

Matrix: (soil/water) WATER Lab Sample ID: 5118307

Sample wt/vol: 1029 (g/mL) ML Lab File ID: gh0160.d

Level: (low/med) LOW Date Received: 08/02/07

% Moisture: not dec: dec: Date Extracted: 08/03/07

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 08/03/07

Injection Volume: 1 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: Extraction: Sepf

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) LOQ UG/L	Q
91-20-3--------	Naphthalene	5	U
208-96-8-------	Acenaphthylene	5	U
83-32-9--------	Acenaphthene	5	U
86-73-7--------	Fluorene	5	U
85-01-8--------	Phenanthrene	5	U
120-12-7-------	Anthracene	5	U
206-44-0-------	Fluoranthene	5	U
129-00-0-------	Pyrene	5	U
56-55-3--------	Benzo(a)anthracene	5	U
218-01-9-------	Chrysene	5	U
205-99-2-------	Benzo(b)fluoranthene	5	U
207-08-9-------	Benzo(k)fluoranthene	5	U
50-32-8--------	Benzo(a)pyrene	5	U
193-39-5-------	Indeno(1,2,3-cd)pyrene	5	U
53-70-3--------	Dibenz(a,h)anthracene	5	U
191-24-2-------	Benzo(g,h,i)perylene	5	U

0257

MW 4/28/07

APPENDIX I

Hydrographs

132071.107

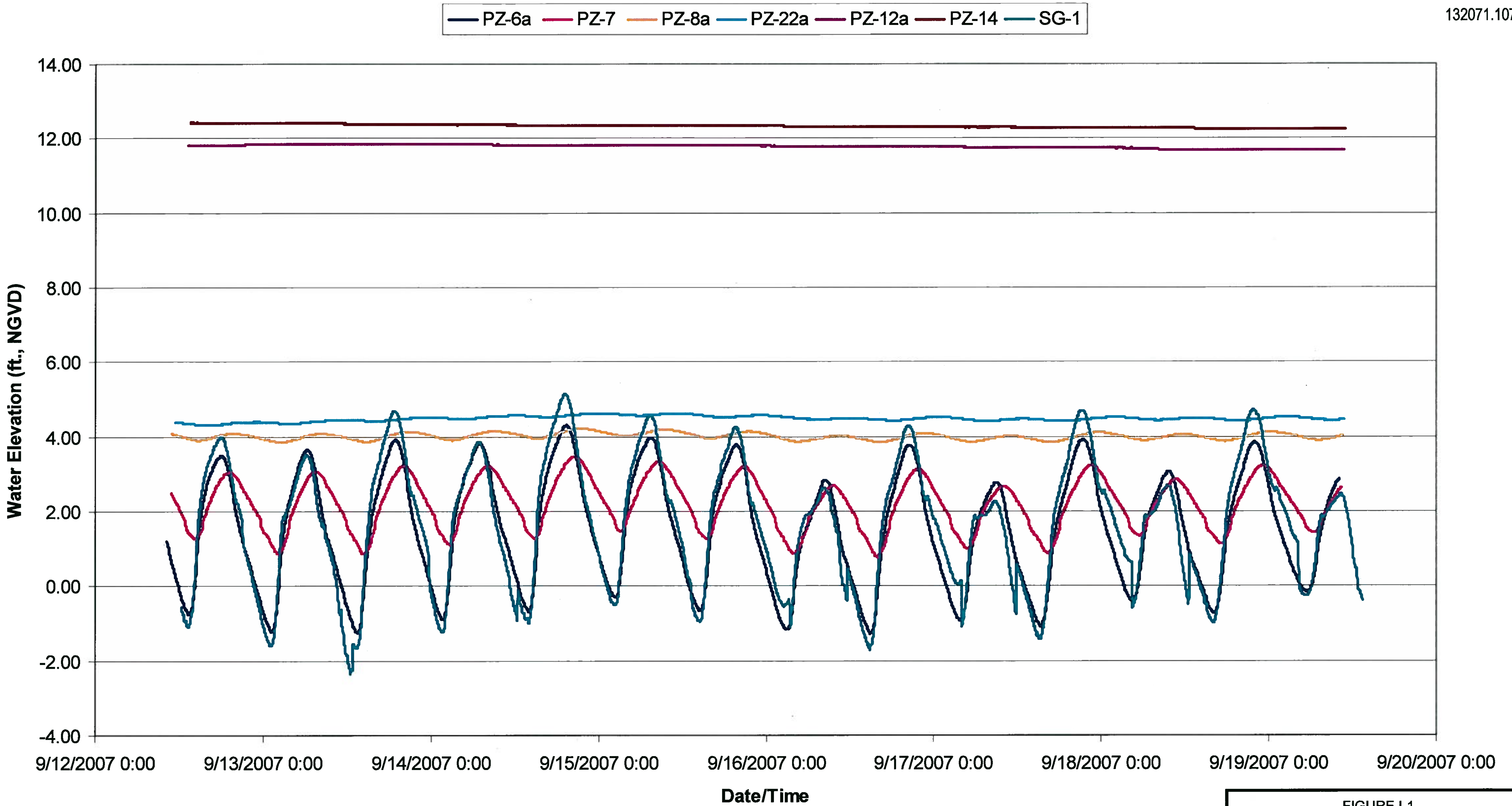


FIGURE I-1

HYDROGRAPH: WATER TABLE – NORTHERN EAST-WEST TRANSECT

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\WT_Hydrograph(NorthernEW).ppt

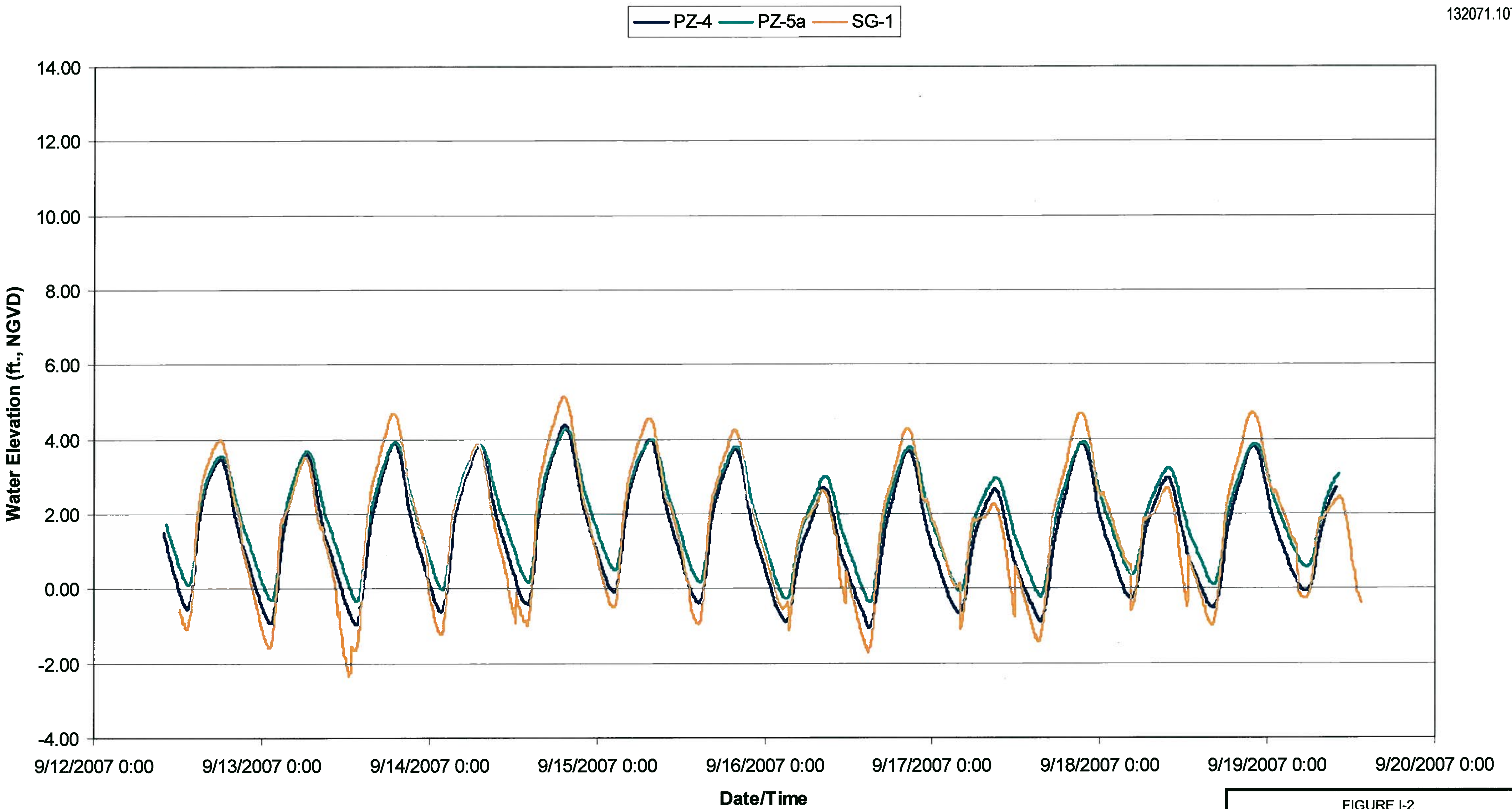


FIGURE I-2

HYDROGRAPH: WATER TABLE – MIDDLE EAST-WEST TRANSECT

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

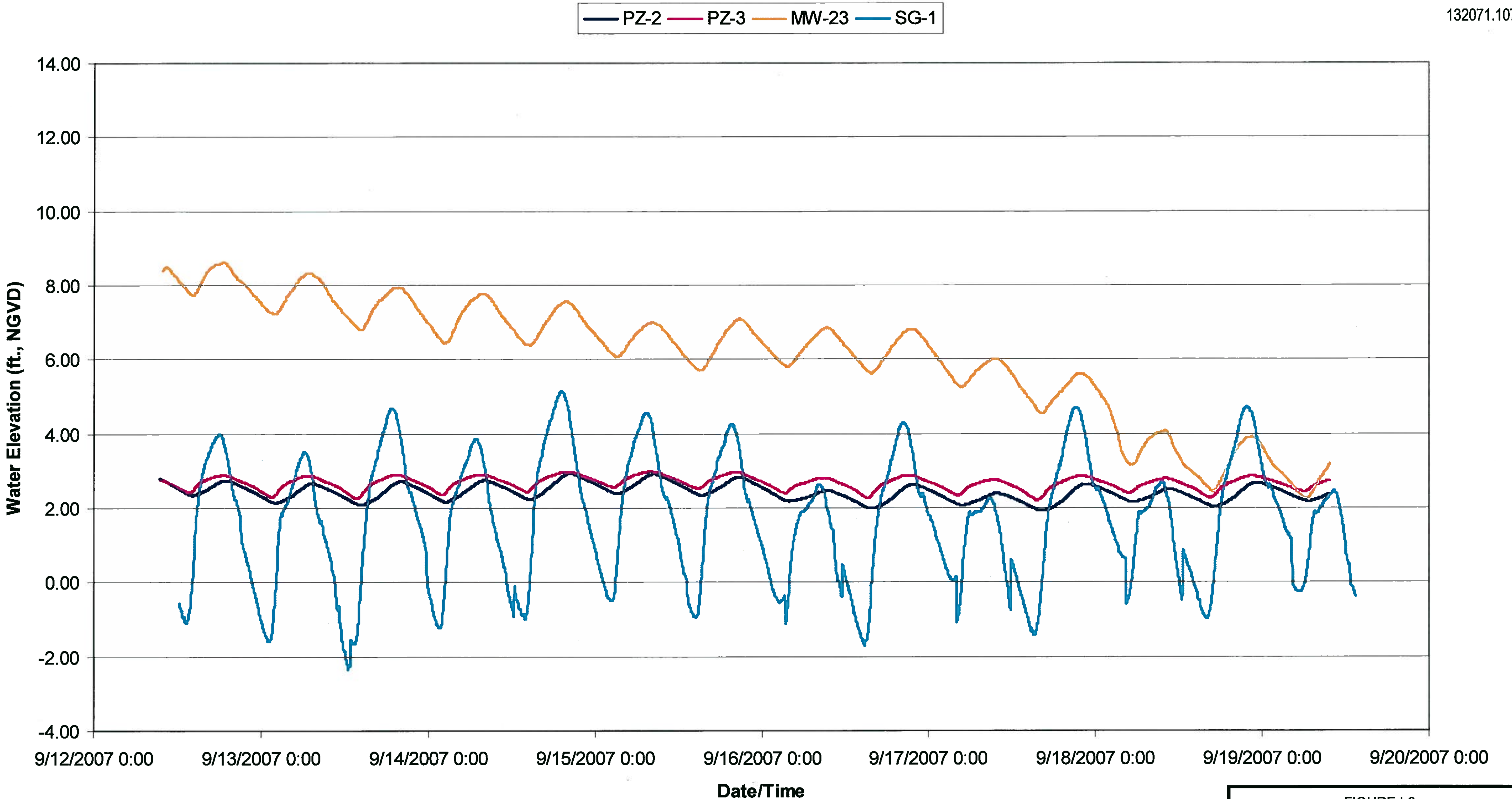


FIGURE I-3

HYDROGRAPH: WATER TABLE – SOUTHERN EAST-WEST TRANSECT

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\WT_Hydrograph(SouthernEW).ppt

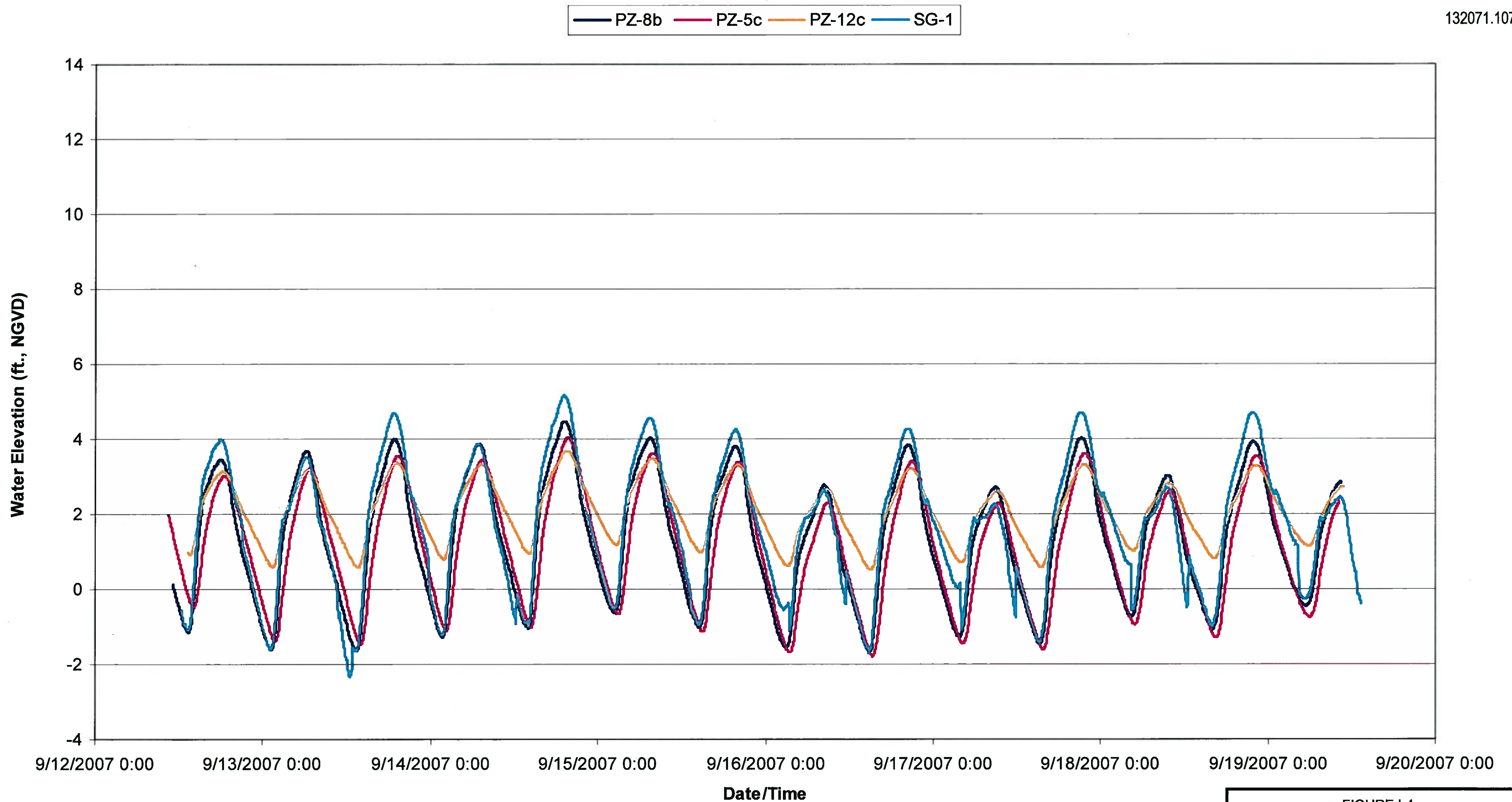


FIGURE I-4

HYDROGRAPH: LOWER SAND AND GRAVEL

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\Hydrograph(LowerSand&Gravel).ppt

132071.107

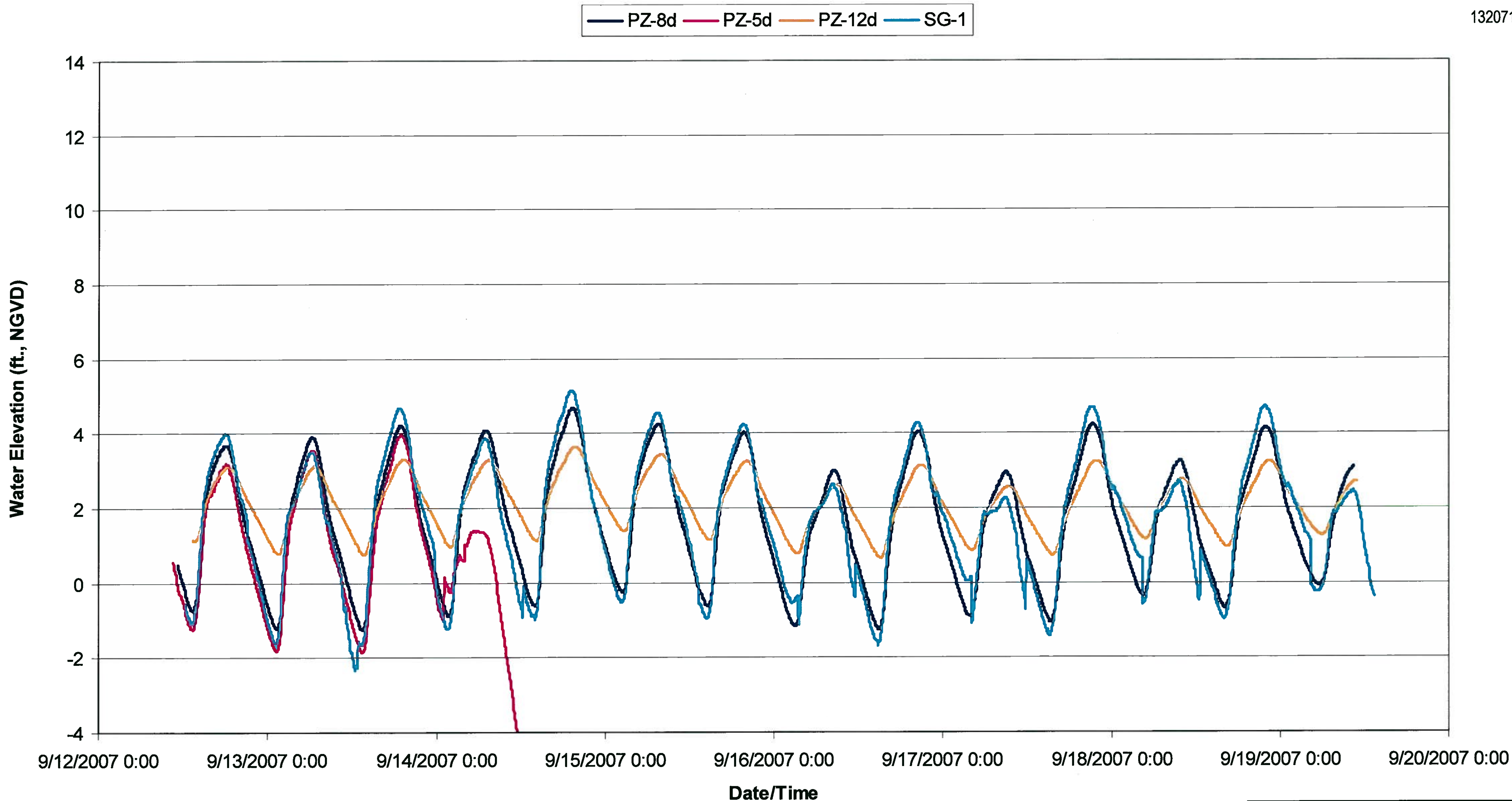


FIGURE I-5

HYDROGRAPH: BEDROCK

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\Hydrograph(Bedrock).ppt

132071.107

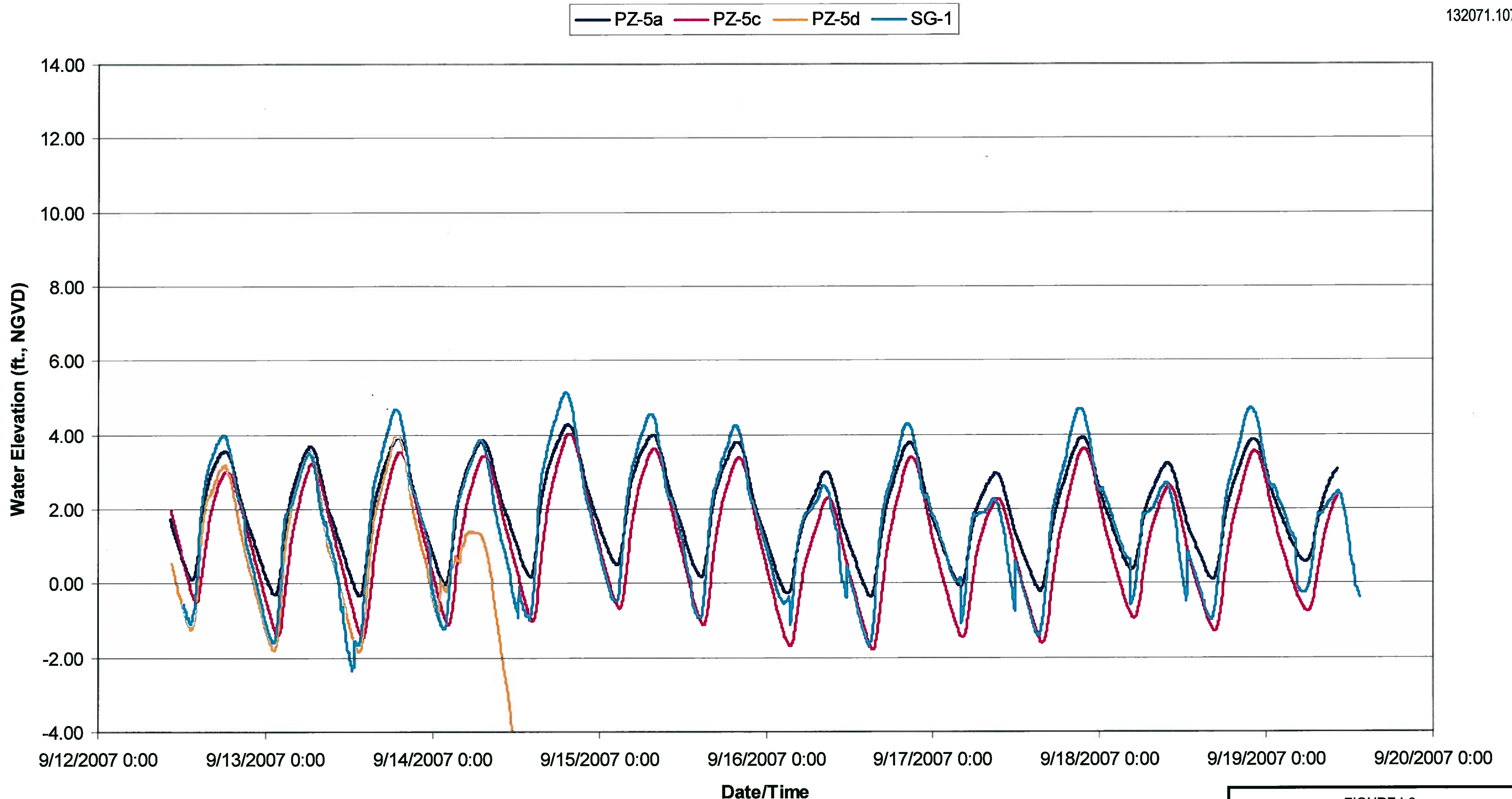


FIGURE I-6

HYDROGRAPH: PZ-5 NEST AND HUDSON RIVER

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\Hydrograph(PZ-5Nest&SG).ppt

132071.107

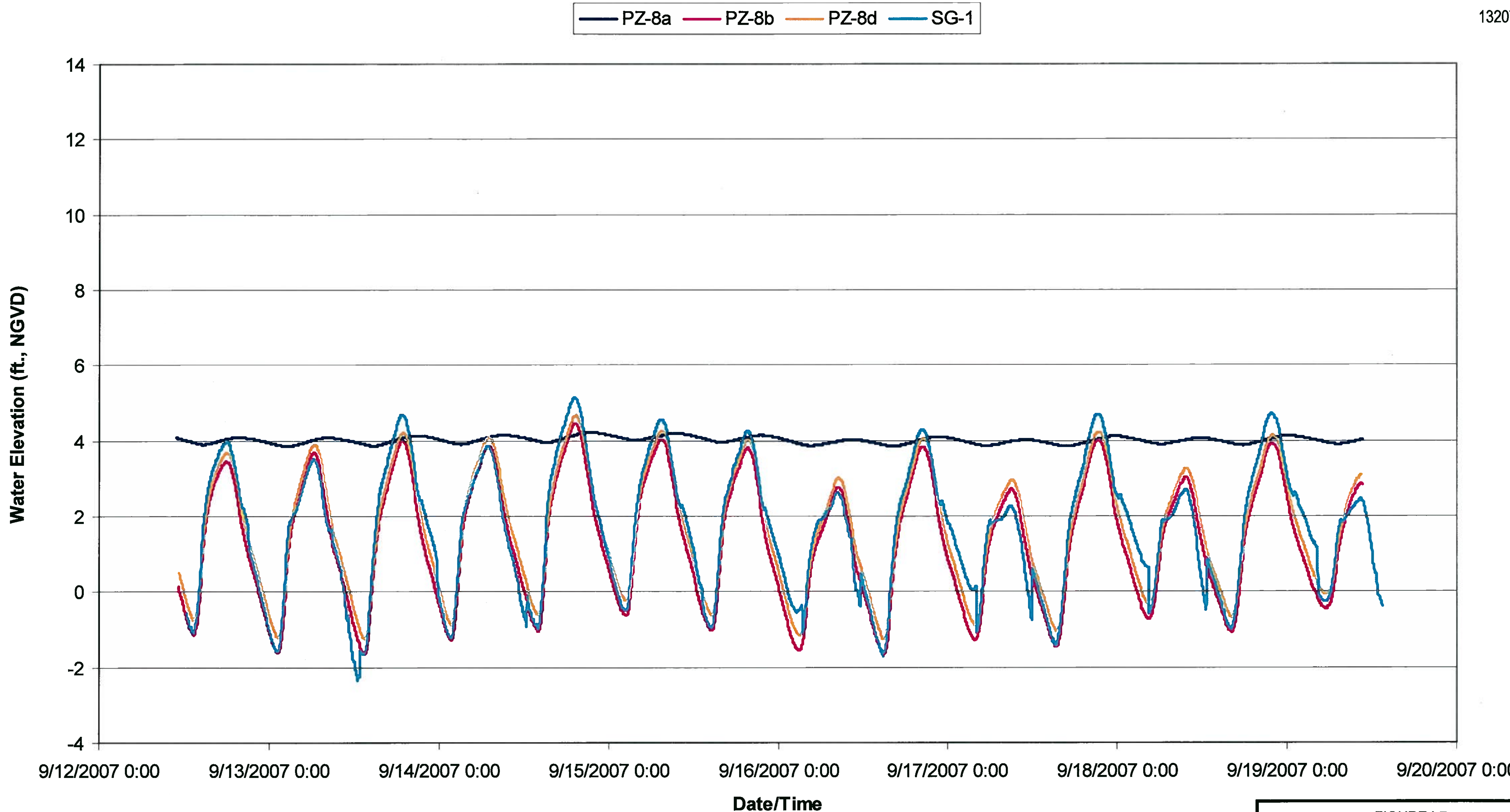


FIGURE I-7

HYDROGRAPH: PZ-8 NEST AND HUDSON RIVER

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\Hydrograph(PZ-8Nest&SG).ppt

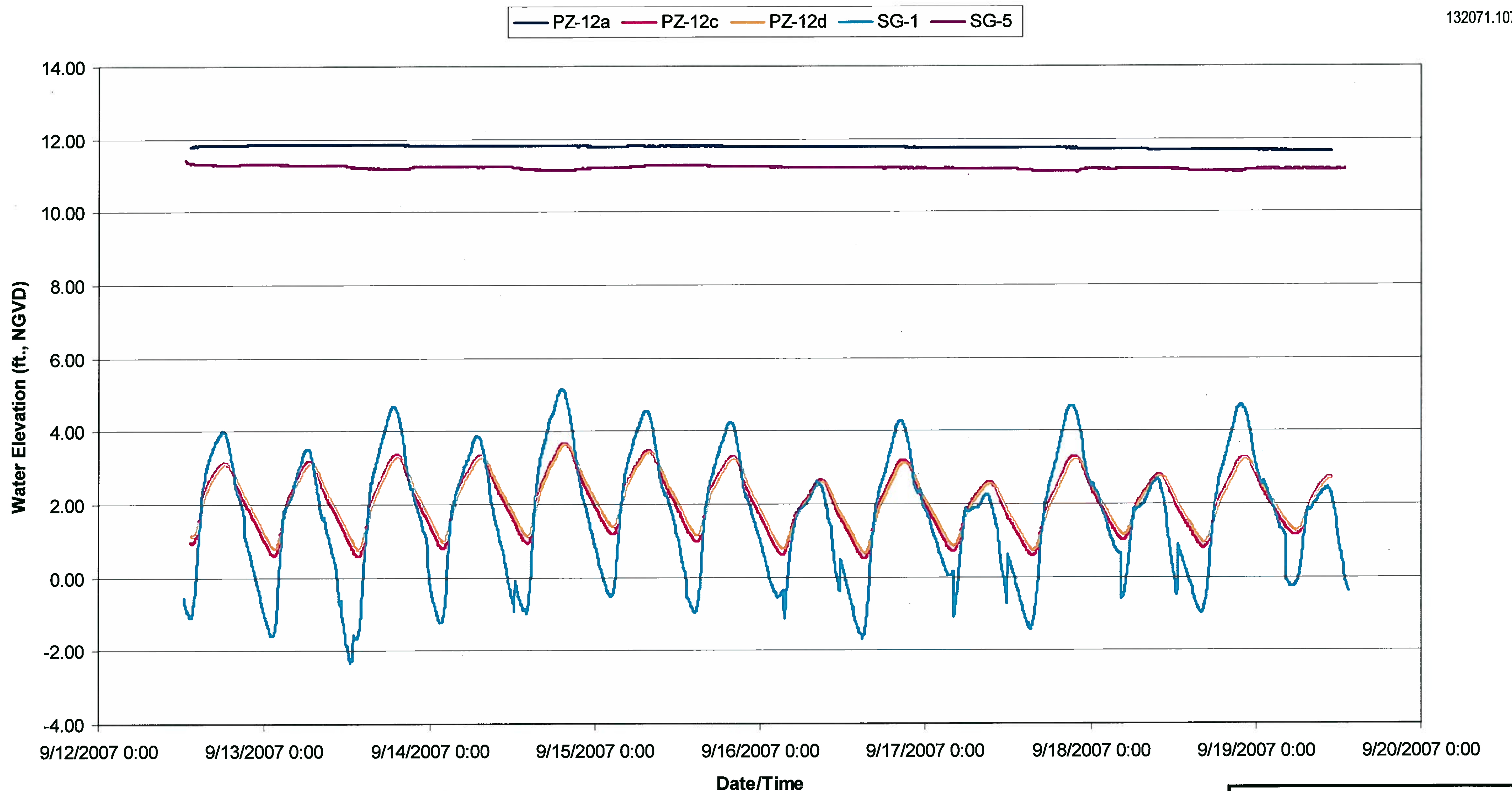


FIGURE I-8

HYDROGRAPH: PZ-12 NEST, HUDSON RIVER, AND WYNANTSKILL CREEK

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\Hydrograph(PZ-12Nest&SGs).ppt

132071.107

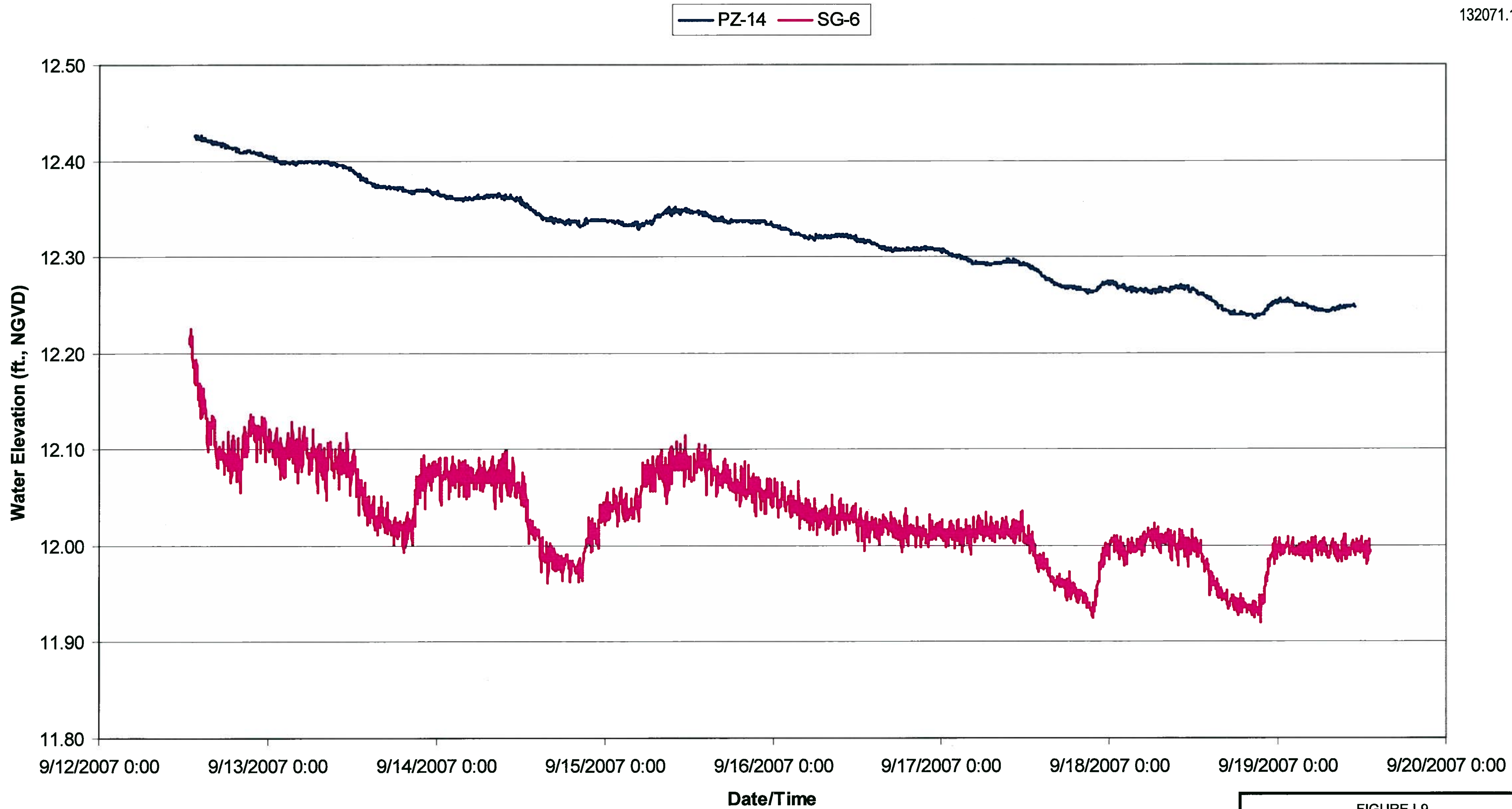


FIGURE I-9

HYDROGRAPH: PZ-14 AND WYNANTSKILL CREEK

NATIONAL GRID
TROY (WATER ST.) SITE-AREA 2
TROY, NEW YORK

BROWN AND CALDWELL ASSOCIATES

\\BCALL01\projects\National_Grid\Nimo_Troy\132071(SI&IRMs)\SuppInv\TidalMonitoring\SI_Rpt_Figures\Hydrograph(PZ-14&SG).ppt