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ENVIRONMENT

Mr. Joshua Cook
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, 625 Broadway, 11th Floor
Albany, New York 12233-7014

Subject:
PDI Report for Survey and Soil Investigation Activities
Port Jervis Former Manufactured Gas Plant (MGP) Site
City of Port Jervis, Orange County, New York
Site No. 3-36-049

Date:
July 29, 2010
Revised:
October 8, 2010

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Our ref.:
B0043021

Dear Mr. Cook:

Between February and May 2010, ARCADIS (on behalf of Orange and Rockland Utilities, Inc. [O&R]) completed several pre-design investigation (PDI) activities at the above-referenced site. Specifically, these PDI activities included:

- A survey of existing site features;
- A survey of subsurface utilities within and adjacent to the site;
- An initial round of groundwater/non-aqueous phase liquid (NAPL) gauging;
- The removal of recoverable NAPL from certain site monitoring wells;
- The sampling/analysis of NAPL removed from monitoring well MW8; and
- The installation of several soil borings and test pits within the O&R Operations Center.

Information regarding the scope and results of the initial NAPL- and groundwater-related PDI activities was presented in the June 16, 2010 *Semi-Annual PDI Status Report for NAPL and Groundwater/Hydrogeologic Assessments* (Status Report; ARCADIS 2010b) and July 2, 2010 *Semi-Annual PDI Status Report Addendum for NAPL and Groundwater/Hydrogeologic Assessments* (Status Report Addendum; ARCADIS 2010c). These documents were collectively approved by the New York State Department of Environmental Conservation (NYSDEC) in a letter to O&R dated July 7, 2010. This letter has been prepared to summarize the scope and results of the recently completed survey- and soil-related PDI activities.

Overview of Completed PDI Activities

Site Survey

The site survey was performed by Borbas Surveying & Mapping, LLC (Borbas) between February 22 and February 24, 2010 and included the O&R Operations Center (Tax Parcel 18-16-2), the O&R-owned property on Pike Street (Tax Parcel 18-16-3), the City of Port Jervis-owned property on the corner of Pike and Water Streets (Tax Parcel 18-16-4), the Meder properties (Tax Parcels 18-14-8.2 and 18-14-9.11), and portions of the Pike, Water, Brown, King, and First Street roadways (located near/adjacent to the site). At the time of the site survey, O&R did not have access to the 28 Pike Street property (Tax Parcel 18-16-1) for the survey activities.

The purpose of the survey was to develop an accurate depiction of existing site features/conditions to facilitate future design activities. The scope of survey activities included the following:

- Existing site features (e.g., buildings, fence lines, roadways/sidewalks, monitoring wells, paved/gravel/vegetated surfaces, etc.);
- Overhead wires/utilities;
- Topography (on one-foot contours); and
- Property boundaries, easements, and right-of-ways.

The results of the site survey are presented on the Borbas survey drawing provided in Attachment A. The survey drawing has been signed by a New York State-licensed Professional Land Surveyor.

Utility Survey

The utility survey was performed by NAEVA Geophysics, Inc. (NAEVA) between April 5 and April 9, 2010 and included the same general areas as the site survey. It should be noted, however, that subsurface utilities within a portion of Pike Street (near the King Street intersection) could not be mapped due to persistent/high-volume traffic. The purpose of the utility survey was to determine the presence and locations of subsurface utilities within and adjacent to the site. Such utilities have the potential to impact the design and implementation of the selected site remedy.

The locations of the identified subsurface utilities and associated structures (e.g., valves, manholes, meters, etc.) are depicted on the NAEVA survey drawing provided in Attachment B. As shown on that drawing, the identified subsurface utilities within and adjacent to the site include electric lines (shown in red), natural gas lines (shown in yellow), water lines (shown in blue), telephone lines (shown in orange), and sanitary/storm sewer lines (shown in green). In addition, there were several suspected/unknown utility lines (denoted with a "?" and shown in purple) identified in and around the O&R Operations Center. Further, several metal detector anomalies (shown in purple hatching) were identified within the O&R Operations Center and may indicate the presence of reinforced concrete or other metal-containing debris.

It should also be noted that there is some uncertainty regarding the locations/alignments of several subsurface utilities on the Meder properties. These include the electric line between the bookstore/church and meeting hall and the two sanitary sewer lines connecting the Meder residence to the sanitary sewer line along First Street. As a result of these uncertainties, additional survey work and/or revisions to the utility survey drawing may be necessary in the future (in advance of subsurface work activities at the Meder properties).

The results of the utility survey were also used to identify and document the locations of subsurface utilities in the area of the soil investigation. Dig Safely New York was also contacted prior to initiating the soil investigation to separately identify subsurface utilities.

Soil Investigation

The PDI soil investigation included the installation of several soil borings and test pits within the O&R Operations Center to support the development of a Remedial Design for the demolition, excavation, and removal of source areas within the top 20 feet of the former MGP site. The *Record of Decision* (ROD; NYSDEC 2007) defines source areas as "...those identified locations on the site where there are former MGP structures containing waste and/or where significant volumes of soil have been found visually to be saturated with NAPL. Soils exhibiting odors, staining, and/or sheens are not included in the definition of 'source areas'". The conceptual limits of soil removal to address source areas are depicted on Figure 5 of the ROD, Figures 4 and 5 of the NYSDEC-approved *Remedial Design Work Plan* (RD Work Plan; ARCADIS 2010a), and Figure 1 of this letter. As noted in the RD Work Plan, these conceptual removal limits were developed based on a limited number of soil borings, monitoring wells, and test pits.

The primary goals of the soil investigation were to:

- Confirm the horizontal limits of source areas;
- Confirm previously reported geotechnical interpretations;
- Obtain geotechnical data necessary to evaluate and design minimum required soil excavation support system(s) for those source areas; and
- Further understand the presence of shallow foundations and obstructions located within and adjacent to the conceptual limits of soil removal.

The locations of the PDI soil borings and test pits are shown on Figure 1. Drilling and test pitting activities were performed by Parratt-Wolff, Inc. under the oversight of an ARCADIS geologist. A representative of the NYSDEC was also on-site periodically during the soil investigation to observe the completion of certain soil borings and test pits.

Soil Borings

Between April 19 and May 4, 2010, a total of 15 soil borings (identified on Figure 1 as PDI-SB1 through PDI-SB3, PDI-SB4A through PDI-SB4D, PDI-SB5, PDI-SB5W, PDI-SB6, PDI-SB6E, PDI-SB7, PDI-SB8A, PDI-SB8B, and PDI-SB9) were installed within and adjacent to the conceptual limits of the 20-foot excavation at the O&R Operations Center. Soil boring logs for these locations are provided in Attachment C and are summarized on Table 1. The original scope of the soil boring program (as proposed and approved in the RD Work Plan) included the installation of nine soil borings (PDI-SB1 through PDI-SB9). However, during the course of the soil investigation (as further described below), certain soil borings were relocated (PDI-SB4 and PDI-SB8) and additional soil borings were installed (PDI-SB5W and PDI-SB6E) in response to conditions encountered in the field.

Prior to initiating drilling activities, boring locations were hand-cleared (using manual air and vacuum technologies) to a depth of approximately 5 feet below ground surface (bgs) to facilitate the identification of potential utilities. At PDI-SB4A and PDI-SB8A (previously identified in the RD Work Plan as PDI-SB4 and PDI-SB8, respectively), subsurface obstructions were encountered during the hand-clearing process that prevented the installation of the soil borings. While hand-clearing the location of soil boring PDI-SB4A, concrete was encountered at a depth of approximately 1 foot bgs. After jack-hammering through approximately 2.5 feet of solid concrete (to a total depth of approximataly 3 feet bgs) and not reaching the bottom of the obstruction, soil boring PDI-SB4A was abandoned (backfilled and

restored to existing grade). Two unsuccessful attempts (identified as soil borings PDI-SB4B and PDI-SB4C) were made to reposition this boring away from the encountered obstruction. In the case of soil boring PDI-SB4D (the third repositioning of soil boring PDI-SB4A), the location was successfully hand-cleared to a depth of 5 feet bgs, but was not drilled (with NYSDEC concurrence) due to its close proximity to soil boring PDI-SB6E, which had already been drilled to a total depth of 50 feet bgs.

While hand-clearing the location of soil boring PDI-SB8A, concrete was encountered at a depth of approximately 2 feet bgs. After jack-hammering through approximately 1 foot of concrete (to a total depth of approximately 3 feet bgs), rebar was observed and a subsurface void was subsequently uncovered. The rebar prevented access, and visual observation of the contents of the structure was not possible. The bottom of the structure is believed to be located at a depth of approximately 5 feet bgs. Lexane tubing was used to probe the bottom of the structure for the presence of NAPL/liquids, but none were observed. In addition, photoionization detector (PID) readings did not indicate the presence of volatile organic compound (VOC) vapors. However, due to uncertainties regarding the contents of the structure (and concerns regarding the potential release of contaminants), no attempt was made to drill through the bottom of the structure. Soil boring PDI-SB8A was relocated to PDI-SB8B and concrete was encountered at a depth of approximately 1 foot bgs (indicating that the subsurface structure likely continues in the direction of Gas Holder A). There were no further attempts to relocate this boring. Based on the location and observations made at soil borings PDI-SB8A and PDI-SB8B, the subsurface structure may be associated with Purifier T.

The remaining nine soil boring locations (PDI-SB1 through PDI-SB3, PDI-SB5, PDI-SB5W, PDI-SB6, PDI-SB6E, PDI-SB7, and PDI-SB9) were successfully hand-cleared to a depth of approximately 5 feet bgs. Once hand-cleared, soil borings were drilled using hollow-stem auger (HSA) methods and soil sampling was performed using 2-inch diameter split spoon sampling devices. Soil samples within the top 20 feet of each boring were collected continuously and soils deeper than 20 feet bgs were sampled in nominal 5-foot increments (e.g., 20 to 22 feet, 25 to 27 feet, 30 to 32 feet, etc.). Each soil sample was visually characterized for soil type and the presence of NAPL. Soil cuttings from each boring location were field screened for the presence of VOC vapors using a PID and were subsequently staged in a covered roll-off container within the limits of the O&R Operations Center.

As indicated on Table 1, materials meeting the ROD definition of "source areas" were encountered in soil borings PDI-SB2 (between 18 and 22 feet bgs), PDI-SB3 (between 16 and 18/20 and 22 feet bgs), PDI-SB5 (between 16 and 20 feet bgs), PDI-SB5W (between 17 and 20 feet bgs), PDI-SB6 (between 16 and 20 feet bgs), and PDI-SB6E (between 18 and 22 feet bgs). As indicated on Table 1, a yellow oil-

like material (of unknown origin) was observed in soil borings PDI-SB5W and PDI-SB6E. This yellow oil-like material was also observed at soil borings PDI-SB1 and PDI-SB2.

Select soil samples from each soil boring were submitted to PW Laboratories, Inc. (PW Labs) for one or more of the following geotechnical analyses:

- Moisture content as a percentage of dry weight (ASTM D2216);
- Particle-size analysis (ASTM D422 and D1140);
- Grain-size distribution from hydrometer analysis (ASTM D422); and
- Specific gravity (ASTM D4767).

The results of these analyses are presented in Attachment D. Table 2 identifies the samples collected and geotechnical analyses performed for each soil boring location. It should be noted that the RD Work Plan (Section 2.5.1) previously identified certain additional geotechnical analyses that may be performed, including direct-shear (ASTM D3080), Atterberg limits (ASTM D4318), and shear strength (ASTM D2850 and D4767). In general, these analyses were determined to not be necessary by ARCADIS' professional geotechnical engineer based on the materials encountered (mostly sands and gravels).

The geotechnical results generally confirm the previously reported geotechnical interpretations and will be used to evaluate and design minimum required soil excavation support system(s) for the demolition, excavation, and removal of source areas within the top 20 feet of the former MGP site.

Test Pits

Between May 5 and May 7, 2010, a total of eight test pits (identified on Figure 1 as PDI-TP1 through PDI-TP8) were installed within the O&R Operations Center. Test pit logs for these locations are provided in Attachment E. The test pits were completed in an attempt to locate/identify shallow foundations and obstructions (including materials of construction, thickness, depth, etc.) that may potentially impact the implementation of the remedy (i.e., installation of excavation support system[s] and soil excavation). The original scope of the test pitting program (as proposed and approved in the RD Work Plan) included the installation of three test pits (PDI-TP1 through PDI-TP3) in the vicinity of the former Gas Oil Above-Ground Storage Tank (AST) H, the southernmost portion of Gas Holder A, and Tar Separator O. However, during the course of the soil investigation, these initial test pits were

renumbered/relocated and additional test pits were added (PDI-TP4 through PDI-TP8) in response to conditions encountered in the field during the soil boring program (most notably, the shallow obstructions observed at soil borings PDI-SB4A through PDI-SB4C). Specifically, former test pit PDI-TP1 was eliminated given that hand-clearing activities at soil boring PDI-SB2 (along with the observations made at historical test pit TP-10) did not indicate the presence of the subsurface foundation/concrete pad for former Gas Oil AST H. Former test pits PDI-TP2 and PDI-TP3 were subsequently renumbered as test pits PDI-TP1 and PDI-TP2, respectively. Test pits PDI-TP3 through PDI-TP8 were added to further investigate the actual locations and extent of foundations associated with Gas Holders C and D.

Test pits were advanced to depths ranging from approximately 0.5 feet to 5.5 feet bgs using a small backhoe. Excavated materials were visually examined and logged by the field geologist and temporarily staged on polyethylene sheeting adjacent to the test pits. Once complete, excavated materials were placed back into the test pits at approximately the same depth and location from which they were removed and the test pits were restored with cold-patch asphalt.

The following is a brief description of the MGP-related structures that were encountered during the test pitting program:

- Gas Holder A (Test Pit PDI-TP1) – Observations made at test pit PDI-TP1 confirm the general location and construction of the holder foundation. As indicated in the log for this location, red brick with mortar joints and concrete were observed along the approximately 14-foot length of the test pit at a depth of approximately 0.5 feet bgs. The general location and edge of the holder outside of the garage bay (in the parking area of the O&R Operations Center) is fairly apparent due to the settlement of pavement.

- Tar Separator O (Test Pit PDI-TP2) – Observations made at test pit PDI-TP2 confirm the general location of Tar Separator O. As indicated in the test pit log for PDI-TP2, several intersecting concrete walls (each approximately 0.5 feet wide) were uncovered and are believed to comprise the baffles/holding chambers of the separator. The presence of standing water at PDI-TP2 likely indicates that the separator has an in-tact bottom. The standing water was collected (to the extent practicable) and containerized in a 55-gallon drum for characterization/disposal. The bottom of the separator was encountered at a depth of approximately 5.5 feet bgs. Due to overhead clearance issues, test pit PDI-TP2 could not be advanced any closer to the loading dock to further investigate the dimensions and contents of Tar Separator O.

- Gas Holder D (Test Pits PDI-TP3 through PDI-TP5) – Observations made at test pits PDI-TP3 through PDI-TP5 confirm the general location and construction of the holder foundation. The foundation appears to be a combination ring-wall (seen at test pits PDI-TP3 and PDI-TP4) and concrete slab (seen at test pit PDI-TP5). The foundation was encountered at a depth of approximately 0.5 feet bgs and appears to extend to a depth of approximately 4.5 feet bgs.

- Gas Holder C (Test Pits PDI-TP6 through PDI-TP8) – Observations made at test pits PDI-TP6 through PDI-TP8 indicate the footprint of the holder foundation is approximately 25 percent larger than previously shown and may be located closer to Gas Holder A (Figure 2). The in-tact foundation was observed along the entire length of test pit PDI-TP8 and appears to continue southwest into the conceptual limits of the 20-foot excavation. At test pits PDI-TP6 and PDI-TP7, the foundation appears to extend to a depth of approximately 5 feet bgs. The metal detector anomalies shown on the NAEVA survey drawing (Attachment B) also appear to delineate the eastern edge of the holder foundation.

Community Air Monitoring

Community air monitoring was performed on a daily basis during the soil investigation to provide real-time measurements of total VOCs and particulate matter less than 10 microns in diameter (PM_{10}) at the downwind perimeter of the work area. The community air monitoring procedures and action levels for total VOCs and PM_{10} were set forth in the NYSDEC-approved *Community Air Monitoring Plan* (CAMP), which was included as Appendix E of the RD Work Plan. Community air monitoring stations (one upwind and one downwind location) were established at the start of each work day based on the predominant wind direction and general location of work activities at that site. Each monitoring station included a PID and dust meter equipped with data logging capabilities.

The action levels for total VOCs and PM_{10} were not exceeded at any point during the soil investigation. Nevertheless, Bio-Solve®/water mixture and associated spraying equipment were available on-site to suppress nuisance odors and/or dust (if encountered).

Handling/Management of Investigation-Derived Waste

Investigation-derived waste (IDW) generated during the soil investigation was stored within the limits of the O&R Operations Center and included: 1) soil cuttings from the hand-clearing, drilling, and test pitting activities; 2) groundwater collected from test pit PDI-TP2; 3) decontamination wash-water; and 4) personal protective equipment and plastic sheeting (from the decontamination pad and test pitting activities). Soil

cuttings were stored in a fully-covered roll-off container and all other IDW was stored in appropriately labeled 55-gallon drums. IDW was characterized and, with the exception of two drums (containing decontamination water), was transported off-site for proper disposal on July 29, 2010.

Conclusions

The soil investigation was successful in further refining the horizontal extent of source areas at the site and providing additional information regarding shallow foundations and obstructions located within and adjacent to the conceptual limits of soil removal. The results of the soil investigation (in conjunction with information obtained from previous site investigations) have been used to develop proposed limits of excavation to address the identified source areas within the top 20 feet of the O&R Operations Center. The proposed limits of excavation are depicted on Figure 2 and are summarized below.

Gas Holder A and Surrounding Soils

The conceptual limits of excavation specified in the ROD for Gas Holder A and the surrounding soils are shown on Figure 1. As previously indicated, these conceptual removal limits were developed based on a limited number of soil borings, monitoring wells, and test pits. During the soil investigation, nine soil borings (PDI-SB1 through PDI-SB3, PDI-SB5, PDI-SB5W, PDI-SB6, PDI-SB6E, PDI-SB7, and PDI-SB9) were successfully advanced to or below the vertical excavation limit specified in the ROD (20 feet bgs) to provide additional information regarding the horizontal extent of source areas. Of these nine locations, materials meeting the ROD definition of source areas were encountered in soil borings PDI-SB2 (between 18 and 22 feet bgs), PDI-SB3 (between 16 and 18/20 and 22 feet bgs), PDI-SB5 (between 16 and 20 feet bgs), PDI-SB5W (between 17 and 20 feet bgs), PDI-SB6 (between 16 and 20 feet bgs), and PDI-SB6E (between 18 and 22 feet bgs).

Based on the observations made during the soil investigation, as well as those made during historical investigations, O&R proposes the following modifications to the conceptual horizontal limits of excavation specified in the ROD:

- Northern Limit – As shown on Figure 2, the northern limit of excavation has been relocated from the edge of Brown Street to the O&R property line. This modification will reduce health and safety concerns regarding the subsurface natural gas line and other unknown/suspected utility lines located along the southern side of Brown Street.

- Eastern and Western Limits – The eastern and western limits of excavation have been expanded to include source areas observed within the upper 20 feet of soil borings PDI-SB5 and PDI-SB6. These limits also encompass soil borings PDI-SB5W and PDI-SB6E, which were installed to the west and east of these locations, respectively. As noted above, although source areas were not observed in the upper 20 feet of soil borings PDI-SB5W and PDI-SB6E, there was a yellow oil-like material (of unknown origin) present at both locations.

- Southern Limit – Source areas have not been observed in the upper 20 feet of the soil borings (SB15 and PDI-SB9) and monitoring well (MW1S) installed in the O&R Operations Center to the south of Gas Holder A. Accordingly, the southern limit of excavation has been relocated to the north of former Purifier T. The log for soil boring PDI-SB9 is provided in Attachment C and the logs for SB15 and MW1S are provided in Attachment F.

Tar Seperator O and Subsurface Structure Potentially Associated with Purifier T

The ROD identifies a conceptual vertical limit of excavation of between 5 and 12 feet bgs for Tar Separator O. As noted above, the bottom of the structure was encountered at a depth of approximately 5.5 feet bgs and, based on the presence of standing water, appears to be in-tact. The removal of Tar Separator O may not be practical due to its location near/below the loading dock of the O&R Operations Center building. As a result, O&R proposes to: 1) remove the contents of Tar Separator O (to a depth of approximately 5.5 feet bgs); 2) power-wash/clean the interior surfaces of the structure; and 3) fill the structure with flowable fill (grout/concrete).

As discussed above, a subsurface structure was encountered during the soil investigation while hand-clearing the location for soil boring PDI-SB8A. This structure may be associated with Purifier T. Observations made during the hand-clearing activities at PDI-SB8A indicate that 1) the bottom of the structure may be located at approximately 5 feet bgs and 2) the structure does not appear to contain NAPL/liquids. Similar to the above activities associated with Tar Separator O, O&R proposes to: 1) remove the contents of the structure; 2) power-wash/clean the interior surfaces; and 3) fill the structure with flowable fill (grout/concrete).

Gas Holder C

The conceptual vertical limit of excavation specified in the ROD for the foundation associated with Gas Holder C is 3 feet bgs. However, as noted above, the edge of the holder foundation appears to extend to a depth of approximately 5 feet bgs. Accordingly, portions of this area will require excavation to a depth of approximately

5 feet bgs to facilitate the complete removal of the holder foundation. Towards the center of the foundation (in the vicinity of monitoring well MW5 and soil boring SB18), the concrete foundation appears to extend to a maximum depth of approximately 3 feet bgs (consistent with the conceptual vertical limit specified in the ROD). As indicated on Figure 2, O&R proposes to remove the holder foundation in its entirety. This will require excavation to depths ranging from 3 feet bgs (towards the center of the foundation) to 5 feet bgs (at the edge of the foundation). Underlying soils will not be removed unless found to be visually saturated with NAPL (thus meeting the ROD definition of source areas). It should be noted that the approximate location and dimensions of the holder foundation depicted on Figure 2 have been modified based on the results of the test pitting activities.

Gas Holder D

The conceptual vertical limit of excavation specified in the ROD for the foundation associated with Gas Holder D is also 3 feet bgs. The actual vertical extent of the holder foundation is likely closer to 5 feet bgs with certain areas of the foundation only extending to a depth of approximately 3 feet bgs. As noted above, the foundation is generally encountered at a depth of approximately 0.5 foot bgs and appears to be a combination ring-wall and concrete slab. O&R proposes to initially remove this upper 0.5 foot of material across the footprint of the holder foundation to identify the actual extent of the ring-wall and concrete slab. Once identified, O&R will excavate/remove the holder foundation. The ring wall (where encountered) is anticipated to require excavation to a depth of approximately 5 feet bgs and the concrete slab (where encountered) is anticipated to require excavation to a depth of approximately 3 feet bgs. Underlying soils (below 0.5 foot bgs) will not be removed unless found to be visually saturated with NAPL.

Due to the presence of the gas regulator station and active subsurface natural gas lines, the complete removal of the holder foundation will not be possible. During excavation activities, a minimum 5-foot off-set will be maintained from the edge of the gas regulator station and a minimum 10-foot off-set will be maintained from active natural gas utility lines. These off-sets are reflected on Figure 2. At this time, it is anticipated that the natural gas line located in the vicinity of monitoring wells MW3S and MW3D will be deactivated to facilitate the excavation of materials in the vicinity of Gas Holder A (discussed above). As a result, there is no off-set shown for this natural gas line. For the natural gas line entering the gas regulator station from Brown Street, there is some uncertainty regarding the alignment of the utility. As shown on Figure 2, a previous utility locator service marked-out an alignment for the natural gas line that shows it initially passing through the limits of the holder foundation to the east of monitoring well MW13. The alignment surveyed by NAEVA (shown in purple on Figure 2) shows the natural gas line to the west of monitoring

well MW13 in this area. As a conservative measure, the proposed limits of excavation assume that the natural gas line passes to the east of monitoring well MW13. It should also be noted that portions of the holder foundation were likely removed in the past to facilitate the installation of the natural gas lines and gas regulator station.

Summary

The above modifications are anticipated to result in the excavation and off-site treatment/disposal of approximately 5,350 *in-situ* cubic yards (cy) of material. This volume is approximately 750 cy more than the estimated removal volume specified in the ROD. In addition, as indicated in the RD Work Plan, if found during the excavation of source areas, piping associated with MGP structures (i.e., not including piping associated with existing/former infrastructure) will be 1) cleaned of NAPL (if present), excavated/removed (if feasible), and properly disposed, or 2) cleaned, capped, and abandoned in place.

Please feel free to contact Ms. Maribeth McCormick of O&R at 845.783.5534 with any questions or comments regarding the information provided herein.

Sincerely,

ARCADIS of New York, Inc.

Andrew Corbin, P.E.
Principal Engineer

Enclosures:
Tables
- Table 1 – Summary of PDI Soil Borings
- Table 2 – Summary of Geotechnical Analyses

Figures
- Figure 1 – PDI Soil Boring and Test Pit Locations
- Figure 2 – Proposed Limits of Excavation

Attachments
- Attachment A – Borbas Survey Drawing
- Attachment B – NAEVA Survey Drawing
- Attachment C – Soil Boring Logs
- Attachment D – Results of Geotechnical Analyses
- Attachment E – Test Pit Logs
- Attachment F – Historical Logs for MW1S and SB15

References.

ARCADIS. 2010a. Remedial Design Work Plan, Port Jervis Former MGP Site, Port Jervis, New York, Site No. 3-36-049, January 2010.

ARCADIS. 2010b. Semi-Annual PDI Status Report for NAPL and Groundwater/Hydrogeologic Assessments, Port Jervis Former Manufactured Gas Plant (MGP) Site, City of Port Jervis, Orange County, New York, Site No. 3-36-049, June 16, 2010.

ARCADIS. 2010c. Semi-Annual PDI Status Report Addendum for NAPL and Groundwater/Hydrogeologic Assessments, Port Jervis Former Manufactured Gas Plant (MGP) Site, City of Port Jervis, Orange County, New York, Site No. 3-36-049, July 2, 2010.

NYSDEC. 2007. Record of Decision, O&R Port Jervis Former MGP Site, Port Jervis, Orange County, New York, December 2007.

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Tables

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TABLE 1

SUMMARY OF PDI SOIL BORINGS

PDI REPORT FOR SURVEY AND SOIL INVESTIGATION ACTIVITIES
PORT JERVIS FORMER MGP SITE
ORANGE AND ROCKLAND UTILITIES, INC. - PORT JERVIS, NEW YORK

Location ID	Date Started	Date Completed	Total Depth of Boring (feet bgs)	Source Areas Observed[2] (Yes/No)	Observations
PDI-SB1	4/28/2010	4/28/2010	50	No	18-20 feet bgs: Trace blebs of brown oil-like material. 20-22 feet bgs: Trace blebs of brown oil-like material, yellow oil-like material coating gravel, brown oil-like material coating outside of spoon and rods. 25-27 feet bgs: Trace blebs of yellow oil-like material coating gravel.
PDI-SB2	4/28/2010	4/29/2010	50	Yes (18-22 feet bgs)	18-22 feet bgs: Moderate yellow-brown oil-like material coating gravel. 25-27 feet bgs: Moderate blebs of yellow-brown oil-like material, brown oil-like material coating rods 32-34 feet bgs: Heavy impacts of brown oil-like material (between 0.6-0.8 feet of recovery)
PDI-SB3	4/30/2010	4/30/2010	37 (boring terminated due to presence of impacts at interface of coarse-grained alluvium and glacial outwash units)	Yes (16 to 18 and 20 to 22 feet bgs)	12-14 feet bgs: Trace brown oil-like material (between 0.2-0.6 feet of recovery), moderate brown oil-like material at the bottom of the sample (between 0.6-1.3 feet of recovery). 14-16 feet bgs: Moderate brown oil-like material coating sand. 16-18 feet bgs: Heavy impacts of brown oil-like material. 20-22 feet bgs: Brown oil-like material pooled in water in spoon (between 0.6-1.0 feet of recovery) 25-27 feet bgs: Heavy impacts of brown oil-like material coating gravel.
PDI-SB4A	4/20/2010	4/21/2010	3 (boring terminated during hand-clearing due to refusal)	NA	Concrete encountered at a depth of approximately 0.5 foot bgs, boring advanced approximately 2.5 feet into solid concrete without reaching bottom of obstruction. Soil boring PDI-SB4A relocated to PDI-SB4B
PDI-SB4B	4/21/2010	4/21/2010	0.5 (boring terminated during hand-clearing activities due to refusal)	NA	Concrete encountered at a depth of approximately 0.5 foot bgs. Soil boring PDI-SB4B relocated to PDI-SB4C.
PDI-SB4C	4/21/2010	4/21/2010	0.8 (boring terminated during hand-clearing due to refusal)	NA	Hard surface (possibly old asphalt) encountered at a depth of approximately 0.8 foot bgs. Soil boring PDI-SB4C relocated to PDI-SB4D.
PDI-SB4D	4/21/2010	4/21/2010	5 (boring not advanced beyond 5 feet bgs)	NA	Soil boring PDI-SB4D was not advanced beyond 5 feet bgs (with NYSDEC concurrence) due to its close proximity to soil boring PDI-SB6E, which had already been drilled to a total depth of 50 feet bgs.
PDI-SB5	4/27/2010	4/27/2010	20 (boring terminated due to presence of source material within top 20 feet)	Yes (16-20 feet bgs)	12-14 feet bgs: Moderate to heavy impacts of brown oil-like material (between 0.4-0.6 feet of recovery). 16-18 feet bgs: Moderate to heavy impacts of oil-like material (between 0-0.4 feet of recovery), saturated with brown oil-like material (between 0.4-1.2 feet of recovery). 18-20 feet bgs. Saturated with brown oil-like material (between 0-1.0 feet of recovery), trace brown oil-like material (between 1.0-1.5 feet of recovery).
PDI-SB5W	5/3/2010	5/3/2010	28.5 (boring terminated due to refusal)	Yes (17-20 feet bgs)	Soil boring PDI-SB5W was installed to further understand the horizontal extent of source material to the west of soil boring PDI-SB5. 17-18 feet bgs: Moderate yellow oil-like material coating gravel (between 0.8-1.0 feet of recovery) 18-20 feet bgs: Moderate brown oil-like material coating gravel Obstruction (gravel/cobble) encountered at a depth of approximately 25.5 feet bgs, cored through obstruction to a total depth of approximately 28.5 feet bgs.
PDI-SB6	4/27/2010	4/27/2010	20 (boring terminated due to presence of source material within top 20 feet)	Yes (16-20 feet bgs)	8-10 feet bgs: Trace brown oil-like material. 10-12 feet bgs: Trace blebs of brown oil-like material (at 1.1 feet of recovery) 12-16 feet bgs: Heavy impacts of brown oil-like material. 16-20 feet bgs: Heavy (saturated) impacts of brown oil-like material.
PDI-SB6E	5/3/2010	5/4/2010	50	Yes (18-22 feet bgs)	Soil boring PDI-SB6E was installed to further understand the horizontal extent of source material to the east of soil boring PDI-SB6 16-18 feet bgs: Moderate yellow oil-like material coating sample. 18-22 feet bgs: Heavy impacts of yellow oil-like material coating gravel.

TABLE 1

SUMMARY OF PDI SOIL BORINGS

PDI REPORT FOR SURVEY AND SOIL INVESTIGATION ACTIVITIES
PORT JERVIS FORMER MGP SITE
ORANGE AND ROCKLAND UTILITIES, INC. - PORT JERVIS, NEW YORK

Location ID	Date Started	Date Completed	Total Depth of Boring (feet bgs)	Source Areas Observed[2] (Yes/No)	Observations
PDI-SB7	4/22/2010	4/23/2010	28.5 (boring terminated due to refusal)	No	8-10 feet bgs: Trace blebs of brown oil-like material (at 1.2 feet of recovery). 10-12 feet bgs: Trace blebs of brown oil-like material (at 0.6 feet of recovery). 18-22 feet bgs: Trace blebs of brown oil-like material Obstruction (gravel/cobble) encountered at a depth of approximately 25.5 feet bgs, cored through obstruction to a total depth of approximately 28.5 feet bgs
PDI-SB8A	4/19/2010	4/19/2010	3 (boring terminated during hand-clearing due to refusal and presence of subsurface void)	NA	Concrete encountered at a depth of approximately 2 feet bgs, boring advanced 1 foot into concrete. Rebar observed at a depth of approximately 3 feet bgs (below concrete) and subsurface void encountered. No attempt made to advance boring any further (given uncertainties regarding contents of subsurface void/structure). Soil boring PDI-SB8A relocated to PDI-SB8B.
PDI-SB8B	4/29/2010	4/29/2010	1 (boring terminated during hand-clearing due to refusal)	NA	Concrete encountered at a depth of approximately 1 foot bgs. No attempt made to advance boring any further or relocate
PDI-SB9	4/21/2010	4/22/2010	50	No	18-20 feet bgs: Trace blebs of brown oil-like material in tip of spoon. 20-22 feet bgs: Trace blebs of brown oil-like material on gravel. 25-27 feet bgs: Trace blebs of brown oil-like material on gravel.

Notes:

1 bgs - below ground surface

2 As specified in the *Record of Decision* (NYSDEC, December 2007), areas of significant waste disposal represent "source areas" and are defined as those identified locations on the site where there are former MGP structures containing waste and/or where significant volumes of soil have been found visually to be saturated with NAPL. Soils exhibiting odors, staining, and/or sheens are not included in the definition of "source areas." At the site, these source areas appear to be directly associated with several of the former plant structures, notably Gas Holder A, Tar Separator O, Gas Holder C, and Gas Holder D.

3 NA - not applicable.

TABLE 2

SUMMARY OF GEOTECHNICAL ANALYSES

PDI REPORT FOR SURVEY AND SOIL INVESTIGATION ACTIVITIES
PORT JERVIS FORMER MGP SITE
ORANGE AND ROCKLAND UTILITIES, INC. - PORT JERVIS, NEW YORK

Soil Boring ID	Sample Increment (feet bgs)	Geotechnical Analysis			
		Moisture Content (ASTM D2216)	Sieve Analysis (ASTM D422 and D1140)	Hydrometer Analysis (ASTM D422)	Specific Gravity (ASTM D854)
PDI-SB1	6-8	1	1	1	0
	14-16	1	1	0	1
	20-22	1	1	0	0
	25-27	1	1	0	0
	30-32	1	1	0	1
	40-42	1	1	0	0
	45-47	1	1	0	0
PDI-SB2	5-6	1	1	0	1
	10-12	1	1	1	0
	20-22	1	1	0	0
	35-37	1	1	0	0
	48-50	1	1	0	0
PDI-SB3	8-10	1	1	1	0
	16-18	1	1	0	1
	25-27	1	1	0	0
PDI-SB5W	5-6	1	1	0	0
	8-10	1	1	1	0
	12-14	1	1	0	0
	18-20	1	1	1	1
PDI-SB6	6-8	1	1	0	0
	10-12	1	1	1	0
PDI-SB6E	18-20	1	1	0	0
	30-32	1	1	0	0
	35-37	1	1	0	1
	45-47	1	1	1	0
PDI-SB7	8-10	1	1	0	0
	12-14	1	1	1	0
	16-18	1	1	0	1
	20-22	1	1	1	0
PDI-SB9	5-6	1	1	0	0
	10-12	1	1	1	0
	18-20	1	1	0	0
	25-27	1	1	0	1
	30-32	1	1	0	0
	35-37	1	1	0	0
	45-47	1	1	0	1
Total		**36**	**36**	**10**	**9**

Notes:
1. Samples were collected by ARCADIS and submitted to PW Laboratories, Inc. for the specified analyses.
2. The results of the geotechnical analyses identified above are provided in Attachment D of the *PDI Report for Survey and Soil Investigation Activities* .
3. bgs - below ground surface.

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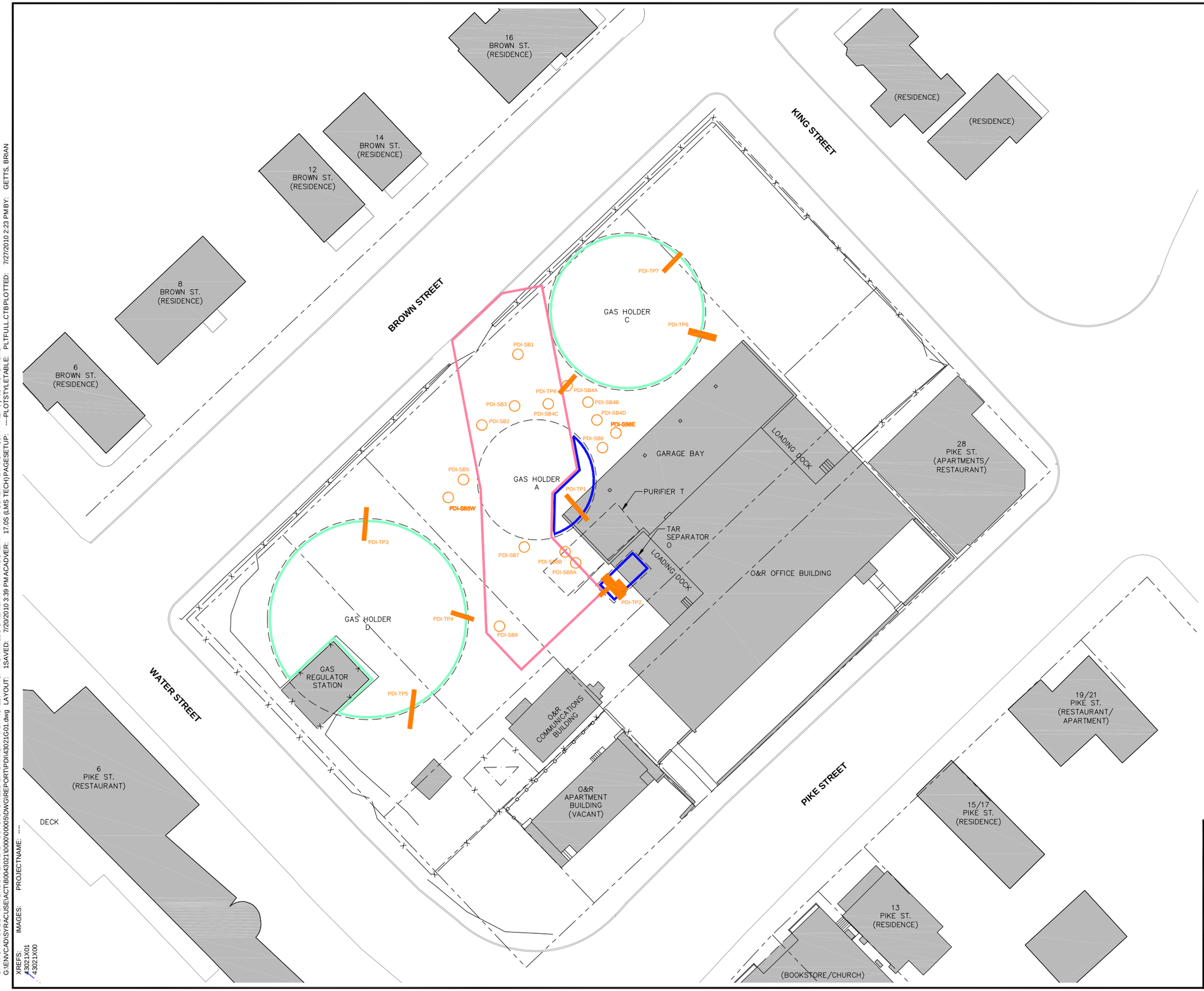
Figures



LEGEND:

- PROPERTY LINE
- EXISTING STRUCTURE/BUILDING
- APPROXIMATE LOCATION OF HISTORICAL SITE FEATURE
- EXISTING CHAIN–LINK FENCE
- EXISTING WOOD FENCE
- PDI-SB3 PDI SOIL BORING LOCATION
- PDI-TP3 PDI TEST PIT LOCATION
- CONCEPTUAL LIMITS OF 3–FOOT EXCAVATION
- CONCEPTUAL LIMITS OF 5– TO 12–FOOT EXCAVATION
- CONCEPTUAL LIMITS OF 20–FOOT EXCAVATION

NOTES:

1. BASE MAP MODIFIED FROM DRAWINGS PORT_JERVIS_08.DWG AND FIG2–1_GW3–08.DWG PROVIDED BY AECOM AND BASED ON ELECTRONIC COPY OF SURVEY DRAWING NO. 100204, TITLED "SURVEY OF PROPERTY", DATED 03–25–10, PROVIDED BY BORBAS SURVEYING AND MAPPING, LLC.
2. HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD 83); NEW YORK STATE PLANE EAST COORDINATE SYSTEM, IN U.S. SURVEY FEET.
3. ALL SITE FEATURES ARE APPROXIMATE.

0 20' 40'
GRAPHIC SCALE

PORT JERVIS FORMER MGP SITE
ORANGE AND ROCKLAND UTILITIES, INC.
PORT JERVIS, NEW YORK

PDI REPORT FOR SURVEY AND SOIL INVESTIGATION ACTIVITIES

PDI SOIL BORING AND TEST PIT LOCATIONS

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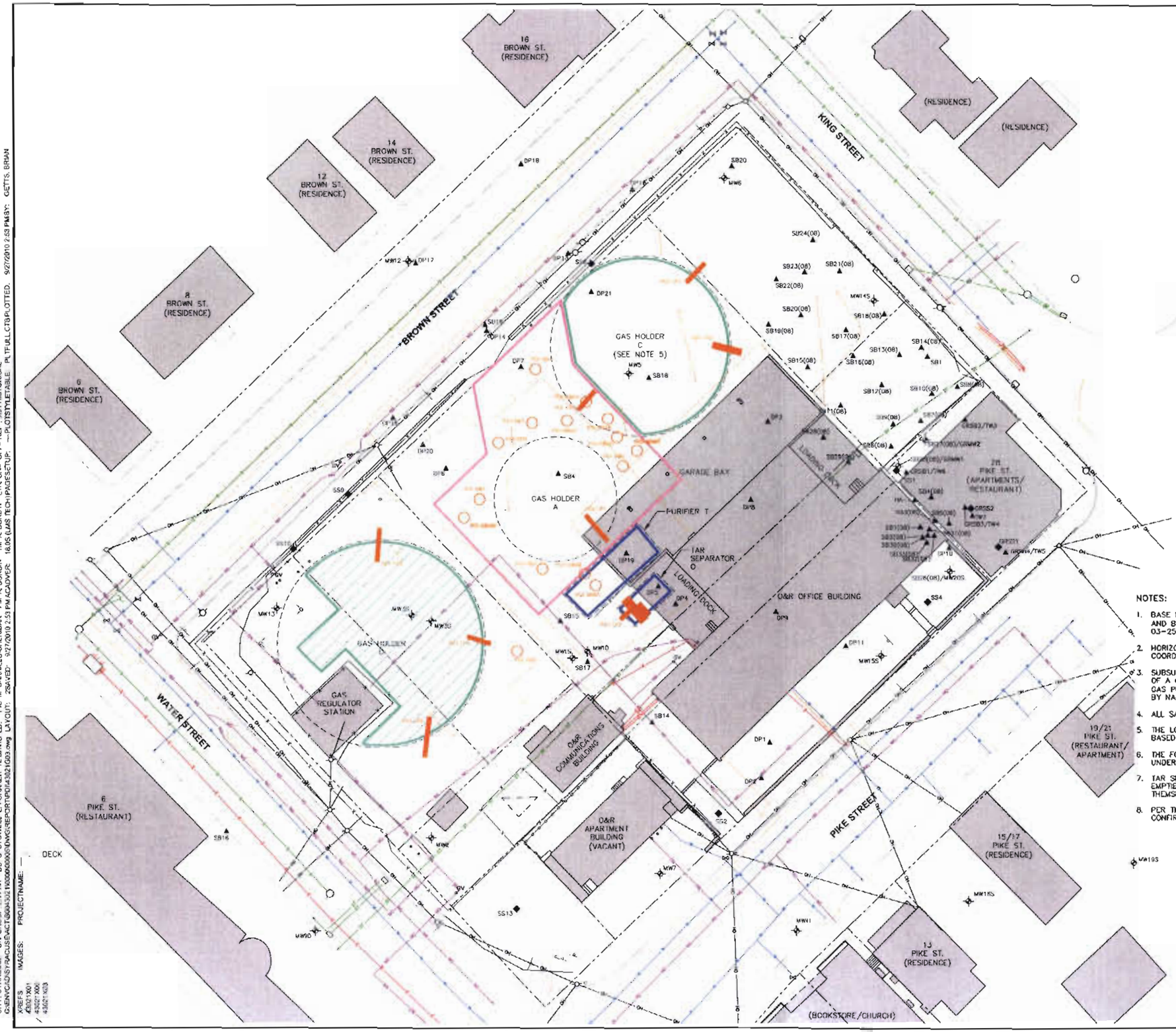
FIGURE
1



LEGEND:

- PROPERTY LINE
- EXISTING STRUCTURE/BUILDING
- APPROXIMATE LOCATION OF HISTORICAL SITE FEATURE
- EXISTING CHAIN-LINK FENCE
- EXISTING WOOD FENCE
- OVERHEAD WIRES
- UNKNOWN/SUSPECTED UTILITY LINE
- ELECTRICAL UTILITY LINE
- NATURAL GAS UTILITY LINE
- TELEPHONE UTILITY LINE
- WATER UTILITY LINE
- SANITARY SEWER UTILITY LINE
- STORM SEWER UTILITY LINE
- UTILITY POLE
- LIGHT POLE
- GAS MARK-OUT BY OTHERS
- GAS VALVE
- WATER MARK-OUT BY OTHERS
- WATER VALVE
- HYDRANT
- MANHOLE
- GRATE
- INLET
- BOLLARD
- SIGN
- SS4 SURFACE SOIL SAMPLE LOCATION
- SB1 SOIL BORING LOCATION
- MW14S MONITORING WELL LOCATION
- PDI SOIL BORING LOCATION
- PDI TEST PIT LOCATION
- INITIAL 0.5-FOOT EXCAVATION TO IDENTIFY EXTENT OF RING-WALL AND CONCRETE SLAB (SEE NOTE 8)
- PROPOSED LIMITS OF 3- TO 5-FOOT EXCAVATION TO REMOVE HOLDER FOUNDATIONS (SEE NOTE 6)
- PROPOSED LIMITS OF 6-FOOT EXCAVATION TO REMOVE CONTENTS OF TAR SEPARATOR O AND THE SUBSURFACE STRUCTURE POTENTIALLY ASSOCIATED WITH PURIFIER T (SEE NOTE 7)
- PROPOSED LIMITS OF 20-FOOT EXCAVATION

NOTES:

1. BASE MAP MODIFIED FROM DRAWINGS PORT_JERVIS_08.DWG AND FIG2-1_GW3-08.DWG PROVIDED BY AECOM AND BASED ON ELECTRONIC COPY OF SURVEY DRAWING NO. 100204, TITLED "SURVEY OF PROPERTY", DATED 03-25-10, PROVIDED BY BORBAS SURVEYING AND MAPPING, LLC.
2. HORIZONTAL DATUM IS THE NORTH AMERICAN DATUM OF 1983 (NAD 83); NEW YORK STATE PLANE EAST COORDINATE SYSTEM, IN U.S. SURVEY FEET.
3. SUBSURFACE UTILITIES ARE FROM AN ELECTRONIC COPY OF SURVEY DRAWING TITLED "FIGURE 1: RESULTS OF A GEOPHYSICAL INVESTIGATION CONDUCTED IN THE AREA OF THE PORT JERVIS FORMER MANUFACTURED GAS PLANT LOCATED AT 18 PIKE STREET IN PORT JERVIS, NEW YORK", DATED APRIL 5-9, 2010, PROVIDED BY NAEVA GEOPHYSICS, INC.
4. ALL SAMPLE/WELL LOCATIONS AND SITE FEATURES ARE APPROXIMATE.
5. THE LOCATION AND DIMENSIONS OF THE FOUNDATION ASSOCIATED WITH GAS HOLDER C HAVE BEEN MODIFIED BASED ON THE RESULTS OF THE PDI TEST PITTING ACTIVITIES.
6. THE FORMER HOLDER FOUNDATIONS WILL BE REMOVED IN THEIR ENTIRETY (TO THE EXTENT PRACTICABLE). UNDERLYING SOILS WILL REMAIN IN PLACE UNLESS FOUND TO BE VISUALLY SATURATED WITH NAPL.
7. TAR SEPARATOR O AND THE SUBSURFACE STRUCTURE POTENTIALLY ASSOCIATED WITH PURIFIER T WILL BE EMPTIED OF THEIR CONTENTS, POWER-WASHED, AND BACKFILLED WITH FLOWABLE FILL. THE STRUCTURES THEMSELVES WILL REMAIN.
8. PER THE NYSDEC'S COMMENT LETTER, DATED SEPTEMBER 16, 2010, THE LOCATION OF THE GAS LINE WILL BE CONFIRMED AND THE LIMITS OF THE EXCAVATION WILL BE EXTENDED TO THE WEST AS FAR AS POSSIBLE.

0 20' 40'
GRAPHIC SCALE

PORT JERVIS FORMER MGP SITE
ORANGE AND ROCKLAND UTILITIES, INC.
PORT JERVIS, NEW YORK
PDI REPORT FOR SURVEY AND SOIL INVESTIGATION ACTIVITIES

PROPOSED LIMITS OF EXCAVATION

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FIGURE 2

ARCADIS

Attachments

.

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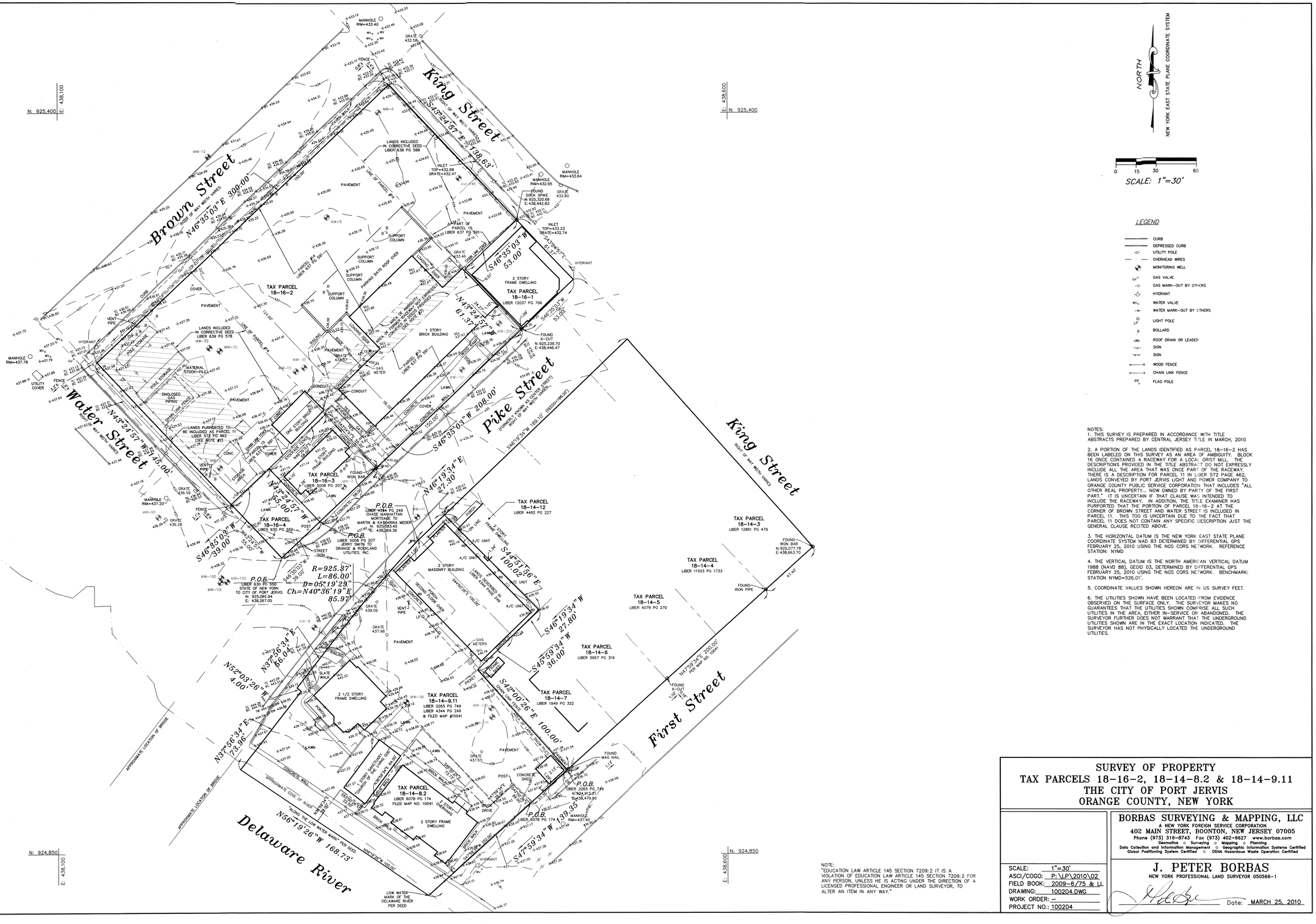
Attachment A

Borbas Survey Drawing



NOTES:
1. THIS SURVEY IS PREPARED IN ACCORDANCE WITH TITLE ABSTRACTS PREPARED BY CENTRAL JERSEY TITLE IN MARCH, 2010

2. A PORTION OF THE LANDS IDENTIFIED AS PARCEL 18-16-2 HAS BEEN LABELED ON THIS SURVEY AS AN AREA OF AMBIGUITY. BLOCK 16 ONCE CONTAINED A RACEWAY FOR A LOCAL GRIST MILL. THE DESCRIPTIONS PROVIDED IN THE TITLE ABSTRACT DO NOT EXPRESSLY INCLUDE ALL THE AREA THAT WAS ONCE PART OF THE RACEWAY. THERE IS A DESCRIPTION FOR PARCEL 11 IN LIBER 572 PAGE 462, LANDS CONVEYED BY PORT JERVIS LIGHT AND POWER COMPANY TO ORANGE COUNTY PUBLIC SERVICE CORPORATION THAT INCLUDES "ALL OTHER REAL PROPERTY... NOW OWNED BY PARTY OF THE FIRST PART." IT IS UNCERTAIN IF THAT CLAUSE WAS INTENDED TO INCLUDE THE RACEWAY. IN ADDITION, THE TITLE EXAMINER HAS PURPORTED THAT THE PORTION OF PARCEL 18-16-2 AT THE CORNER OF BROWN STREET AND WATER STREET IS INCLUDED IN PARCEL 11. THIS TOO IS UNCERTAIN DUE TO THE FACT THAT PARCEL 11 DOES NOT CONTAIN ANY SPECIFIC DESCRIPTION JUST THE GENERAL CLAUSE RECITED ABOVE.

3. THE HORIZONTAL DATUM IS THE NEW YORK EAST STATE PLANE COORDINATE SYSTEM NAD 83 DETERMINED BY DIFFERENTIAL GPS FEBRUARY 25, 2010 USING THE NGS CORS NETWORK. REFERENCE STATION: NYMD

4. THE VERTICAL DATUM IS THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88), GEOID 03, DETERMINED BY DIFFERENTIAL GPS FEBRUARY 25, 2010 USING THE NGS CORS NETWORK. BENCHMARK: STATION NYMD=526.01'.

5. COORDINATE VALUES SHOWN HEREON ARE IN US SURVEY FEET.

6. THE UTILITIES SHOWN HAVE BEEN LOCATED FROM EVIDENCE OBSERVED ON THE SURFACE ONLY. THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

NOTE:
"EDUCATION LAW ARTICLE 145 SECTION 7209:2 IT IS A VIOLATION OF EDUCATION LAW ARTICLE 145 SECTION 7209:2 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY."

SURVEY OF PROPERTY
TAX PARCELS 18-16-2, 18-14-8.2 & 18-14-9.11
THE CITY OF PORT JERVIS
ORANGE COUNTY, NEW YORK

BORBAS SURVEYING & MAPPING, LLC
A NEW YORK FOREIGN SERVICE CORPORATION
402 MAIN STREET, BOONTON, NEW JERSEY 07005
Phone (973) 316-8743 Fax (973) 402-6627 www.borbas.com
Geomatics ○ Surveying ○ Mapping ○ Planning
Data Collection and Information Management ○ Geographic Information Systems Certified
Global Positioning System Certified ○ OSHA Hazardous Waste Operation Certified

SCALE: 1"=30'
ASCI/COGO: P:\LP\2010\02
FIELD BOOK: 2009-6/75 & LL
DRAWING: 100204.DWG
WORK ORDER: –
PROJECT NO.: 100204

J. PETER BORBAS
NEW YORK PROFESSIONAL LAND SURVEYOR 050566-1

Date: MARCH 25, 2010

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Attachment B

NAEVA Survey Drawing

16 BROWN ST. (RESIDENCE)
14 BROWN ST. (RESIDENCE)
12 BROWN ST. (RESIDENCE)
8 BROWN ST. (RESIDENCE)
6 BROWN ST. (RESIDENCE)
(RESIDENCE)
(RESIDENCE)
KING STREET
BROWN STREET
WATER STREET
PIKE STREET
suspected buried manhole covers/vaults with the inner circle suspected to be the cover and the outer anomaly suspected to be the edges of the vault
MW6
MW12
MW5
MW14S
MW13
MW3S
MW3D
MW1D
MW1S
MW2
MW9D
MW10D
MW10I
MW10S
MW7
MW11
MW8
MW15S
MW16S
MW17S
MW17I
MW18I
MW19S
GRMW1
GRMW2
MW20S
stored material
STORAGE AREA
INLET
PAVEMENT
GATE
O&R OPERATIONS CENTER
empty conduit
GUY
public markout had gas line marked that NAEVA could not detect
tracing line inserted into the shallow pipe in the sewer vault could not penetrate past this point, indicating the pipe either becomes clogged or turns. The suspected line to the west was located with a hand-held metal detector.
POLE STORAGE
UTILITY COVER
electric vault
multiple short lines were marked by public markout, after inspection of vault, NAEVA only located two conduits leaving the vault
estimated edge of vault as determined with the metal detector
GAS REGULATOR STATION
CONDUIT
O&R COMMUNICATIONS BUILDING
Start of a GPR anomaly ~6' below grade extending into parking area
LOADING DOCK
O&R OFFICE BUILDING
GAS METER
LAWN
water meter vault
sidewalk
bushes
O&R APARTMENT BUILDING (VACANT)
MICROWAVE TOWER
one call marked water; NAEVA could not detect
could not detect line beyond this point from signal applied to a gas tracer line
OUTFALL PIPE
SEASONAL POOL
BENCHMARK
could not open
assumed to be electric vault, could not open due to traffic hazard
GAS METERS
28 PIKE ST. (APARTMENTS/ RESTAURANT)
19/21 PIKE ST. (RESTAURANT/ APARTMENT)
15/17 PIKE ST. (RESIDENCE)
13 PIKE ST. (RESIDENCE)
(BOOKSTORE/CHURCH)
6 PIKE ST. (RESTAURANT)
9 PIKE ST. (APARTMENT/ BOARDING HOUSE)
(MEETING HALL)
2-4 FIRST ST. (MEDER RESIDENCE)
potential presence of an electric line
parked vehicle
GPR anomaly
suspected buried sewer vault/manhole
Water line was traced with confidence to this point. A weaker signal was detected to the southeast as indicated, but is was not definitive if it was a water line.
potential presence of a sanitary line
could not detect lines beyond these locations, but are assumed to continue
CONCRETE RETAINING WALL
APPROXIMATE LOCATION OF BRIDGE
CONCRETE WALL
the persistent traffic at this intersection was too hazardous for the geophysical investigation in the roadway

approximately

20 10 0 10 20 ft
Scale: One inch equals approximately twenty feet

NAEVA GEOPHYSICS, INC.
THE LEADER IN SUBSURFACE DETECTION
Subsurface Geophysical Surveys
225 N. Route 303, Suite 102
Congers, NY. 10920
(845)268-1800
(845)268-1802 FAX

Figure 1: Results of a Geophysical Investigation conducted in the area of the Port Jervis former Manufacturing Gas Plant located at 16 Pike Street in Port Jervis, New York

Client	ARCADIS U.S. Inc	Date of Work	April 5-9, 2010
Project No.	C1004051K	Map By	Kelly A. Weyer

ALL UNDERGROUND FACILITIES MAY NOT BE DEPICTED ON THIS MAP

LEGEND

e	electric line		electrical conduit
ng	natural gas line		gas valve
w	water line		gas meter
t	telephone line		natural gas conduit
san	sanitary sewer line		water valve
st	storm sewer line		fire hydrant
?	suspected utility		utility pole
	metal-detector anomaly		telephone conduit
	area of investigation		manhole cover
			catch basin

ARCADIS

Attachment C

Soil Boring Logs

Date Start/Finish: 4/28/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: CME-55
Sampling Method: 2' x 2" Split Spoon

Northing: 925324.7
Easting: 438263.7

Borehole Depth: 50' bgs
Surface Elevation: 435.8' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB1**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	435	NA	0-5	NA	NA	NA	NA		Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).	Borehole completed with concrete (0-0.5' bgs).
5	430	1	5-6	1.1	1 1	NA	0.0		Brown fine to medium SAND, trace Silt, moist.	
		2	6-8	1.2	1 1 1 2	2	2.7		Dark gray to black fine to medium SAND, some Silt, pungent odor, discoloration, moist.	
		3	8-10	1.5	1 1 2 3	3	4.5		Trace Clay 0-0.6' of recovery.	Borehole backfilled with grout (0.5-50' bgs).
10	425	4	10-12	1.6	2 2 3 6	5	3.1		No Clay.	
		5	12-14	1.6	5 6 7 7	13	4.4		Gray medium SAND, little fine Sand, discoloration, pungent odor, very loose, moist.	
15	420	6	14-16	1.6	4 3 4 4	7	5.0			

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB1**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
					3				Wet.	
		7	16-18	1.5	16 15 14	31	6.3		Brown coarse sub-angular GRAVEL, little medium to fine sub-round to sub-angular Gravel and fine to medium Sand, trace coarse Sand, pungent odor, wet.	
		8	18-20	1.0	12 15 17 12	32	5.1		Brown coarse sub-round to sub-angular GRAVEL, some fine to medium sub-round to sub-angular Gravel, little fine to medium Sand, trace blebs of brown oil-like material, pungent odor, wet.	
20	415	9	20-22	0.7	22 21 23 27	44	0.9		Brown to gray coarse sub-round to sub-angular GRAVEL, some fine to medium sub-round Gravel, little fine to medium Sand, trace coarse Sand, trace blebs of brown oil-like material, yellow oil-like material coating gravel, rainbow sheen, hint of petroleum-like odor, wet. Brown oil-like material coating outside of spoon and rods.	
		NA	22-25	NA	NA	NA	NA		Blind drill to 25' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
25	410	10	25-27	1.0	15 15 25 33	40	1.2		Gray coarse to medium sub-round to sub-angular GRAVEL, little fine sub-round Gravel and fine to coarse Sand, trace blebs of yellow oil-like material coating gravel, moderate rainbow sheen, petroleum-like odor, wet.	Borehole backfilled with grout (0.5-50' bgs).
		NA	27-30	NA	NA	NA	NA		Blind drill to 30' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
30	405	11	30-32	0.9	6 15 14 12	29	0.0		Brown coarse to medium sub-round GRAVEL, little fine sub-round Gravel and fine to coarse Sand, trace Silt, wet.	
		NA	32-35	NA	NA	NA	NA		Blind drill to 35' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
35	400	12	35-37	1.0	7 8	21	0.2		Brown fine SAND, wet.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB1**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		12	35-37	1.0	13 14	21	0.2		Brown fine SAND, trace medium to coarse Sand and fine sub-round Gravel, wet.	
		NA	37-40	NA	NA	NA	NA		Blind drill to 40' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
40	395	13	40-42	2.0	13 19 27 21	46	0.3		Brown coarse SAND, trace very coarse and medium Sand and fine sub-round Gravel, wet.	
		NA	42-45	NA	NA	NA	NA		Blind drill to 45' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	Borehole backfilled with grout (0.5-50' bgs).
45	390	14	45-47	1.8	7 9 13 15	22	0.1		Brown coarse SAND, trace very coarse and medium Sand, and fine sub-round Gravel, wet.	
		NA	47-48	NA	NA	NA	NA		Blind drill to 48' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
		15	48-50	1.9	8 9 15 21	24	0.2		Brown fine to medium SAND, little coarse Sand, trace fine sub-round Gravel, wet.	
50	385								Boring terminated at 50' bgs.	
55	380									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/28-4/29/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: CME-55
Sampling Method: 2' x 2" Split Spoon

Northing: 925295.3
Easting: 438248.7

Borehole Depth: 50' bgs
Surface Elevation: 436.6' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB2**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0 / 435	NA	0-5	NA	NA	NA	NA		Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).
5	1	5-6	1.4	1 3	NA	0.0		Brown fine SAND, little Silt, moist.
430	2	6-8	2.0	3 4 3 3	7	0.0		
	3	8-10	1.8	4 3 3 3	6	0.1		
10	4	10-12	1.5	1 2 3 3	5	5.6		Black mottled discoloration between 0.6-0.8' and 1.3-1.5' of recovery, coal tar-like odor.
425								Dark gray to black fine SAND, little Silt, discoloration, coal tar-like odor, moist.
	5	12-14	1.5	4 4 5 5	9	8.7		Gray medium SAND, trace fine Sand, loose, coal tar-like odor, moist.
15	6	14-16	1.4	4 4 5 16	9	6.8		Discoloration, petroleum-like odor. Wet.

Borehole completed with concrete (0-0.5' bgs).

Borehole backfilled with grout (0.5-50' bgs).

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB2**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	420	7	16-18	1.2	18 16 17 17	33	20.6		Gray medium to coarse sub-round GRAVEL, little fine sub-round Gravel and fine to coarse Sand, discoloration, petroleum-like odor, wet.	
		8	18-20	1.2	18 28 17 18	45	25.4		Moderate yellow-brown oil-like material coating gravel.	
20		9	20-22	0.4	10 50/0.4	NA	9.5			
	415	NA	22-25	NA	NA	NA	NA		Blind drill to 25' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
25		10	25-27	0.6	12 48 50/0.2	NA	8.6		Gray medium to coarse sub-round GRAVEL, little fine sub-round Gravel and fine to coarse Sand, moderate blebs of yellow-brown oil-like material, rainbow sheen, coal tar-like odor, wet. Brown oil-like material coating rods.	Borehole backfilled with grout (0.5-50' bgs).
	410	NA	27-30	NA	NA	NA	NA		Blind drill to 30' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
30		11	30-32	1.0	15 15 18 27	33	1.1		Gray fine to coarse sub-round GRAVEL, trace fine to coarse Sand, rainbow sheen, discoloration, coal tar-like odor, wet. Brown coarse sub-angular GRAVEL, some medium, trace fine sub-round Gravel and fine to coarse Sand, coal tar-like odor, wet.	
	405	12	32-34	0.8	6 9 13 7	22	2.5		Gray coarse sub-angular GRAVEL, some medium sub-angular Gravel, trace fine sub-round Gravel and coarse to fine Sand, heavy impacts of brown oil-like material between 0.6-0.8' of recovery, sheen, discoloration, coal tar-like odor, wet.	
		NA	34-35	NA	NA	NA	NA		Blind drill to 35' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
35		13	35-37	0.5	3 2	4	0.3		Brown medium SAND, loose, wet.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB2**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
400	13	35-37	0.5	2 4	4	0.3		Brown medium SAND, loose, wet.	
	NA	37-40	NA	NA	NA	NA		Blind drill to 40' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
40	14	40-42	1.7	2 2 6 7	8	0.2		Brown medium SAND, loose, between 0.9-1.0' of recovery gray discoloration, wet.	
395	NA	42-45	NA	NA	NA	NA		Blind drill to 45' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	Borehole backfilled with grout (0.5-50' bgs).
45	15	45-47	1.2	2 3 6 7	9	0.1		Brown medium to coarse SAND, between 0.9-1.0' of recovery brown Silt, trace Clay, wet.	
390	NA	47-48	NA	NA	NA	NA		Blind drill to 48' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
	16	48-50	1.8	8 11 11 8	22	0.1		Brown medium to coarse SAND, wet. Brown medium SAND, wet.	
50								Boring terminated at 50' bgs.	
385									
55									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/30/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: Diedrich - D50
Sampling Method: 2' x 2" Split Spoon

Northing: 925303.2
Easting: 438262.3

Borehole Depth: 37' bgs
Surface Elevation: 436.5' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB3**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	435	NA	0-5	NA	NA	NA	NA		Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).	Borehole completed with concrete (0-0.5' bgs).
5		1	5-6	0.5	5 7	NA	0.1		Brown fine SAND and SILT, moist.	
	430	2	6-8	1.8	7 6 7 7	13	0.2		Brown fine SAND, trace Silt, moist.	
		3	8-10	1.2	6 2 2 3	4	1.1		Brown fine SAND, moist. Brown to gray SILT, little fine Sand, trace Clay, discoloration, coal tar-like odor, moist to wet.	Borehole backfilled with grout (0.5-37' bgs).
10		4	10-12	1.3	1 2 2 3	4	31.5		Brown to gray SILT, little fine Sand, mottled discoloration between 0.5-0.6' of recovery, mild coal tar-like odor, moist to wet. Gray medium SAND, discoloration, coal tar-like odor, moist to wet.	
	425								Dark gray to black medium SAND, trace fine Sand, discoloration, coal tar-like odor, wet.	
		5	12-14	1.6	1 3 5 4	8	47.3		Dark gray to black SILT, trace fine Sand and Clay, trace brown oil-like material, discoloration, coal tar-like odor, moist. Dark gray to black fine SAND, trace medium Sand, moderate brown oil-like material at the bottom of the sample, discoloration, coal tar-like odor, wet.	
15		6	14-16	1.0	4 6 5 6	11	66.4		Dark gray medium SAND, moderate brown oil-like material coating sand, coal tar-like odor, moist to wet.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB3**

Borehole Depth: 37' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	420				5				Heavy impacts of brown oil-like material between 0-0.4' of recovery.	
		7	16-18	1.1	36 26 21	62	60.1		Dark gray coarse sub-round GRAVEL, trace fine to medium sub-round Gravel and medium to coarse Sand, heavy impacts of brown oil-like material coating gravel, discoloration, coal tar-like odor, moist to wet.	
		8	18-20	0.8	16 16 15 17	31	53.9		Little fine to medium sub-round Gravel and medium to coarse Sand, coal tar-like odor.	
20		9	20-22	1.0	17 25 34 39	59	64.3		Brown oil-like material pooled in water in spoon between 0.6-1.0' of recovery.	
	415									
		NA	22-25	NA	NA	NA	NA		Blind drill to 25' bgs. Samples were collected in nominal 5' increments between 20-37' bgs.	
25		10	25-27	1.2	17 18 40 29	58	72.6		Dark gray coarse sub-round GRAVEL, little fine to medium sub-round Gravel and medium to coarse Sand, heavy impacts of brown oil-like material coating gravel, discoloration, coal tar-like odor, moist to wet.	
	410									Borehole backfilled with grout (0.5-37' bgs).
		NA	27-30	NA	NA	NA	NA		Blind drill to 30' bgs. Samples were collected in nominal 5' increments between 20-37' bgs.	
30		11	30-32	NR	50/0.2	NA	NA		No recovery. Cobble in tip of spoon.	
	405									
		NA	32-35	NA	NA	NA	NA		Blind drill to 35' bgs. Samples were collected in nominal 5' increments between 20-37' bgs.	
35		12	35-37	1.3	13 12	24	4.9		Brown medium SAND, trace fine sub-round Gravel and coarse Sand, coal tar-like odor, wet.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB3**

Borehole Depth: 37' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
400	12	35-37	1.3	12 11	24	4.9		Brown medium SAND, trace fine sub-round Gravel and coarse Sand, coal tar-like odor, wet.	Borehole backfilled with grout (0.5-37' bgs).
								Boring terminated at 37' bgs.	
40									
395									
45									
390									
50									
385									
55									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/20-4/21/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Rod Trask
Drilling Method: NA
Auger Size: NA
Rig Type: Vac Master 4000
Sampling Method: NA

Northing: 925311.6
Easting: 438284.1

Borehole Depth: 3' bgs
Surface Elevation: 436.3' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB4A**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 435	NA	0-3	NA	NA	NA	NA		Boring location hand-cleared to 3' bgs. Terminated due to refusal (concrete encountered from 0.5-3.0' bgs). Gray CONCRETE.	Borehole backfilled with cold asphalt patch (0 - 3.0' bgs).
5 / 430								Boring terminated (during hand clearing) at 3.0' bgs.	
10 / 425									
15									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/21/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Rod Trask
Drilling Method: NA
Auger Size: NA
Rig Type: Vac Master 4000
Sampling Method: NA

Northing: 925304.8
Easting: 438292.8

Borehole Depth: 0.5' bgs
Surface Elevation: 436.3' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB4B**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	0-0.5	NA	NA	NA	NA		Boring location hand-cleared to 0.5' bgs. Terminated due to refusal (concrete encountered at 0.5' bgs). Boring terminated (during hand clearing) at 0.5' bgs. Top of Concrete.	Borehole backfilled with cold asphalt patch (0-0.5 ' bgs).
	435									
5										
	430									
10										
	425									
15										

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/21/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Rod Trask
Drilling Method: NA
Auger Size: NA
Rig Type: Vac Master 4000
Sampling Method: NA

Northing: 925304.1
Easting: 438276.3

Borehole Depth: 0.8' bgs
Surface Elevation: 436.5' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB4C**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	0-0.8	NA	NA	NA	NA		Boring location hand-cleared to 0.8' bgs. Location abandoned due to presence of hard surface (possibly old asphalt) at 0.8' bgs.	Borehole backfilled with cold asphalt patch (0-0.8 ' bgs).
									Boring terminated (during hand clearing) at 0.8' bgs.	
	435									
5										
	430									
10										
	425									
15										

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/21/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Rod Trask
Drilling Method: NA
Auger Size: NA
Rig Type: Vac Master 4000
Sampling Method: NA

Northing: 925297.4
Easting: 438296.5

Borehole Depth: 5' bgs
Surface Elevation: 436.4' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB4D**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 435	NA	0-5	NA	NA	NA	NA		Black ASPHALT. FILL. Boring location hand-cleared to 5' bgs. Location abandoned due to the close proximity to PDI-SB6E.	Borehole backfilled with cold asphalt patch (0-0.5' bgs). Borehole backfilled with soil cutting (0.5-5.0' bgs).
5 / 430								Boring terminated (during hand clearing) at 5.0' bgs.	
10 / 425									
15									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/27/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: CME-55
Sampling Method: 2' x 2" Split Spoon

Northing: 925272.6
Easting: 438241.0

Borehole Depth: 20' bgs
Surface Elevation: 436.9' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB5**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	435	NA	0-5	NA	NA	NA	NA		Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).	Borehole completed with concrete (0-0.5' bgs).
5		1	5-6	0.3	2 1	NA	0.0		Brown fine to medium SAND and coarse sub-round GRAVEL, wet.	
	430	2	6-8	1.2	4 4 3 4	7	0.0		Brown fine to medium SAND, moist. Brown to black fine SAND and SILT, black mottled discoloration, pungent odor, moist. Brown fine to medium SAND, little fine sub-round Gravel, moist.	
		3	8-10	0.2	4 3 3 3	6	0.0		Brown fine to medium SAND and fine sub-round Gravel, trace Silt and coarse Sand, wet.	Borehole backfilled with grout (0.5-20' bgs).
10		4	10-12	NR	3 3 2 3	5	NA		No recovery.	
	425	5	12-14	0.7	2 2 5 6	7	321		Brown fine to medium SAND, trace coarse Sand and fine sub-round Gravel, moist. Dark gray to black fine to medium SAND, trace coarse Sand, moderate to heavy impacts of brown oil-like material, black discoloration, coal tar-like odor, moist. Gray CONCRETE, dry.	
15		6	14-16	NR	5 5 5 7	10	NA		No recovery. Coarse sub-round angular Gravel in tip of spoon.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB5**

Borehole Depth: 20' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
420	7	16-18	1.2	14 15 17 29	32	184		Brown to gray fine to medium SAND, trace coarse Sand and fine sub-round Gravel, moderate to heavy impacts of oil-like material, gray discoloration, coal tar-like odor, wet.	
								Gray to black fine to coarse sub-round GRAVEL, little fine to coarse Sand, saturated with brown oil-like material, discoloration, coal tar-like odor, wet.	
	8	18-20	1.5	19 21 20 29	41	221		Trace brown oil-like material.	Borehole backfilled with grout (0.5-20' bgs).
20								Boring terminated at 20' bgs.	
415									
25									
410									
30									
405									
35									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 5/3/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: Diedrich - D50
Sampling Method: 2' x 2" Split Spoon/NX Core

Northing: 925265.2
Easting: 438234.7

Borehole Depth: 28.5' bgs
Surface Elevation: 437.1' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB5W**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	440									
0									Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).	Borehole completed with concrete (0-0.5' bgs).
	435	NA	0-5	NA	NA	NA	NA			
5		1	5-6	1.0	6 2	NA	0.2		Brown fine SAND, trace Silt, moist.	
	430	2	6-8	1.5	3 4 4 3	8	0.1		Brown fine SAND, little medium Sand, moist.	
		3	8-10	1.1	3 5 7 8	12	0.2		Brown SILT, little fine Sand, moist.	Borehole backfilled with grout (0.5-28.5' bgs).
10		4	10-12	1.6	7 7 6 6	13	0.0			
	425	5	12-14	1.4	4 5 5 5	10	1.8		Brown medium SAND, little fine Sand, gray discoloration between 1.2-1.4' of recovery, coal tar-like odor, moist.	
15		6	14-16	1.1	4 4 5 6	9	18.4		Gray medium SAND, trace fine Sand, discoloration, coal tar-like odor, moist.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB5W**

Borehole Depth: 28.5' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
					8				Gray medium SAND, trace fine Sand, discoloration, coal tar-like odor, moist.	
	420	7	16-18	1.0	21 20 14	41	29.0		Gray medium sub-angular GRAVEL, little medium Sand, trace fine sub-round Gravel, moderate yellow oil-like material coating gravel, discoloration, coal tar-like odor, wet.	
		8	18-20	0.5	21 19 50/0.4	NA	22.3		Gray coarse to fine sub-round to round GRAVEL, little fine to medium Sand, moderate brown oil-like material coating gravel, discoloration, coal tar-like odor, wet.	
20		9	20-22	NR	50/0.1	NA	NA		No recovery.	
	415	NA	22-25	NA	NA	NA	NA		Blind drill to 25' bgs. Samples were collected in nominal 5' increments between 20-28.5' bgs.	Borehole backfilled with grout (0.5-28.5' bgs).
25		10	25-25.5	NR	50/0.4	NA	NA		No recovery. Auger refusal at 25.5' bgs. Cored from 25.5-28.5' bgs with NX core bit.	
									Gray LIMESTONE.	
									Gray coarse sub-round to round GRAVEL, wet.	
	410	11	25.5-28.5	1.2	NA	NA	NA		Gray LIMESTONE.	
									Gray coarse GRAVEL or COBBLE.	
									Boring terminated (due to refusal) at 28.5' bgs.	
30										
	405									
35										

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/27/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: CME-55
Sampling Method: 2' x 2" Split Spoon

Northing: 925285.9
Easting: 438298.8

Borehole Depth: 20' bgs
Surface Elevation: 436.5' AMSL

Descriptions By: Levia Terrell

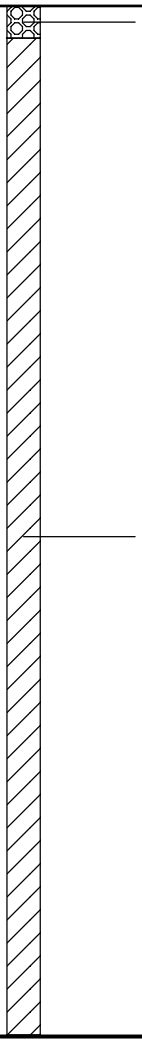
Well/Boring ID: **PDI-SB6**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	435	NA	0-5	NA	NA	NA	NA		Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).
5	430	1	5-6	0.4	2 4	NA	0.0		Brown fine to medium SAND, SILT, and coarse round GRAVEL, trace Clay, wet.
		2	6-8	1.3	4 5 5 4	10	0.0		Brown fine to medium SAND, some fine to coarse sub-round Gravel, trace coarse Sand, moist between 0.6-1.3' of recovery, wet.
		3	8-10	0.6	6 6 5 5	11	5.5		Dark gray to black fine to medium SAND, little coarse sub-round Gravel, discoloration, trace brown oil-like material, coal tar-like odor, moist.
10	425	4	10-12	1.2	3 4 1 3	5	69.8		Dark gray to black fine to medium SAND and SILT, discolored, strong coal tar-like odor, moist. Dark gray to black SILT, little fine Sand, discolored, trace blebs of brown oil-like material at 1.1' of recovery, strong coal tar-like odor, moist.
		5	12-14	1.5	3 4 4 3	8	56.4		Dark gray to brown fine to medium SAND, trace fine sub-angular Gravel, heavy impacts of brown oil-like material, discoloration, strong coal tar-like odor, moist.
15		6	14-16	1.5	5 4 4 5	8	111		

Well/Boring Construction



ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB6**

Borehole Depth: 20' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	420	7	16-18	1.5	8 15 22 20	37	117		Dark gray to black fine to medium SAND, trace coarse sub-angular Gravel at the bottom of the sample, heavy (saturated) impacts of brown oil-like material, discoloration, strong coal tar-like odor, moist.	
		8	18-20	1.2	18 26 25 27	51	104		Dark gray to black fine to coarse sub-angular GRAVEL, little fine to medium Sand, trace coarse Sand, heavy (saturated) impacts of brown oil-like material, discoloration, strong coal tar-like odor, wet.	Borehole backfilled with grout (0.5-20' bgs).
20									Boring terminated at 20' bgs.	
	415									
25										
	410									
30										
	405									
35										

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Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 5/3-5/4/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: Diedrich-D50
Sampling Method: 2' x 2" Split Spoon

Northing: 925292.0
Easting: 438304.4

Borehole Depth: 50' bgs
Surface Elevation: 436.3' AMSL

Descriptions By: Levia Terrell

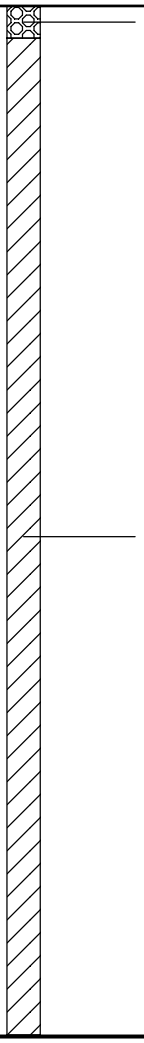
Well/Boring ID: **PDI-SB6E**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	435	NA	0-5	NA	NA	NA	NA		Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).
5	430	1	5-6	0.65	1 2	NA	0.3		Brown SILT, trace fine Sand and Clay, moist.
		2	6-8	1.0	3 5 4 4	9	4.8		Brown SILT, little fine Sand, moist.
10		3	8-10	1.5	3 3 4 3	7	14.3		Brown fine SAND, dark gray to black mottled discoloration between 0-0.3' and 1.45-1.5' of recovery, mild coal tar-like odor, moist.
	425	4	10-12	1.2	3 3 4 5	7	9.1		Gray to brown fine SAND, mottled discoloration, coal tar-like odor, moist. Gray medium SAND, discoloration, coal tar-like odor, moist.
		5	12-14	1.4	6 5 7 6	12	8.4		
15		6	14-16	1.3	4 4 4 3	8	9.6		Dark gray, pungent and coal tar-like odor.

Well/Boring Construction



ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB6E**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	420	7	16-18	1.3	8 14 25 21	39	17.3		Dark gray to black medium to coarse sub-round GRAVEL, little fine sub-angular Gravel and fine to medium Sand, moderate yellow oil-like material coating sample, sheen, discoloration, pungent odor, wet.	
		8	18-20	1.2	28 31 35 46	66	5.3		Gray coarse to medium sub-round GRAVEL, little fine sub-round Gravel and medium to coarse Sand, heavy impacts of yellow oil-like material coating gravel, rainbow sheen, petroleum-like odor, wet.	
20		9	20-22	1.4	21 23 33 25	56	8.1			
	415	NA	22-25	NA	NA	NA	NA		Blind drill to 25' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
25		10	25-27	NR	50/0.4	NA	NA		No recovery.	Borehole backfilled with grout (0.5-50' bgs).
	410	NA	27-30	NA	NA	NA	NA		Blind drill to 30' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
30		11	30-32	0.5	20 19 30 21	49	5.3		Brown fine sub-round GRAVEL, little very coarse to coarse Sand, trace medium Sand, rainbow sheen, mild coal tar-like odor, wet.	
	405	NA	32-35	NA	NA	NA	NA		Blind drill to 35' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
35		12	35-37	0.8	6 12	29	1.4		Brown medium to coarse SAND, some medium sub-round Gravel, little very coarse Sand and fine sub-round Gravel, trace fine Sand, mild coal tar-like odor, wet.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB6E**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	400	12	35-37	0.8	17 18	29	1.4		Brown medium to coarse SAND, some medium sub-round Gravel, little very coarse Sand and fine sub-round Gravel, trace fine Sand, mild coal tar-like odor, wet.	
		NA	37-40	NA	NA	NA	NA		Blind drill to 40' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
40		13	40-42	1.1	8 12 15 17	27	0.7		Brown fine SAND, trace medium to coarse Sand and fine sub-round Gravel, wet.	
	395	NA	42-45	NA	NA	NA	NA		Blind drill to 45' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	Borehole backfilled with grout (0.5-50' bgs).
45		14	45-47	1.3	7 7 12 10	19	0.6		Brown fine SAND, trace medium to coarse Sand, wet.	
	390	NA	47-48	NA	NA	NA	NA		Blind drill to 48' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
		15	48-50	1.2	5 5 6 8	11	0.4		Brown fine SAND, trace medium to coarse Sand, wet.	
50									Boring terminated at 50' bgs.	
	385									
55										

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level; NR = No Recovery.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/22-4/23/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: CME-55
Sampling Method: 2' x 2" Split Spoon/NX Core

Northing: 925244.6
Easting: 438266.3

Borehole Depth: 28.5' bgs
Surface Elevation: 437.4' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB7**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	440									
0									Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).	Borehole completed with concrete (0-0.5' bgs).
	435	NA	0-5	NA	NA	NA	NA			
5		1	5-6	1.2	3 2	NA	0.3		Brown fine SAND and SILT, little fine to coarse sub-round to sub-angular Gravel, trace red Brick, moist.	
									Brown fine to medium SAND, little Silt, moist.	
		2	6-8	1.2	4 4 5 4	9	0.2		Brown fine to medium SAND, trace medium to coarse sub-round Gravel at 1.0' of recovery, very loose, moist.	
	430									Borehole backfilled with grout (0.5-28.5' bgs).
		3	8-10	1.4	3 3 4 3	7	20.0		Gray discoloration in bands, trace blebs of brown oil-like material at 1.2' of recovery, strong coal tar-like odor.	
10		4	10-12	1.6	3 2 2 2	4	26.5		Gray discoloration in bands, trace blebs of brown oil-like material at 0.6' of recovery, strong coal tar-like odor.	
									Brown fine SAND and SILT, strong coal tar-like odor, moist.	
	425	5	12-14	1.4	4 3 3 2	6	30.4		Dark gray to black fine SAND and SILT, discoloration in bands, strong coal tar-like odor, moist.	
15		6	14-16	0.9	10 11 10 8	21	54.9		Dark brown coarse to medium sub-angular GRAVEL, little fine sub-angular Gravel and fine to medium Sand, trace coarse Sand, strong coal tar-like odor, moist.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB7**

Borehole Depth: 28.5' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	420	7	16-18	1.1	11 13 13 8	26	16.9		Brown coarse sub-round GRAVEL, little medium sub-round Gravel, trace fine sub-angular Gravel and fine to coarse Sand, coal tar-like odor, moist.	
		8	18-20	0.6	10 25 20 19	45	12.9		Gray coarse sub-angular GRAVEL, little medium to fine sub-round to sub-angular Gravel, trace fine to coarse Sand, trace blebs of brown oil-like material, heavy silver sheen, strong coal tar-like odor, wet.	
20		9	20-22	0.4	37 40 50/0.2	NA	4.9			
	415	NA	22-25	NA	NA	NA	NA		Blind drill to 25' bgs. Samples were collected in nominal 5' increments between 20-28.5' bgs.	Borehole backfilled with grout (0.5-28.5' bgs).
25		10	25-25.5	0.6	28 50/0.4	NA	NA		Brown fine to coarse SAND, some fine sub-round Gravel, little medium sub-angular Gravel, trace Silt, mild coal tar-like odor, wet. Auger refusal at 25.5' bgs. Cored from 25.5-28.5' bgs with NX core bit.	
									Gray LIMESTONE.	
									Gray coarse sub-round GRAVEL.	
	410	11	25.5-28.5	1.4	NA	NA	0.0		Gray COBBLE.	
									Boring terminated (due to refusal) at 28.5' bgs.	
30										
	405									
35										

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/19/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Rod Trask
Drilling Method: NA
Auger Size: NA
Rig Type: Vac Master 4000
Sampling Method: NA

Northing: 925238.0
Easting: 438287.7

Borehole Depth: 3.0' bgs
Surface Elevation: 437.5' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB8A**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
440									
0									
	NA	0-3.0	NA	NA	NA	NA		ASPHALT.	Borehole backfilled with cold asphalt patch (0-0.5' bgs).
								FILL.	
435								CONCRETE. Boring location hand-cleared to 3.0' bgs. Terminated due to refusal and presence of subsurface void (concrete encountered from 2.0-3.0' bgs, rebar and subsurface void encountered at 3.0' bgs).	Borehole backfilled with soil cuttings (0.5-3.0' bgs).
								Boring terminated (during hand clearing) at 3.0' bgs.	
5									
430									
10									
425									
15									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/29/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Rod Trask
Drilling Method: NA
Auger Size: NA
Rig Type: Vac Master 4000
Sampling Method: NA

Northing: 925242.6
Easting: 438283.3

Borehole Depth: 1.0' bgs
Surface Elevation: 437.5' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB8B**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 440	NA	0-1.0	NA	NA	NA	NA		Black ASPHALT. FILL. Boring location hand-cleared to 1.0' bgs. Location abandoned due to presence of concrete surface at 1.0' bgs. Boring terminated (during hand clearing) at 1.0' bgs.	Borehole backfilled with cold asphalt patch (0-0.5' bgs). Borehole backfilled with soil cuttings (0.5-1.0' bgs).
5 / 435									
10 / 430									
15 / 425									

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Date Start/Finish: 4/21-4/22/10
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Mickey Marshall
Drilling Method: Hollow Stem Auger
Auger Size: 3.25"
Rig Type: CME-55
Sampling Method: 2' x 2" Split Spoon

Northing: 925211.7
Easting: 438256.0

Borehole Depth: 50' bgs
Surface Elevation: 437.2' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **PDI-SB9**

Client: Orange and Rockland Utilities, Inc.

Location: Port Jervis Former MGP Site
Port Jervis, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
440									
0	NA	0-5	NA	NA	NA	NA		Boring location hand-cleared to 5' bgs (blind drill to 5' bgs).	Borehole completed with concrete (0-0.5' bgs).
435									
5	1	5-6	0.7	2 2	NA	0.2 0.1		Brown very fine to fine SAND, trace Silt, moist.	
	2	6-8	1.7	4 4 3 5	7	0.1 0.0 0.1		Brown fine SAND, trace Silt, dark brown between 1.4-1.5' of recovery, moist.	
430	3	8-10	1.8	2 2 3 3	5	0.1 0.1 0.0			Borehole backfilled with grout (0.5-50' bgs).
10	4	10-12	1.7	2 2 2 2	4	0.2			
425	5	12-14	1.5	4 4 4 3	8	0.1		Brown fine to medium SAND, trace Silt, moist.	
15	6	14-16	1.2	8 8 9 10	17	0.9		Gray fine to medium SAND, little coarse Sand, trace fine to coarse sub-round Gravel, coal tar-like odor, moist.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB9**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	420	7	16-18	0.2	28 27 23 21	50	10.2		Gray coarse sub-round GRAVEL, little medium sub-round Gravel, trace fine sub-round Gravel and fine to coarse Sand, coal tar-like odor, wet.	
		8	18-20	1.3	18 25 21 20	46	12.1		Gray and brown coarse sub-round GRAVEL, some medium sub-round to sub-angular Gravel, little fine sub-round Gravel and fine to medium Sand, trace coarse Sand, trace blebs of brown oil-like material in tip of spoon, coal tar-like odor, wet.	
20		9	20-22	1.0	28 15 10 14	25	6.3		Trace blebs of brown oil-like material on Gravel.	
	415	NA	22-25	NA	NA	NA	NA		Blind drill to 25' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
25		10	25-27	0.4	25 50/0.4	NA	0.9		Gray coarse sub-round GRAVEL and fractured COBBLE or coarse GRAVEL, little fine sub-round to sub-angular Gravel, trace fine to coarse angular Sand and Silt, trace blebs of brown oil-like material on Gravel, coal tar-like odor, wet.	Borehole backfilled with grout (0.5-50' bgs).
	410	NA	27-30	NA	NA	NA	NA		Blind drill to 30' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
30		11	30-32	1.7	25 19 20 20	39	0.8		Brown medium to coarse SAND, some fine to coarse sub-round to sub-angular Gravel, trace fine Sand and Silt, mild coal tar-like odor, very loose, wet.	
	405	NA	32-35	NA	NA	NA	NA		Blind drill to 35' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
35		12	35-37	0.7	25 30	64	1.3		Brown to dark brown coarse sub-round to sub-angular GRAVEL, little medium sub-round Gravel, trace fine sub-round Gravel, fine to coarse Sand and Silt, mild coal tar-like odor, wet.	

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

Client: Orange and Rockland Utilities, Inc.

Well/Boring ID: **PDI-SB9**

Borehole Depth: 50' bgs

Site Location:
Port Jervis Former MGP Site
Port Jervis, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		12	35-37	0.7	34 48	64	1.3		Brown to dark brown coarse sub-round to sub-angular GRAVEL, little medium sub-round Gravel, trace fine sub-round Gravel, fine to coarse Sand and Silt, mild coal tar-like odor, wet.	
	400								Blind drill to 40' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
		NA	37-40	NA	NA	NA	NA			
40										
					4 4				Gray coarse to medium SAND, trace fine sub-round Gravel and fine Sand, mild coal tar-like odor, wet.	
		13	40-42	1.2	3 4	7	0.9		Brown very fine to fine SAND and SILT, loose, slight coal tar-like odor, wet.	
	395								Blind drill to 45' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
		NA	42-45	NA	NA	NA	NA			Borehole backfilled with grout (0.5-50' bgs).
45										
		14	45-47	1.5	4 5 6 6	11	0.8		Brown very fine to fine SAND and SILT, loose, slight coal tar-like odor, wet.	
	390	NA	47-48	NA	NA	NA	NA		Blind drill to 48' bgs. Samples were collected in nominal 5' increments between 20-50' bgs.	
		15	48-50	2.0	9 10 11 10	21	0.5		Brown very fine to fine SAND and SILT, loose, hint of coal tar-like odor, wet.	
50									Boring terminated at 50' bgs.	
	385									
55										

ARCADIS
Infrastructure, environment, buildings

Remarks: bgs = below ground surface; NA = Not Available/Applicable; AMSL = Above Mean Sea Level.

Cat head and rope used for blow counts.

Horizontal datum is the North American Datum of 1983 (NAD 83); New York State Plane East coordinate system, in U.S. Survey feet.
Vertical datum is the North American Vertical Datum of 1988 (NAVD 88).

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Attachment D

Results of Geotechnical Analyses

PW LABORATORIES, INC.
6544 FREMONT ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • Fax 315-437-1752 • pwlabsinc@hotmail.com

Revision

June 28, 2010

Mr. Adam Chwalibog
ARCADIS
6723 Towpath Road
P.O. Box 66
Syracuse, New York 13214-0066

Re: L-10039
Laboratory Testing
Orange & Rockland
Port Jervis Former MGP Site
Project #B0043021

Dear Adam {Adam.Chwalibog@arcadis-us.com}:

Enclosed are the results of laboratory testing performed at your request on thirty-six jar samples delivered to our laboratory on June 1, 2010 for the above referenced project. Results include:

1. Natural Moisture Content ASTM D2216
   Laboratory I.D. #'s 24976 – 25011 — 36 Each

2. Sieve Analysis ASTM D422 & D1140
   Laboratory I.D. #'s 24976 – 25011 — 36 Each

3. Hydrometer Analysis ASTM D422
   Laboratory I.D. #'s 24976, 24984, 24988, 24992, 24994, 24996, 25000, 25002, 25004 & 25006 — 10 Each

4. Specific Gravity ASTM D854
   Laboratory I.D. #'s 24977, 24980, 24983, 24989, 24994, 24999, 25003, 25008 & 25011 — 9 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, 2010. Please notify PW Laboratories, Inc. by letter or telephone prior to July 28, 2010 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

PW LABORATORIES, INC.
6544 FREMONT ROAD, E
315-437-1420 • Fax 3
PW LABORATORIES, INC.
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315-437-1420 • Fax 315-437-1752 • pwlabsinc@hotmail.com

June 17, 2010

L-10039
Laboratory Testing
Orange and Rockland
Port Jervis Former MGP Site
Project #B0043021

Natural Moisture Content
ASTM D2216

Lab I.D. #	Boring #	Depth (Feet)	Moisture Content as a Percent of Dry Weight
24976	SB-1	6.0-8.0	20.3
24977	SB-1	14.0-16.0	20.9
24978	SB-1	20.0-22.0	4.3
24979	SB-1	25.0-27.0	6.6
24980	SB-1	30.0-32.0	7.5
24981	SB-1	40.0-42.0	13.1
24982	SB-1	45.0-47.0	15.2
24983	SB-2	5.0-6.0	14.3
24984	SB-2	10.0-12.0	17.7
24985	SB-2	20.0-22.0	7.6
24986	SB-2	35.0-37.0	25.2
24987	SB-2	48.0-50.0	20.0
24988	SB-3	8.0-10.0	13.6
24989	SB-3	16.0-18.0	10.0
24990	SB-3	25.0-27.0	6.0
24991	SB-5W	5.0-6.0	14.1
24992	SB-5W	8.0-10.0	17.7
24993	SB-5W	12.0-14.0	13.1
24994	SB-5W	18.0-20.0	9.8
24995	SB-6	6.0-8.0	9.1
24996	SB-6	10.0-12.0	16.7
24997	SB-6E	18.0-20.0	5.4
24998	SB-6E	30.0-32.0	9.0
24999	SB-6E	35.0-37.0	7.9
25000	SB-6E	45.0-47.0	20.3
25001	SB-7	8.0-10.0	16.6
25002	SB-7	12.0-14.0	16.2
25003	SB-7	16.0-18.0	4.0
25004	SB-7	20.0-22.0	8.0
25005	SB-9	5.0-6.0	18.5
25006	SB-9	10.0-12.0	16.0
25007	SB-9	18.0-20.0	4.2
25008	SB-9	25.0-27.0	4.6
25009	SB-9	30.0-32.0	9.0
25010	SB-9	35.0-37.0	8.3
25011	SB-9	45.0-47.0	16.2

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Revised
Sieve Analysis of Soil/Aggregate

Project Title: Laboratory Testing
Orange and Rockland
Port Jervis Former MGP Site
Project #B0043021

Project #: L-10039
Test Method: ASTM D422 & D1140

Report #: 1
Report Date: June 28, 2010

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Boring #	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
24976	SB-1	6.0-8.0	--	--	--	--	--	--	--	100	99.8	99.4	94.5	81.2	63.2	
24977	SB-1	14.0-16.0	--	--	--	--	--	--	100	99.9	97.0	82.4	34.8	12.9	9.4	
24978	SB-1	20.0-22.0	100	58.6	49.9	40.6	35.0	29.7	27.5	24.0	17.8	15.3	11.2	8.1	6.1	
24979	SB-1	25.0-27.0	100	78.4	46.4	40.4	39.4	33.5	31.6	24.2	15.6	13.6	10.4	8.1	6.3	
24980	SB-1	30.0-32.0	--	100	57.1	48.8	38.3	34.0	31.1	25.6	16.5	14.1	11.0	8.9	8.0	
24981	SB-1	40.0-42.0	--	--	--	100	99.2	96.1	92.9	84.0	50.2	29.7	14.4	8.8	6.0	
24982	SB-1	45.0-47.0	--	--	--	--	100	99.4	99.0	96.3	66.5	40.8	20.3	12.7	8.7	
24983	SB-2	5.0-6.0	--	--	--	--	--	--	100	99.9	99.8	99.7	96.5	73.5	42.6	
24984	SB-2	10.0-12.0	--	--	--	--	--	--	--	100	99.8	99.4	95.6	84.9	61.3	

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

Performed By: MB, ES, AM

Checked By: V.J. Thoma

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Revised

Sieve Analysis of Soil/Aggregate

Project Title: Laboratory Testing
Orange and Rockland
Port Jervis Former MGP Site
Project #B0043021

Project #: L-10039
Test Method: ASTM D422 & D1140

Report #: 1
Report Date: June 28, 2010

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Boring #	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
24985	SB-2	20.0-22.0	100	82.8	68.0	63.0	56.4	41.9	35.1	22.9	12.2	9.7	6.6	4.8	3.6	
24986	SB-2	35.0-37.0	--	--	--	--	--	100	99.9	99.7	98.8	95.9	55.1	17.6	6.2	
24987	SB-2	48.0-50.0	--	--	--	--	--	--	--	100	99.4	97.4	76.2	37.3	12.7	
24988	SB-3	8.0-10.0	--	--	--	--	--	--	100	99.8	99.2	98.7	89.7	67.3	44.3	
24989	SB-3	16.0-18.0	100	64.9	45.6	45.6	44.1	44.1	44.1	43.3	41.1	35.7	19.9	10.5	6.8	
24990	SB-3	25.0-27.0	100	84.9	56.1	45.8	35.9	29.0	25.1	19.0	11.6	10.0	7.8	6.1	4.3	
24991	SB-5W	5.0-6.0	--	--	--	--	100	99.1	98.8	98.3	97.5	96.9	91.0	70.2	45.1	
24992	SB-5W	8.0-10.0	--	--	--	--	--	--	--	100	99.9	99.8	97.8	88.2	63.3	
24993	SB-5W	12.0-14.0	--	--	--	--	--	--	--	100	99.9	99.7	89.4	65.1	39.4	

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

Performed By: MB, ES, AM

Checked By: V.J. Thoma

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Revised
Sieve Analysis of Soil/Aggregate

Project Title: Laboratory Testing
Orange and Rockland
Port Jervis Former MGP Site
Project #B0043021

Project #: L-10039
Test Method: ASTM D422 & D1140

Report #: 1
Report Date: June 28, 2010

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Boring #	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
24994	SB-5W	18.0-20.0	100	79.3	72.8	56.9	48.3	42.3	40.2	34.7	27.6	23.9	17.7	13.4	10.0	
24995	SB-6	6.0-8.0	--	100	85.7	72.7	68.2	63.7	60.9	56.0	47.7	41.6	27.3	18.1	12.1	
24996	SB-6	10.0-12.0	--	--	--	--	--	--	100	99.9	98.0	89.1	54.1	30.5	17.7	
24997	SB-6E	18.0-20.0	100	86.9	44.8	33.4	28.2	22.4	21.0	17.8	12.3	10.1	7.1	4.9	3.6	
24998	SB-6E	30.0-32.0	--	--	--	100	94.6	80.7	64.5	33.3	19.0	17.0	12.8	9.6	7.5	
24999	SB-6E	35.0-37.0	--	100	76.6	66.9	61.9	53.2	48.2	33.7	16.8	13.7	10.5	8.7	7.0	
25000	SB-6E	45.0-47.0	--	--	--	--	100	98.8	98.1	97.0	95.3	94.0	86.1	57.3	24.5	
25001	SB-7	8.0-10.0	--	--	--	--	--	100	99.9	99.6	98.2	97.4	91.3	72.7	48.7	
25002	SB-7	12.0-14.0	--	--	--	--	--	--	100	99.9	98.7	97.7	91.2	70.0	46.8	

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks:

Performed By: MB, ES, AM

Checked By: V.J. Thoma

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Revised
Sieve Analysis of Soil/Aggregate

Project Title: Laboratory Testing
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Port Jervis Former MGP Site
Project #B0043021

Project #: L-10039
Test Method: ASTM D422 & D1140

Report #: 1
Report Date: June 28, 2010

			Sieve Size - Percent Passing Sieve													
Lab I.D. #	Boring #	Depth (feet)	1 1/2"	1"	3/4"	1/2"	3/8"	1/4"	#4	#10	#30	#40	#60	#100	#200	
	SB-7	16.0-18.0	100	87.4	66.2	48.9	42.2	36.4	34.5	30.4	25.0	22.4	17.2	11.8	7.0	
25004	SB-7	20.0-22.0	--	100	87.6	87.6	79.6	65.6	60.5	47.4	34.4	32.1	25.9	18.9	12.1	
25005	SB-9	5.0-6.0	--	--	--	--	--	--	100	99.6	99.2	99.1	97.5	88.4	61.0	
25006	SB-9	10.0-12.0	--	--	--	--	--	--	--	100	99.9	99.9	95.8	76.3	48.7	
25007	SB-9	18.0-20.0	100	54.7	41.5	33.9	29.7	27.9	26.7	23.9	19.1	16.7	13.2	10.3	8.4	
25008	SB-9	25.0-27.0	100	47.5	42.2	33.7	31.0	26.1	22.0	15.7	11.4	10.5	8.8	7.4	5.8	
25009	SB-9	30.0-32.0	100	78.8	74.1	60.3	57.1	53.1	49.8	40.7	28.1	23.1	16.7	12.7	9.5	
25010	SB-9	35.0-37.0	100	89.8	59.7	48.2	43.6	35.4	32.2	25.1	19.4	17.6	13.7	10.2	7.9	
25011	SB-9	45.0-47.0	--	--	100	98.4	97.9	95.7	94.4	89.1	76.5	67.0	37.1	17.0	8.3	

Sample mass, as received, meets minimum mass requirements of test method: Yes ____ No X

Prewashed: Yes X No ____

Remarks: ____

Performed By: MB, ES, AM

Checked By: V.J. Thoma

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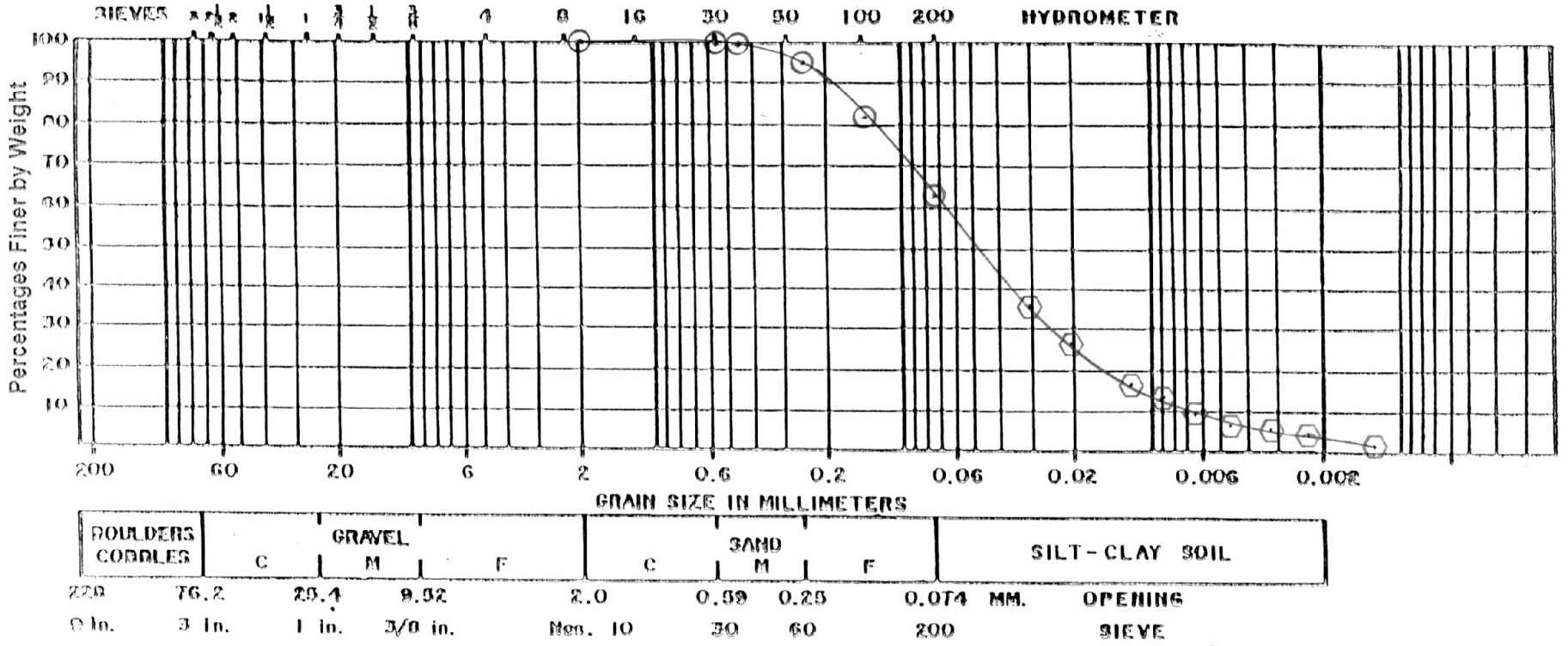
Job No.:	L-10039
Report No:	1
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24976
Laboratory Testing	Boring #:	SB-1
Orange and Rockland	Depth (Feet):	6.0 - 8.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

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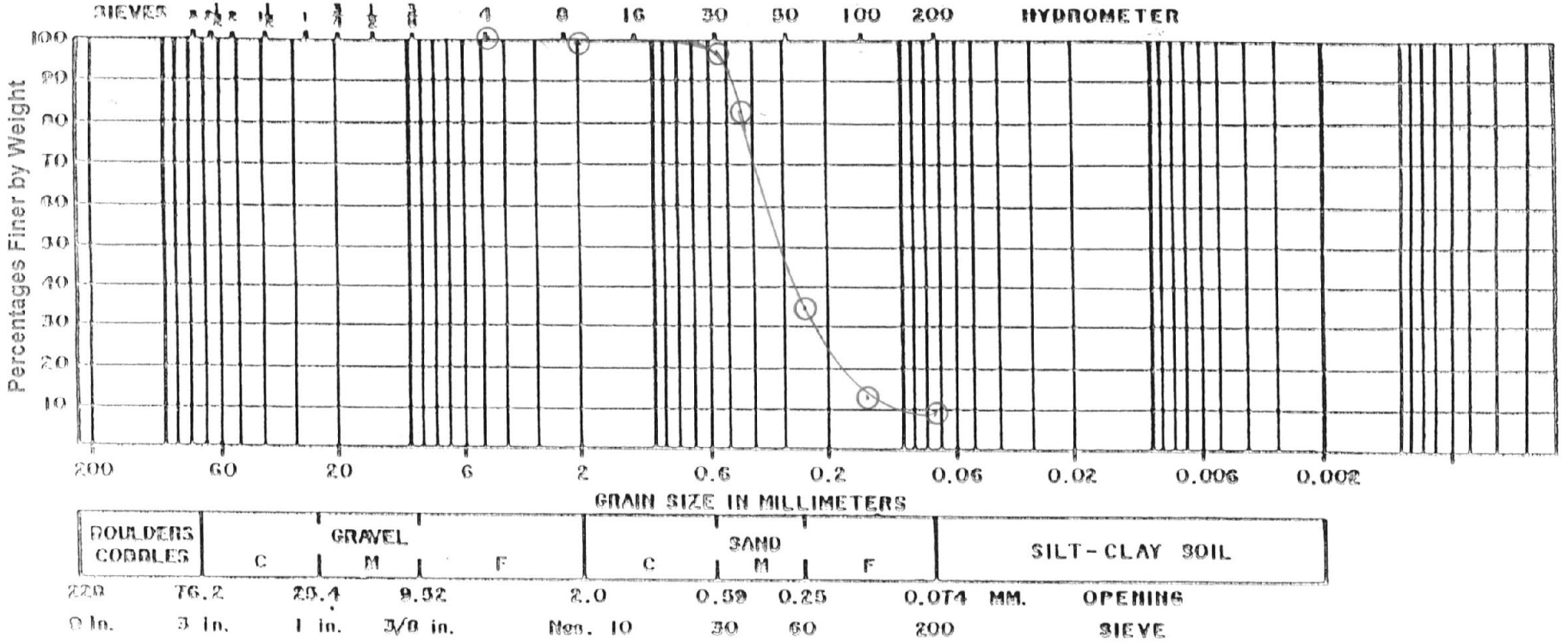
Job No.:	L-10039
Report No:	2
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24977
Laboratory Testing	Boring #:	SB-1
Orange and Rockland	Depth (Feet):	14.0 - 16.0
Port Jervis Former MPG Site		
⊙ Sieve Analysis ASTM D422 & D1140		
⊙ Hydrometer Analysis ASTM D422		

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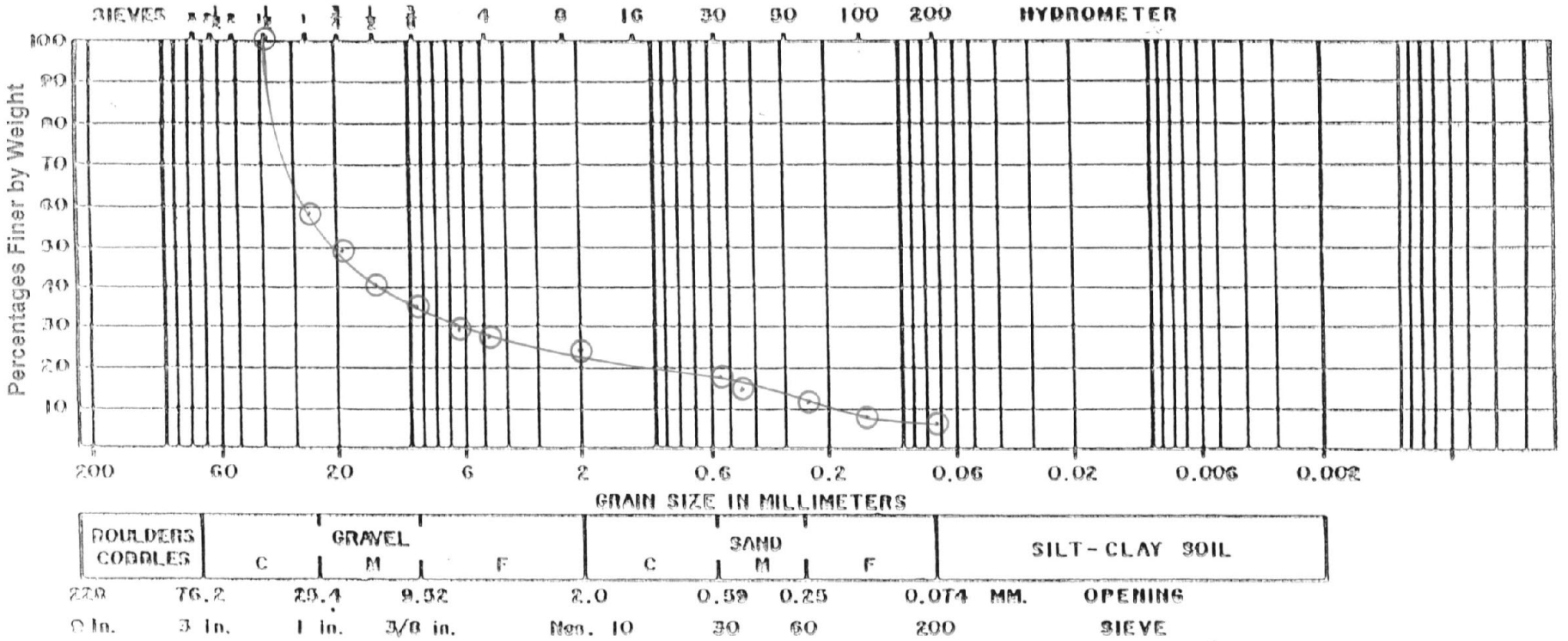
Job No.:	L-10039
Report No:	3
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24978
Laboratory Testing	Boring #:	SB-1
Orange and Rockland	Depth (Feet):	20.0 - 22.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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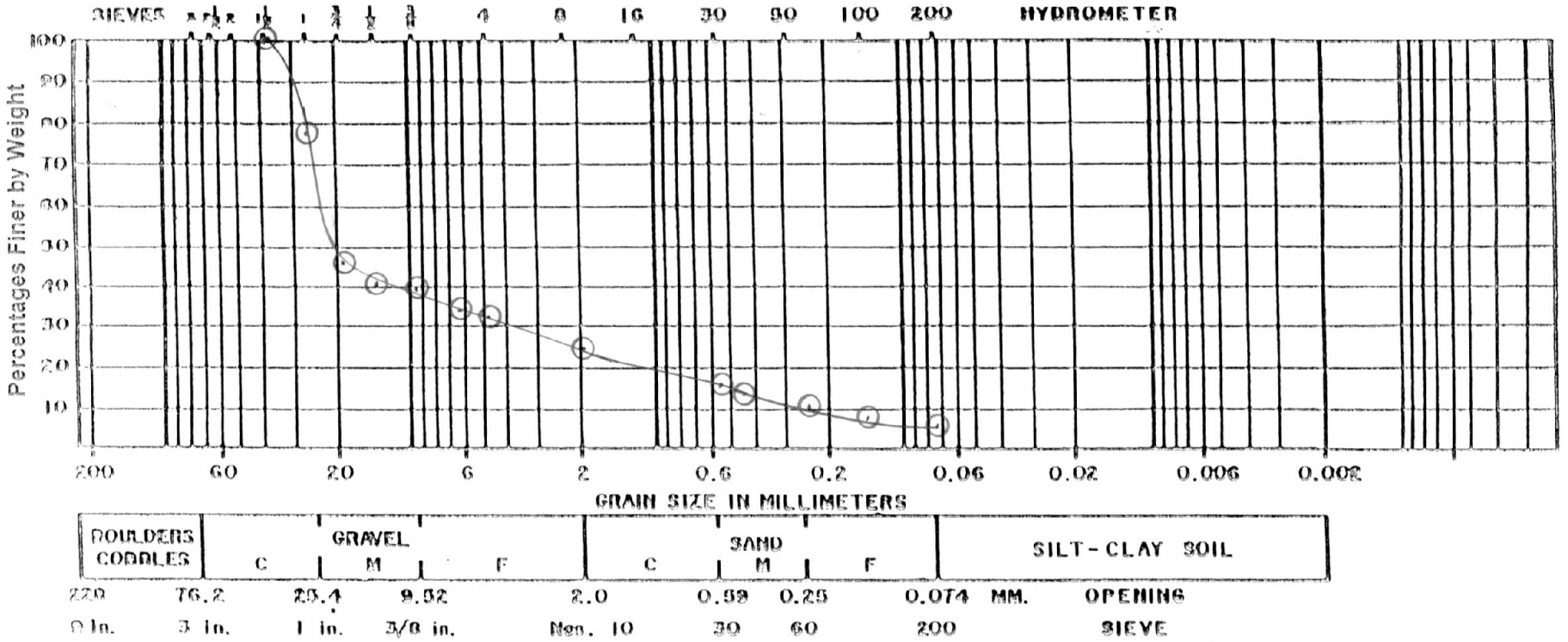
Job No.:	L-10039
Report No:	4
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24979
Laboratory Testing	Boring #:	SB-1
Orange and Rockland	Depth (Feet):	25.0 - 27.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

p-w labs
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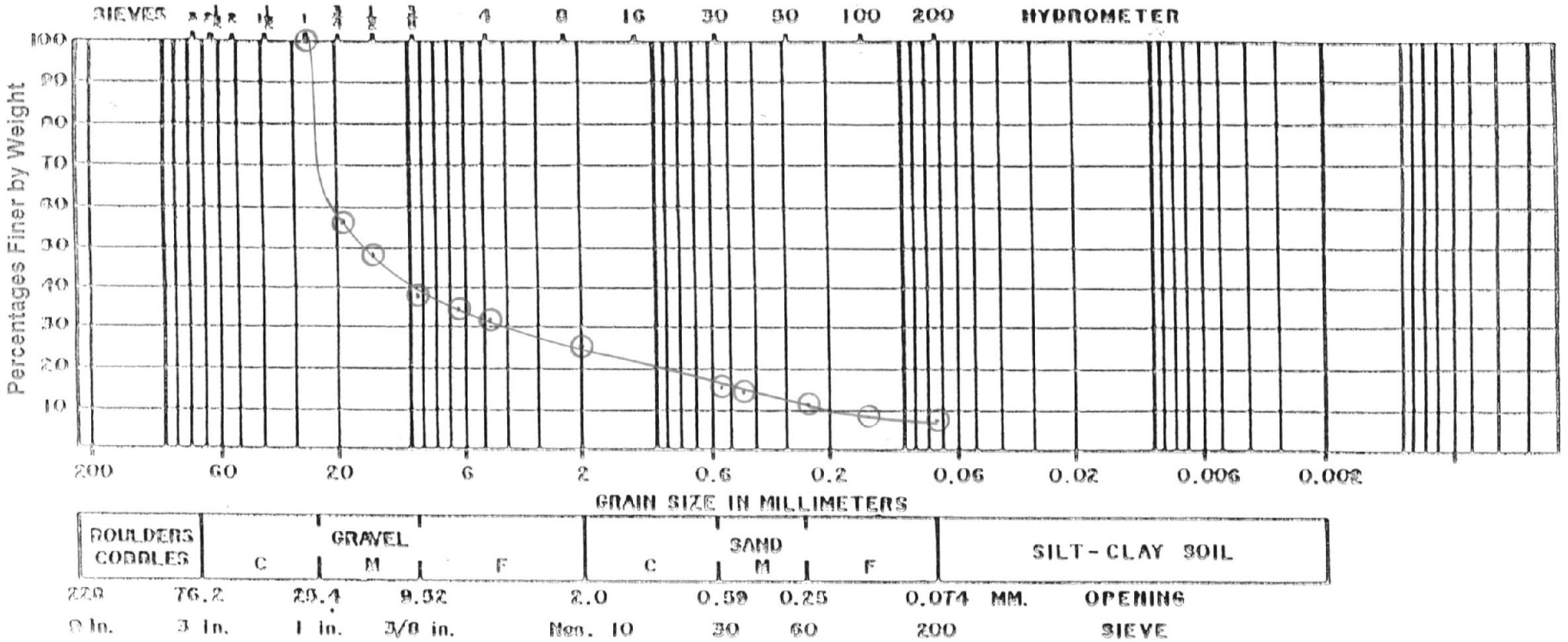
Job No.:	L-10039
Report No:	5
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24980
Laboratory Testing	Boring #:	SB-1
Orange and Rockland	Depth (Feet):	30.0 - 32.0
Port Jervis Former MPG Site		

○ Sieve Analysis ASTM D422 & D1140
◔ Hydrometer Analysis ASTM D422

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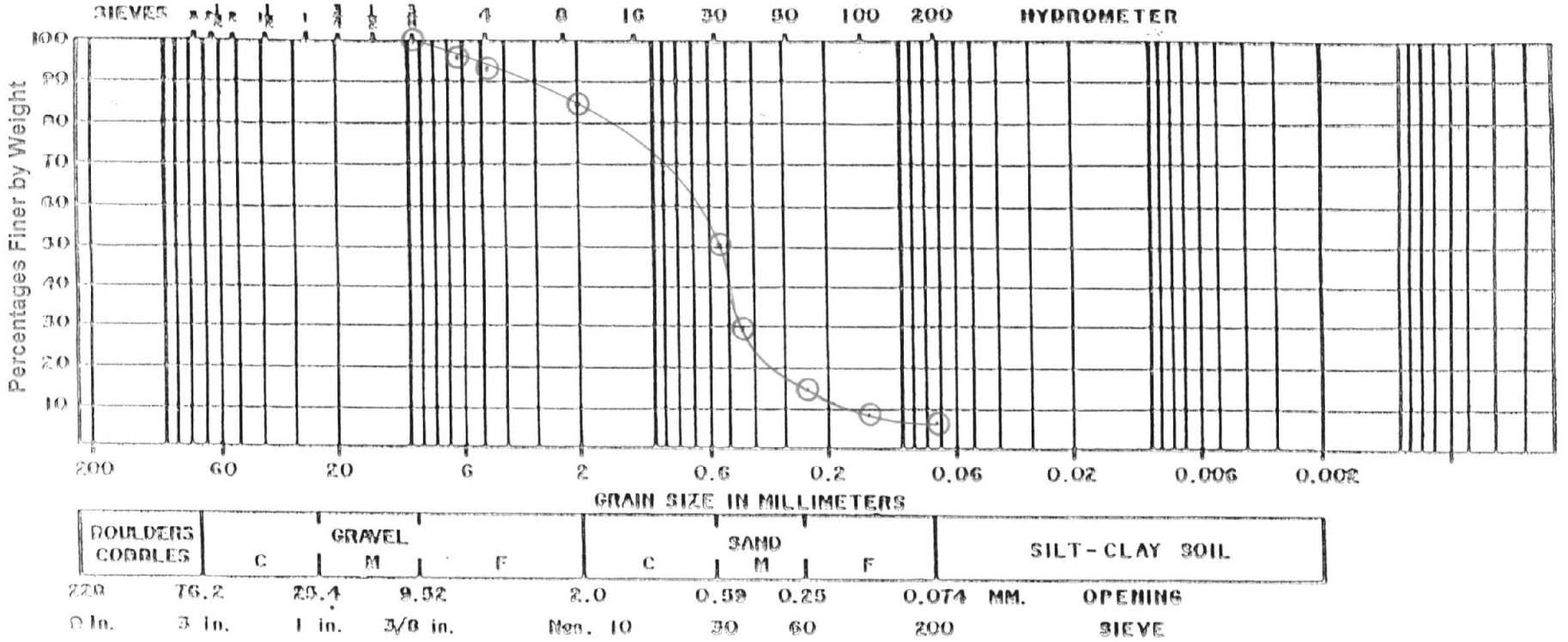
Job No.:	L-10039
Report No:	6
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24981
Laboratory Testing	Boring #:	SB-1
Orange and Rockland	Depth (Feet):	40.0 - 42.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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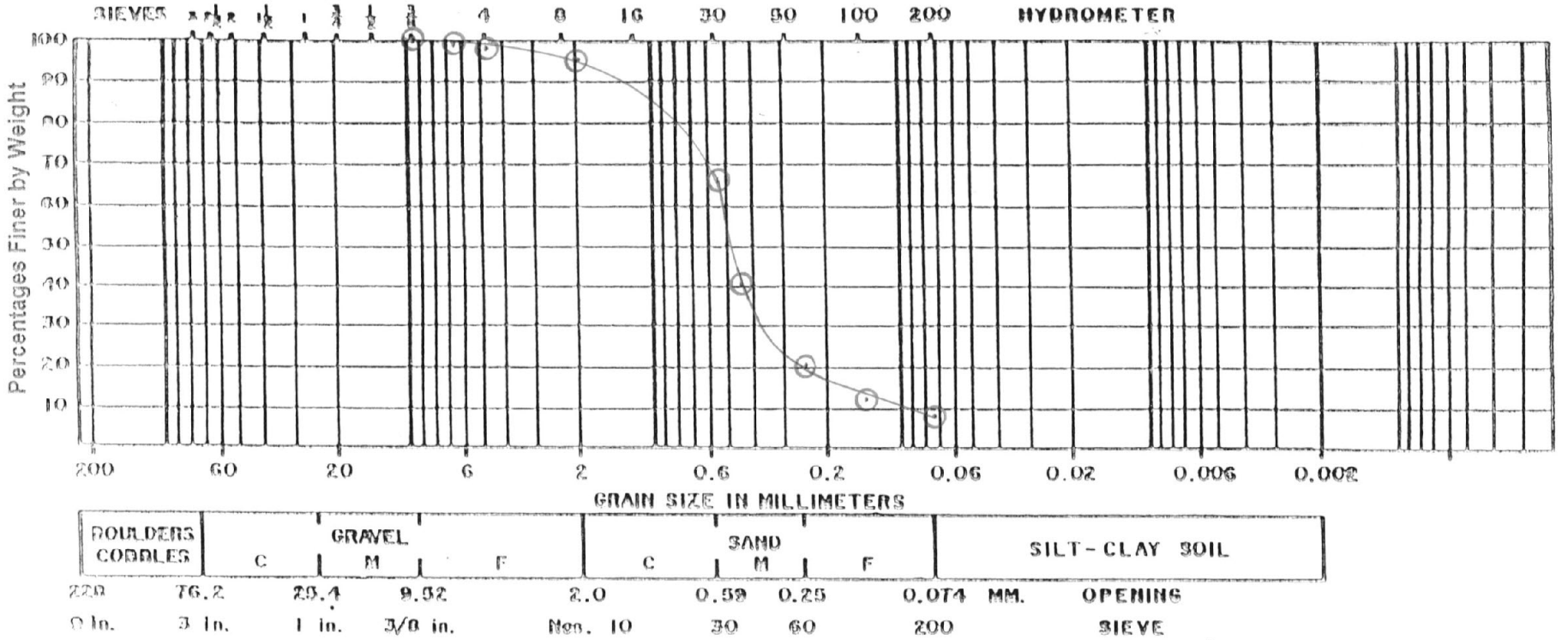
Job No.:	L-10039
Report No:	7
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24982
Laboratory Testing	Boring #:	SB-1
Orange and Rockland	Depth (Feet):	45.0 - 47.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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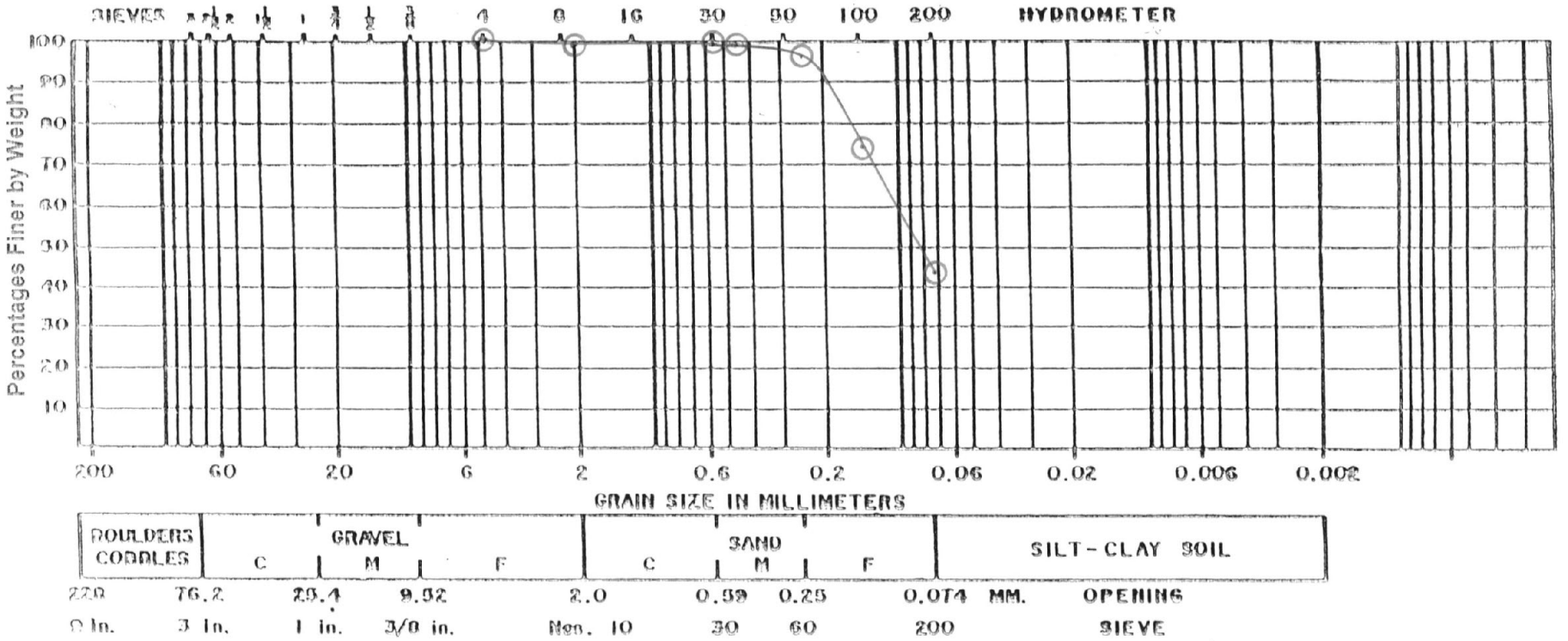
Job No.:	L-10039
Report No:	8
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24983
Laboratory Testing	Boring #:	SB-2
Orange and Rockland	Depth (Feet):	5.0 - 6.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⬡ Hydrometer Analysis ASTM D422

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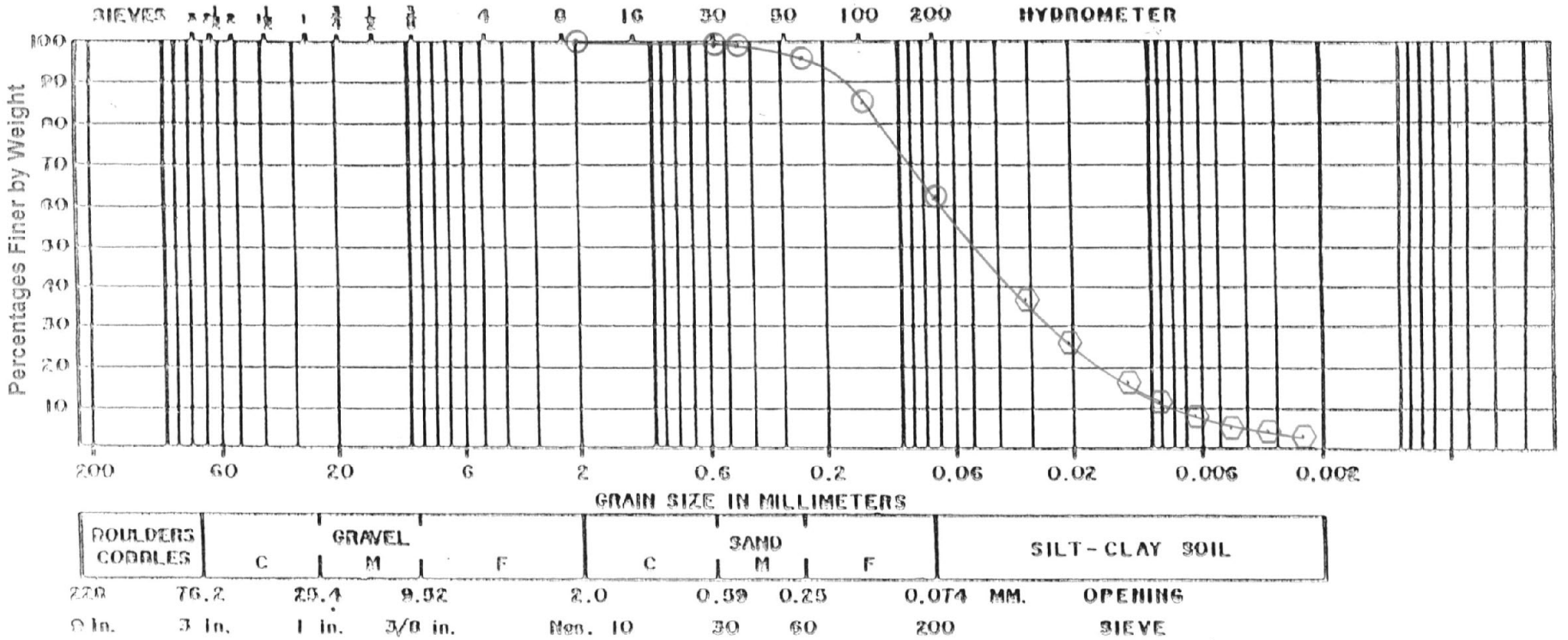
Job No.:	L-10039
Report No:	9
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24984
Laboratory Testing	Boring #:	SB-2
Orange and Rockland	Depth (Feet):	10.0 -12.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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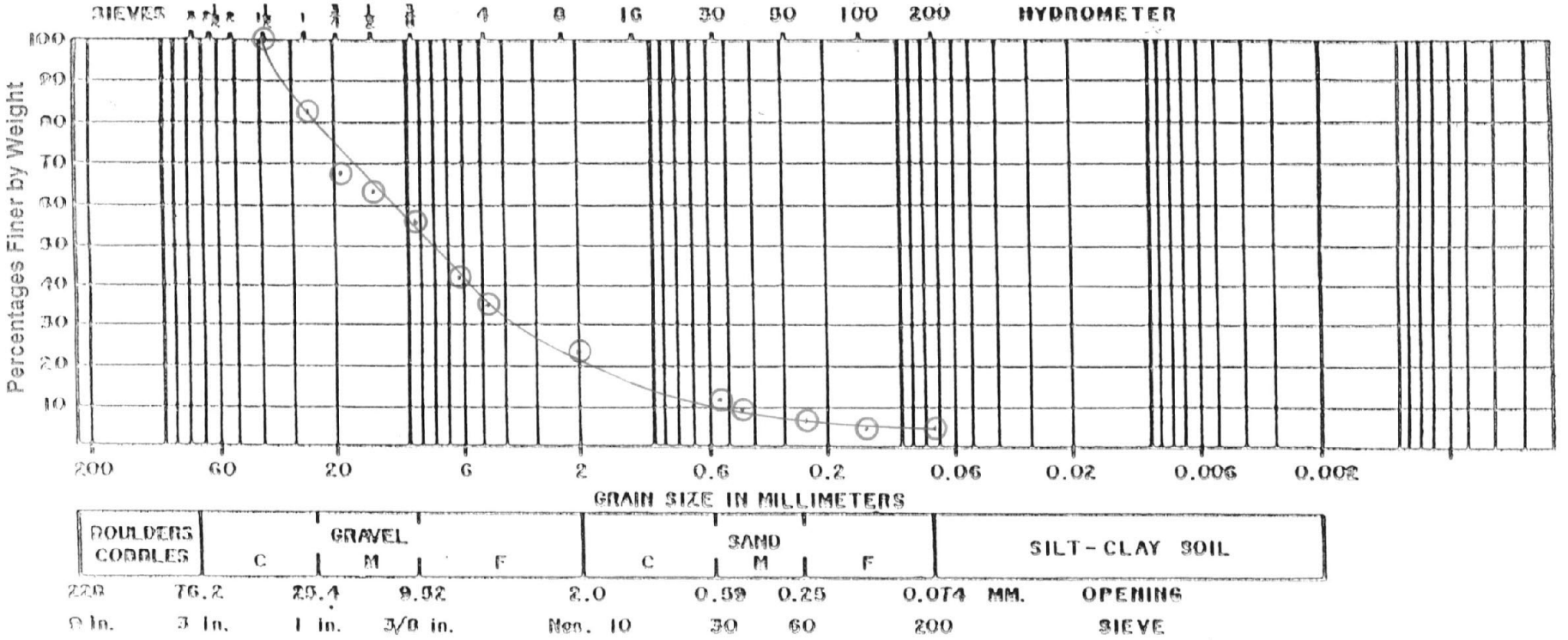
Job No.:	L-10039
Report No:	10
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24985
Laboratory Testing	Boring #:	SB-2
Orange and Rockland	Depth (Feet):	20.0 - 22.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

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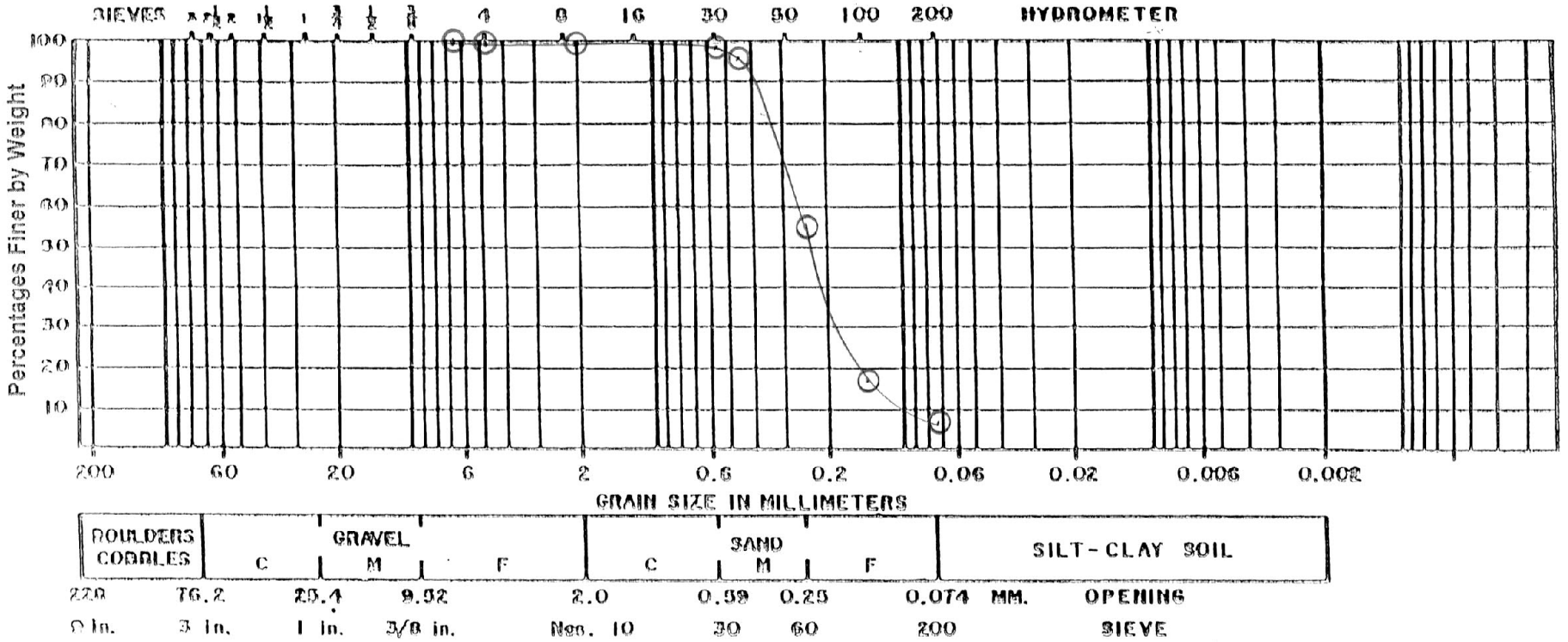
Job No.:	L-10039
Report No:	11
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24986
Laboratory Testing	Boring #:	SB-2
Orange and Rockland	Depth (Feet):	35.0 - 37.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⬡ Hydrometer Analysis ASTM D422

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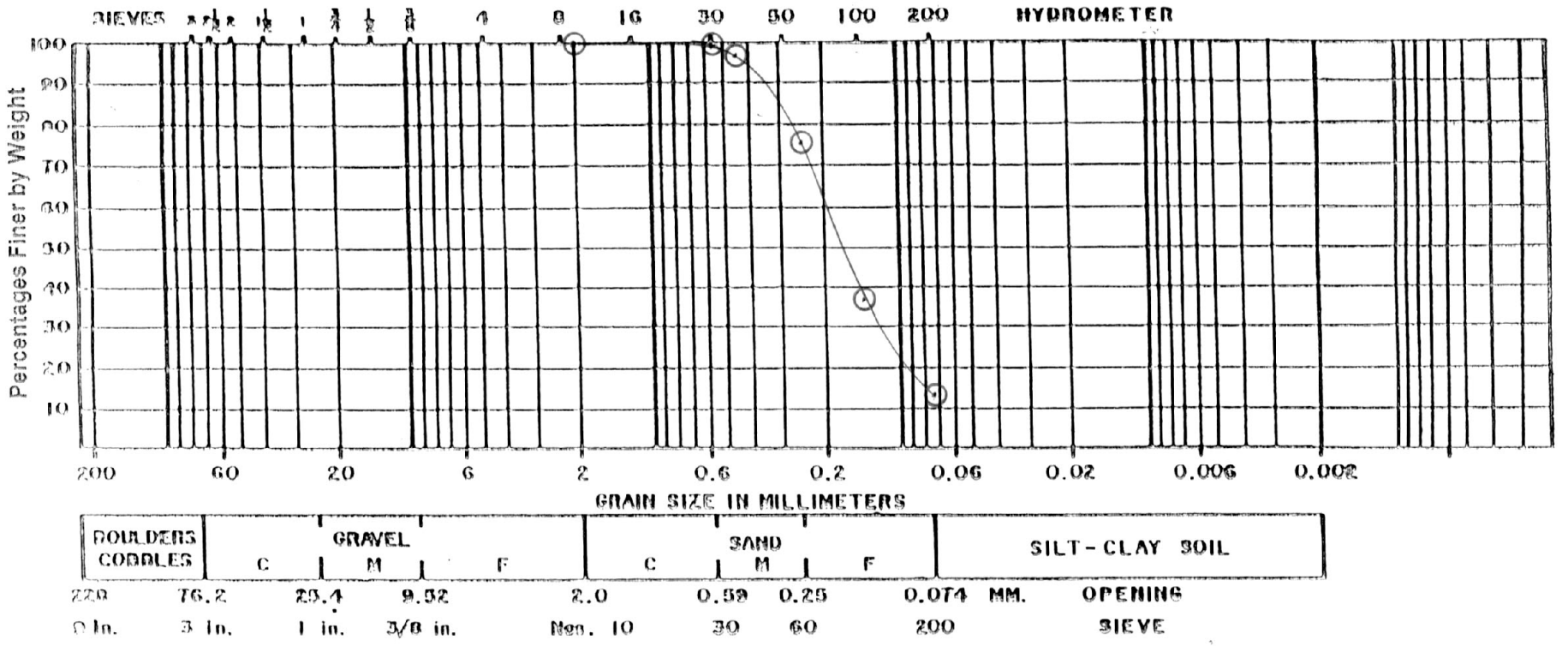
Job No.:	L-10039
Report No:	12
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24987
Laboratory Testing	Boring #:	SB-2
Orange and Rockland	Depth (Feet):	48.0 - 50.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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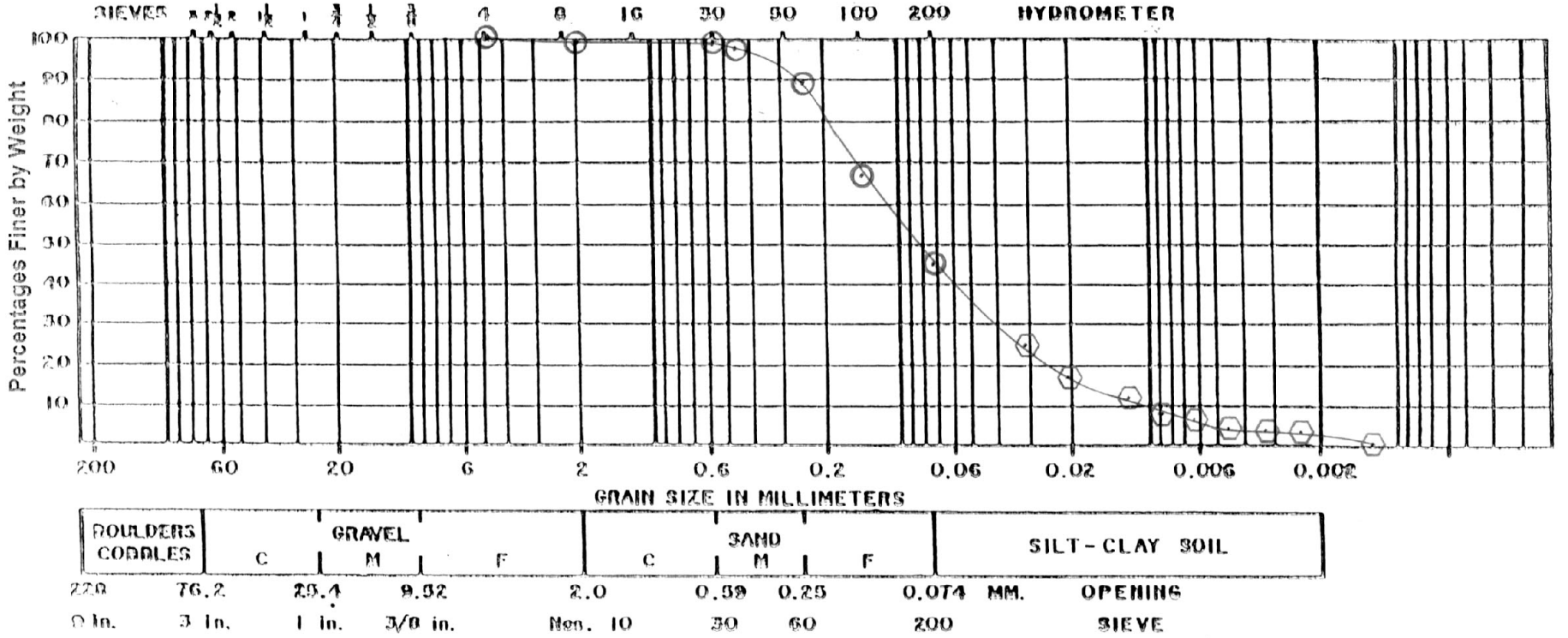
Job No.:	L-10039
Report No:	13
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24988
Laboratory Testing	Boring #:	SB-3
Orange and Rockland	Depth (Feet):	8.0 - 10.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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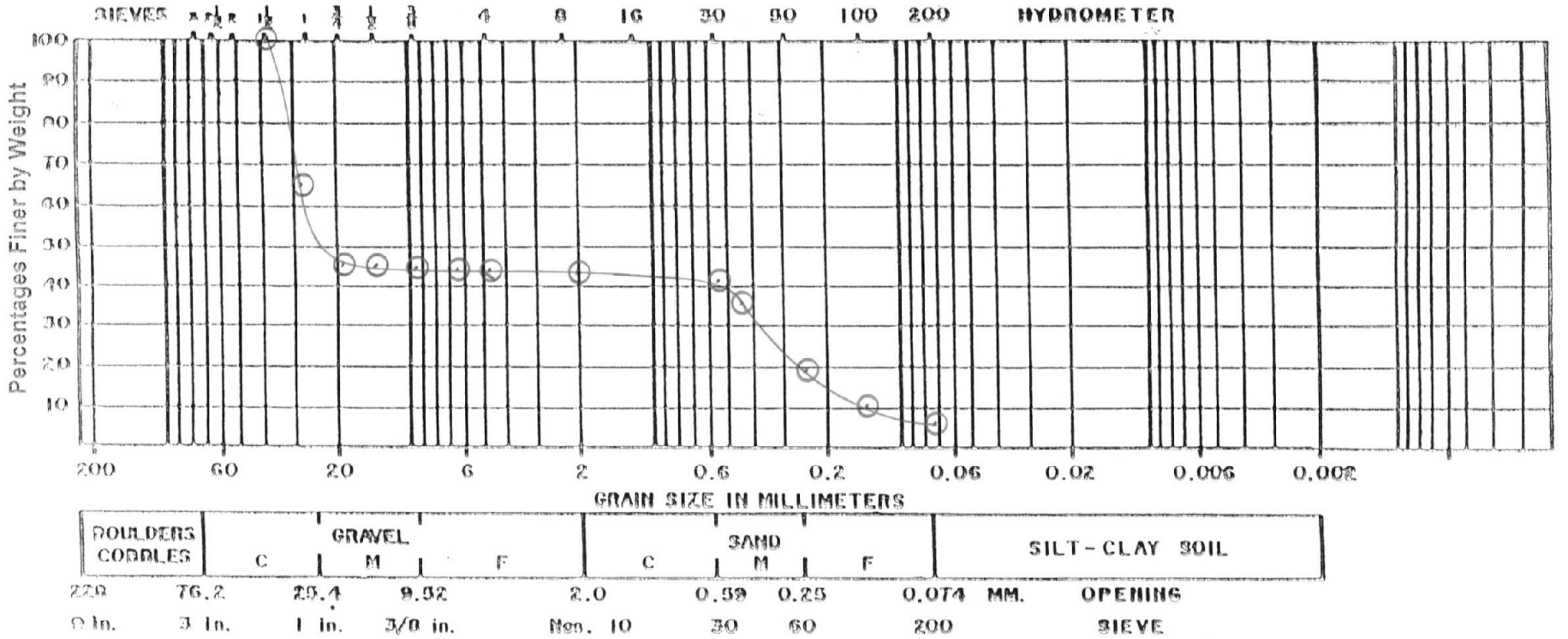
Job No.:	L-10039
Report No:	14
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #: 24989
Laboratory Testing	Boring #: SB-3
Orange and Rockland	Depth (Feet): 16.0 - 18.0
Port Jervis Former MPG Site	

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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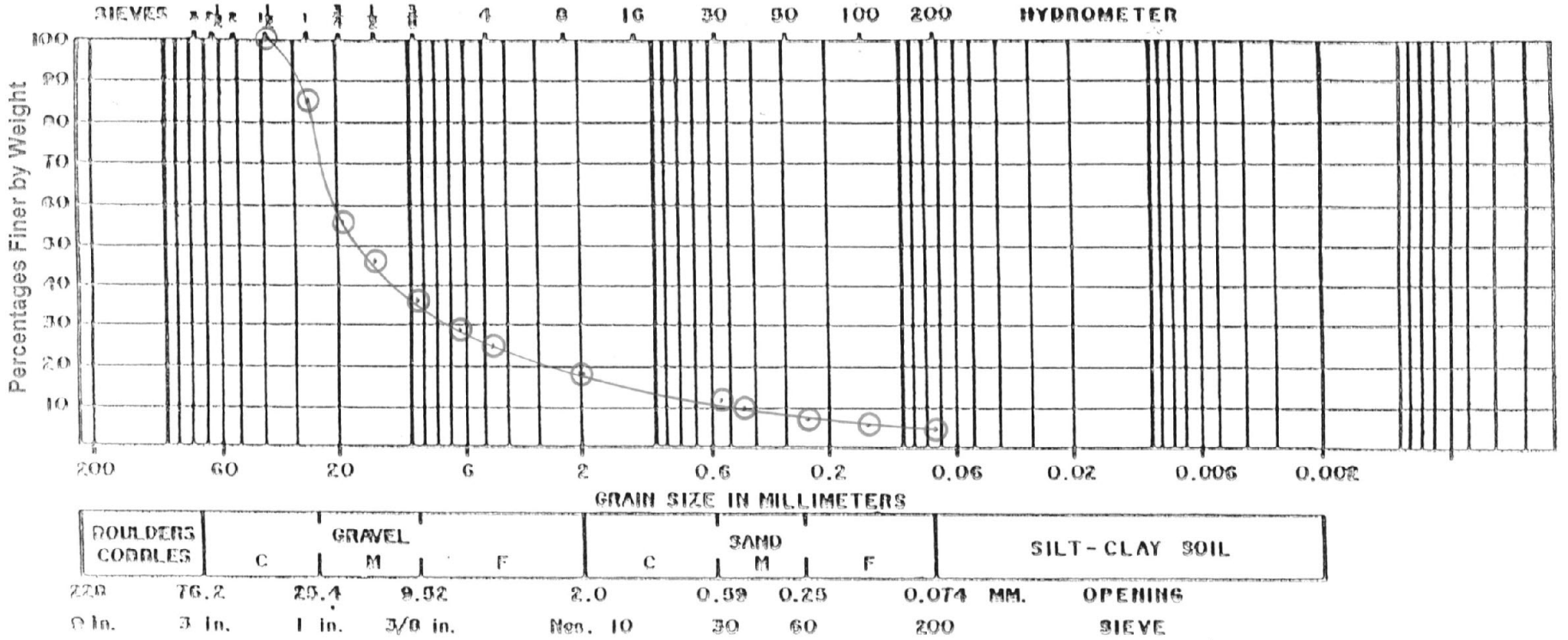
Job No.:	L-10039
Report No:	15
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24990
Laboratory Testing	Boring #:	SB-3
Orange and Rockland	Depth (Feet):	25.0 - 27.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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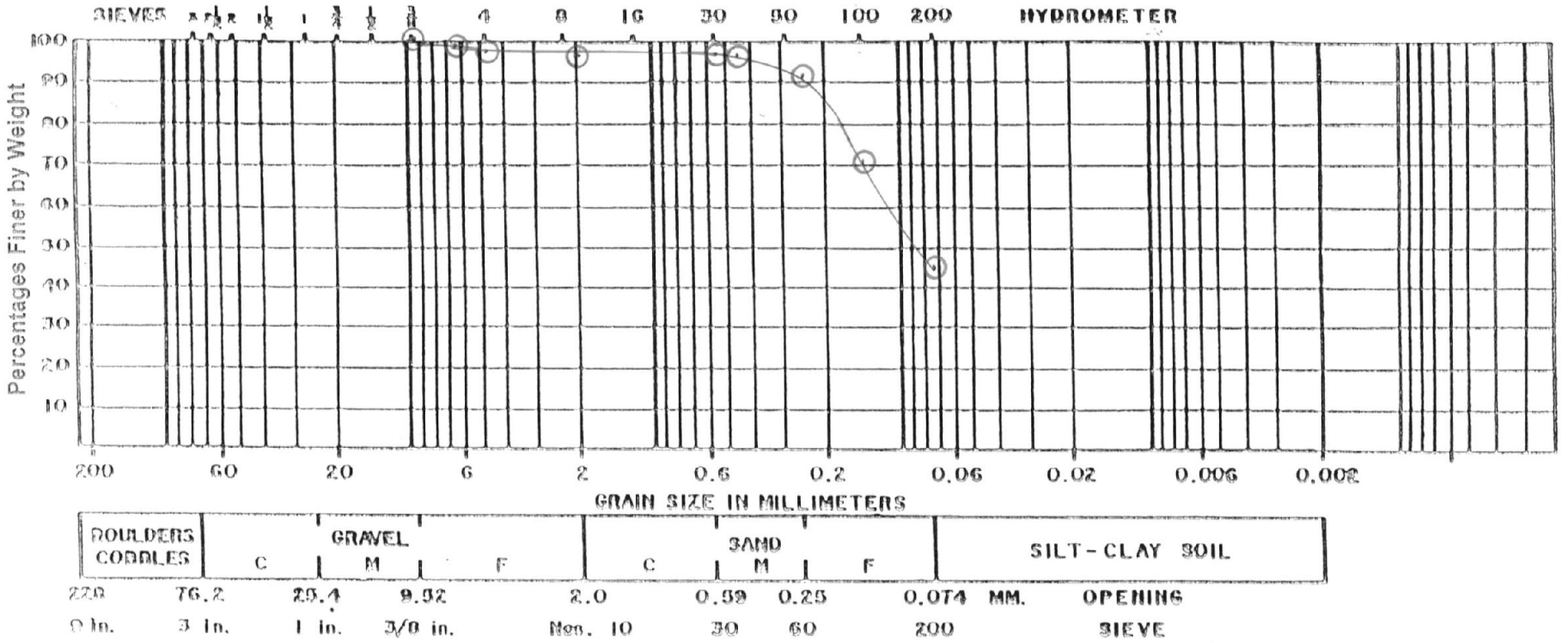
Job No.:	L-10039
Report No:	16
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24991
Laboratory Testing	Boring #:	SB-5W
Orange and Rockland	Depth (Feet):	5.0 - 6.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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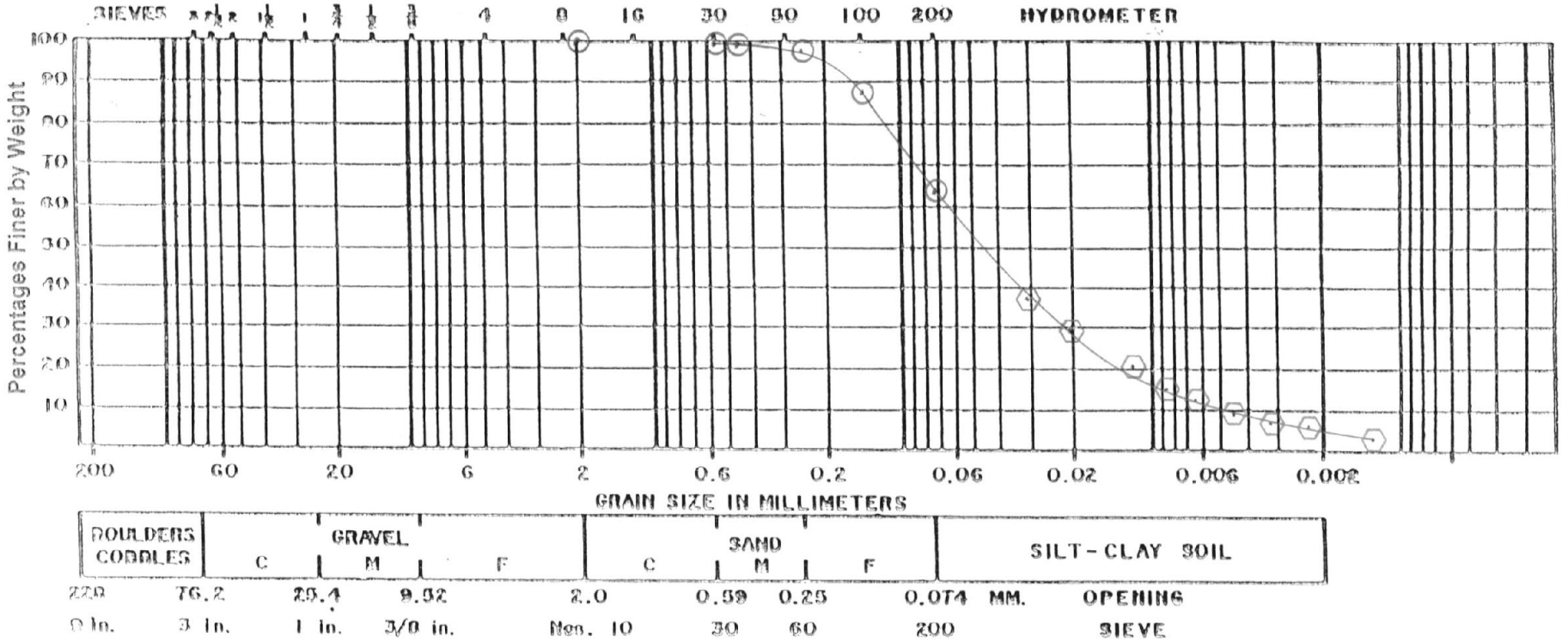
Job No.:	L-10039
Report No:	17
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24992
Laboratory Testing	Boring #:	SB-SW
Orange and Rockland	Depth (Feet):	8.0 - 10.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

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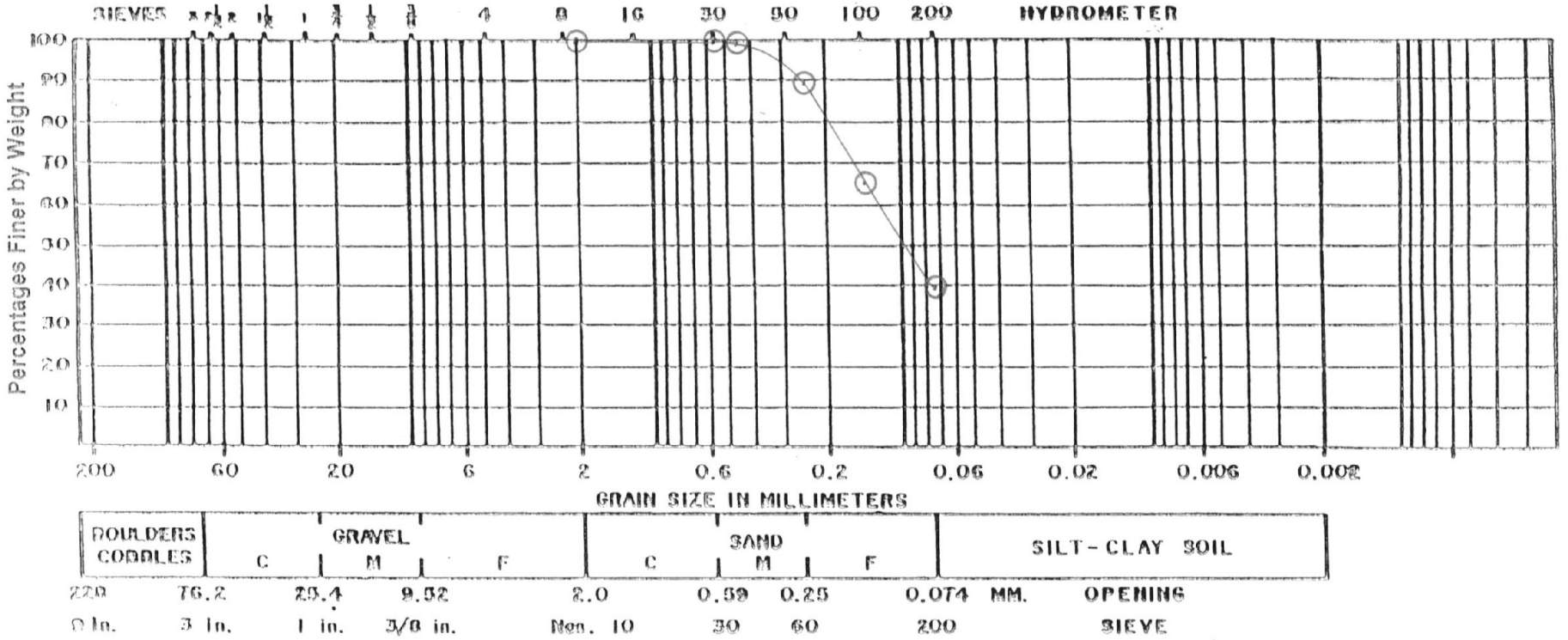
Job No.:	L-10039
Report No:	18
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24993
Laboratory Testing	Boring #:	SB-5W
Orange and Rockland	Depth (Feet):	12.0 - 14.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⬡ Hydrometer Analysis ASTM D422

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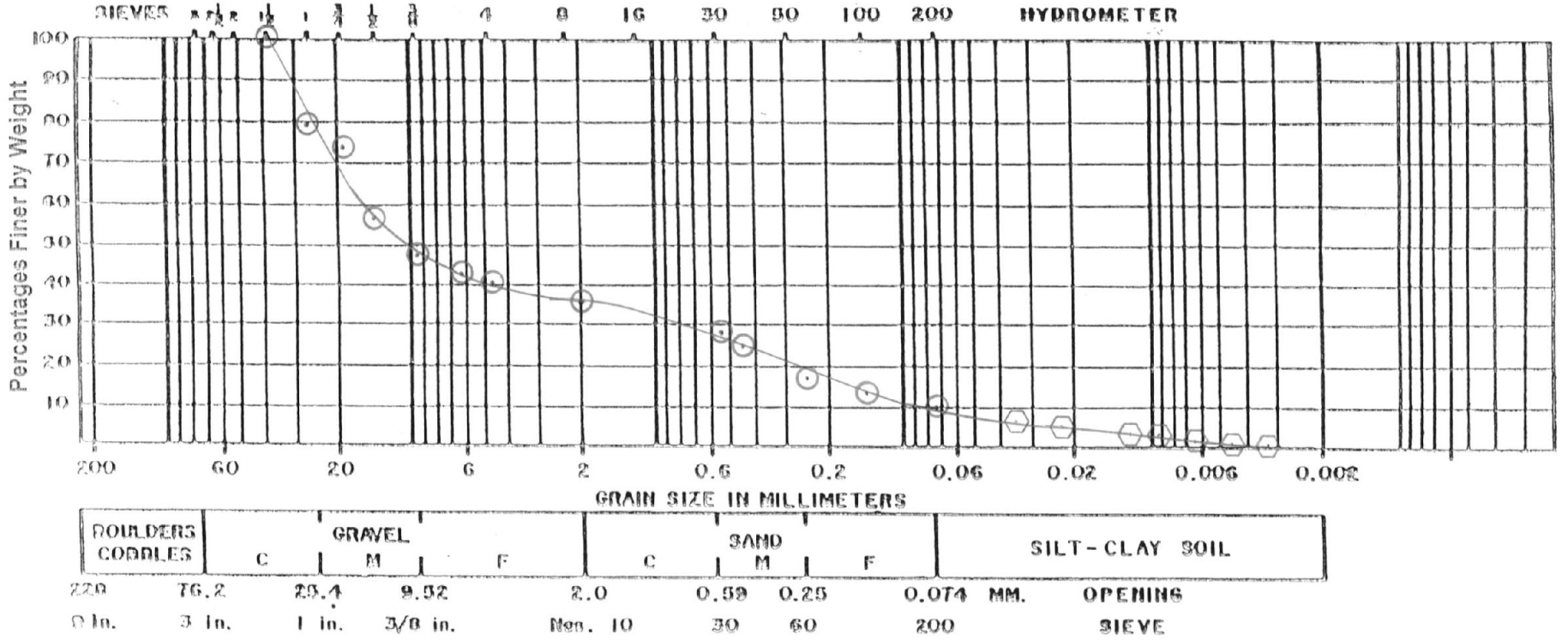
Job No.:	L-10039
Report No:	19
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24994
Laboratory Testing	Boring #:	SB-5W
Orange and Rockland	Depth (Feet):	18.0 - 20.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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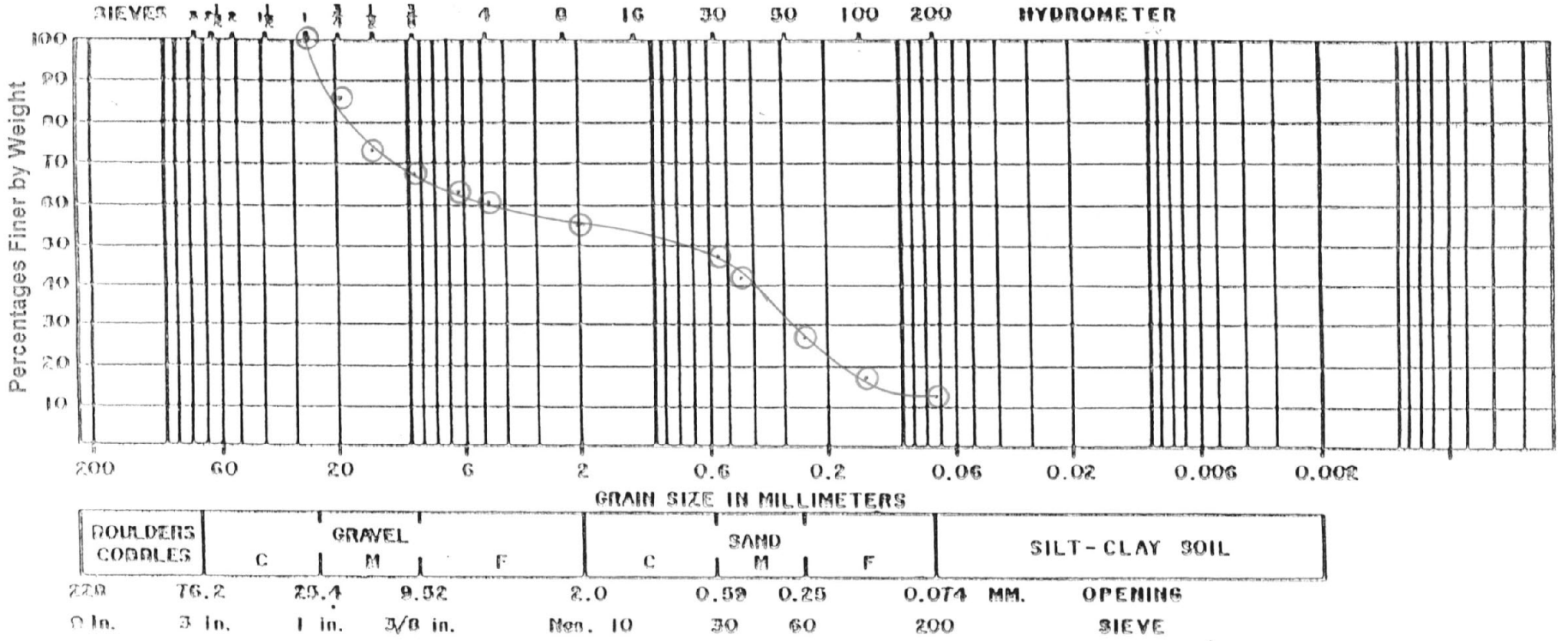
Job No.:	L-10039
Report No:	20
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24995
Laboratory Testing	Boring #:	SB-6
Orange and Rockland	Depth (Feet):	6.0 - 8.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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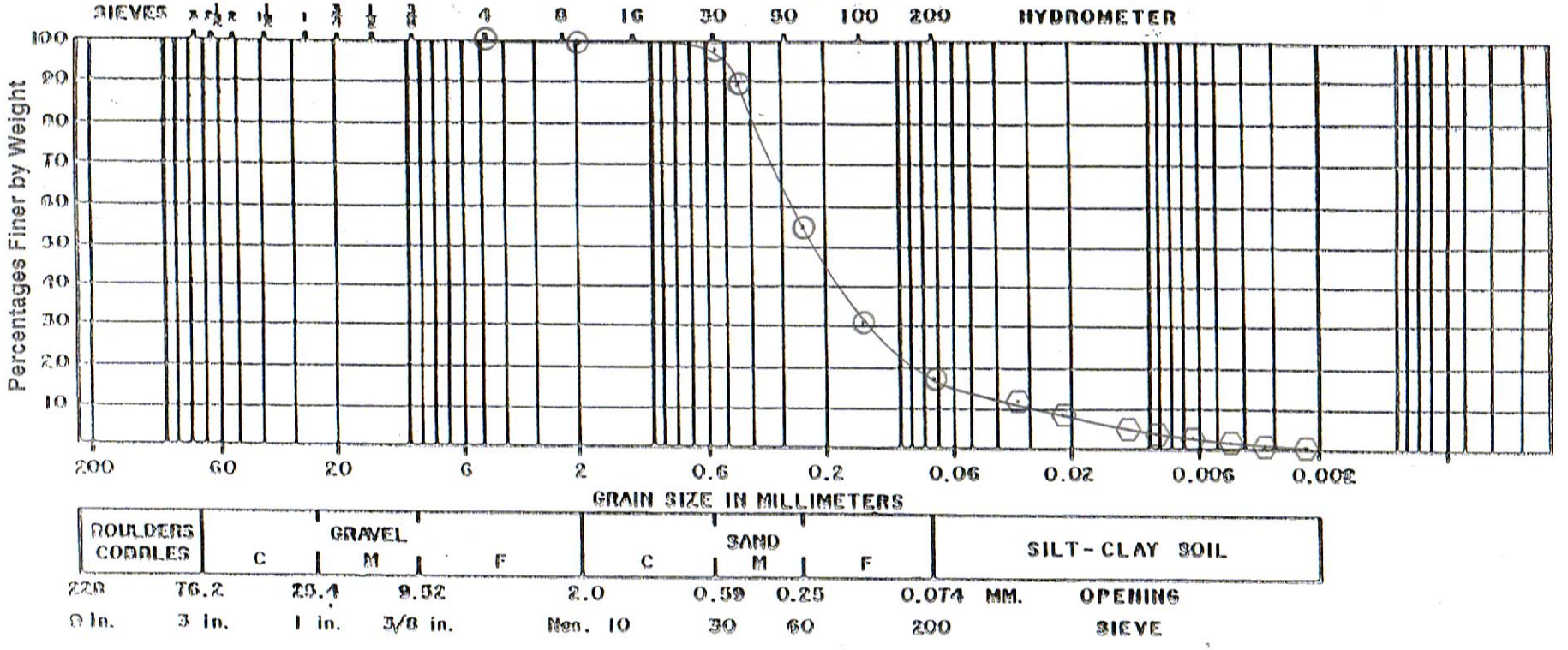
Job No.:	L-10039
Report No:	21
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24996
Laboratory Testing	Boring #:	SB-6
Orange and Rockland	Depth (Feet):	10.0 - 12.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140

⊙ Hydrometer Analysis ASTM D422

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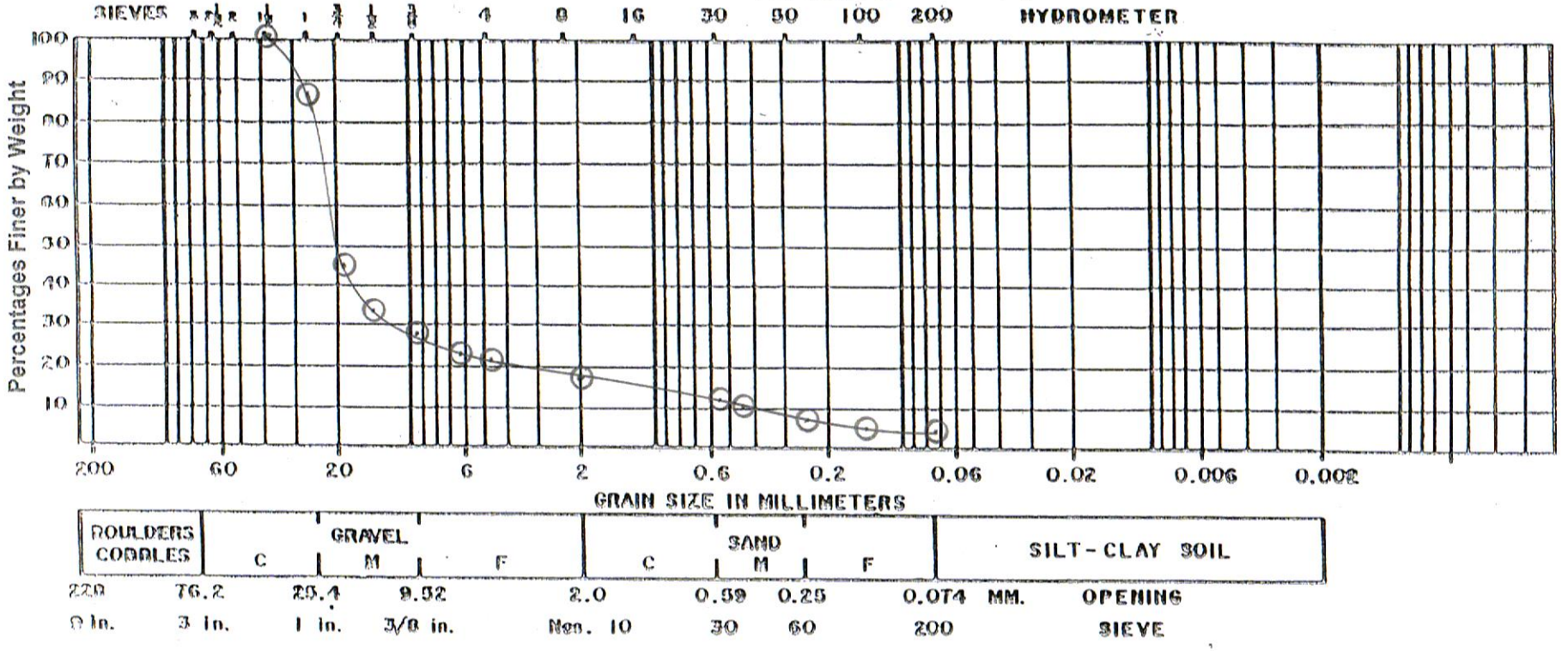
Job No.:	L-10039
Report No:	22
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24997
Laboratory Testing	Boring #:	SB-6E
Orange and Rockland	Depth (Feet):	18.0 - 20.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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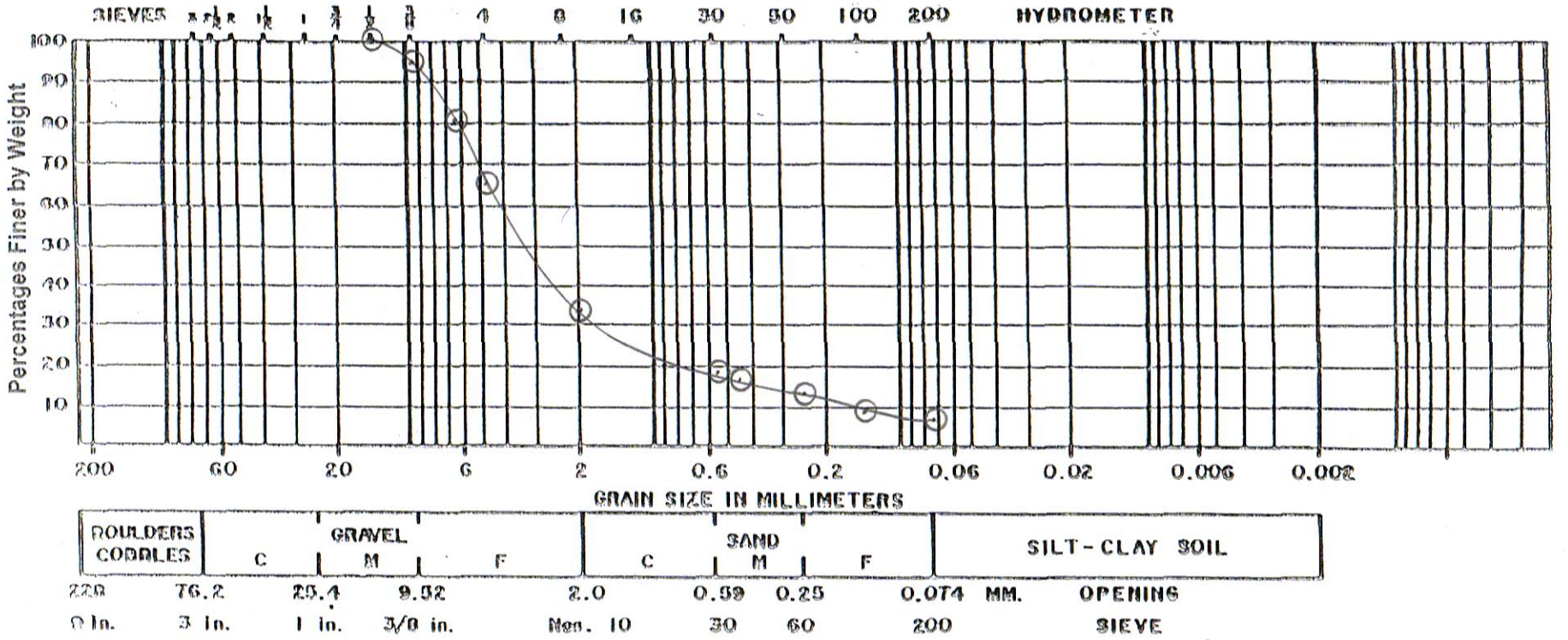
Job No.: L-10039
Report No: 23
Date June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24998
Laboratory Testing	Boring #:	SB-6E
Orange and Rockland	Depth (Feet):	30.0 - 32.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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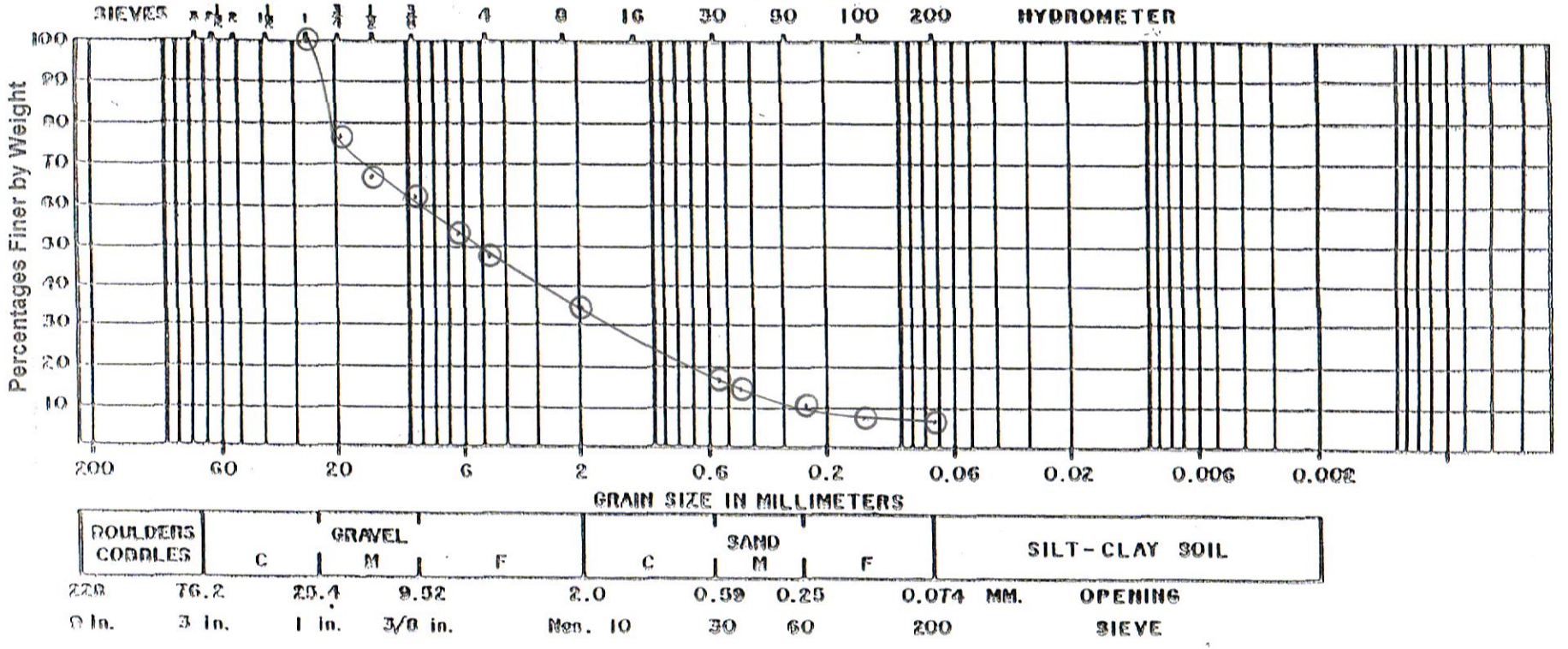
Job No.:	L-10039
Report No:	24
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	24999
Laboratory Testing	Boring #:	SB-6E
Orange and Rockland	Depth (Feet):	35.0 - 37.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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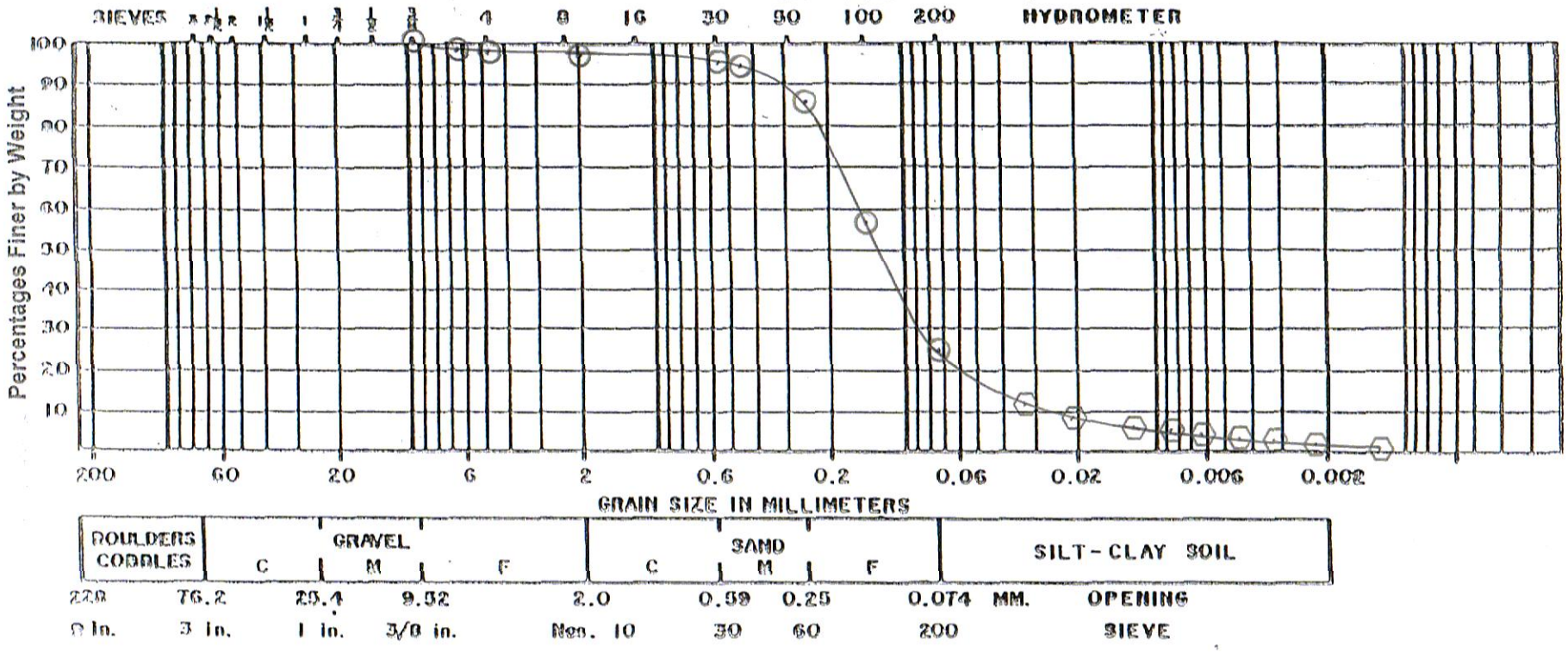
Job No.:	L-10039
Report No:	25
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25000
Laboratory Testing	Boring #:	SB-6E
Orange and Rockland	Depth (Feet):	45.0 - 47.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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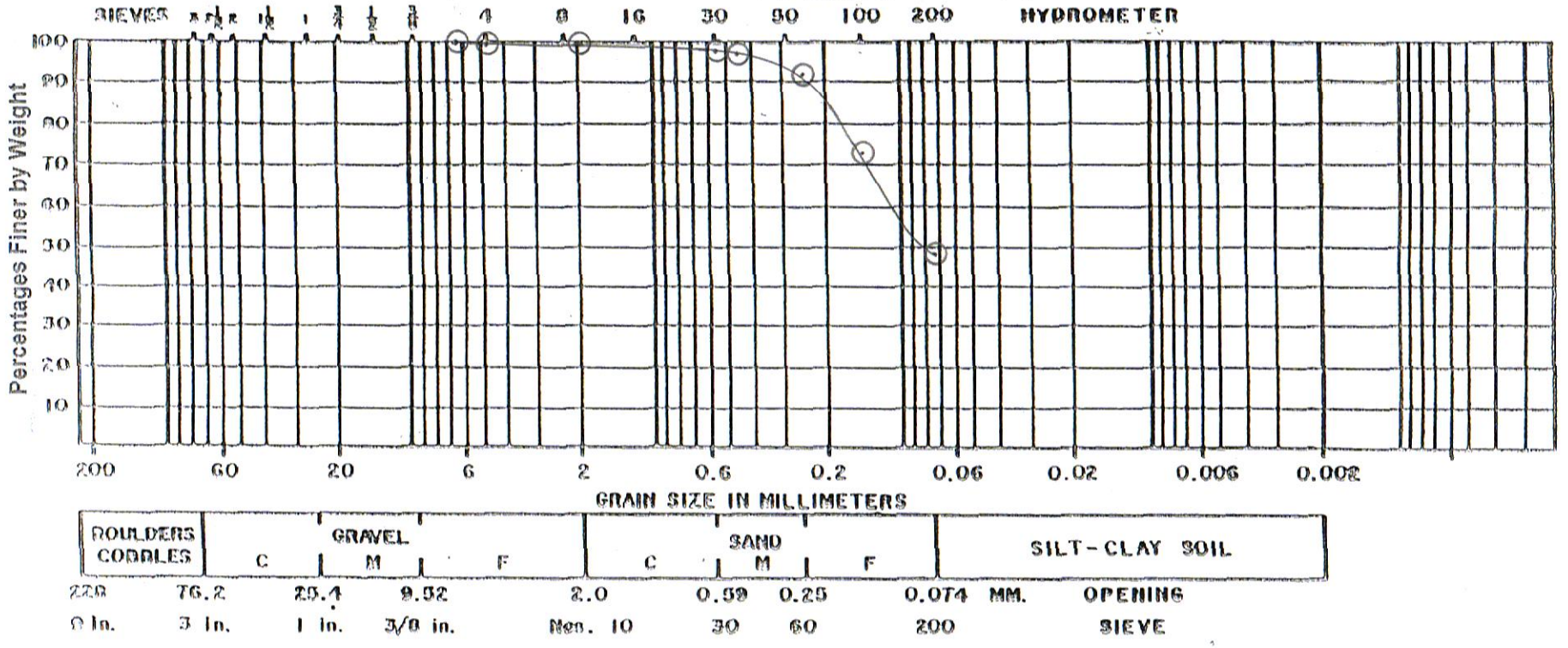
Job No.: L-10039
Report No: 26
Date June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25001
Laboratory Testing	Boring #:	SB-7
Orange and Rockland	Depth (Feet):	8.0 - 10.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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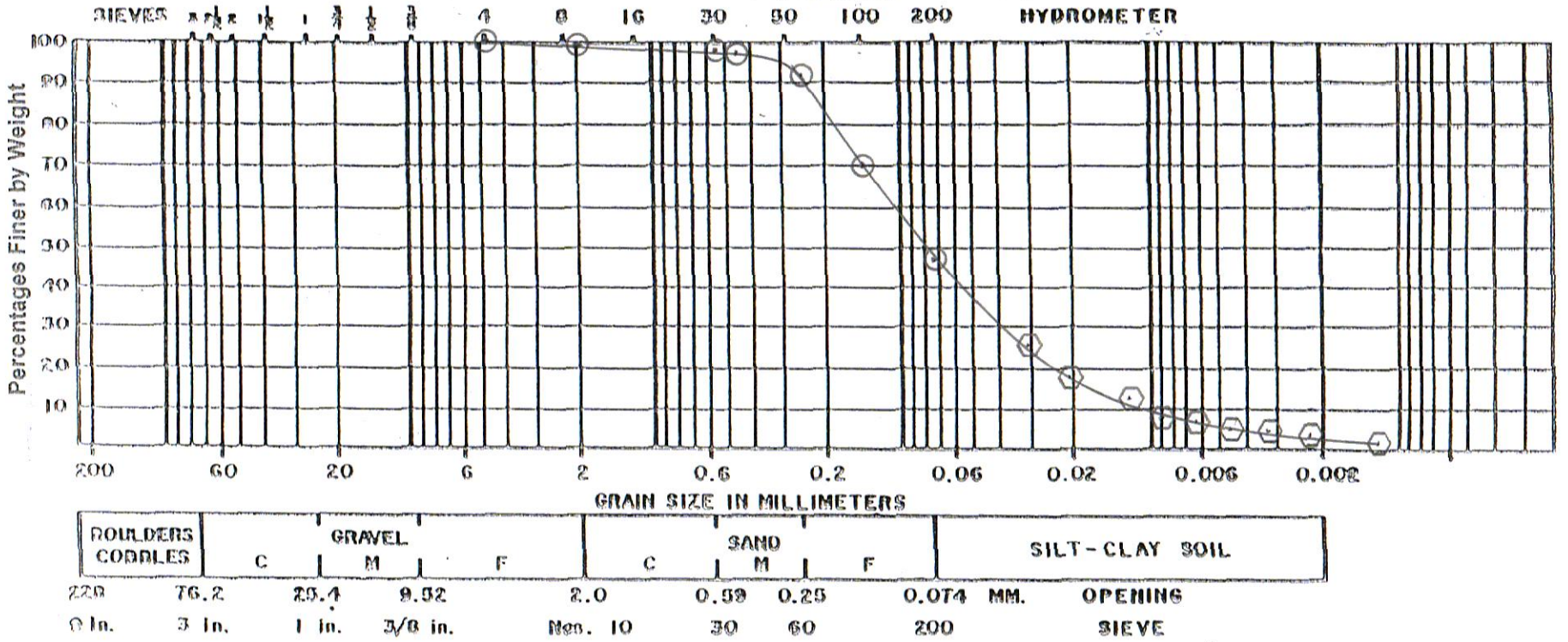
Job No.: L-10039
Report No: 27
Date June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25002
Laboratory Testing	Boring #:	SB-7
Orange and Rockland	Depth (Feet):	12.0 - 14.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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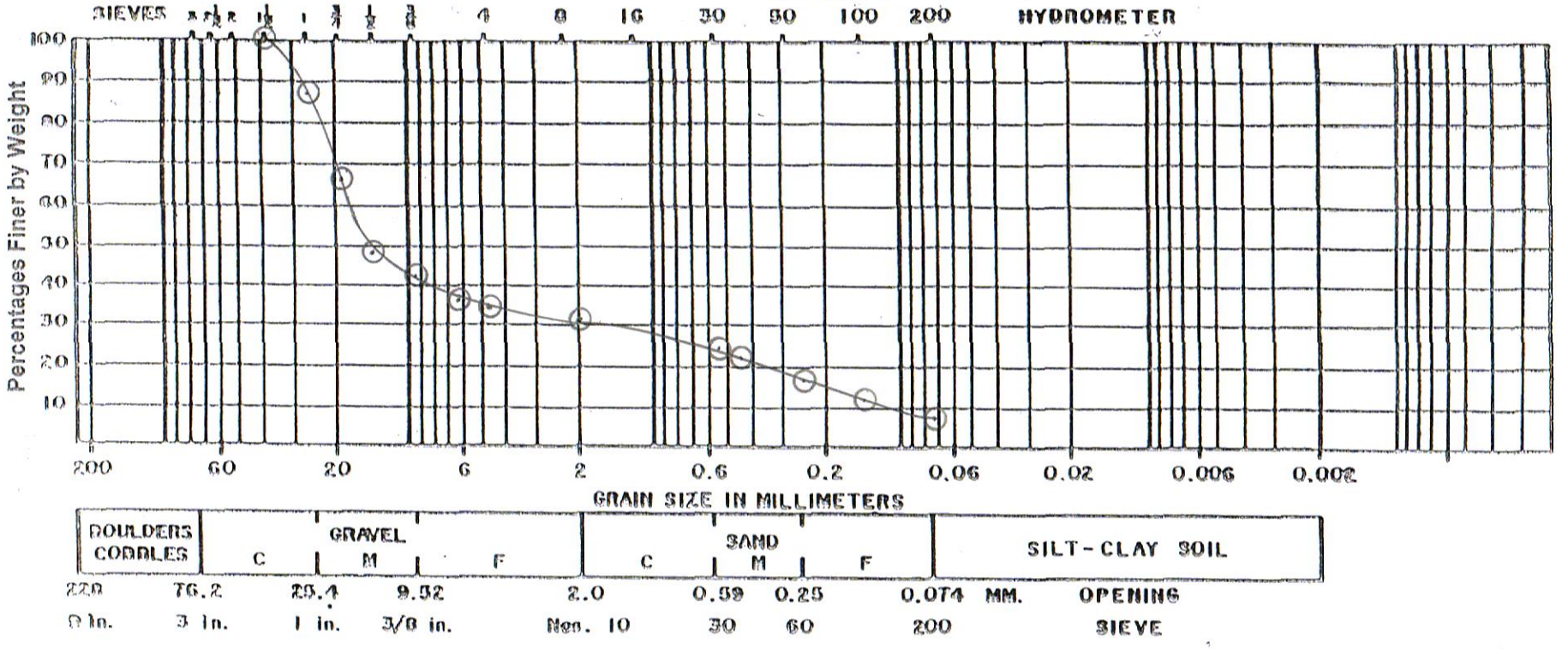
Job No.: L-10039
Report No: 28
Date June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25003
Laboratory Testing	Boring #:	SB-7
Orange and Rockland	Depth (Feet):	16.0 - 18.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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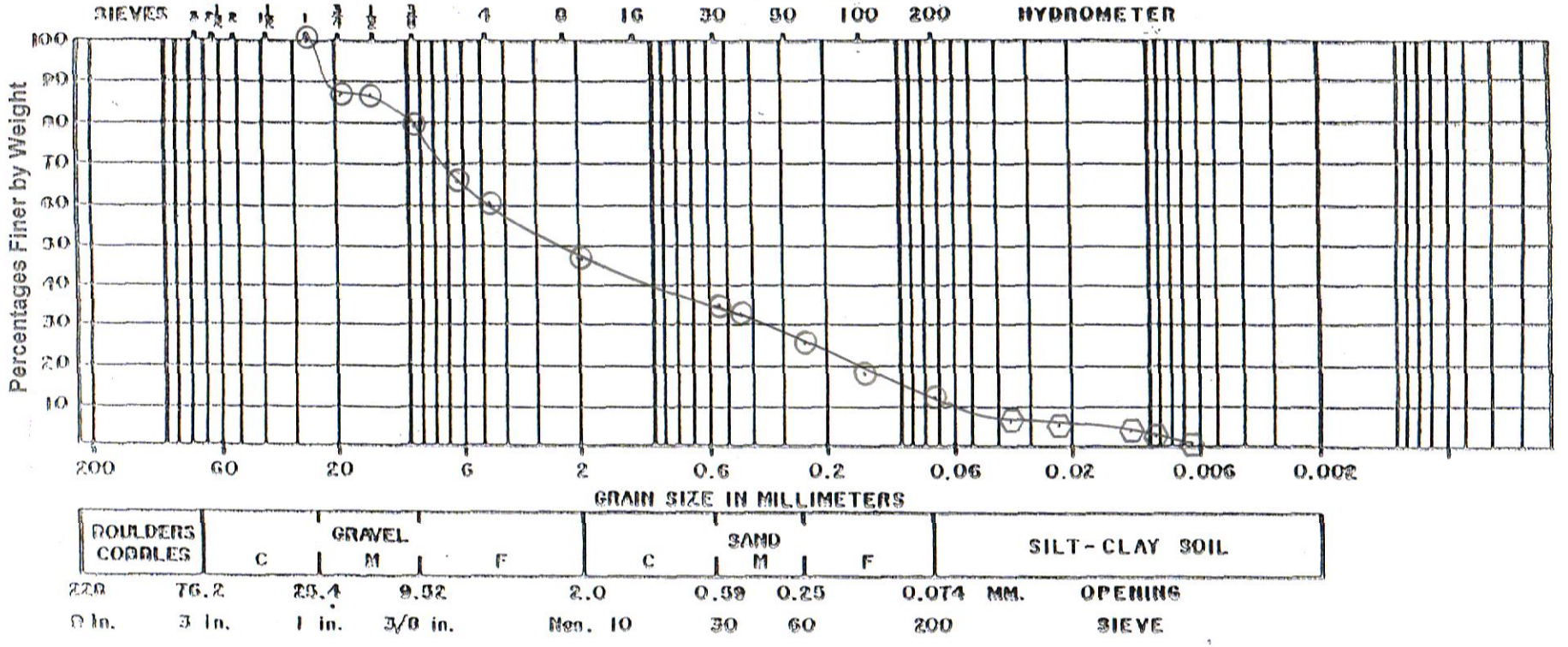
Job No.: L-10039
Report No: 29
Date June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25004
Laboratory Testing	Boring #:	SB-7
Orange and Rockland	Depth (Feet):	20.0 - 22.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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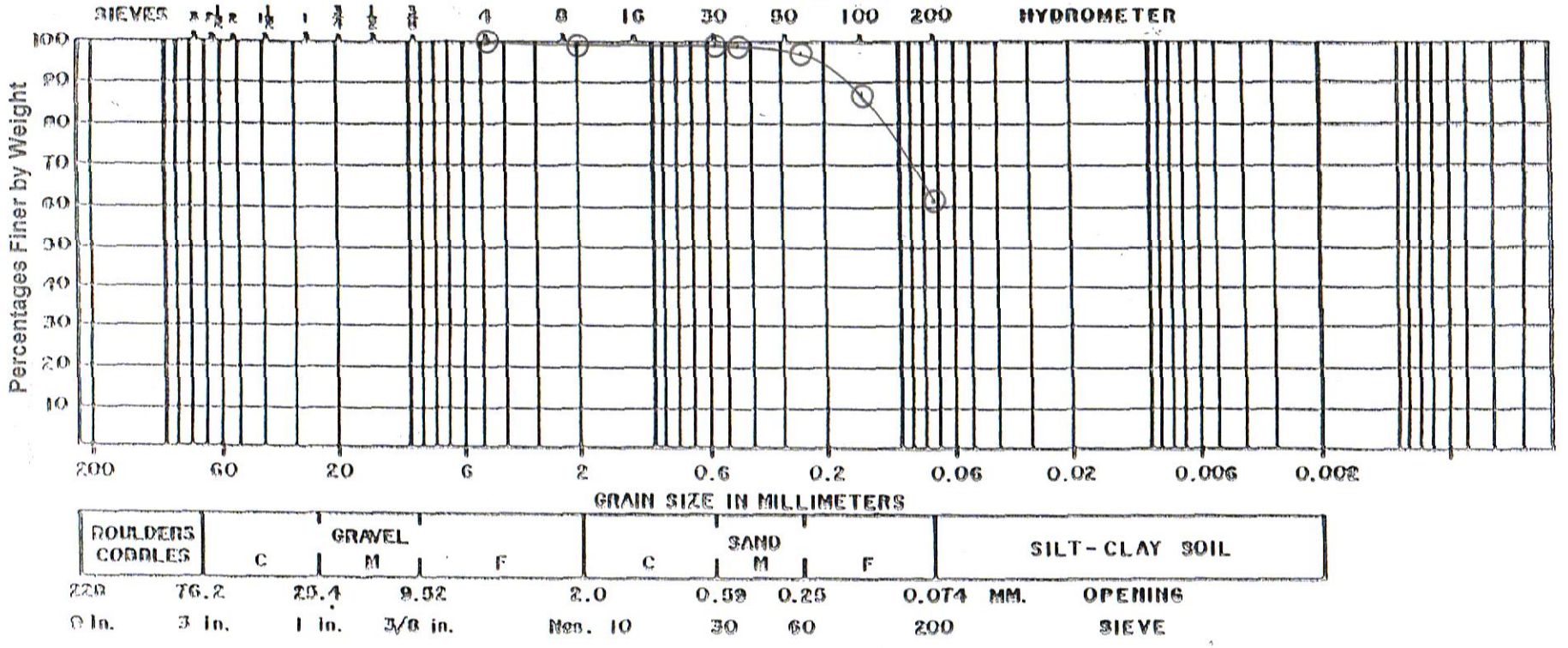
Job No.:	L-10039
Report No:	30
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25005
Laboratory Testing	Boring #:	SB-9
Orange and Rockland	Depth (Feet):	5.0 - 6.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

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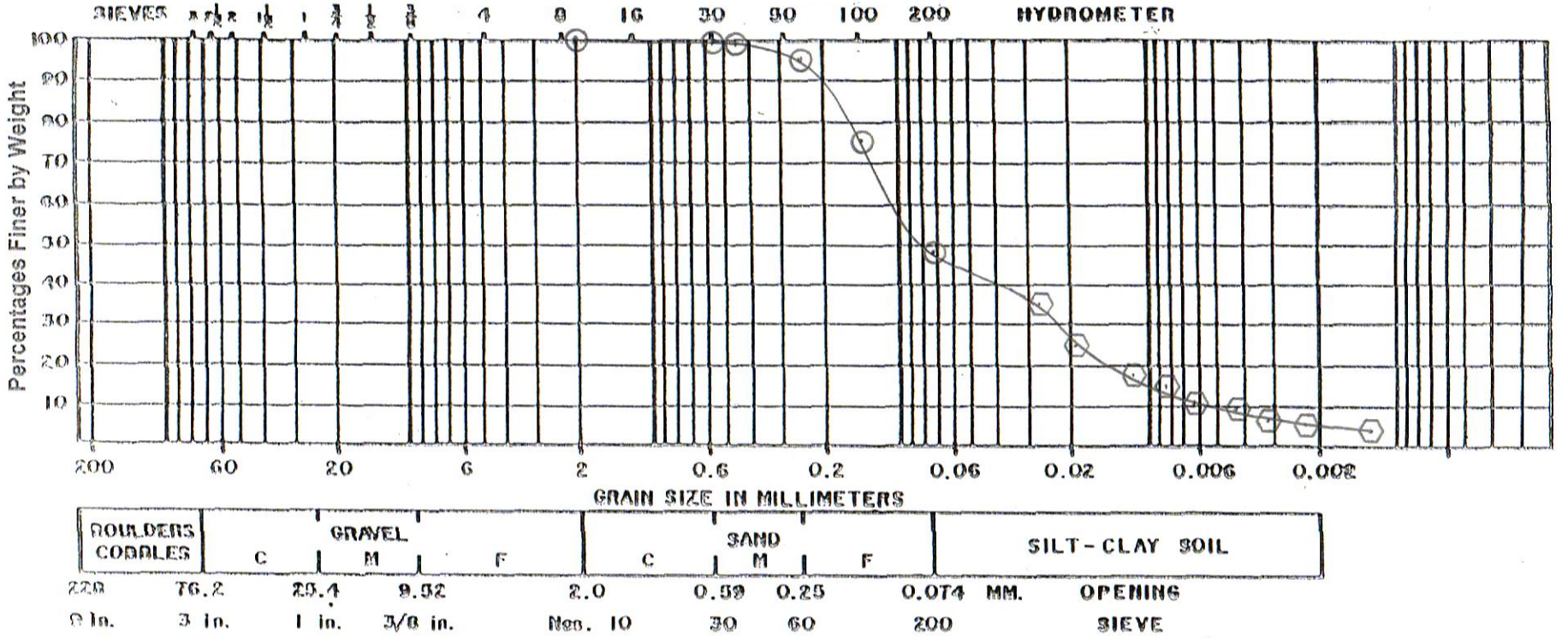
Job No.:	L-10039
Report No:	31
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25006
Laboratory Testing	Boring #:	SB-9
Orange and Rockland	Depth (Feet):	10.0 - 12.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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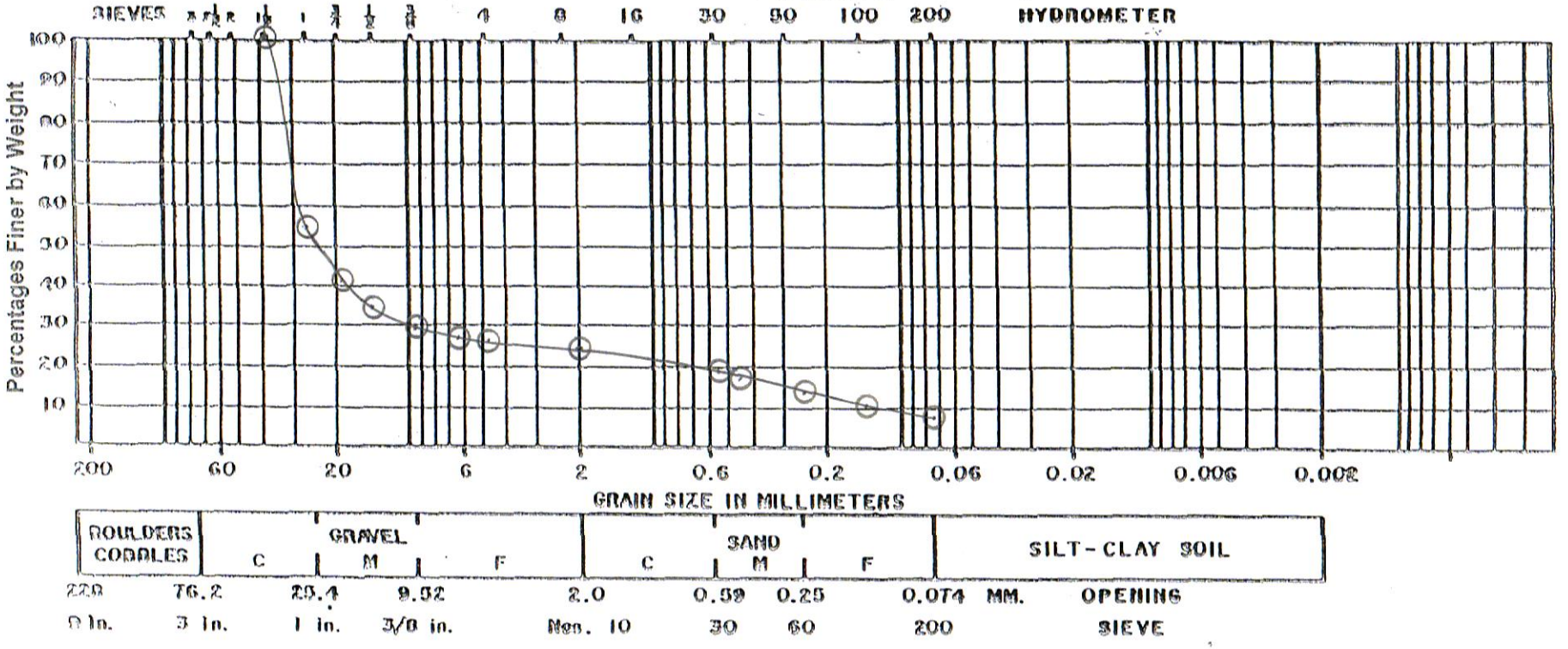
Job No.: L-10039
Report No: 32
Date June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25007
Laboratory Testing	Boring #:	SB-9
Orange and Rockland	Depth (Feet):	18.0 - 20.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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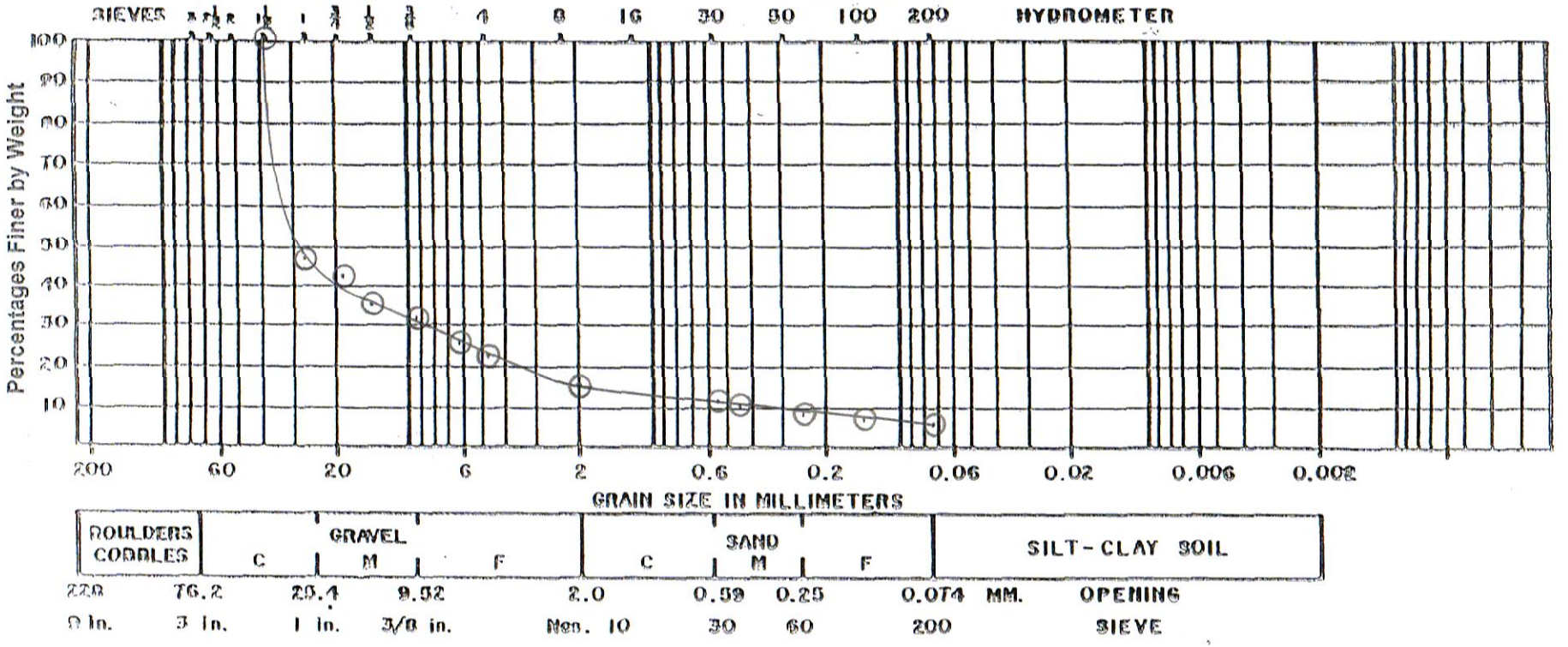
Job No.:	L-10039
Report No:	33
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25008
Laboratory Testing	Boring #:	SB-9
Orange and Rockland	Depth (Feet):	25.0 - 27.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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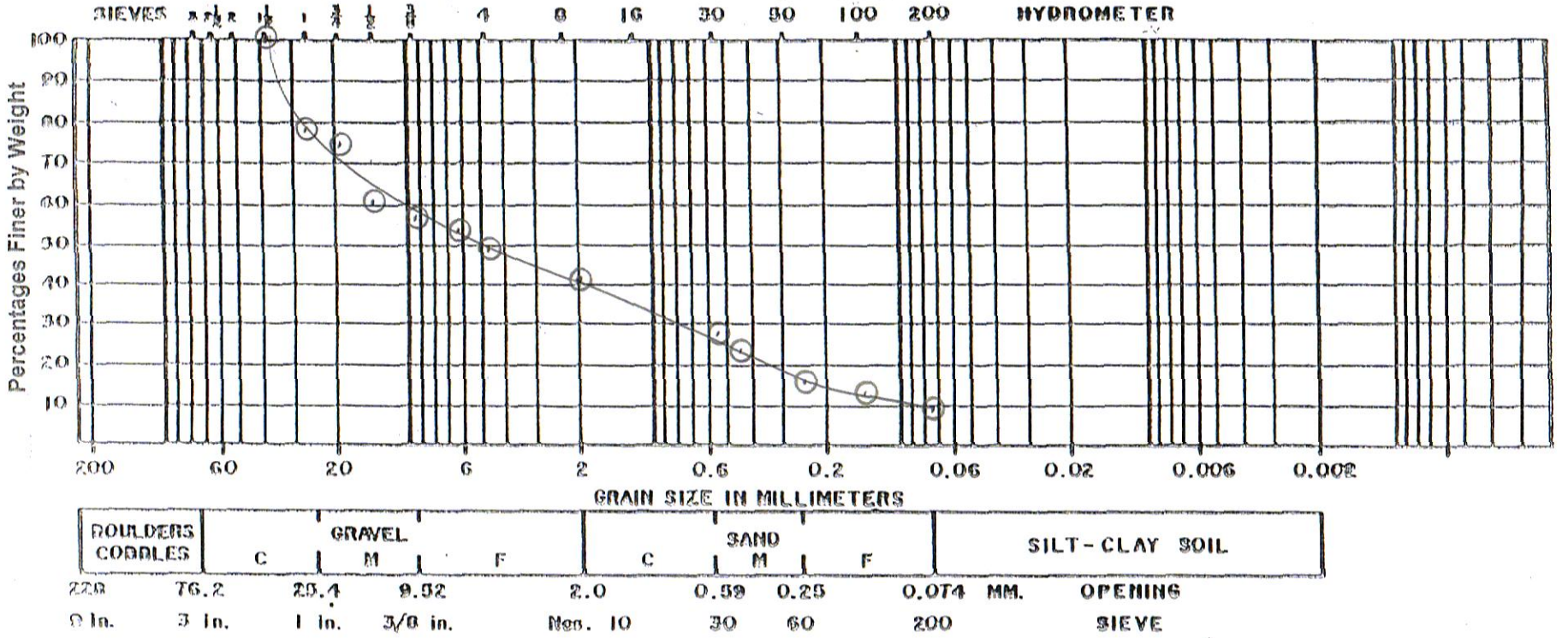
Job No.:	L-10039
Report No:	34
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25009
Laboratory Testing	Boring #:	SB-9
Orange and Rockland	Depth (Feet):	30.0 - 32.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⊙ Hydrometer Analysis ASTM D422

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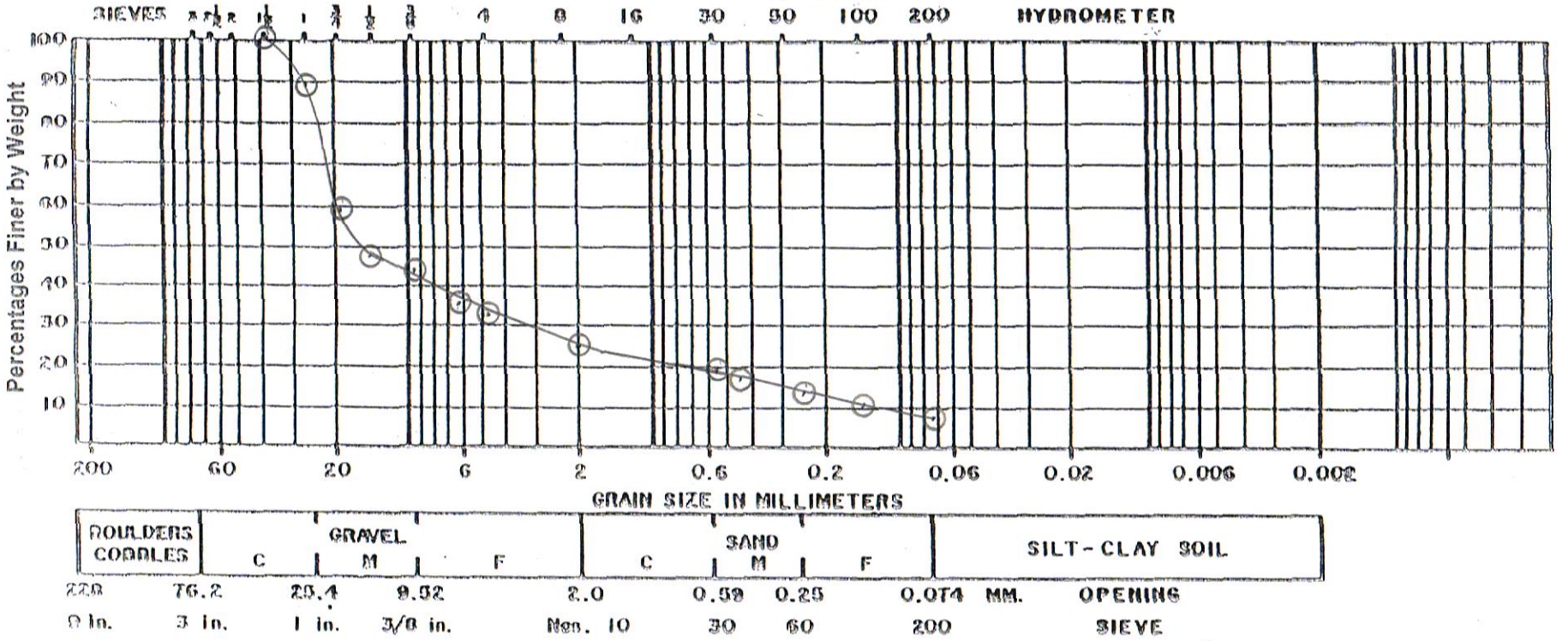
Job No.:	L-10039
Report No:	35
Date	June 17, 2010

GRAIN SIZE ANALYSIS



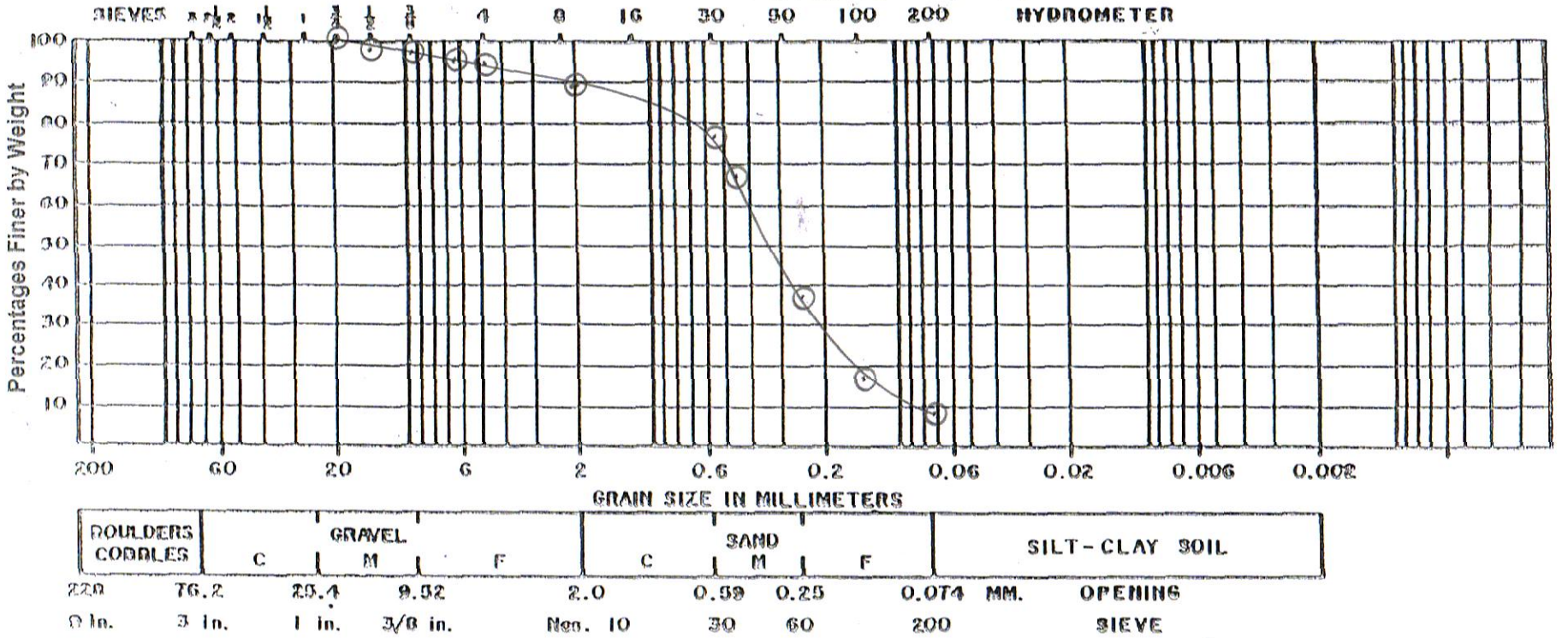
L-10039	Lab I.D. #:	25010
Laboratory Testing	Boring #:	SB-9
Orange and Rockland	Depth (Feet):	35.0 - 37.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

PW LABORATORIES, INC.
6544 FREMONT ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • Fax 315-437-1752 • pwlabsinc@hotmail.com

Job No.:	L-10039
Report No:	36
Date	June 17, 2010

GRAIN SIZE ANALYSIS



L-10039	Lab I.D. #:	25011
Laboratory Testing	Boring #:	SB-9
Orange and Rockland	Depth (Feet):	45.0 - 47.0
Port Jervis Former MPG Site		

⊙ Sieve Analysis ASTM D422 & D1140
⬡ Hydrometer Analysis ASTM D422

PW LABORATORIES, INC.
6544 FREMONT ROAD, EAST SYRACUSE, NY 13057
315-437-1420 • Fax 315-437-1752 • pwlabsinc@hotmail.com

June 17, 2010

L-10039
Laboratory Testing
Orange and Rockland
Port Jervis Former MGP Site
Project #B0043021

Specific Gravity of Soils
ASTM D854

Lab. I.D.#	Boring #	Depth (Feet)	Specific Gravity of Solids (G)
24977	SB-1	14.0 - 16.0	2.69
24980	SB-1	30.0 - 32.0	2.73
24983	SB-2	5.0 - 6.0	2.64
24989	SB-3	16.0 - 18.0	2.56
24994	SB-5W	18.0-20.0	2.61
24999	SB-6E	35.0 - 37.0	2.73
25003	SB-7	16.0 - 18.0	2.68
25008	SB-9	25.0 - 27.0	2.73
25011	SB-9	45.0 - 47.0	2.72

ARCADIS

Attachment E

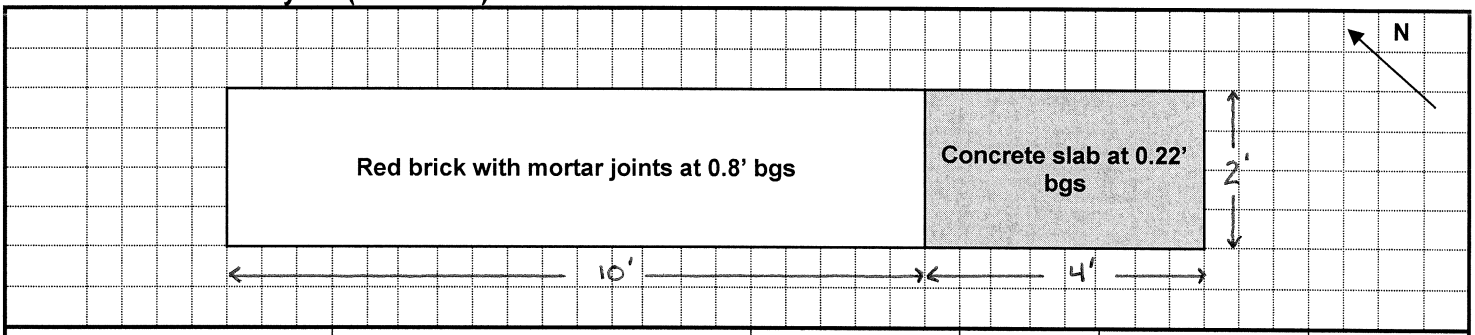
Test Pit Logs

Test Pit Log

Test Pit ID: PDI-TP1

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/7/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**14 feet (L) by 2 feet (W)**	**Total Depth:**	**0.8 feet**	**Depth to Water:**	**NA**

Depth Interval (feet bgs)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.25	0.0	Black ASPHALT.	NA
0.25-0.8	0.0	Brown fine to coarse SAND, trace fine to coarse sub-round to sub-angular Gravel.	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete slab encountered at 0.22' bgs. Red brick with mortar joints encountered at 0.8' bgs.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

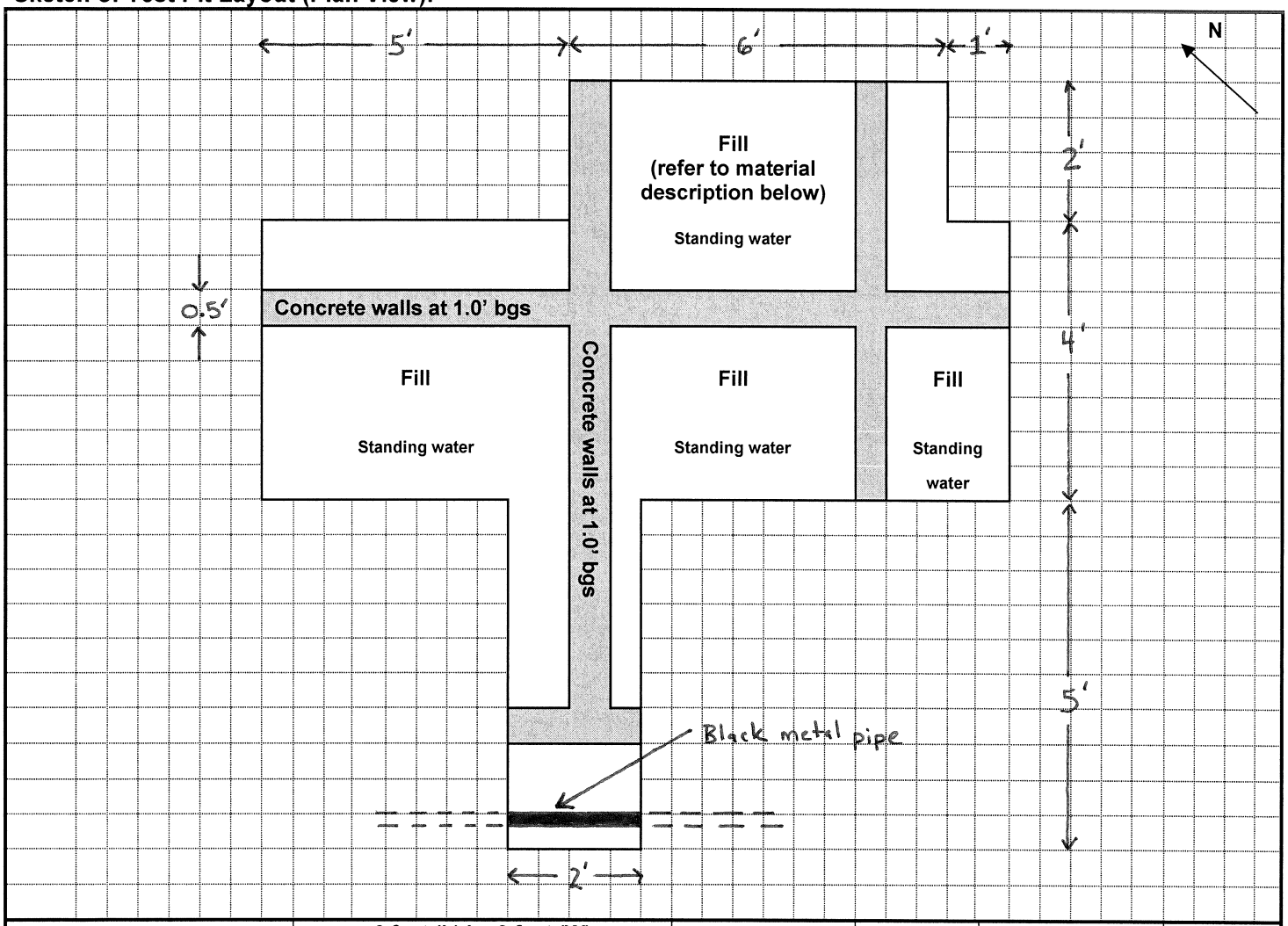
NA	NA

Test Pit Log

Test Pit ID: PDI-TP2

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/7/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**6 feet (L) by 2 feet (W) 12 feet (L) by 4 feet (W) 2 feet (L) by 5 feet (W)**	**Total Depth:**	**5.5 feet**	**Depth to Water:**	**1.5 feet**

ARCADIS

Test Pit Log

Test Pit ID: PDI-TP2

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/7/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.5	0.0	Black ASPHALT.	NA
0.5-0.8	0.0	Gray coarse angular GRAVEL (sub-base), trace brown fine to medium Sand, Caster, Metal.	NA
0.8-3.0	0.0	Brown fine to coarse SAND, fine to coarse sub-angular GRAVEL and COBBLES, trace Wood and yellow Brick, trace brown oil-like material on water surface, silver sheen, coal tar-like odor, standing water at 1.5' bgs.	NA
3.0-5.5	0.0	Dark gray COBBLES, discoloration, coal tar-like odor.	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete walls encountered at 1.0' bgs. Each wall approximately 0.5' wide.
Bottom of structure at 5.5' bgs.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

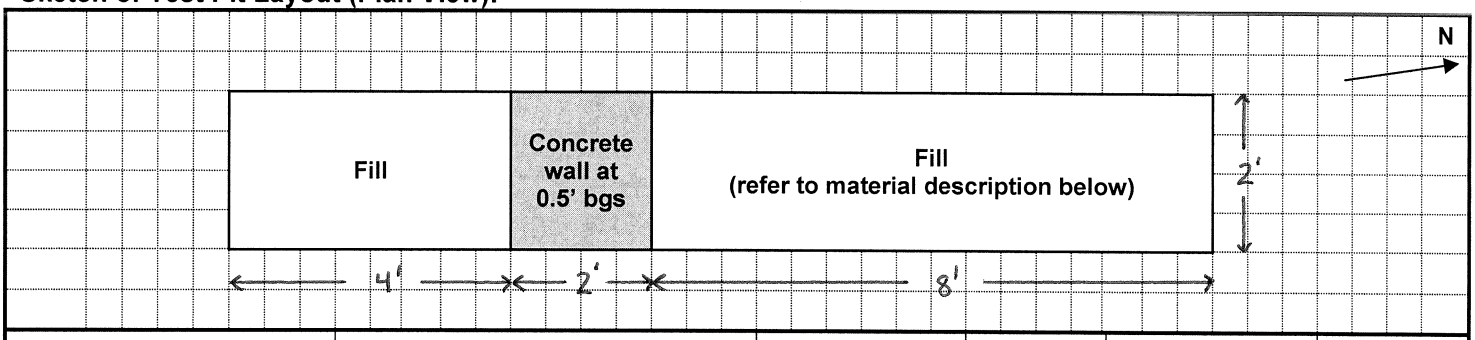
NA	NA

Test Pit Log

Test Pit ID: PDI-TP3

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/5-5/6/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**14 feet (L) by 2 feet (W)**	**Total Depth:**	**4.5 feet**	**Depth to Water:**	**NA**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.25	0.0	Black ASPHALT.	NA
0.25-4.5	0.0	Brown fine SAND and SILT, trace fine to coarse Gravel and Cobbles, black coal at 1.0' bgs, glass and plastic at 3.0' bgs, coal tar-like odor between 1.0-2.0' bgs.	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete wall encountered at 0.5' bgs. Bottom of concrete wall at approximately 4.5' bgs.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

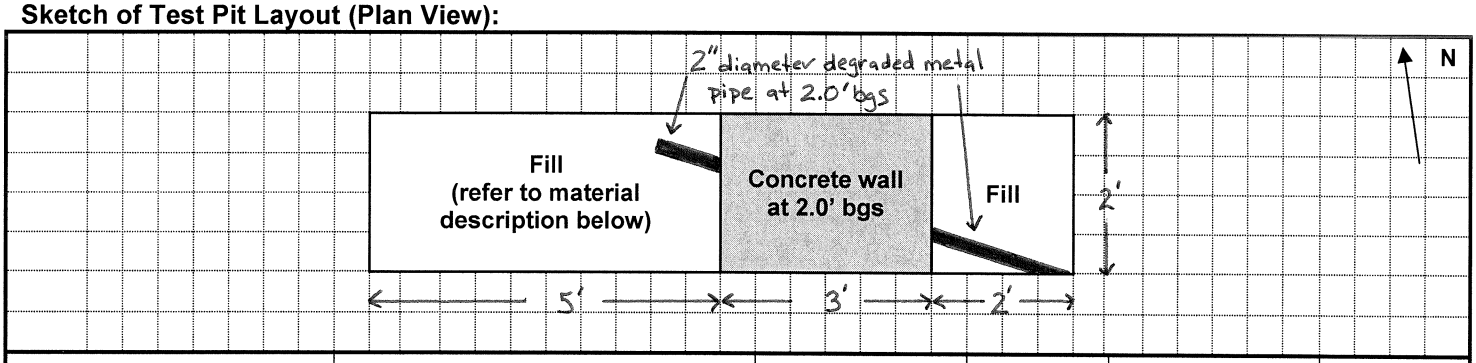
NA	NA

Test Pit Log

Test Pit ID: PDI-TP4

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/5/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**10 feet (L) by 2 feet (W)**	**Total Depth:**	**4 feet**	**Depth to Water:**	**NA**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.25	0.0	Black ASPHALT.	NA
0.25-4.0	0.0	Brown fine SAND and SILT, trace fine to coarse sub-round Gravel and Cobbles, Concrete and Wood at 1.5' bgs, Glass and Boulders at 2.0' bgs.	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete wall and degraded metal pipe (2" diameter) encountered at 2.0' bgs. Concrete wall approximately 3' wide. Bottom of concrete wall at approximately 4.0' bgs.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

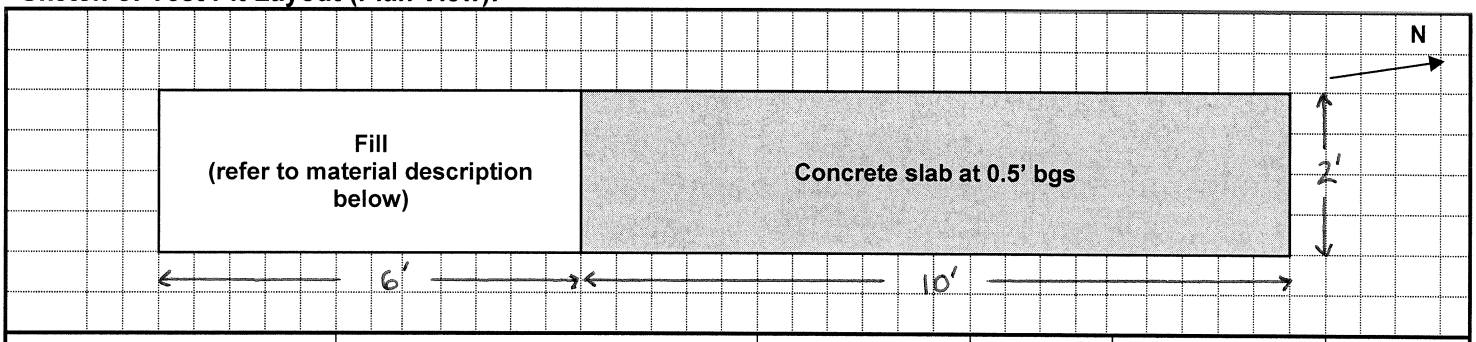
NA	NA

Test Pit Log

Test Pit ID: PDI-TP5

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/5-5/6/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**16 feet (L) by 2 feet (W)**	**Total Depth:**	**4.6 feet**	**Depth to Water:**	**NA**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.25	0.0	Black ASPHALT.	NA
0.25-4.6	0.0	Brown fine SAND, SILT, COBBLES, and BOULDER, trace Concrete, black Coal, metal, red Brick at 1.5' bgs.	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete slab encountered at 0.5' bgs. Bottom of concrete slab at 4.6' bgs.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

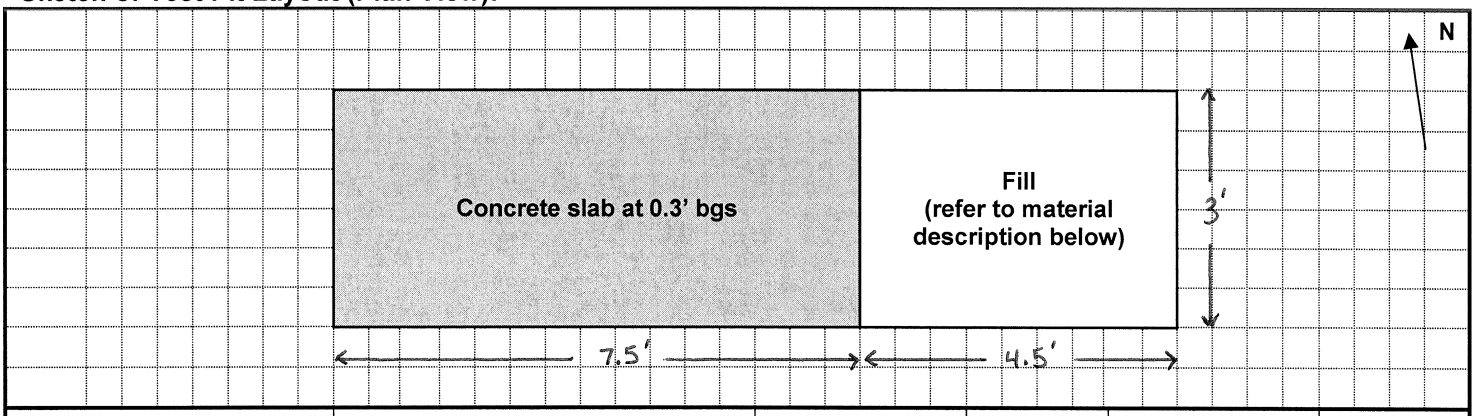
NA	NA

Test Pit Log

Test Pit ID: PDI-TP6

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/6/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**12 feet (L) by 3 feet (W)**	**Total Depth:**	**5 feet**	**Depth to Water:**	**NA**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.3	0.0	Black ASPHALT.	NA
0.3-5.0	0.0	Brown to black fine to coarse SAND, sub-round to sub-angular GRAVEL, CINDERS, RED BRICK, ASH, SLAG and CONCRETE. White medium to coarse Sand, sulfur-like odor at 4-5' bgs (adjacent to concrete).	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete slab encountered at 0.3' bgs. Bottom of concrete slab at 5.0' bgs.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

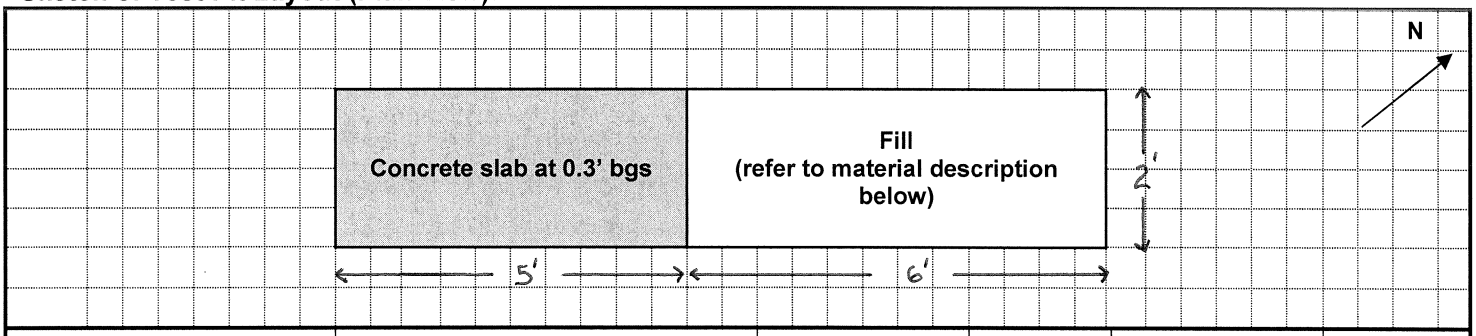
NA	NA

Test Pit Log

Test Pit ID: PDI-TP7

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/6/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**11 feet (L) by 2 feet (W)**	**Total Depth:**	**5 feet**	**Depth to Water:**	**NA**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.3	0.0	Black ASPHALT.	NA
0.3-4.5	0.0	Brown to black fine to coarse angular GRAVEL, medium to coarse Sand and Concrete (cobble-size pieces), trace black Cinders and Ash.	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete slab encountered at 0.3' bgs. Bottom of concrete slab at 5.0' bgs.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

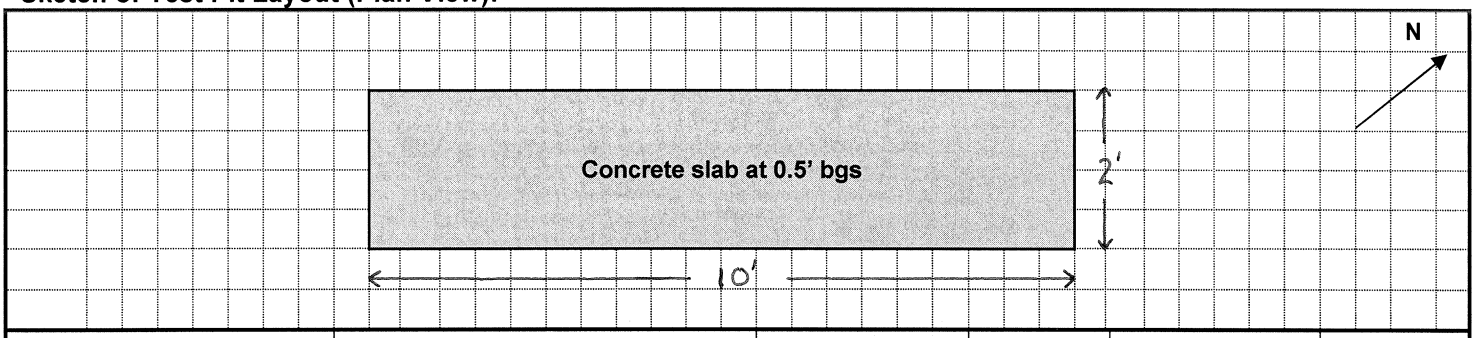
NA	NA

Test Pit Log

Test Pit ID: PDI-TP8

Client:	Orange and Rockland Utilities, Inc.	**Date:**	5/6/2010
Location:	Port Jervis Former MGP Site Port Jervis, New York	**Subcontractor:**	Parratt-Wolff, Inc.
Geologist:	Levia Terrell	**Equipment:**	John Deere 310J

Sketch of Test Pit Layout (Plan View):



Test Pit Dimensions:	**10 feet (L) by 2 feet (W)**	**Total Depth:**	**0.5 feet**	**Depth to Water:**	**NA**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-0.3	0.0	Black ASPHALT.	NA
0.3-0.5	0.0	Brown to dark brown fine to medium SAND, little Asphalt, trace red Brick, fine to coarse sub-round Gravel.	NA

Notes:

NA = Not Available/Applicable; bgs = below ground surface; ppm = parts per million.
Concrete slab encountered at 0.5' bgs along entire length of test pit.
Refer to Figure 1 of the *PDI Report for Survey and Soil Investigation Activities* for test pit location.

Photograph Summary:

NA	NA

ARCADIS

Attachment F

Historical Logs for MW1S, SB15, and SB17

Site Id: MW-1S

ATLANTIC Environmental
a Division of GEI Consultants, Inc.

tion: Port Jervis former MGP site	
Township/Range: Port Jervis, NY	Project Number:
Date(s): 04/20/98 - 04/20/98	Total Depth: 31.00'
Elevation: 437.92'	Datum: Mean Sea Level
X Coordinate: 438277.07	Y Coordinate: 925210.25
Contractor: AT&D	Drilling Method: Hollow Stem Auger
Logged By: Terry Taylor	
Remarks:	

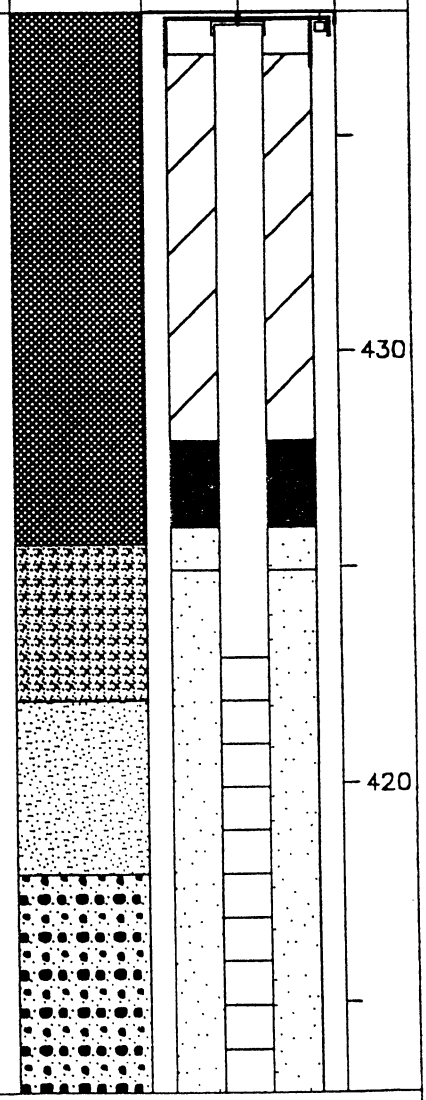
Blank Casing:
type: PVC dia: 2.00in fm: 0.3' to: 15.00'

Screens:
type: Slotted size: 0.020india: 2.00in fm: 15.00' to: 25.00'

Annular Fill:

type: Grout	fm: 1.00'	to: 10.00'
type: Bentonite Pellets	fm: 10.00'	to: 12.00'
type: Sand Filter	fm: 12.00'	to: 13.00'
type: Sand Filter	fm: 13.00'	to: 28.00'
type: Fill	fm: 28.00'	to: 31.00'

SS Sample Depth (ft.)	Blows Per 6 Inches	Recovery (%)	PID	Depth (ft.)	Soil Description
					0-0.5 ft Augered through 6" of asphalt, FILL.
0.5-2	7		1.4 ppm		0.5-2 ft Dark brown sand and gravel, slightly moist, some clay, no odor, FILL.
	7				
	5				2-2.6 ft Brown fine sand with gravel and ash (gravel size), FILL.
2-4	3		1.2 ppm		
	2		1.2 ppm		2.6-4 ft Brown medium sand, dry, no odors, FILL.
	2				4.0 ft Hit obstruction, possibly retired gas line. Moved toward Water St. augered to 4 feet and resumed sampling, FILL.
4-6	5		1.2 ppm		
	5				4-6 ft Broken concrete fragments, no odor, FILL.
	2				
	3				6-8 ft Brown very fine silty sand grading to fine sand at 7.5 ft, no odors, slightly moist, FILL.
6-8	3		1.2 ppm		
	3		1.2 ppm		
	3		1.2 ppm		
	3				8-10 ft Brown very fine sand with little silt, moist, no odors, FILL.
8-10	2		1.0 ppm		
	3		1.2 ppm		
	3				
	4			10	10-12 ft No recovery. piece of concrete wedged in shoe, sample material is not representative of sample interval, FILL.
10-12	5		0.7 ppm		
	5				
	4				12-14 ft Brown fine sand with trace to little silt, coal fragments from 12-12.4 feet, iron staining from 12.4-13.8 feet.
	3				
12-14	3		1.0 ppm		
	3		1.0 ppm		
	2		1.0 ppm		
	3		1.0 ppm		14-14.7 ft Brown to black FINE SAND, moderate odor.
14-16	4		2.1 ppm		14.7-16 ft Black FINE SAND, very moist, strong tar odor, TAR BLEBS when wet.
	5		2.8 ppm		
	5		13 ppm		
	8				16-18 ft FINE SAND with rock fragments, wet with TAR in sand.
16-18	12		55 ppm		
	32				
					18-20 ft FINE SAND and ROCK FRAGMENTS, TAR BLEBS and TAR STRINGERS, sample is very moist but not wet. collected SAMPLE PJ-MW1-01.
18-20	14				
	30		15 ppm		
	25		72 ppm		
	18			20	20-22 ft ROCK FRAGMENTS and SAND, COBBLES, TAR SHEEN and BLEBS, wet.
20-22	14		13 ppm		
	18		10 ppm		
	25				
	99 R/.4				22-25 ft Augered to 25 feet, still in COBBLES.
					25-25.7 ft ROCK FRAGMENTS.



Site Id: MW-1S

ATLANTIC Environmental
a Division of GEI Consultants, Inc.

SS Sample Depth	Blows Per 6 In.	Recovery (%)	PID	Depth (ft.)	Soil Description		Lithology	Well Construction	Elevation (ft)
25–27	50 52				25.7–27 ft	GRAVEL and COBBLES, no tar, but SHEEN on water, wet.			
	48		13 ppm		27–29 ft	GRAVEL.			
27–28	50 40		6 ppm			Augered to 29 feet.			
	51 R/2				29–29.8 ft	GRAVEL and COBBLES.			
29–31	21		8 ppm		29.8–31 ft	FINE SAND, SAND, GRAVEL with TAR BLEBS, wet.			
	31		10 ppm		31.0 ft	End of Boring.			
	40 40								
				35					
				45					
				55					

ThermoRetec
1001 West Seneca Street, Suite 204
Ithaca, New York 14850-3342

Boring ID: SB15

Project Name: Port Jervis MGP Site
Location: Port Jervis, NY
Project Number: ORAN2-15063
Date Completed: 10-20-00
Drilling Company: Boart Longyear
Drilling Method: Rotosonic Drilling
Sampling Method: 4 inch ID Core Barrel

Boring Location: Down Graident Holder A
Ground Elevation (ft/MSL): 437.95
Total Depth (ft) BGS: 75.0
Boring Diameter Inner (in): 6 inch ID
Logged By: James Edwards

Depth (Feet) BGS	Recovery (feet)	Laboratory Sample ID	PID (ppm)	USCS Symbol	Lithology Symbol	Geologic Description
0						Asphalt 6 inches.
			0.0	FILL		Fine-coarse gravel.
	4.8					Medium sand with trace cobbles. Brown, loose, wet.
			0.0	SM		Hydrocarbon-like odor.
-5			0.0			Concrete and rebar 4-7 ft bgs.
						Medium-coarse sand. Brown, loose, moist, uniform.
			0.0	SM		
			0.0			
-10	10.0					
			17.5	SM		
						Gravel, trace cobbles, sand, and silt. Gray, loose, moist.
			87			
						Hydrocarbon-like stain.
-15			110	GM		
						Hydrocarbon stain and sheen, strong.
						Hydrocarbon-like odor.
			112	GM		
-20	10.0					Driller reports cobbles and boulders 15-25 ft bgs.
			61.7			

Remarks:
Laboratory Sample: SB15 (73-75)
MGP Indicators

ThermoRetec
1001 West Seneca Street, Suite 204
Ithaca, New York 14850-3342

Boring ID: SB15

Depth (Feet)	Recovery (feet)	Laboratory Sample ID	PID (ppm)	USCS Symbol	Lithology Symbol	Geologic Description
				GM		Hydrocarbon-like sheen.
-25			25.6			
				GM		
			8.1			
-30	10.0					Gravel, cobbles, pebbles, sand, silt. Poorly sorted. Trace visible brown NAPL mixed with gravel
			0.0	GM		
			0.0			Visible NAPL mixed with gravel at 34 ft bgs.
-35			0.0	GM		
			0.0	SM		Coarse sand with trace gravel. Gray, loose, poorly sorted. Hydrocarbon-like odor.
			0.0	SM		
-40	10.0					Coarse Gravel with coarse sand. Gray, rounded.
			48.3	GM		Hydrocarbon-like odor.
			0.0	SM		Medium sand with trace fine coarse gravel. Brown. Hydrocarbon-like odor.
-45			0.0			Coarse gravel with fine-coarse sand. Hydrocarbon-like odor.
			0.0	SM		
				SM		
-50						

Remarks:

Laboratory Sample: SB15 (73-75)

MGP Indicators

ThermoRetec
1001 West Seneca Street, Suite 204
Ithaca, New York 14850-3342

Boring ID: SB15

Depth (Feet)	Recovery (feet)	Laboratory Sample ID	PID (ppm)	USCS Symbol	Lithology Symbol	Geologic Description
-50	10.0		10.3	GM		Fine-coarse gravel with fine-coarse sand. Trace hydrocarbon-like sheen.
			0.0	GM		Coarse gravel with fine-coarse sand. Hydrocarbon-like sheen.
-55			5.6	SM		Coarse gravel with cobbles. Trace hydrocarbon-like sheen.
			5.2			Medium-coarse sand. Loose, uniform, moist.
				SM		
-60	10.0					
			14.6			
			0.0	SM		
-65			0.0			Medium-coarse sand. Loose, uniform, moist.
			0.0	SM		
			0.0			
-70	10.0					
			0.0	SM		
		SB15 (73-75)	0.0	SM		
-75						Boring Terminated at 75.0 ft

Remarks:

Laboratory Sample: SB15 (73-75)

MGP Indicators