

## Appendix B-1

# Final Geotechnical Engineering Report

World Headquarters of  
Jehovah's Witnesses

Warwick, New York



Prepared for

Watchtower Bible and Tract Society  
of New York, Inc.

25 Columbia Heights  
Brooklyn, New York 11201

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CHA Project No. 21137.4000.32000



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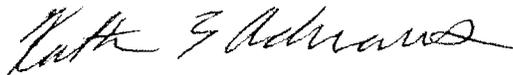
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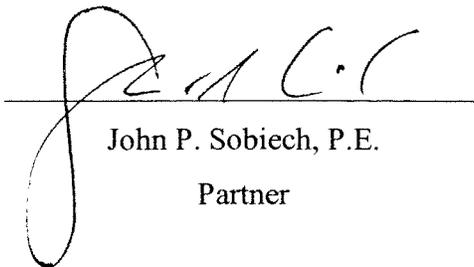
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## **1.0 INTRODUCTION**

This report summarizes the results of the final geotechnical investigation performed by CHA for the World Headquarters of Jehovah's Witnesses proposed by Watchtower Bible and Tract Society of New York, Inc. The project includes the construction of a religious administrative campus, consisting of about 13 buildings and associated utilities over a 30-acre area. The project is located in Warwick, New York as shown on the Project Location Map included in Appendix A as Figure 1.

The primary objectives of this final investigation were to confirm subsurface conditions at the proposed campus, determine infiltration rates for proposed bioretention and infiltration/detention ponds, and develop final geotechnical recommendations for the design and construction of the proposed site development.

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## 2.0 PROJECT AND SITE DESCRIPTION

We understand that the Watchtower Bible & Tract Society of New York, Inc. (Watchtower) is planning to construct a religious administrative campus at the former INCO Research and Development facility located in Warwick, Orange County, New York.

The project site is off of Long Meadow Road at the southeastern shore of Sterling Forest Lake and is located on about 253 acres. The site currently consists of forest and meadowlands surrounding the former INCO Research and Development Facility which includes a large multi-story building, a sewage treatment plant and associated access roadways, small structures and utilities. The building and treatment plant are currently vacant and not operating. It is understood that the large multi-story building is to be demolished and has a basement level at about elevation 660 feet. Sterling Forest Lake Dam is located to the north of the proposed project site. The dam is a 40-foot high earthen dam.

We understand that the proposed religious campus will consist of approximately 13 buildings over a 30-acre area located in the area of the existing INCO facility buildings. The proposed building footprints were based in part on the results of the Preliminary Geotechnical Report prepared by CHA in August 2010. The final geotechnical subsurface investigation was based on the building footprints and final floor elevations provided by Watchtower.

The proposed site layout is included on the Subsurface Location Plan included as Figure 2 in Appendix A. The layout of the buildings was developed to reduce the amount of rock removal based on the results of the preliminary investigation. It is anticipated that some structures will be benched so that rock removal is minimized, as shown on the sections included on Figure 2. The proposed final floor elevations are summarized in Table 1 below.

**Table 1: Proposed Final Floor Elevations**

Building	Elevation (feet)
Residence Hall D	688 to 706
Residence Hall C	666 to 676
Visitors Parking Garage	648.5 to 653
Residence Hall B	684
Residence Hall A	674
West Recreation Area	666
Resident Parking Garage	664
Maintenance Shop, Home Services, Office	660
Vehicle Maintenance Shop	631

For development of geotechnical recommendations it was assumed that the bottom of footing is 3.0 feet below the proposed final floor elevations summarized above. It is understood that the Residence Halls will have an estimated column spacing of 20 to 25 feet with an estimated 400 kip load.

## **2.1 Review of Existing Information**

In March and April 2010 CHA performed a preliminary site investigation for the project site based on a preliminary site layout. The subsurface investigation included the advancement of 24 soil borings, installation of 4 piezometers and performance of 3 infiltration tests. Results of the investigation are included in the “Preliminary Geotechnical Investigation, Watchtower Warwick Project” dated August 13, 2010. Subsurface conditions encountered during this investigation are included in the subsurface conditions section of this report and subsurface logs are included in Appendix B and are identified as TB-01 through TB-24

In June and July 2009 CHA performed an environmental site investigation for the project site and a geotechnical investigation for the Sterling Forest Lake Dam (previously called the Blue Lake Dam) located just north of the proposed campus, respectively. The environmental site investigation included the advancement of 25 geoprobes and installation of 9 groundwater monitoring wells and the geotechnical for the dam investigation included the advancement of 3 soil borings. Results of the investigation were included in the “Site Investigation Report, King’s College Property, Warwick, New York” dated June 19, 2009.

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As part of this final geotechnical investigation, CHA reviewed the subsurface data collected during these investigations. This information was used to develop the proposed test pit and boring location plan with Watchtower to create a plan sufficient to confirm the varying soil stratigraphy.

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### 3.0 SUBSURFACE INVESTIGATION

For the final investigation, eighteen test pits designated as TP-01 through TP-18, and two borings designated as TB-25 and TB-26 were advanced between November 30, 2010 and December 6, 2010. The test pits were excavated at selected locations where additional information was necessary about the final bearing surface of the footings. Due to the varying rock profile across the site, the borings were advanced in the area of the proposed resident parking garage where the proposed final floor elevation required a large cut to reach final bearing elevation. The approximate test pit and boring locations are shown on the Test Pit and Boring Location Plan, Figure 2, included in Appendix A. The ground surface elevations of the test pits and borings as indicated on the logs were determined from a survey conducted by Watchtower personnel. The locations and elevations of the test pits and borings should be considered accurate only to the degree implied by the method used to determine them. Photographs documenting the investigation are included in Appendix E.

The test pits were excavated by a Watchtower machine operator using a CAT 325BL. The excavator was outfitted with rock-bit tips on the bucket to aid in the removal of large cobbles and boulders.

CHA retained TransTech Drilling Services of Schenectady, New York to advance the borings. A CHA geotechnical engineer observed the field investigation to ensure that proper drilling and sampling methods were used for this investigation, classify soil samples, and prepare field logs documenting subsurface conditions.

The borings were advanced with a track mounted drill rig using flush joint casing with an inside diameter of 4 inches. Split-spoon sampling and standard penetration tests were generally conducted in the borings continuously through the fill layer and at standard 5-foot intervals to boring termination or auger refusal thereafter. The split-spoon sampler was driven with a 140(±) pound hammer free falling 30(±) inches, in general accordance with ASTM International guidelines (ASTM D1586). "Blow counts" are recorded on the boring logs and indicate the penetration resistance for a six-inch advancement of the split-spoon

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sampler. Initially, the sampler is driven six inches to seat the sampler in undisturbed material. The number of blows required to drive the sampler the next 12 inches is taken as the standard penetration resistance or "N" value. This value is indicative of the soil's in-place density or consistency. The final six-inch increment that the spoon is driven is not included in the determination of "N". Refusal is defined as a resistance of greater than 50 blows per six inches of penetration.

Twenty-two samples were collected from select test pits for sieve analysis to confirm soil classifications and four samples were collected for modified proctor testing. Laboratory testing results are included in Appendix D.

Infiltration testing was conducted in the proposed ponds BIO-1B-2, BIO-1B-3, BIO-1B-4, BIO-1B-5, BIO-2C-5, and BIO-2C-6 to assist with design of the bioretention ponds and infiltration/detention ponds.

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## **4.0 SUBSURFACE CONDITIONS**

### **4.2 Regional Geology**

According to the *Surficial Geologic Map of New York, Lower Hudson Sheet* (Cadwell, D.H., (1989)) the site deposition consists of glacial till of variable texture (boulders to silt) that is usually poorly sorted and varying in thickness and permeability.

According to the *Geologic Map of New York, Lower Hudson Sheet* (Fisher, D.W., Isachsen, Y.W. and Rickard, L.V; (1970)), the bedrock within the project area is within a transition area of two formations; metamorphic rocks of uncertain origin, including amphibolite, granite, gneiss and hornblende, and the Wappinger Formation, including sandstone and dolostone.

### **4.3 Subsurface Stratigraphy**

Subsurface conditions encountered in the test pits and borings are detailed and described on the test pit and boring logs included in Appendix B. Large boulders and cobbles were encountered throughout the test pit and boring advancement in fill and glacial till soils. General subsurface conditions are described below in order of increasing depth.

Asphalt – Asphalt was encountered at ground surface in test pits TP-07, TP-08, TP-09, TP-11, and borings TB-23, TB-25 and TB-26 to a depth varying from 0.3 feet to 0.5 feet.

Subbase – Subbase was encountered at ground surface in test pits TP-07 and TP-09, and borings TB-17, TB-25 and TB-26 to a depth varying from 0.5 feet to 0.9 feet. The subbase consisted of fine to coarse gravel with varying amounts of sand and silt. The subbase was black and the moisture content was visually classified as moist. Based on SPT resistance penetration the subbase was medium compact to very compact.

Topsoil –Topsoil was encountered at ground surface test pits TP-01 through TP-06, TP-10, and TP-12 through TP-18 to depths ranging 0.3 feet to 1.5 feet.

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Concrete – A layer of concrete and asphalt was encountered beneath the topsoil to a depth of 0.8 feet in TP-02.

Uncontrolled Fill – Uncontrolled fill was encountered beneath the asphalt, subbase, or topsoil in test pits TP-01, TP-07 through TP-09, TP-11, and TP-12 and borings TB-1, TB-4, TB-7, TB-16, TB-18, TB-19, TB-25 and TB-26. The fill generally consisted of fine to coarse sand with varying amounts of clayey silt, fine to coarse gravel, waste debris, and organics. The waste debris consisted of soda cans, cables and wires, and metal scraps. The fill was generally brown and visually classified as moist. Based on SPT resistance values, obtained while advancing the borings, which vary from 2 blows per foot (bpf) to refusal, the fill ranged from very loose to very compact. In test pit TP-01, the excavator had increased difficulty advancing the test pit through the fill. Once the excavator had passed through the fill, difficulty lessened. The soil type in accordance with OSHA Standard 1926 Subpart P, Appendix A for the uncontrolled fill is Type C, however should be evaluated by a competent person at the time of excavation.

Silty Clay – Silty clay was encountered beneath the topsoil in boring TB-24 and beneath the fill in boring TB-19 to depths of 2.0 and 7.0 feet, respectively. The silty clay contained varying amounts of fine to coarse sand and was generally light brown. Based on SPT resistance values ranging from 9 bpf to 15 bpf, the consistency of the silty clay ranged from medium stiff to stiff and the moisture content was visually classified moist to wet. The soil type in accordance with OSHA Standard 1926 Subpart P, Appendix A for the silty clay is Type B, however should be evaluated by a competent person at the time of excavation.

Silty Sand – Fine to coarse sand was encountered beneath the fill in test pit TP-01 and borings TB-03 through TB-05, TB-07, TB-08, TB-14, TB-16, TB-19, TB-23 and beneath the topsoil in test pits TP-02 through TP-06, TP-13 through TP-16, and TP-18 and borings TB-01 and TB-06, to depths ranging from 2.5 to 13.5 feet. The sand contained varying amounts of silt, clay, and fine to coarse gravel, and was generally light brown. The moisture content was visually classified as moist to wet. In the borings, based on SPT resistance values varying from 7 bpf to refusal, the density of the sand ranged from loose to very compact and the

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moisture content was visually classified as moist to wet. The soil type in accordance with OSHA Standard 1926 Subpart P, Appendix A for the silty sand is Type B, however should be evaluated by a competent person at the time of excavation.

Clayey Silt – Clayey silt was encountered beneath the silty clay in boring TB-19 to a depth of 17.5 feet. The clayey silt contained varying amounts of fine to coarse sand and fine to coarse gravel and was brown. Based on an SPT resistance value equal to 17 bpf, the consistency of the clayey silt was very stiff and the moisture content was visually classified as wet. The soil type in accordance with OSHA Standard 1926 Subpart P, Appendix A for the clayey silt is Type B, however should be evaluated by a competent person at the time of excavation.

Glacial Till – Glacial till was encountered beneath the asphalt, subbase, fill or topsoil in test pits TP-01, TP-05 through TP-09, TP-11 through TP-18, and all the borings except TB-14 and TB-18. The till extended from depths of 12 to 60.8 feet with borings TB-02 through TB-08, TB-10 through TB-12 and TB-24, and test pits TP-01, TP-08, and TP-12 through TP-18 terminating in this layer. The glacial till consisted of fine to coarse sand and contained varying amounts of silt, fine to coarse gravel. Numerous cobbles and boulders were encountered in this layer. The glacial till was brown/gray and the moisture content was visually classified as moist to wet. Based on SPT resistance values varying from 19 to greater than 100 bpf or refusal, the density of the glacial till ranged from medium compact to very compact. The soil type in accordance with OSHA Standard 1926 Subpart P, Appendix A for the glacial till is Type A, however should be evaluated by a competent person at the time of excavation.

Completely Weathered Bedrock – Completely weathered bedrock was encountered beneath the glacial till in test pits TP-09 and TP-11 and borings TB-09, TB-13, TB-14, TB-23, TB-25 and TB-26, and beneath the silty sand in test pit TP-03 to termination of the excavations and borings at depths varying 48.4 feet to 60.8 feet in the borings and 4.5 feet to 15 feet in the test pits.. The completely weathered bedrock consisted of varying amounts of silt, clay and fine to coarse sand and was layered orange, black, white and brown. Based on SPT resistance values ranging from 42 to greater than 100 bpf, the density of the completely weathered bedrock was

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very compact, and the consistency of the completely weathered bedrock was hard. The moisture content was visually classified as moist to wet. The soil type in accordance with OSHA Standard 1926 Subpart P, Appendix A for the completely weathered bedrock is Type A, however should be evaluated by a competent person at the time of excavation.

Bedrock – Granite bedrock was encountered beneath the glacial till in test pits TP-02, TP-04 through TP-07, and TP-10, and test borings TB-16, TB-17A, TB-19 through TB-22 and beneath the completely weathered rock in TP-11. In the borings, the granite was gray and brown in color and classified as very hard, freshly to moderately weathered, with close to medium fracture spacing and very poor to good RQD values ranging from 12% to 88%. Based on material removed by the excavator on the top surface of the bedrock, the granite was gray/white/black in color and classified as very hard. The rock type in accordance with OSHA Standard 1926 Subpart P, Appendix A for the bedrock is Stable Rock, however should be evaluated by a competent person at the time of excavation.

Schist bedrock was encountered in borings TB-15 and TB-18. In the test pits, the bedrock caused excavator refusal at depths ranging from 3.0 to 11.0 feet. The schist was gray in color, and was classified as very hard, freshly to moderately weathered, with very close to close fracture spacing and a poor to fair RQD ranging from 42% to 66%.

Figure 3 in Appendix A, Bedrock Contour Map, identifies the estimated elevation of the top surface of the bedrock.

#### **4.4 Groundwater**

Groundwater level observations were made during and after excavating operations and with four piezometers that were installed during the preliminary investigation for continued monitoring to determine static groundwater levels. Throughout the course of the investigation, readings were obtained from the piezometers and are summarized in Table 4 included in Appendix C.

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Seasonal factors such as temperature and precipitation also affect groundwater levels. For this reason, long-term groundwater levels may differ from those described in this report.

Groundwater levels vary with elevation across the site. Figure 4, Groundwater Contour Map, in Appendix A, estimates groundwater elevation across the site based on observations made during the investigations.

#### **4.5 Infiltration Testing**

Infiltration testing for the proposed stormwater management areas was conducted at proposed features BIO-1B-2, BIO-1B-3, BIO-1B-4, BIO-1B-5, BIO-2C-5, and BIO-2C-6 on December 7-8, 2010 during the final geotechnical investigation. The weather was above freezing temperatures and the ground was not frozen. Test pits were excavated on December 6, 2010 to install the casing so that the hole could be presoaked overnight. Upon completion of the infiltration testing, an average head loss rate of 0.4 inches per hour was observed in pond BIO-1B-3 and 0.5 inches per hour in pond BIO-2C-6. Bioretention ponds BIO-1B-4 and BIO-1B-5 were abandoned prior to testing due to refusal on bedrock. Bioretention ponds BIO-1B-2 and BIO-2C-5 were abandoned prior to testing because the test pits were flooded by the groundwater.

During the preliminary investigation, infiltration testing was conducted in borings TB-01 and TB-02 on Monday April 26, 2010 and Monday May 3, 2010 respectively. The borings were advanced on April 23, 2010 and April 30, 2010 respectively, and allowed to pre-soak. Upon completion of the infiltration testing, an average head loss rate of 5.4 inches per hour was observed in boring TB-01 and 5.7 inches per hour in boring TB-02.

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## **5.0 RECOMMENDATIONS**

### **5.1 Shallow Spread Foundations**

Based upon the subsurface conditions encountered during the preliminary and final investigations, the proposed structures will bear on glacial till, weathered bedrock, bedrock or a combination these materials. The undisturbed glacial till , weathered bedrock and bedrock are suitable to support the proposed structures on shallow spread foundations. We recommend a net allowable bearing pressure of 3.0 tsf for the design of shallow spread foundations bearing on glacial till, structural fill, and weathered bedrock and a net allowable of 10 tsf for bearing on bedrock. Due to the high fine content of the glacial till, the allowable bearing pressure was chosen based on the anticipated disturbance of the bearing surface during construction and removal of cobbles and boulders. The net allowable bearing pressures provided are based on factors of safety on the order of 3.0 to maintain differential settlements within tolerable levels. Bearing pressures up to one-third in excess of the allowable bearing pressure are permitted when considering load combinations from wind or earthquakes.

Exterior footings should be founded at a minimum depth of 4.0 feet below finished grade to provide frost protection. Interior footings in heated areas may be founded at a minimum of 2.0 feet below the bottom of the floor slab. We recommend that isolated footings be a minimum of 36 inches in least dimension and continuous footings be a minimum of 18 inches wide.

A detailed settlement analysis was beyond the scope of this study. However, based on the information obtained during the preliminary and final investigations and the general recommendations outlined in this report we anticipate that conditions can be achieved when final structure locations are established to keep total settlement of proposed footings to less than 1 inch, with differential settlements across individual column lines of about ½ inch or less. These estimates are based on the assumption that proper site preparation and construction monitoring is performed and that foundations are constructed on properly compacted glacial till, bedrock or structural fill as recommended in this report.

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## 5.2 Floor Slabs

Floor slabs may be supported on the existing natural sand or glacial till, or on properly compacted structural fill. The uncontrolled fill soils encountered are not suitable to support floor slabs and should be completely removed and replaced with compacted structure fill.

A subgrade modulus of 200 pounds per cubic inch should be used for design of concrete floor slabs on the existing site soils or compacted structural fill.

## 5.3 Foundation and Retaining Walls

Walls that retain earth and are restrained against lateral movement, such as the proposed basement walls should be designed to resist “at rest” earth pressures. The retained soils immediately behind the basement walls should be maintained in a drained condition at all times to avoid the build-up of hydrostatic pressures. To accommodate this drainage requirement, a vertical layer of open graded, free draining, crushed granular material such as a 50:50 mix of NYSDOT #1&2 sized crushed stone should be compacted against the retaining walls or a composite drain, as recommended in *Section 5.8 Groundwater Control*, to intercept groundwater seepage. The on-site soils may not be used behind retaining walls due to the high percentage of fines in the material that could develop hydrostatic pressures.

The balance of the basement wall excavation should comprise of structural backfill extending a horizontal distance behind such walls at least half the wall height. Drainage should be installed as outlined in *Section 5.8 Groundwater Control*. Walls can then be designed based on the following engineering properties of the structural backfill:

- Total unit weight: 125 pcf
- Angle of internal friction: 32 degrees
- Coefficient of at rest earth pressure (level backfill) (K<sub>o</sub>): 0.47
- Coefficient of active earth pressure (level backfill) (K<sub>a</sub>): 0.30

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- Friction factor, concrete footing on-site material: 0.45

A unit weight of 125 pcf and a coefficient of passive pressure (for level ground) ( $K_p$ ) of 3.5 can be used to determine the passive pressure for design assuming glacial till or structural fill soils. In addition, sliding resistance may be combined with passive pressure.

For retaining and foundation walls with a roadway located within a horizontal distance of half the wall height, we recommend a horizontal surcharge load of 250 psf over the full height of the wall. For construction activities located within the same horizontal distance, a surcharge load should also be considered. The load should be calculated based on the specific equipment to be used.

#### **5.4 Seismic Site Classification and Design Parameters**

Based upon the subsurface conditions encountered in the borings and in accordance with 2010 Building Code of New York State, the site class for the project site is defined as C. In addition, the following seismic design site coefficients were determined:

- Spectral Response Acceleration for Short Periods ( $S_S$ ) 0.331g
- Spectral Response Acceleration for 1.0-Second Period ( $S_1$ ) 0.069g
- Site Coefficient  $F_a$  1.20
- Site coefficient  $F_v$  1.70

#### **5.5 Rock Removal**

Based on the information obtained during the subsurface investigations, rock removal will be required during earthwork operations. It is anticipated that controlled blasting will be required for economical rock removal. To limit potential for blasting damage to nearby structures, blasting vibrations should be limited to a maximum peak particle velocity of 2 inches per second for buried utilities and as shown in Table for newly placed concrete. In addition to limiting peak particle velocity, vibrations should be monitored at the Sterling

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Forest Lake Dam crest and toe throughout the blasting operation.

**Table 2: Ground Vibration Limits for Newly Placed Concrete**

Age of Concrete	Maximum PPV in/s (mm/s)
Less than 3 days	No blasting
After 3 days	1.0 (25)
After 5 days	1.8 (46)
After 7 days	2.0 (50)

The areas of anticipated rock removal are on the west side of the site, in the vicinity of Residence Halls A, B, C and D. Test pit refusal and boring rock cores were observed to be at depths generally less than 12 feet from the existing ground surface and the proposed final footing elevations are below the elevation of the bedrock surface. Figure 3, in Appendix A, Bedrock Contour Map, gives the approximate elevation of bedrock across the project site.

We recommend that a precondition survey be performed of all structures within 200 feet of any location where blasting will be performed that are to remain as part of the proposed development. We also recommend that blasting vibrations be monitored at the nearest structure for each blast in addition to the Sterling Forest Lake Dam. Precondition surveys and blast vibration monitoring should be performed by an independent firm experienced in this type of work.

During the subsurface investigation, the CAT 325BL did not have noticeable difficulty advancing test pits through the completely weathered bedrock so blasting is not anticipated for removal of this material.

### **5.5.1 Existing Structure Demolition**

CHA understands that some buildings of the proposed construction, likely the maintenance shop and service building as currently depicted on the conceptual site plan, will be constructed above the present footprint of the former INCO Research Facility. This will necessitate demolishing the present building along with any old underground utilities that serviced the structure. In order for construction to proceed effectively and efficiently, the

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structure should be demolished and disposed of in a fashion so as not to create poor subgrade conditions for the new buildings. Any basements should be backfilled with compacted structural fill. Any tanks or underground utility lines should be removed in their entirety and subsequently backfilled with structural fill or grouted up to abandon in place in accordance with applicable state law. Old floor slabs should be removed or broken up in place and recompact, and old footings or basement walls should be removed if they interfere with the new work or ground down at least 18 to 24 inches below any floor slab or foot subgrade elevation. Old floor slabs may also be drilled to allow groundwater equilibration. A 6-inch cushion layer of structural fill shall be placed above remaining slabs should the existing slabs be founded on bedrock to allow relief of potential stress points.

In general building demolition debris should not be used as structural backfill, unless properly separated and processed. Properly crushed and screened concrete can produce a granular backfill suitable as structural fill, pavement sub-base material, drainage and sub-base material under floor slabs and drainage material for foundations and retaining walls.

## **5.6 Site Preparation and Construction**

Areas within the proposed structures footprints should be stripped of vegetation and topsoil, and uncontrolled fill. The subgrade should be the glacial till, completely weathered bedrock or granite/schist bedrock. Based on the proposed building footprints provided by Watchtower, the bottom of footings for the Residence Halls A and C, Picnic and Recreation Area, Visitor Parking will be in the layer of silty sand and/ or uncontrolled fill that is not a suitable subgrade. The silty sand and uncontrolled fill soils should be removed in the locations of the footings according to the procedure below.

The subgrade soil beneath proposed structures should be proof rolled using a smooth drum vibratory roller with a static weight of at least 10 tons. When proof rolling the roller should operate in its vibratory mode and complete at least 6 passes at a speed not exceeding 3 feet per second. Areas that tend to “pump” or “weave” under the passing roller should be undercut by at least 12 inches and stabilized with structural fill or crushed stone wrapped in

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filter fabric. If the vibratory roller tends to “bring up” moisture, the subgrade should be proof rolled with the roller operating in the static mode. Turning of the equipment on the subgrade shall be kept to a minimum. When compaction is being performed within 3 feet of foundation and retaining walls, light, walk-behind equipment should be used.

Structural fill used for stabilization purposes should meet the gradation requirements and be compacted as indicated in *Section 5.7 Structural Fill*.

During the subsurface investigations no indications of slope instability were observed at the site. Based on the subsurface conditions encountered it is recommended that temporary slopes during construction should not exceed OSHA standards and final slopes should not exceed 3H:1V without appropriate erosion control and stabilization.

#### **5.6.1 Footing Construction**

Spread footings should be constructed as soon as possible after excavation or fill placement to minimize the risk of disturbance of the bearing surface by exposure to precipitation, freezing, or other adverse conditions. Bedrock shall be benched and leveled prior to placing forms or reinforcement. Existing soils may also become disturbed or softened by foot traffic when placing forms and reinforcement. Any softened, disturbed, or frozen subgrade soil shall be removed and replaced or the bottom of the footings should be lowered as required. If it is anticipated that footing subgrades will be exposed for some time or if adverse weather conditions are anticipated, we recommend a working mat such as 6 inches of crushed stone wrapped in filter fabric or 3 inches of lean concrete be placed on the prepared subgrade immediately after the geotechnical engineer has observed the subgrade condition for consistency with the design. The working mat will provide a firm and stable working platform during foundation construction and will protect the sensitive bearing surface soils.

If the working mat is to be constructed using crushed stone and filter fabric it will need to conform to the following requirements:

- The crushed stone shall be a 50:50 mix of NYSDOT size designation No. 1 and No. 2

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crushed stone.

- The geotextile shall be a 6 ounce per square yard or heavier, non-woven filter fabric with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70 such as Mirafi 160N or equal.

### **5.6.2 Floor Slab Construction**

The following general features are recommended as part of the floor slab construction:

- Any deleterious material found below the floor slab area should be removed and replaced with compacted structural fill as described in section 5.7 *Structural Fill*.
- A minimum of 6 inches of clean, compacted crushed stone should be placed beneath the slab to enhance support and provide a working base above the soil sub-grade. The actual thickness of the stone layer should be based on structural design requirements. The crushed stone should be a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone. The stone should be underlain by a 6 ounce per square yard or heavier, non-woven filter fabric with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70 such as a Mirafi 160N or a geotextile of similar qualities. This will provide separation between the stone and underlying sand, glacial till or structural fill soils.
- The crushed stone should be kept moist, but not wet, immediately prior to the slab concrete placement.
- A polyethylene vapor barrier should be used between the crushed stone and the concrete slab in areas where the slab will be covered with floor tile, carpeting, or other material which may be adversely affected by moisture. Should a waterproofing system be used, a vapor barrier is not required.
- If a polyethylene vapor barrier is used, adequate curing procedures should be specified to prevent slab curling due to excessive moisture loss in the slab surface.

A geotechnical engineer or special inspector with current Level II certification in geotechnical engineering technology/ construction from the National Institute for Certification in

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Engineering Technologies (NICET) should be retained to observe proof rolling of the subgrade and review subgrade conditions prior to slab construction and make recommendations for any unsuitable conditions encountered.

### 5.7 Structural Fill

Structural fill shall be used for backfilling footing excavations, undercuts, and backfilling behind basement and retaining walls. Material suitable for structural fill should consist of sound, durable, sand and gravel, free of stumps, roots, other organics and any frozen or deleterious materials.

Structural fill shall conform to the following gradation:

**Table 2: Gradation Requirements for Structural Fill**

Sieve Size	Percent Passing by Weight
4 inch	100
No. 40	0 to 70
No. 200	0 to 10

The on-site soils **do not** meet the requirements for structural fill based upon the laboratory results included in Appendix D. The on-site soils may be blended with gravel and sand to meet gradation requirements outlined in Table 2, however, it is likely not economical due to a significant amount of labor, equipment and materials required. Should the site soils be blended, it is recommended that they not be used a structural fill associated with footings and retaining walls and should be limited to use in landscape and roadways areas, unless confirmation laboratory testing is performed on the blended material to ensure the material meets structural fill gradation requirements.

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Structural fill should be placed in loose lifts not exceeding 8 inches in thickness and should be compacted to at least 95 percent of the maximum laboratory dry density as determined by the modified Proctor test (ASTM D1557). Proctor results for 4 soil samples obtained during the investigation are included in Appendix D. The results indicate a maximum density ranging from 129.7 pcf to 140.2 pcf for glacial till and 136.0 pcf completely weathered bedrock. Actual lift thickness shall depend upon the type of compaction equipment used during construction. Structural fill around footings should be thoroughly compacted to provide uniform slab support.

A nuclear density gauge can be used as the field test method for determining the in-place dry density of the compacted fill. It is recommended that one test be performed on a 50 foot grid, equivalent to one test per 2,500 square feet, of construction within building footprints to determine that the placed soil is at the minimum acceptable dry density to conform to the requirements of *Section 1803.5 Compacted Fill Material* of the 2010 Building Code of New York State.

### **5.7.1 Fill and Backfill Materials**

Backfill for construction generally should not have a high percentage of fine material. Fine grained material can trap water that freezes during winter months to cause heave in the winter, and ensuing settlement in the spring when the ice in the soil thaws. Based on laboratory results of the soil samples retained in the subsurface investigation, the glacial till generally has a percentage of fines much greater than 10 percent. These results indicate that the on-site, unmodified glacial till is only suitable for utility trench backfill and floor slabs on grade if placed correctly (*Section 5.6 Site Preparation and Construction*). Due to the portion of fines in the glacial till soils, proper drainage in accordance with *Section 5.8 Groundwater Control* must be constructed near the utility trench to reduce the potential damage of frost heave. Also, the glacial till should not be placed as backfill immediately after or during adverse weather conditions such as rain storms, to maintain a low moisture content in the soil.

The glacial till is not suitable for fill below walks and pavement and should not be used in those applications due to the percentage of fines. Additionally, the silty sand that is

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encountered beneath the topsoil and the completely weathered bedrock cannot be used for any of the aforementioned applications due to a high percentage of fine soil particles. Use of the materials in this application may cause heaving that may develop cracks or other deformations in the walks and pavement during winter months. These materials may be used up to four feet below the finished grade for walks and pavement.

For on-site soils to be able to be used as structural fill, sand or gravel can be blended with the glacial till so the material meets the gradation requirements specified in *Section 5.7 Structural Fill*. The gradation results of the blending should be verified by a certified soils laboratory as recommended in *Section 5.7*.

On-site materials used as backfill in landscape should be compacted to a minimum of 85 percent of the modified proctor and utility trench backfill should be compacted to a minimum of 90 percent of the modified proctor.

Cobbles and boulders were encountered throughout the excavations. In general, boulders may be crushed in compliance with specifications determined by a rock crusher's manufacturer instructions to provide gravel for the site for use as structural fill, subbase, pavement base course and foundation drain backfill. Blasted bedrock may also be processed to produce gravel. Care should be taken during crushing of cobbles and boulders to ensure soils are not processed to ensure a high amount of fines are not introduced into the final processed product.

Controlled low strength materials (CLSM) can be used as an alternative to structural fill. A minimum compressive strength of 150 psi is recommended. The subgrade surface shall be prepared in accordance with *Section 5.6 Site Preparation and Construction*. Material delivered to the site shall be tested and placed in accordance with NYSDOT Standard Specification Section 204 – Controlled Low Strength Material (CLSM).

### **5.7.2 Recommended Use of On-site and Imported Soils**

A summary table included the recommended use of on-site, processed on-site soils and

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imported soils in included as Table 5 included in Appendix C.

## **5.8 Groundwater Control**

We anticipate that groundwater will be encountered during site construction. Figure 4, included in Appendix A, illustrates the estimated groundwater elevation. For design an additional two feet should be added to the elevations shown on the figure. It is recommended that the peizometers continue to be monitored to confirm seasonal high groundwater elevations.

Based on investigations and the proposed floor elevations shown in Table 1, a waterproofing system is required at visitor parking, home services, powerhouse, resident garage, recreation, maintenance and residences B, C and D in accordance with section *1807 Dampproofing and Waterproofing* of the 2010 Building Code of New York State. Although the building code allows for dampproofing provided the design includes a groundwater control system, where the estimated finished floor elevations of the structures is below the estimated groundwater elevation it is recommended that a waterproofing system be used in addition to the drainage system outline below. Where building and structures will be constructed above groundwater a dampproofing system is recommended.

We recommend a waterproofing system such as Bithuthene 3000 manufactured by W.R. Grace & Company be used on the foundation walls and below the floor slab to provide a waterproof barrier. The waterproofing system should also include a composite drain on the foundation walls such as Hydroduct 220 manufactured by W.R. Grace & Company to collect and drain water away from the structure. The composite drain should outlet to the drain tile around the exterior footings or permanent sump structure. Gravel backfill is not recommended to be placed directly against waterproofing membrane, to avoid penetration through the membrane.

A drain tile with crushed stone or gravel backfill is recommended to be placed adjacent to exterior footings at an elevation below floor slabs. The crushed stone or gravel (50:50 mix of

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NYSDOT #1 and #2 size crushed stone) backfill shall extend a minimum of 12 inches around the drain tile. All drain tiles shall be connected to a storm sewer, day lighted at a lower elevation, or lead to a sump equipped with duplex pumps. Considerations must be made for the groundwater table and the location of the stormwater ponds relative to location of day lights and pitch of the drain outlets. A minimum pipe diameter of 4 inches is recommended.

Additionally, under drains are recommended beneath the floor slabs. The under drains should be constructed in a manner similar to the drain tile. Hydrostatic uplift forces do not need to be evaluated if a sufficient amount of under drains are constructed below the floor slabs in locations where the slabs will be below the groundwater table. For some structures, that the finished floor only extends a small depth below the groundwater elevation, it may be more economical to construct a floor slab to resist the maximum hydrostatic uplift in its place of under drains. A minimum pipe diameter of 4 inches and maximum spacing of 15 feet is recommended for the under drain system.

Based on an assumed trench depth of one foot for the under drains and foundation drain, an estimated flow rate of 1 gallon per minute per 100 feet (0.01 gallons per minute per foot) of pipe is recommended for design of drains in soil.

Project specifications shall require that the contractor maintain groundwater at a minimum depth of 2 feet below excavation bottom at all times to maintain stable conditions. Special consideration shall be given to base stability in excavations supported by temporary excavation on support walls. It should be the responsibility of the contractor to maintain dry conditions so that foundation construction may be completed in the dry. Dewatering methods suitable for this site include the use of sumps and pumps, diversion and drainage ditches, toe drains and other similar methods. Pumps should be of sufficient capacity to control the groundwater, and operated in a manner which will limit the withdrawal of fines from the soil. We recommend that pumps be installed in sumps lined with a filter fabric and crushed stone. The crushed stone should be a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone. The filter fabric should be a 6 ounce per square yard or heavier, non-woven filter fabric with an apparent opening size (AOS) equal to or smaller than the U.S. Standard

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sieve size of 70 such as a Mirafi 160N or a geotextile of similar qualities.

Surface runoff should be diverted away from excavations during construction. The upper one foot of backfill should be fairly impervious and the ground surface should be graded so that surface water runoff is directed away from the building. Due to the nature of the in situ soil, open excavations that collect water from surface runoff from storm events will not percolate through the side walls to lower the water levels in the excavations. Manual or mechanical precautions as outlined above should be taken to remove excess water.

## **5.9 Pavement Subgrade**

The uncontrolled fill, undisturbed site soils or compacted structural fill are suitable to support pavement for access roadways and parking areas. Based on generalize soil classification of the site soils, a CBR value of 10 may be used for design.

A minimum pavement section might comprise the following:

- 2 inches of Surface Mix
- 3 inches of Binder Mix
- 10 inches of Dense Graded Aggregate

Should a rigid pavement be used, a minimum pavement section might comprise the following:

- 6 inches of PCC
- 10 inches of Dense Graded Aggregate

The site soils contain greater than 10 percent fines. These soils are not free draining and will tend to trap infiltrating water in the subbase. Accordingly, under drains should be provided in the pavement design to promote rapid drainage and removal of water from the subbase. The use of woven geotextile fabric beneath the subbase will provide separation and confinement of base materials and prevent fines from fouling subbase. This will enhance pavement

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performance and life. A properly chosen woven geotextile fabric can provide additional reinforcement strength, increasing resistance of the pavement to physical deterioration and loss of strength, thereby extending the pavement life. We recommend Mirafi X-Series Woven Polypropylene Geotextile, 600X or above, or a geotextile of similar quality and characteristics.

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## **6.0 EXCAVATIONS**

Excavations shall be done using a smooth blade bucket. Should excavation be difficult with a smooth blade bucket due to soil density, a toothed or ripping bucket maybe used provided any loose material is removed or recompacted to the same density as the bearing surface. All excavations should be performed in accordance with the Occupational Safety and Health Administration (OSHA) standards and applicable state and local codes. The soil and rock type in accordance with OSHA Standard 1926 Subpart P, Appendix A are included in Section 4.0 and are anticipated for temporary cut slopes and should be evaluated during construction by a competent person. It is recommended that unstable rock and soil excavations below groundwater by classified as Type C. In areas where sufficient sloping of excavation cuts is not possible, an engineered system maybe required.

### **6.1 Temporary Shoring During Construction**

Construction of the office building, maintenance shop, recreation area and resident garage will require excavation depths of about 27 feet, 17 feet, 25 feet and 31 feet, respectively. These excavations will likely require temporary shoring to reach final bearing elevation. A soldier pile and lagging wall with tie-backs is recommended. This would allow for top down construction and limit the majority of earthwork to excavation at the front of the wall. The piles will be advanced through the glacial till layer that contains numerous cobbles and boulders, therefore, installation will likely require drilling techniques for advancement.

The piles will likely develop support primarily from the glacial till, with the exception of the resident garage where weathered bedrock was encountered just below the footing elevation.

Soldier pile and lagging walls retain earth and are not restrained against lateral movement and should be designed to resist earth pressures. To limit the potential for excessive hydrostatic pressure behind the wall, weep holes should be installed. The wall will retain in-place glacial till soils and can be designed based on the following engineering properties for glacial till:

- 
- Total Unit Weight: 135 pcf
  - Angle of Internal Friction: 35 degrees
  - Active Earth Pressure Coefficient (Ka): 0.27
  - At Rest Earth Pressure Coefficient (Ko): 0.43
  - Friction Factor, Steel Piles against Glacial Till: 0.25

## 6.2 Grout Bonded Anchors

For wall heights above about 20 feet, a multi-level tie-back system will likely be required. Tie-backs shall be designed to allow for no more than ½ inch of movement at the top of the excavation support wall. Tie-backs into glacial till soils can be designed base on the following engineering properties and following the most current guidelines from the Post-Tension Institute “Recommendations for Prestressed Rock and Soil Anchors” (PTI).

- Total Unit Weight: 135 pcf
- Grout to Glacial Till Allowable Bond Stress (pressure grouted) 30 psi
- Grout to Weathered Rock Allowable Bond Stress (pressure grouted) 50 psi
- Grout to Bedrock Allowable Bond Stress (pressure grouted) 150 psi

Anchors should be provided with a bonded length not less than 15 feet for ASTM A416 strand anchors or 10 feet for ASTM A722 Type II bar anchors unless special provisions are made.

The design load should not exceed 60 percent of the specified minimum tensile strength of the prestressing steel, or as per manufacturer’s recommendations. The anchors should be made sufficiently deep to engage a cone of rock having a weight at least equal to the design load. This cone can be determined assuming a 30 degree angle from vertical beginning at the midpoint of the anchorage zone, and a unit weight of 160 pounds per cubic foot (pcf) for the bedrock.

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### **6.2.1 Anchor Installation**

The anchor holes should be thoroughly cleaned of cuttings and loose debris prior to constructing the anchors, and grout should be injected from the bottom of the holes using a grout tube. The anchors should be prestressed in accordance with the design engineer's or manufacturer's recommendations.

We recommend that one test anchor be installed at the site prior to the installation of the remaining anchors. The anchor should be performance tested to 1.33 times the design load. If the performance test indicates that the anchor sustains 1.33 times the design load, the remaining foundation anchors should then be installed in the same manner as the test anchor and proof tested to 1.33 times the design load to verify their capacity. Performance testing and proof testing loads shall not exceed 80 percent of the specified minimum tensile strength of the prestressing steel. If performance test results indicate that the test anchor capacity is less than 1.33 times the design load, the anchor should be removed and redesigned, and an additional test anchor installed and performance tested. If the test anchor passes the performance test, it can remain as one of the foundation anchors.

Performance testing and proof testing should be in accordance with the latest edition of the PTI.

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## **7.0 OBSERVATION DURING CONSTRUCTION**

A qualified geotechnical engineer or special inspector with current Level II certification in geotechnical engineering technology/ construction from the National Institute for Certification in Engineering Technologies (NICET) should be onsite during excavation for foundations to ensure that all existing fill soils are removed beneath planned footings. The geotechnical engineer should carefully inspect the final excavation surface for foundations and floor slabs to ascertain that the subgrade has been properly prepared and is consistent with the design recommendations. The inspection of subgrade should include probing at select locations, specifically to verify the bearing capacity of the supporting soils and where load bearing soils may have been disturbed. Inspection should also include verification that bedrock surfaces are properly leveled, benched and cleaned.

Materials used as fill, including those used beneath footings, floor slabs and pavement should be tested by a qualified soils laboratory to verify they meet the specified gradations and to determine their maximum dry density for compaction. In-place density tests should be performed to verify that compaction methods and equipment achieve the required densities.

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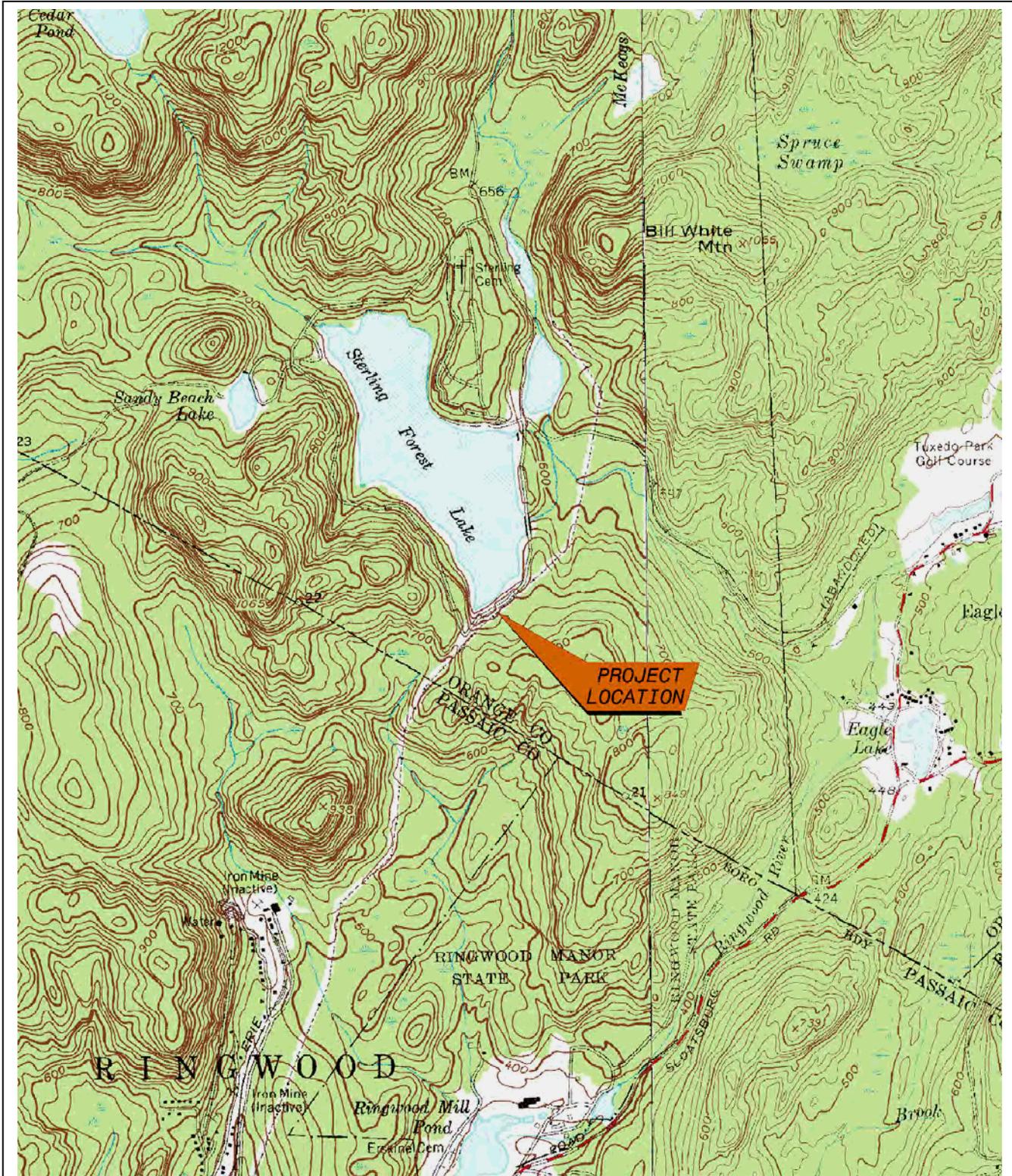
## 8.0 CLOSURE

The general geotechnical recommendations presented in this final report are based, in part, on project and subsurface information available at the time this report was prepared and in accordance with generally accepted foundation engineering practices. Based on findings in subsurface investigations, it is anticipated that the bedrock varies significantly in elevation across the site. Additional subsurface investigations to verify elevations of the bedrock may be necessary prior to construction to confirm bearing materials and estimate rock removal prior to construction. No other warranty, expressed or implied, is made. Some variation of subsurface conditions may occur from the locations explored that may not become evident until construction. Depending on the nature and extent of the variations, it may be necessary to re-evaluate the recommendations presented in this report.

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**APPENDIX A**

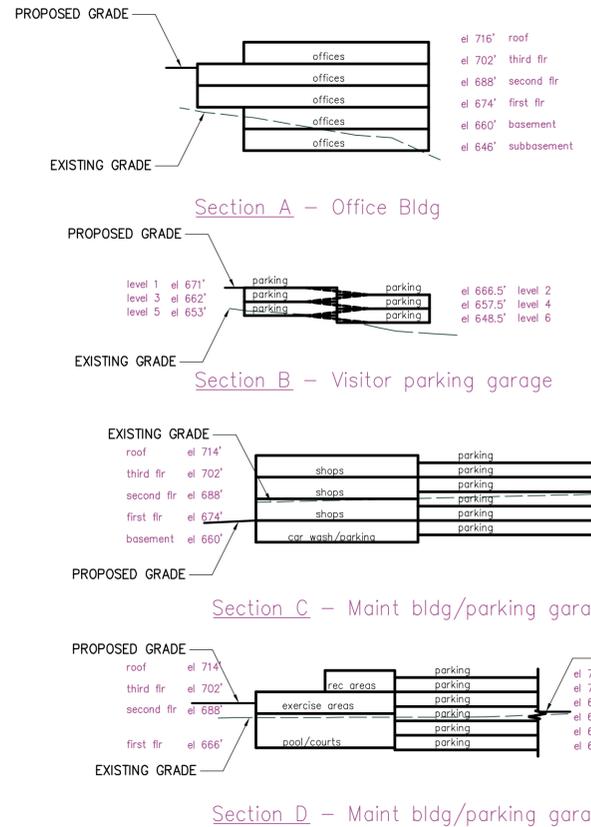
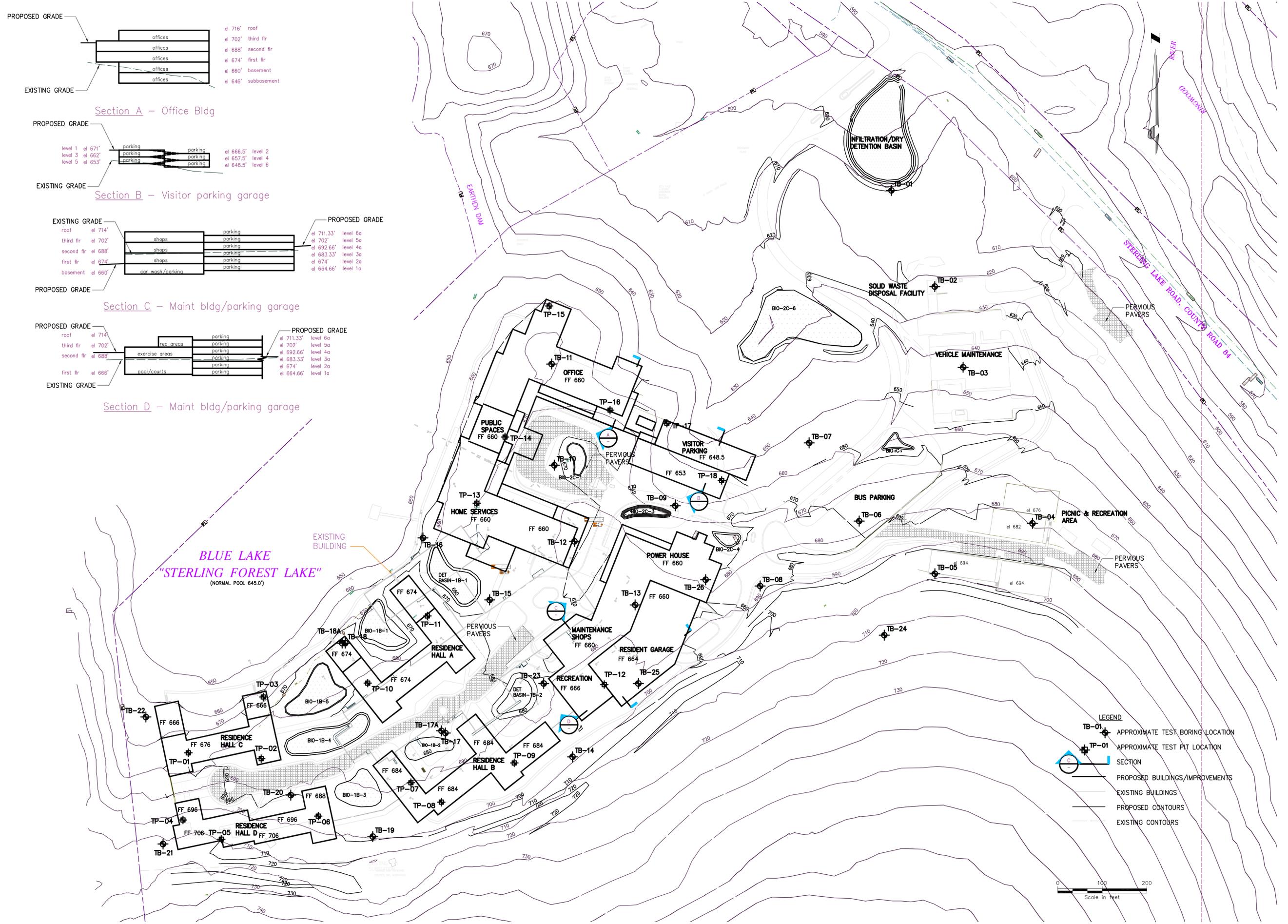
**FIGURES**



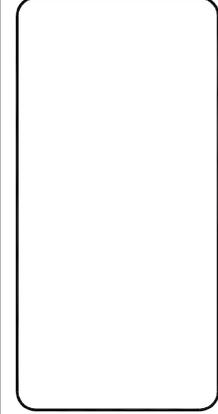
		<p><b>FIGURE 1</b> <b>Project Location Map</b></p>	
<p>Scale 1" = 2000'</p>	<p>CHA File No: 21137.2000.32000</p>	<p>World Headquarters of Jehovah's Witness Kings Road Warwick, NY 10987 Greenwood Lake USGS Quad</p>	



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**WORLD HEADQUARTERS OF  
 JEHOVAH'S WITNESSES  
 WARWICK, NEW YORK**

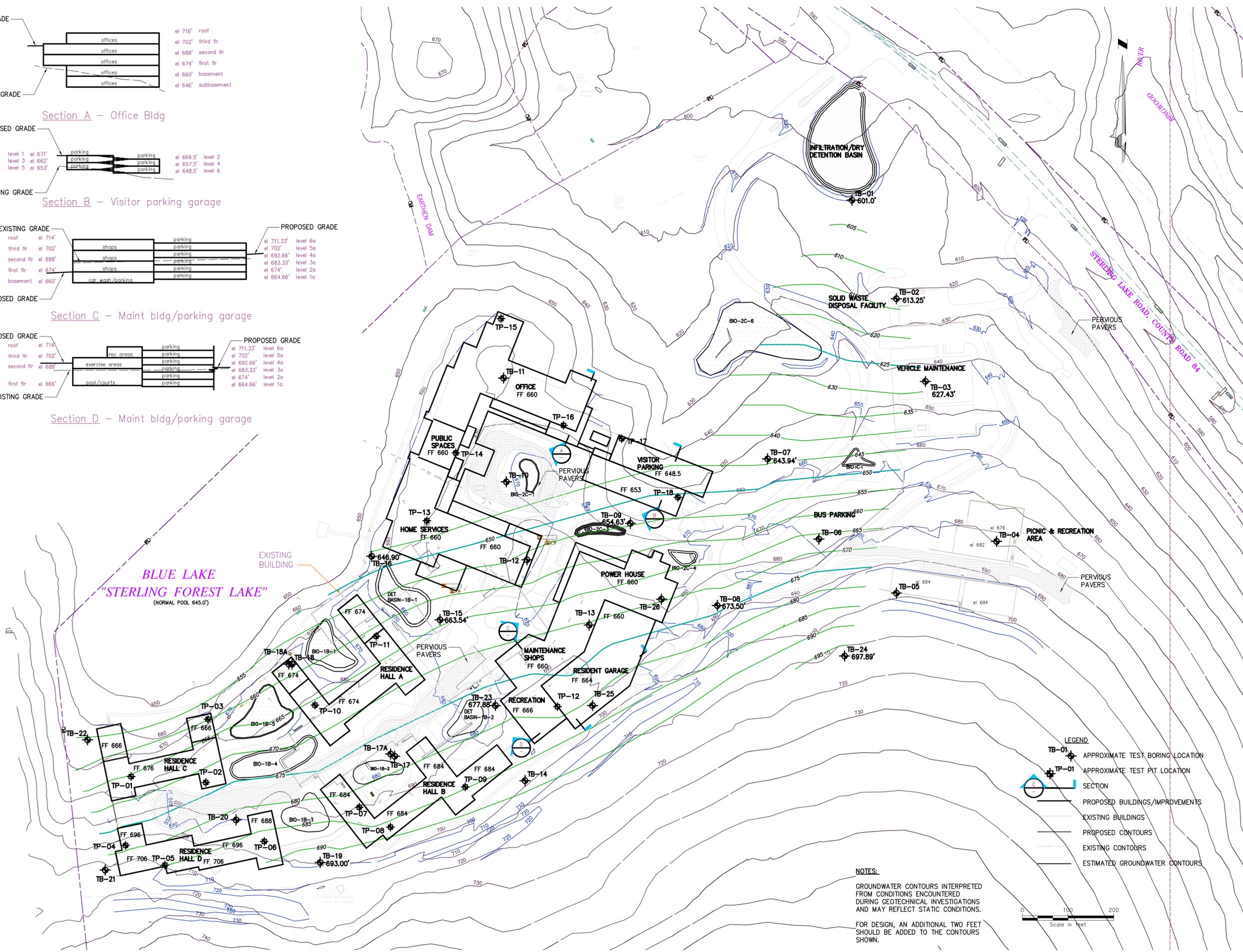
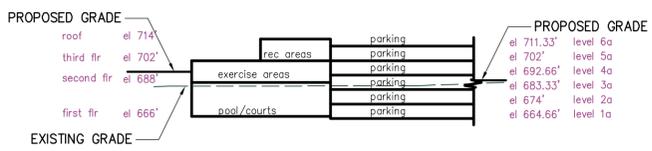
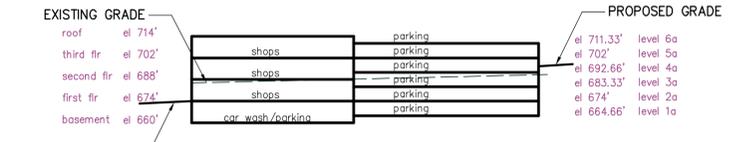
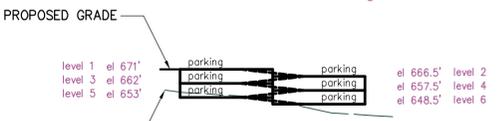
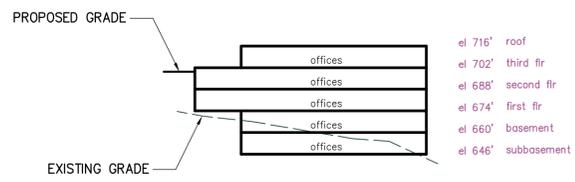
**BORING AND TEST PIT  
 LOCATION PLAN**

Scale: AS SHOWN  
 Project No.: 21137  
 Issue Date: 04/2011

**FIG. 2**



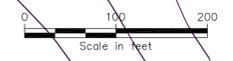
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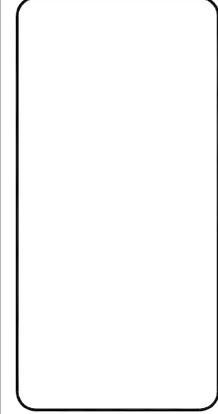
**LEGEND**

- TB-01 APPROXIMATE TEST BORING LOCATION
- TP-01 APPROXIMATE TEST PIT LOCATION
- SECTION
- PROPOSED BUILDINGS/IMPROVEMENTS
- EXISTING BUILDINGS
- PROPOSED CONTOURS
- EXISTING CONTOURS
- ESTIMATED GROUNDWATER CONTOURS

**NOTES:**  
 GROUNDWATER CONTOURS INTERPRETED FROM CONDITIONS ENCOUNTERED DURING GEOTECHNICAL INVESTIGATIONS AND MAY REFLECT STATIC CONDITIONS.  
 FOR DESIGN, AN ADDITIONAL TWO FEET SHOULD BE ADDED TO THE CONTOURS SHOWN.



Date	
By	
Appr	
Submital / Revision	
No.	



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**WORLD HEADQUARTERS OF JEHOVAH'S WITNESSES WARWICK, NEW YORK**

**GROUNDWATER CONTOUR PLAN**

Issue Date: 04/2011    Project No.: 21137    Scale: AS SHOWN

**FIG. 4**



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**APPENDIX B**

**BORING LOGS**



PROJECT NUMBER: 21137.3000.32000 12/7/10

World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG  
TEST PIT NUMBER TP-01

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 10 X 18 ft		BOTTOM: 10 X 18 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 20 Over 18 inches Diam: 12
CONTRACTOR: Watchtower Operator			12-1-10	9:20 AM	7	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 9:00:00 AM						
FINISH DATE and TIME: 12/1/2010 9:40:00 AM						
SURFACE ELEV: 677.64 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 6 - 7	675	5		<b>TOPSOIL</b> <b>f.m.c. SAND</b> , little silt, trace waste, gray, moist ( <b>FILL</b> )	▽	Boulders and cobbles throughout the test pit. Waste in the fill consisted of metal straps/pipes, soda cans, and large angular rock.
				<b>f.m.c. SAND</b> , Some f.c. Gravel, little clayey silt, mottled orange/gray, wet ( <b>SM</b> )		Fill was difficult to excavate, difficulty lessened at depths of natural materials. Very large boulder, greater than 5' wide, removed at a depth of 6'. Sample G-1 moisture content = 9.9%. Test pits were only open for a short duration and groundwater observations may not represent static conditions. Fewer boulders were excavated in the test pit in the glacial till than in the fill.
G-2 12.5 - 14	670	10		<b>f.m.c. SAND</b> , little f.c. gravel, trace silt, light brown, moist ( <b>SP-TILL</b> )		▽
				End of Test Pit at 16 ft		
	665	15				
	660	20				
	655	25				
	650	30				

TEST PIT LOG - 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 12/7/11



PROJECT NUMBER: 21137.3000.32000 12/7/10

**World Headquarters of Jehovah's Witnesses**

**SUBSURFACE LOG  
TEST PIT NUMBER TP-02**

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 20 X 14 ft		BOTTOM: 20 X 14 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 0 Over 18 inches Diam: 0
CONTRACTOR: Watchtower Operator			12-1-10	9:50 AM	0.8	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 9:50:00 AM						
FINISH DATE and TIME: 12/1/2000 10:15:00 AM						
SURFACE ELEV: 684.58 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 2 - 3				<b>TOPSOIL</b> f.m.c. SAND, little clayey silt, little f.c. gravel, light brown, moist (SM)		Layer of asphalt and concrete at 0.8'. Test pits were only open for a short duration and groundwater observations may not represent static conditions. Fractured granite bedrock was in spoils from 2' to 3.5'. Test pit terminated at 3.5' due to refusal on granite bedrock.
	680	5		End of Test Pit at 3.5 ft		
	675	10				
	670	15				
	665	20				
	660	25				
	655	30				

TEST PIT LOG - 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT - 12/7/11



PROJECT NUMBER: 21137.3000.32000 12/7/10

World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG  
TEST PIT NUMBER TP-03

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 15 X 15 ft		BOTTOM: 15 X 15 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 10 Over 18 inches Diam: 6
CONTRACTOR: Watchtower Operator			12-6-10	9:00 AM	None	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/6/2010 8:25:00 AM						
FINISH DATE and TIME: 12/6/2010 9:00:00 AM						
SURFACE ELEV: 672.48 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
PR-1 4 - 6	670	5		<b>TOPSOIL</b>		Test pits were only open for a short duration and groundwater observations may not represent static conditions.  Very large, angular boulders from 2.5' to test pit termination.  PR-1 max dry density = 136.0 pcf @ optimum moisture = 6.8%.  Test pit terminated at 8'. The test pit was advanced on a slope and large boulder removal was causing the walls to collapse and undercutting the excavator.
				<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, brown, moist (SP)		
				<b>f.m.c. SAND</b> , Some Silt, Some f.c. gravel, light brown/orange/black, moist ( <b>COMPLETELY WEATHERED BEDROCK</b> )		
				End of Test Pit at 8 ft		

TEST PIT LOG - 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT - 12/7/11



PROJECT NUMBER: 21137.3000.32000

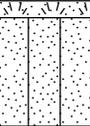
12/7/10

**World Headquarters of Jehovah's Witnesses**

**SUBSURFACE LOG  
TEST PIT NUMBER TP-04**

Page 1 of 1

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 20 X 15 ft		BOTTOM: 20 X 15 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 0 Over 18 inches Diam: 0
CONTRACTOR: Watchtower Operator			12-1-10	8:45 AM	None	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 8:20:00 AM						
FINISH DATE and TIME: 12/1/2010 8:45:00 AM						
SURFACE ELEV: 704.83 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 1 - 2.5				<b>TOPSOIL</b> f.m.c. SAND, Some clayey Silt, Some f.c. Gravel, trace organics, light brown/orange, wet (SM)		Test pits were only open for a short duration and groundwater observations may not represent static conditions. Boulders observed at the ground surface. Sample G-1 moisture content = 17.2%. Test pit termination due to excavator refusal on granite bedrock.
				End of Test Pit at 3 ft		
	700	5				
	695	10				
	690	15				
	685	20				
	680	25				
	675	30				

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SUBSURFACE LOG  
TEST PIT NUMBER TP-05

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 8 X 14 ft		BOTTOM: 8 X 14 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 12 Over 18 inches Diam: 6
CONTRACTOR: Watchtower Operator			12-1-10	7:55 AM	10	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 7:30:00 AM						
FINISH DATE and TIME: 12/1/2010 8:00:00 AM						
SURFACE ELEV: 706.28 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 5 - 6	705			<b>TOPSOIL</b>		Large boulders observed at the ground surface. Cobbles and boulders were excavated 2.5' to test pit termination.  Difficult excavation 4' to test pit termination.   Test pits were only open for a short duration and groundwater observations may not represent static conditions. Test pit termination due to excavator refusal on schist bedrock.
		5		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown/orange, moist ( <b>SM</b> )		
		700			<b>f.m.c. SAND</b> , little silt, little f.c. gravel, light brown/gray, moist ( <b>SM-TILL</b> )	
		10				
	695			End of Test Pit at 11 ft		
		15				
	690					
		20				
	685					
		25				
	680					
		30				
	675					

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**World Headquarters of Jehovah's Witnesses**  
**SUBSURFACE LOG**  
**TEST PIT NUMBER TP-06**

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 4 X 8 ft		BOTTOM: 4 X 8 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 35 Over 18 inches Diam: 8
CONTRACTOR: Watchtower Operator			12-6-10	8:00 AM	6.7	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/6/2010 7:40:00 AM						
FINISH DATE and TIME: 12/6/2010 8:15:00 AM						
SURFACE ELEV: 694.24 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 3 - 5	690	5		<b>TOPSOIL</b>	▽	Very large boulders were excavated throughout the test pit, some boulders were very angular and likely fractured bedrock.  Test pits were only open for a short duration and groundwater observations may not represent static conditions. Test pit termination due to excavator refusal on granite bedrock.
				<b>f.m.c. SAND</b> , little f.c. gravel, trace silt, dark brown, moist (SP)		
				<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown, moist (SP-TILL)		
				End of Test Pit at 6.9 ft		
	685	10				
	680	15				
	675	20				
	670	25				
	665	30				

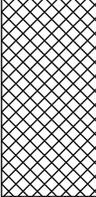
TEST PIT LOG - 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



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**World Headquarters of Jehovah's Witnesses**  
**SUBSURFACE LOG**  
**TEST PIT NUMBER TP-07**

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 10 X 15.5 ft		BOTTOM: 11 X 15.5 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 20 Over 18 inches Diam: 15
CONTRACTOR: Watchtower Operator			11-30-10	3:50 PM	9	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 11/30/2010 3:20:00 PM						
FINISH DATE and TIME: 11/30/2010 4:05:00 PM						
SURFACE ELEV: 688.81 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 5 - 6	685	5		<b>ASPHALT</b>	▽	Cobbles and boulders observed in excavation throughout the test pit. Metal stranded cable in wall of test pit in fill layer.  Test pits were only open for a short duration and groundwater observations may not represent static conditions. Test pit termination at 11' due to excavator refusal on granite bedrock.
				<b>f.c. GRAVEL</b> , trace silt, trace sand, black ( <b>SUBBASE</b> )		
				<b>f.m.c. SAND</b> , little silt, trace wire, red/orange, moist ( <b>FILL</b> )		
	680	10		<b>f.m.c. SAND</b> , little silt, little f.c. gravel, light brown, wet ( <b>SM-TILL</b> )		
				End of Test Pit at 11 ft		
	675	15				
	670	20				
	665	25				
	660	30				

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SUBSURFACE LOG  
TEST PIT NUMBER TP-08

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 14 X 17 ft		BOTTOM: 14 X 17 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 6 Over 18 inches Diam: 9
CONTRACTOR: Watchtower Operator			11-30-10	11:30 AM	14	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens		11-30-10	11:40 AM	11	
START DATE and TIME: 11/30/2010 10:40:00 AM						
FINISH DATE and TIME: 11/30/2010 11:40:00 AM						
SURFACE ELEV: 694.12 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 0.5 - 1.5				<b>ASPHALT</b> f.m.c. SAND, little silt, little f.c. gravel, trace organics, light brown, moist (FILL)		Cobbles and boulders observed throughout test pit excavation.
G-2 4 - 5	690	5		f.m.c. SAND, Some Silt, little f.c. gravel, light brown, moist (SM-TILL)  becomes gray  becomes light brown		Difficult excavating 2.5' to 10'. Very large boulders, 3' by 5', removed at 3' and 7'.
G-3 8 - 10	685	10				Difficulty of excavating decreased from 10' to test pit termination and boulders were smaller. Test pits were only open for a short duration and groundwater observations may not represent static conditions.  Test pits were only open for a short duration and groundwater observations may not represent static conditions. Test pit terminated in glacial till soils.
G-4 14 - 15	680	15		becomes wet End of Test Pit at 15 ft		
	675	20				
	670	25				
	665	30				

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 10 X 18 ft		BOTTOM: 10 X 18 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 10 Over 18 inches Diam: 10
CONTRACTOR: Watchtower Operator			11-30-10	1:45 PM	None	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 11/30/2010 12:55:00 PM						
FINISH DATE and TIME: 11/30/2010 1:45:00 PM						
SURFACE ELEV: 694.82 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 0.7 - 1.3				<b>ASPHALT</b>		Test pits were only open for a short duration and groundwater observations may not represent static conditions. Cobbles and boulders observed in test pit excavation from 1.5' to test pit termination.  Sample G-2 moisture content = 5.5%.  Several large boulders packed together at 9'.  Sample G-4 moisture content = 10.2%. Test pit terminated in completely weathered bedrock.
				<b>f.c. GRAVEL</b> , trace silt, trace f.m.c. sand, black, moist ( <b>SUBBASE</b> )		
				<b>f.m.c. SAND</b> , little silt, little f.c. gravel, orange/dark brown, moist ( <b>FILL</b> )		
				<b>f.m.c. SAND</b> , little silt, little f.c. gravel, light brown/gray, moist ( <b>SM-TILL</b> )		
G-2 4 - 5	690	5		Some f.c. Gravel, little clayey silt, grayish brown, moist ( <b>SM-TILL</b> )		
G-3 9 - 11	685	10		becomes light brown		
G-4 14 - 15	680	15		<b>f.m.c. SAND</b> , Some Silt, little f.c. gravel, red/white/light brown, moist ( <b>COMPLETELY WEATHERED BEDROCK</b> ) End of Test Pit at 15 ft		
	675	20				
	670	25				
	665	30				

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SUBSURFACE LOG  
TEST PIT NUMBER TP-10

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 7 X 10 ft		BOTTOM: 7 X 10 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 0 Over 18 inches Diam: 0
CONTRACTOR: Watchtower Operator			11-30-10	4:25 AM	None	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 11/30/2010 4:15:00 PM						
FINISH DATE and TIME: 11/30/2010 4:25:00 PM						
SURFACE ELEV: 686.21 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
	685			<b>TOPSOIL</b>		Test pit was on bedrock outcropping. Excavator was able to remove approximately 1' of fractured bedrock off of the rock face. Test pits were only open for a short duration and groundwater observations may not represent static conditions. Test pit termination at excavator refusal on granite bedrock.
				<b>GRANITE</b> , gray, very hard, moderately weathered, close fracture spacing End of Test Pit at 2.5 ft		
		5				
	680					
		10				
	675					
		15				
	670					
		20				
	665					
		25				
	660					
		30				
	655					

TEST PIT LOG - 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT - 12/7/11



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SUBSURFACE LOG  
TEST PIT NUMBER TP-11

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 4 X 10 ft		BOTTOM: 4 X 10 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 5 Over 18 inches Diam: 1
CONTRACTOR: Watchtower Operator			12-6-10	11:15 AM	4.5	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/6/2010 10:50:00 AM						
FINISH DATE and TIME: 12/6/2010 11:15:00 AM						
SURFACE ELEV: 670.70 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 3 - 4 G-2 4 - 4.5	670	5		<b>ASPHALT</b>	▽	Test pits were only open for a short duration and groundwater observations may not represent static conditions. Test pit termination due to excavator refusal on granite bedrock.
				<b>f.m.c. SAND</b> , trace silt, trace f. gravel, mottled light brown/orange, moist ( <b>FILL</b> )		
				<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown, moist/wet ( <b>SP-TILL</b> )		
	665			<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown/orange/white ( <b>COMPLETELY WEATHERED BEDROCK</b> ) End of Test Pit at 4.5 ft		
	660	10				
	655	15				
	650	20				
	645	25				
	640	30				

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 SUBSURFACE LOG  
 TEST PIT NUMBER TP-12

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 7 X 18 ft		BOTTOM: 7 X 18 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 20 Over 18 inches Diam: 9
CONTRACTOR: Watchtower Operator			11-30-10	12:50 PM	16	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 11/30/2010 2:20:00 PM						
FINISH DATE and TIME: 11/30/2010 3:00:00 PM						
SURFACE ELEV: 693.52 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
				<u>TOPSOIL</u>		
				<u>f.m.c. SAND</u> , little silt, trace f.c. gravel, orange/brown, moist (FILL)		
G-1 4 - 5	690	5		<u>f.m.c. SAND</u> , little silt, little f.c. gravel, light brown, moist (SM-TILL)		Boulders and cobbles observed from 2' to test pit termination.
	685	10				
G-2 13 - 14.5	680	15		<u>f.m.c. SAND</u> , And Clayey SILT, little f.c. gravel, brown, moist (SM-TILL)		Boulders packed together from 11' to 13' caused difficult excavation.  Sample G-2 moisture content = 11.0%.
				becomes gray	▽	
G-3 17 - 18	675	20		<u>f.m.c. SAND</u> , And Clayey SILT, little f.c. gravel, gray, moist (SM-TILL)		Layer of boulders at 16'. Test pits were only open for a short duration and groundwater observations may not represent static conditions. Sample G-3 moisture content = 13.0%.
				End of Test Pit at 22 ft		Test pit terminated in glacial till soils.
	670	25				
	665	30				

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SUBSURFACE LOG  
TEST PIT NUMBER TP-13

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 6 X 12 ft		BOTTOM: 6 X 12 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 8 Over 18 inches Diam: 5
CONTRACTOR: Watchtower Operator			12-1-10	1:45 PM	None	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 1:05:00 PM						
FINISH DATE and TIME: 12/1/2010 1:45:00 PM						
SURFACE ELEV: 670.08 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
				<b>TOPSOIL</b>		
				<b>f.m.c. SAND</b> , little clayey silt, trace f.c. gravel, light brown/orange, moist ( <b>SM</b> )		Test pits were only open for a short duration and groundwater observations may not represent static conditions. Cobbles and boulders were observed throughout the test pit. Large boulders were observed at the ground surface and at a depth of 8 feet.
G-1 4 - 5	665	5		<b>f.m.c. SAND</b> , little f.c. gravel, trace silt, light brown/gray, moist ( <b>SM-TILL</b> )		
G-2 12 - 14	660	10		<b>f.m.c. SAND</b> , Some f.c. Gravel, little silt, brown/gray, moist ( <b>SM-TILL</b> )		
	655	15		End of Test Pit at 15 ft		Sample G-2 moisture content = 10.8%.  Test pit terminated in glacial till soils.
	650	20				
	645	25				
	640	30				

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 4 X 10 ft		BOTTOM: 4 X 10 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 8 Over 18 inches Diam: 4
CONTRACTOR: Watchtower Operator			12-1-10	12:00 PM	5	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 11:40:00 AM						
FINISH DATE and TIME: 12/1/2010 12:05:00 PM						
SURFACE ELEV: 668.34 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
				<b>TOPSOIL</b>		Large boulders were observed at the ground surface and at a depth of 8 feet. Less boulders were excavated as the depth of the test pit increased.
	665	5		<b>f.m.c. SAND</b> , Some clayey Silt, little f. gravel, trace organics, orange/light brown, wet ( <b>SM</b> )	▽	
G-1 6 - 7 PR-1 7 - 9	660	10		<b>f.m.c. SAND</b> , Some f.c. Gravel, little silt, light brown/gray, moist ( <b>SM-TILL</b> )		Test pits were only open for a short duration and groundwater observations may not represent static conditions. Sample G-1 moisture content = 8.9%. PR-1 max dry density = 140.2 pcf @ optimum moisture = 6.8%.
G-2 12 - 13	655	15		<b>f.m.c. SAND</b> , Some f.c. Gravel, little silt, light brown/gray, moist ( <b>SM-TILL</b> )		Sample G-2 moisture content = 6.6%.
				End of Test Pit at 15.5 ft		Test pit terminated in glacial till soils.
	650	20				
	645	25				
	640	30				

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SUBSURFACE LOG  
TEST PIT NUMBER TP-15

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 7 X 25 ft		BOTTOM: 7 X 25 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 10 Over 18 inches Diam: 6
CONTRACTOR: Watchtower Operator			12-1-10	11:25 AM	None	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 10:45:00 AM						
FINISH DATE and TIME: 12/1/2010 11:25:00 AM						
SURFACE ELEV: 660.30 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
	660			<b>TOPSOIL</b>		Test pits were only open for a short duration and groundwater observations may not represent static conditions. Very large boulders were removed from the test pit from ground surface to a depth of 4 feet.  Sample G-1 moisture content = 8.2%.  PR-1 max dry density = 137.3 pcf @ optimum moisture = 7.3%.
G-1 4 - 5	655	5		<b>f.m.c. SAND</b> , little clayey silt, light brown, moist ( <b>SM</b> )		
PR-1 6 - 7	650	10		<b>f.m.c. SAND</b> , Some f.c. Gravel, little silt, light brown/gray, moist ( <b>SM-TILL</b> )  <b>f.m.c. SAND</b> , Some Silt, Some f.c. Gravel, light brown/gray, moist ( <b>SM-TILL</b> )		
				End of Test Pit at 11.5 ft		Test pit termination due to excavator refusal on tightly packed boulders.
	645	15				
	640	20				
	635	25				
	630	30				

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 8 X 12 ft		BOTTOM: 8 X 12 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 17 Over 18 inches Diam: 6
CONTRACTOR: Watchtower Operator			12-1-10	3:20 PM	9	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens		12-1-10	3:21 PM	7	
START DATE and TIME: 12/1/2010 3:00:00 PM FINISH DATE and TIME: 12/1/2010 3:20:00 PM						
SURFACE ELEV: 668.85 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
				<b>TOPSOIL</b>		
				<b>f.m.c. SAND</b> , little f.c. gravel, trace silt, light brown, moist ( <b>SM</b> )		Cobbles and boulders were observed throughout the excavation.
G-1 5 - 7	665	5		<b>f.m.c. SAND</b> , And Clayey SILT, little f.c gravel, red/brown, moist ( <b>SM</b> )		Sample G-1 moisture content = 15.4%.
				<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown, moist ( <b>SM-TILL</b> )	▽	Operator notes difficult excavation from a depth of 7 feet to test pit termination. Test pits were only open for a short duration and groundwater observations may not represent static conditions.
G-2 10 - 11	660	10		<b>f.m.c. SAND</b> , And Clayey SILT, little f.c gravel, light brown, moist ( <b>SM-TILL</b> )	▽	Sample G-2 moisture content = 11.4%.
	655	15		End of Test Pit at 15 ft		Test pit terminated in glacial till soils.
	650	20				
	645	25				
	640	30				

TEST PIT LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 12/7/11



PROJECT NUMBER: 21137.3000.32000 12/7/10

**World Headquarters of Jehovah's Witnesses**  
**SUBSURFACE LOG**  
**TEST PIT NUMBER TP-17**

LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 8 X 17 ft		BOTTOM: 8 X 17 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 3 Over 18 inches Diam: 8
CONTRACTOR: Watchtower Operator			12-1-10	2:40 PM	5.5	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens		12-1-10	2:50 PM	7.1	
START DATE and TIME: 12/1/2010 2:20:00 PM						
FINISH DATE and TIME: 12/1/2010 2:55:00 PM						
SURFACE ELEV: 653.73 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
				<b>TOPSOIL</b>		
G-1 3 - 4	650	5		<b>f.m.c. SAND</b> , little clayey silt, trace f.c. gravel, light brown, moist ( <b>SM-TILL</b> )		Very large boulders throughout test pit. Few cobbles and mostly boulders were observed.
PR-1 6 - 8	645	10		<b>f.m.c. SAND</b> , Some clayey Silt, Some f.c. Gravel, gray, wet ( <b>SM-TILL</b> )	▽ ▽	Test pits were only open for a short duration and groundwater observations may not represent static conditions. PR-1 max dry density = 129.7 pcf @ optimum moisture = 9.3%.
G-2 10 - 11	640	15		<b>f.m.c. SAND</b> , And Clayey SILT, little f.c gravel, light brown, moist ( <b>SM-TILL</b> )		Sample G-2 moisture content = 20.3%.
	640	15		End of Test Pit at 14 ft		Test pit terminated at 14 feet because the side walls were collapsing and undercutting the excavator.
	635	20				
	630	25				
	625	30				

TEST PIT LOG - 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT - 12/7/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG  
TEST PIT NUMBER TP-18

PROJECT NUMBER: 21137.3000.32000

12/7/10

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LOCATION: Warwick, New York		PIT DIMENSIONS - TOP: 9 X 16 ft		BOTTOM: 9 X 16 ft		
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS DURING/AFTER EXCAVATION	DATE	TIME	WATER DEPTH (ft)	NUMBER OF BOULDERS ENCOUNTERED  8 to 18 inches Diam: 12 Over 18 inches Diam: 4
CONTRACTOR: Watchtower Operator			12-1-10	4:00 PM	None	
EQUIPMENT: CAT 325BL	INSPECTOR: K. Owens					
START DATE and TIME: 12/1/2010 3:30:00 PM						
FINISH DATE and TIME: 12/1/2010 4:00:00 PM						
SURFACE ELEV: 653.03 (ft; Surveyed)		CHECKED BY: J. Gorman				

SAMPLE # AND DEPTH RANGE (Feet)	ELEVATION (Feet)	DEPTH (Feet)	STRATA	DESCRIPTION AND CLASSIFICATION	WATER AND/OR SEEP ELEV.	Remarks on Character of Excavation, Water seeps, etc.
G-1 2 - 3.5	650	5		<b>TOPSOIL</b> <b>f.m.c. SAND</b> , little silt, little f.c. gravel, light brown, moist ( <b>SM</b> ) <b>f.m.c. SAND</b> , Some Silt, trace f.c. gravel, light brown, moist ( <b>SM</b> ) becomes light brown  becomes red		Test pits were only open for a short duration and groundwater observations may not represent static conditions. Boulders and cobbles observed throughout the test pit, higher concentration of boulders near the ground surface. Sample G-1 moisture content = 9.3%.  Sample G-2 moisture content = 5.7%.
G-2 7 - 9	645	10		<b>f.m.c. SAND</b> , Some f.c. Gravel, little silt, light brown, moist ( <b>SM-TILL</b> )		
	640	15		End of Test Pit at 15.5 ft		
	635	20				
	630	25				
	625	30				

TEST PIT LOG - 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT - 12/7/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-01

PROJECT NUMBER: 21137.3000.32000

12/7/10

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LOCATION: Warwick, New York

DRILL FLUID: None

DRILLING METHOD: 3.75" HSA

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: SoilTesting

DRILLER: T. Page

INSPECTOR: K. Owens

START DATE and TIME: 4/23/2010 10:25:00 AM

FINISH DATE and TIME: 4/23/2010 12:30:00 PM

SURFACE ELEV: 611.00 (ft; Surveyed)

CHECKED BY: C. Symmes

WATER LEVEL OBSERVATIONS

DATE

TIME

READING TYPE

WATER DEPTH (ft)

CASING BOTTOM (ft)

HOLE BOTTOM (ft)

4-23-10

11:45 AM

During Drilling

10

8

12

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.2	2-3-12-18	15				<b>TOPSOIL</b> <b>Clayey SILT</b> , little f.m.c. sand, trace f.c. gravel, trace organics, dark brown, stiff, moist ( <b>FILL</b> )	610	Groundwater levels encountered during drilling may not reflect static groundwater conditions.  Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.  Infiltration test conducted in boring TB-01 with bottom of hole at 7.1'.	▽
S-2	2	1.1	18-12-13-18	25			<b>f. SAND</b> , Some Silt, trace f.c. gravel, orange, medium compact, wet ( <b>SM</b> ) <b>f. SAND</b> , Some Silt, light brown, very compact, moist ( <b>SM</b> )				
S-3	2	1.4	26-31-38-27	69	5		<b>Similar Soil (SM)</b> <b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown, very compact, moist ( <b>SP-TILL</b> )	605			
S-4	2	1.4	25-27-41-56	68			<b>Similar Soil (SP-TILL)</b>  <b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown, very compact, moist ( <b>SM-TILL</b> )				
S-5	2	1.6	42-33-35-14	68	10		<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, gray/brown/white/black, compact, wet ( <b>SP-TILL</b> )	600			
S-6	2	1.6	11-18-16-16	34			  <b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown, very compact, wet ( <b>SM-TILL</b> )				
S-7	2	1.4	26-42-29-34	71	15		<b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown, compact, wet ( <b>SM-TILL</b> )	595			
S-8	2	2	6-12-24-22	36	20		<b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown, medium compact, wet ( <b>SM-TILL</b> )	590			
S-9	2	1.3	18-14-14-16	28	25		<b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown, medium compact, wet ( <b>SM-TILL</b> )	585			
						30		End of Boring at 27 ft	580		



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-02

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: None		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-30-10	10:50 AM	During Drilling	10	10	11.9
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/30/2010 9:55:00 AM								
FINISH DATE and TIME: 4/30/2010 4:45:00 PM								
SURFACE ELEV: 623.25 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.6	3-48-24-4	72		72		<b>TOPSOIL</b> <b>f.m.c. SAND</b> , little silt, little f.c. gravel, light brown/orange, very compact, moist/wet ( <b>SM</b> ) No recovery		Groundwater levels encountered during drilling may not reflect static groundwater conditions.	
S-2	2	0	5-3-7-11	10		10			620	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-3	2	1.3	21-26-26-61	52		52		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown, very compact, wet ( <b>SM-TILL</b> )  becomes brown ( <b>SM-TILL</b> )		Cobble fragment lodged in shoe of sample S-4.	
S-4	2	1.6	60-46-44-65	90		90		grades to little f.c. gravel ( <b>SM-TILL</b> )	615		
S-5	2	1.7	88-78-62-77	R		R			10		
S-6	1.9	1.4	22-24-33-50/5"	57		57		<b>f.m.c. SAND</b> , little f.c. gravel, trace silt, brown, very compact, wet ( <b>SP-TILL</b> )	610		▽
S-7	2	1.2	14-23-24-50	47		47		<b>f.m.c. SAND</b> , little silt, trace f. gravel, brown, compact, wet ( <b>SM-TILL</b> )	605		
S-8	0.1	0	50/1"	R		R		No recovery	600		
S-9	0.3	0.3	100/4"	R		R		<b>f.m.c. SAND</b> , little silt, little c. gravel, gray, very compact, moist ( <b>SM-TILL</b> )	595		
S-10	0.8	0.6	61-100/3"	R		R		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, gray, very compact, moist ( <b>SM-TILL</b> )			



SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-11	0.7	0.5	62-50/2"	R		35		<b>f.m.c. SAND</b> , little silt, trace f. gravel, gray, very compact, moist ( <b>SM-TILL</b> )	590		
S-12	0.5	0.5	121/6"	R		40		<b>f.m.c. SAND</b> , little silt, gray, very compact, moist/wet ( <b>SM-TILL</b> )	585		
S-13	0.5	0.2	143/6"	R		45		grades to trace c. gravel ( <b>SM-TILL</b> )	580		
S-14	0.3	0.3	50/3"	R		50		<b>f.m.c. SAND</b> , Some Clayey Silt, trace f. gravel, gray, very compact, moist/wet ( <b>SM-TILL</b> ) End of Boring at 50.3 ft	575		
						55			570		
						60			565		
						65			560		
						70			555		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-03

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: None		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			5-3-10	9:45 AM	During Drilling	15	15	17
DRILLER: T. Page	INSPECTOR: K. Owens		5-6-10	12:00 PM	Well Install	4.8	24.5	24.5
START DATE and TIME: 5/3/2010 8:45:00 AM			6-7-10	10:30 AM	Static	16	24.5	24.5
FINISH DATE and TIME: 5/3/2010 11:50:00 AM								
SURFACE ELEV: 643.63 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.8	3-1-2-3	3				<b>TOPSOIL</b> <b>f.m.c. SAND</b> , Some Clayey Silt, trace organics, light brown, very loose, moist ( <b>FILL</b> )			
S-2	2	1.4	14-9-9-10	18				<b>f.m.c. SAND</b> , little clayey silt, trace f. gravel, light brown/gray/orange, medium compact, moist ( <b>SM</b> ) becomes light brown ( <b>SM</b> )	640	Samples S-2 and S-3 laboratory testing results: MC = 14.4%, LL = 23.6, PL = 13.6.	
S-3	2	1.5	7-7-10-12	17		5		<b>f.m.c. SAND</b> , Some Clayey Silt, trace f. gravel, light brown, compact, moist ( <b>SM</b> )			
S-4	2	1.9	9-18-18-18	36				<b>f.m.c. SAND</b> , little clayey silt, little f.c. gravel, light brown, compact, moist ( <b>SM-TILL</b> )	635		Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.
S-5	2	1.8	19-23-26-27	49		10		becomes very compact ( <b>SM-TILL</b> )			
S-6	1.7	1.7	13-22-38-50/2"	60					630		
S-7	1.6	0.7	15-13-48-50/1"	61		15		<b>f.m.c. SAND</b> , little clayey silt, little f.c. gravel, light brown, very compact, wet ( <b>SM-TILL</b> )	625		
S-8	0.5	0.5	100/6"	R		20		<b>f.m.c. SAND</b> , little silt, little f.c. gravel, gray/light brown, very compact, moist ( <b>SM-TILL</b> )	620		
S-9	1.5	1.5	39-71-73/6"	R		25		<b>Similar Soil (SM-TILL)</b>	615		
								End of Boring at 26.5 ft			
									615		
									30		



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-04

PROJECT NUMBER: 21137.3000.32000

12/7/10

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LOCATION: Warwick, New York

DRILL FLUID: Water @ 40.5'

DRILLING METHOD: 3.75" HSA

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: SoilTesting

DRILLER: T. Page

INSPECTOR: K. Owens

START DATE and TIME: 4/29/2010 1:45:00 PM

FINISH DATE and TIME: 4/30/2010 9:25:00 AM

SURFACE

ELEV: 679.13 (ft; Surveyed)

CHECKED BY: C. Symmes

WATER LEVEL OBSERVATIONS

DATE

TIME

READING TYPE

WATER DEPTH (ft)

CASING BOTTOM (ft)

HOLE BOTTOM (ft)

4-29-10

2:35 PM

During Drilling

8

8

10

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.5	2-1-1-1	2				<b>TOPSOIL</b> <b>SILT</b> , trace f. sand, trace organics, brown, moist, very soft ( <b>FILL</b> )		Groundwater levels encountered during drilling may not reflect static groundwater conditions.  Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-2	2	1.4	3-15-10-8	25			<b>f.m.c. SAND</b> , Some Silt, trace f. gravel, light brown, medium compact, moist ( <b>SM</b> )				
S-3	2	1.7	4-6-11-24	17		5	<b>f.m.c. SAND</b> , Some Silt, trace f. gravel, light brown, medium compact, wet ( <b>SM</b> )	675			
S-4	2	1.5	15-16-20-45	36			<b>f.m.c. SAND</b> , And Silt, trace f.c. gravel, light brown, compact, moist/wet ( <b>SM</b> )				
S-5	2	1.9	9-10-11-13	21		10	<b>f.m.c. SAND</b> , Some Silt, trace f. gravel, light brown, medium compact, wet ( <b>SM</b> )	670			
S-6	2	1.4	15-19-26-28	45			<b>f.m.c. SAND</b> , Some Silt, trace f. gravel, brown, compact, wet ( <b>SM-TILL</b> )				
						15			665		
S-7	2	1.8	18-42-31-36	73			<b>f.m.c. SAND</b> , Some Silt, trace f.c. gravel, brown, very compact, moist ( <b>SM-TILL</b> )				
						20			660		
						25		becomes gray/light brown ( <b>SM-TILL</b> )	655		
S-8	1.5	0.7	63-91-85/6"	R					655		
						30		<b>Similar Soil (SM-TILL)</b>	650		
S-9	1.5	1.3	15-50-51/6"	R							



SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-10	2	2		14-15-19-27	34		35		becomes gray, very compact ( <b>SM-TILL</b> )	645		
S-11	0.2	0.2		50/2"	R		40		becomes very compact ( <b>SM-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>	640	Auger refusal at 40.5'	
R-1	9.5	1.9					45			635	No spoon taken at 45' due to hole collapse 43'-50'. Wash from core barrel was fine sand and silt.	
							50		End of Boring at 50 ft	630		
							55			625		
							60			620		
							65			615		
							70			610		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-05

PROJECT NUMBER: 21137.3000.32000

12/7/10

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LOCATION: Warwick, New York

DRILL FLUID: Water @ 26'

DRILLING METHOD: 3.75" HSA

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: SoilTesting

DRILLER: T. Page

INSPECTOR: K. Owens

START DATE and TIME: 4/29/2010 8:25:00 AM

FINISH DATE and TIME: 4/29/2010 1:35:00 PM

SURFACE ELEV: 698.87 (ft; Surveyed)

CHECKED BY: C. Symmes

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
4-29-10	11:30 AM	During Drilling	35	35	36.5

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.4	1-3-2-7	5				<b>TOPSOIL</b> <b>f.m.c. SAND.</b> Some Silty Clay, trace f. gravel, trace organics, light brown, loose, wet ( <b>FILL</b> )		Groundwater levels encountered during drilling may not reflect static groundwater conditions.  Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-2	2	1.5	9-7-10-12	17				<b>f.m.c. SAND.</b> Some Silt, light brown, medium compact, moist ( <b>SM</b> )	695		
S-3	2	1.7	16-34-41-26	75		5		<b>f.m.c. SAND.</b> And Silt, trace f. gravel, light brown, very compact, moist ( <b>SM-TILL</b> )			
S-4	0.9	0.9	20-50/5"	R				becomes mottled orange/gray/light brown/black ( <b>SM-TILL</b> )			
S-5	2	2	13-19-29-57	48		10		becomes brown, compact ( <b>SM-TILL</b> )	690		
S-6	2	1.9	36-39-44-57	83				becomes very compact ( <b>SM-TILL</b> )			
S-7	0.3	0.3	100/3"	R		15		<b>f.m.c. SAND.</b> Some Silt, brown, very compact, moist ( <b>SM-TILL</b> )	685		
S-8	1.5	1.5	23-44-53/6"	R		20		grades to trace f.c. gravel ( <b>SM-TILL</b> )	680		
S-9	1.5	1.5	48-57-62/6"	R		25		<b>Similar Soil (SM-TILL)</b>	675		
S-10	1.5	1.5	49-45-71/6"	R		30		<b>Similar Soil (SM-TILL)</b>	670		

Water introduced at 26' to ease drilling.



SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft) RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-11	1.5	1.5	26-30-105/6"	R	35		becomes gray ( <b>SM-TILL</b> )	665		
S-12	1.3	1.3	24-65-100/4"	R	40		<u>Similar Soil (SM-TILL)</u>	660		
S-13	0.1	0.1	50/1"	R	45		<u>Similar Soil (SM-TILL)</u>	655		
S-14	1.5	1.5	26-31-89/6"	R	50		<u>Similar Soil (SM-TILL)</u>	650		
End of Boring at 51.5 ft								645		
					55			645		
					60			640		
					65			635		
					70			630		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-06

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: None		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-28-10	11:40 AM	Completion	None	25	25.5
DRILLER: T. Page			INSPECTOR: K. Owens					
START DATE and TIME: 4/28/2010 8:30:00 AM								
FINISH DATE and TIME: 4/28/2010 11:40:00 AM								
SURFACE ELEV: 677.01 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.9	3-4-3-6	7	[Symbol]	7	[Symbol]	<b>TOPSOIL</b> <b>f.m.c. SAND</b> , Some Clayey Silt, trace f.c. gravel, light brown/orange/black, loose, moist/wet ( <b>SM</b> )	675	Groundwater levels encountered during drilling may not reflect static groundwater conditions.  Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-2	1.4	1.2	3-18-50/5"	R	[Symbol]	8	[Symbol]	<b>f.m.c. SAND</b> , Some Clayey Silt, trace f.c. gravel, light brown/orange/black, very compact, wet ( <b>SM</b> )			
S-3	1	1	11-100/6"	R	[Symbol]	5	[Symbol]	<b>f.m.c. SAND</b> , little silty clay, trace f.c. gravel, brown, very compact, moist ( <b>SM-TILL</b> )			
S-4	0.3	0.3	50/4"	R	[Symbol]	9	[Symbol]	<b>f.m.c. SAND</b> , Some Clayey Silt, trace f. gravel, brown, very compact, moist ( <b>SM-TILL</b> )	670		
S-5	1.5	1.5	28-44-75/6"	R	[Symbol]	10	[Symbol]	<b>Similar Soil (SM-TILL)</b>	665		
S-6	1.5	1.5	30-47-61/6"	R	[Symbol]	15	[Symbol]	<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown, very compact, moist ( <b>SM-TILL</b> )	660		
S-7	1.5	1.5	28-78-52/6"	R	[Symbol]	20	[Symbol]	<b>Similar Soil (SM-TILL)</b>	655		
S-8	0.5	0.5	100/6"	R	[Symbol]	25	[Symbol]	<b>Similar Soil (SM-TILL)</b> End of Boring at 25.5 ft	650		
						30					



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SUBSURFACE LOG

HOLE NUMBER TB-07

PROJECT NUMBER: 21137.3000.32000

12/7/10

Page 1 of 2

LOCATION: Warwick, New York

DRILL FLUID: Water @ 23.5'

DRILLING METHOD: 3.75" HSA

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: SoilTesting

DRILLER: T. Page

INSPECTOR: K. Owens

START DATE and TIME: 4/27/2010 8:25:00 AM

FINISH DATE and TIME: 4/28/2010 8:00:00 AM

SURFACE ELEV: 653.94 (ft; Surveyed)

CHECKED BY: C. Symmes

WATER LEVEL OBSERVATIONS

DATE

TIME

READING TYPE

WATER DEPTH (ft)

CASING BOTTOM (ft)

HOLE BOTTOM (ft)

4-27-10

9:15 AM

During Drilling

10

8

12

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.5	7-11-12-4	23				<b>TOPSOIL</b> <b>Silty CLAY</b> , Some f. Sand, trace m.c. sand, trace organics/wood, light brown, very stiff, moist ( <b>FILL</b> )		Groundwater levels encountered during drilling may not reflect static groundwater conditions.	
S-2	2	1.7	18-35-26-24	61				becomes hard ( <b>FILL</b> ) <b>f.m.c. SAND</b> , Some Clayey Silt, trace c. gravel, orange/light brown, very compact, moist ( <b>SM</b> )	650	Residual soil lenses in shoe of sample S-2.	
S-3	2	1.9	4-14-14-28	28		5		<b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown/orange/red, medium compact, moist ( <b>SM</b> )			
S-4	2	1.5	14-21-33-40	54				<b>f.m.c. SAND</b> , Some Clayey Silt, orange/light brown, medium compact, moist ( <b>SM</b> ) <b>f.m.c. SAND</b> , Some Silt, trace c. gravel, light brown, very compact, moist ( <b>SM-TILL</b> )	645	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter. Coarse gravel lodged in shoe of S-5.	
S-5	2	1.7	22-31-33-59	64		10		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown, very compact, moist/wet ( <b>SM-TILL</b> ) becomes wet ( <b>SM-TILL</b> )			
S-6	2	1.4	40-38-60-45	98							
S-7	1.4	1.2	39-49-50/5"	R		15		<b>Similar Soil (SM-TILL)</b>	640		
S-8	0.7	0.7	53-50/2"	R		20		<b>f. SAND</b> , little silt, trace m.c. sand, trace f.c. gravel, light brown, very compact, wet ( <b>SM-TILL</b> )	635		
R-1	2.5	1.9				25		<b>GRANITE (BOULDERS/COBBLES)</b>	630	Auger refusal at 23.5'. Switch drilling methods to flush joint casing to advance boring.	
R-2	3	0						No recovery			
S-9	0.7	0.3	52-50/2"	R		30		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown, very compact, moist/wet ( <b>SM-TILL</b> )	625		





SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA	
S-10	0	0	0	50/0"	R		35		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>	620			
R-3	4.9	0.3									615		
S-11	0.5	0	0	70/6"	R		40		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>				
R-4	4.5	0.9									610		
S-12	0.9	0.5	0.5	53-50/5"	R		45		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, gray, very compact, wet ( <b>SM-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>				
R-5	4.1	0.4									605		
S-13	0.9	0	0	41-60/5"	R		50		No recovery				
End of Boring at 50.9 ft													
										600			
										595			
										590			
										585			
										70			

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-08

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 8.5'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-26-10	8:15 AM	Start of Day	12.5	24	24
DRILLER: T. Page			INSPECTOR: K. Owens					
START DATE and TIME: 4/23/2010 1:30:00 PM								
FINISH DATE and TIME: 4/26/2010 2:00:00 PM								
SURFACE ELEV: 686.01 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.5	2-2-2-2	4				<b>TOPSOIL</b> <b>f.m.c. SAND</b> , Some Clayey Silt, trace f. gravel, trace organics, orange/light brown, very loose, moist/wet ( <b>FILL</b> )	685	Groundwater levels encountered during drilling may not reflect static groundwater conditions. Samples S-2 and S-3 laboratory testing results: MC = 7.2%, LL = 16.6, PL = 13.1.	
S-2	2	1.6	16-18-17-20	35			<b>f.m.c. SAND</b> , Some f.c. Gravel, little clayey silt, light brown/orange, compact, moist ( <b>SM</b> )				
S-3	2	1.8	13-15-18-17	33		5	<b>f.m.c. SAND</b> , Some f.c. Gravel, little clayey silt, light brown, compact, moist ( <b>SM</b> )				
S-4	1.7	1.6	25-21-38-60/2"	59			<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, brown, very compact, moist ( <b>SM-TILL</b> )	680	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter. Auger grinding at 8'. Auger refusal at 8.5'. Switch drilling methods to flush joint casing to advance boring.		
S-5	0.1	0.1	50/1"	R			<b>f.m.c. SAND</b> , little silt, little f. gravel, brown, very compact, moist ( <b>SM-TILL</b> )				
R-1	3	0.6				10	<b>SANDSTONE (BOULDERS/COBBLES)</b>	675			
S-6	0.9	0.8	52-60/5"	R		15	<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, gray, very compact, moist ( <b>SM-TILL</b> )	670			
S-7	0.3	0.3	50/3"	R		20	<b>Similar Soil (SM-TILL)</b>	665			
S-8	0.3	0.1	50/4"	R		25	<b>Similar Soil (SM-TILL)</b> <b>GRANITE (BOULDERS/COBBLES)</b>	660			
R-2	4.7	0.9									
S-9	0.1	0	50/1"	R		30	No recovery <b>GRANITE (BOULDERS/COBBLES)</b>	655			





SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-3	3.9	0.9						<b>GRANITE (BOULDERS/COBBLES)</b> <i>(continued)</i>			
						35		<b>GRANITE (BOULDERS/COBBLES)</b>	650	Core barrel jams at 34'.	
R-4	6	1.3									
S-10	0.1	0	75/1"		R	40		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>	645		
R-5	4.9	0.6								Gray silt and sand in wash.	
S-11	0.5	0	105/6"		R	45		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>	640		
R-6	4.5	1.3								Gray silt and sand in wash.	
S-12	0.9	0	53-100/5"		R	50		No recovery	635		
								End of Boring at 50.9 ft	635		
						55			630		
						60			625		
						65			620		
						70					

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-09

PROJECT NUMBER: 21137.3000.32000

12/7/10

Page 1 of 2

LOCATION: Warwick, New York

DRILL FLUID: Water @ 21'

DRILLING METHOD: 3.75" HSA

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: SoilTesting

DRILLER: T. Page

INSPECTOR: K. Owens

START DATE and TIME: 4/21/2010 9:15:00 AM

FINISH DATE and TIME: 4/22/2010 8:45:00 AM

SURFACE

ELEV: 662.63 (ft; Surveyed)

CHECKED BY: C. Symmes

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
4-21-10	10:30 AM	During Drilling	8	8	8.4

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.7	2-3-4-3	7		7		<b>TOPSOIL</b> <b>f.m.c. SAND</b> , Some Silt, trace organics, light brown, loose, moist ( <b>FILL</b> )	660	Groundwater levels encountered during drilling may not reflect static groundwater conditions. Coarse gravel in sample S-2 consists of boulder and cobble fragments.	
S-2	2	1.3	4-4-5-6	9		9	<b>f.m.c. SAND</b> , Some Silt, trace c. gravel, trace organics, light brown, loose, moist ( <b>FILL</b> )	660			
S-3	2	1.2	4-7-49-56	56		5	<b>f.m.c. SAND</b> , little silt, little f.c. gravel, trace organics, light brown, very compact, moist ( <b>FILL</b> )	660			
S-4	0.1	0	50/1"	R				No recovery	655	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-5	0.4	0.4	50/4"	R			<b>f.m.c. SAND</b> , little silt, trace f. gravel, brown, very compact, moist/wet ( <b>SM-TILL</b> )	655			
S-6	2	1.2	12-19-25-34	44		10		becomes compact ( <b>SM-TILL</b> ) <b>f.m.c. SAND</b> , trace silt, trace c. gravel, brown, compact, moist/wet ( <b>SP-TILL</b> )	650	Auger refusal at 21'. Switch drilling methods to flush joint casing to advance boring.	
S-7	2	0.8	39-55-25-22	80		15		<b>f.m.c. SAND</b> , little f.c. gravel, trace silt, gray, very compact, wet ( <b>SP-TILL</b> )	650		
S-8	0	0	50/0"	R		20		No recovery <b>SANDSTONE (BOULDERS/COBBLES)</b>	645		
R-1	4.9	1				20			640		
S-9	0.4	0.2	100/4"	R		25		<b>f.m.c. SAND</b> , little c. gravel, trace silt, gray, very compact, wet ( <b>SP-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>	640		
R-2	4.6	0.8				25			635		
S-10	0.5	0.2	112/6"	R		30		<b>f.m.c. SAND</b> , little silt, little c. gravel, gray, very compact, wet ( <b>SM-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>	635		



SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-3	4.5	0.9						<b>GRANITE (BOULDERS/COBBLES)</b> <i>(continued)</i>	630		
S-11	0.9	0.8	34-80/5"	R		35		<b>f.m.c. SAND</b> , little silt, little c. gravel, very compact, wet ( <b>SM-TILL</b> ) No Recovery			
R-4	4.1	0							625		
S-12	0.7	0.3	30-60/2"	R		40		becomes brown ( <b>SM-TILL</b> ) <b>f.m.c. SAND</b> , trace silt, orange/white/brown/black, very compact, wet ( <b>COMPLETELY WEATHERED BEDROCK</b> )	620	Completely weathered bedrock in shoe of spoon S-12. Completely weathered bedrock in samples S-12 and S-14 contain micaceous sand.	
S-13	0.3	0.2	100/3"	R		45		<b>f.m.c. SAND</b> , trace silt, trace f. gravel, orange/white/black/light brown, very compact, wet ( <b>COMPLETELY WEATHERED BEDROCK</b> )	615		
S-14	0.2	0	100/2"	R		50		No Recovery ( <b>COMPLETELY WEATHERED BEDROCK</b> ) End of Boring at 50.2 ft	610	Silt and sand in wash appears to be completely weathered bedrock.	
						55					
						60					
						65					
						70					
									595		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-10

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 7.5'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-13-10	8:20 AM	Start of Day	12.7	10	13
DRILLER: T. Page			INSPECTOR: K. Owens					
START DATE and TIME: 4/12/2010 12:45:00 PM								
FINISH DATE and TIME: 4/13/2010 1:40:00 PM								
SURFACE ELEV: 677.91 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG: 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.3	5-3-5-4	8				<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, trace organics, brown, loose, moist ( <b>FILL</b> )		Groundwater levels encountered during drilling may not reflect static groundwater conditions. Coarse gravel in shoe of S-1.  Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter. Sample S-3 has stratification. Samples S-3 and S-4 laboratory testing results: MC = 5.9%, LL = n/a, PL = n/a. Samples are non-plastic. Very difficult drilling 5-6'. Auger refusal at 7.5'. Switch drilling methods to flush joint casing to advance boring.	
S-2	2	0.9	4-2-3-3	5				<b>f.m.c. SAND</b> , trace silt, trace f. gravel, trace organics, brown/light brown/gray, loose, moist ( <b>FILL</b> )	675		
S-3	2	1.1	28-39-72-70	R		5		<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, brown, very compact, moist ( <b>SP-TILL</b> )			
S-4	1.9	1.2	72-70-100/5"	R				<b>Similar Soil (SP-TILL)</b>			
R-1	2.5	1.5						<b>GRANITE (BOULDERS/COBBLES)</b>	670		
S-5	2	0.5	16-35-96-44	R		10		<b>f.m.c. SAND</b> , little clayey silt, trace f. gravel, light brown, very compact, wet ( <b>SM-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>			
R-2	3	0.5							665		
S-6	2	0.8	40-46-36-62	82		15		<b>f.m.c. SAND</b> , trace silt, trace c. gravel, light brown, very compact, wet ( <b>SP-TILL</b> )			
R-3	3	0.9						<b>GRANITE (BOULDERS/COBBLES)</b>	660		
S-7	1.9	0.9	38-24-40-100/5"	64		20		<b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown, very compact, wet ( <b>SM-TILL</b> )			
R-4A	4.6	1						<b>GRANITE (BOULDERS/COBBLES)</b>	655		
R-4B	3.5	0.6						<b>GRANITE (BOULDERS/COBBLES)</b>	650		
S-8	0.1	0	100/1"	R		30		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>		No spoon taken at 25' because of large boulder 24-26'.	





SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-5	4.9	1.3						<b>GRANITE (BOULDERS/COBBLES)</b> <i>(continued)</i>	645		
S-9	0	0	100/0"	R		35		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>			
R-6	4.9	1.9							640		
S-10	0.3	0	100/3"	R		40		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>			
R-7	4.7	0.7							635		
S-11	0.3	0	100/4"	R		45		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>			
R-8	4.7	1							630		
S-12	0.6	0.1	72-100/2"	R		50		<b>f.m.c. SAND</b> , little silt, little f. gravel, gray, very compact, wet ( <b>SM-TILL</b> ) End of Boring at 50.6 ft	625		
						55			625		
						60			620		
						65			615		
						70			610		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-11

PROJECT NUMBER: 21137.3000.32000

12/7/10

Page 1 of 2

LOCATION: Warwick, New York

DRILL FLUID: Water @ 16'

DRILLING METHOD: 3.75" HSA

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: SoilTesting

DRILLER: T. Page

INSPECTOR: K. Owens

START DATE and TIME: 4/8/2010 12:35:00 PM

FINISH DATE and TIME: 4/12/2010 12:30:00 PM

SURFACE ELEV: 671.00 (ft; Surveyed)

CHECKED BY: C. Symmes

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
4-8-10	2:15 PM	During Drilling	10	8	12
4-12-10	8:20 AM	Start of Day	11	34	34
5-6-10	12:10 PM	Well Install	None	15.5	15.5
6-7-10	10:55 AM	Static	None	15.5	15.5

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.3	1-2-3-3	5		5		<u>TOPSOIL</u>	670		
S-2	1.9	1.9	3-21-42-50/5"	63		63		<u>f.m.c. SAND</u> , trace silt, trace f. gravel, trace organics, light brown/gray, very compact, moist ( <b>FILL</b> )			
S-3	2	2	19-54-60-57	R		5		<u>f.m.c. SAND</u> , little silt, trace f. gravel, light brown/gray, very compact, moist ( <b>SM-TILL</b> )		Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-4	2	0.9	56-35-48-100	83				grades to trace silt ( <b>SP-TILL</b> )	665	Hard augering 7-8'.	
S-5	2	1.3	15-40-48-48	88				grades to trace f.c. gravel ( <b>SP-TILL</b> )			
S-6	2	1.6	31-48-46-120	94		10		<u>f.m.c. SAND</u> , little silt, little f.c. gravel, light brown, wet ( <b>SM-TILL</b> )	660		
S-7	0.8	0.8	89-100/4"	R		15		becomes moist ( <b>SM-TILL</b> ) No recovery	655	Auger refusal at 16'. Switch drilling methods to flush joint casing to advance boring.	
R-1	4.2	0						No recovery <u>GRANITE (BOULDERS/COBBLES)</u>	650		
S-8	0.3	0	50/3"	R		20		No recovery <u>GRANITE (BOULDERS/COBBLES)</u>	650		
R-2	4.7	1						<u>GRANITE (BOULDERS/COBBLES)</u>	645		
R-3	5	1.8							645	Hole collapses at 26' while pulling augers back to 15' for piezometer installation. Backfill with sand to 15'.	
S-9	0.1	0	50/1"	R		30		No recovery <u>GRANITE (BOULDERS/COBBLES)</u>	640		



SUBSURFACE LOG: 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD% SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-4	4.9	3.4					<b>GRANITE (BOULDERS/COBBLES)</b> <i>(continued)</i>			
S-10	0.1	0	50/1"	R	35		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>	635		
R-5	4.9	1.5								
S-11	0.3	0.3	200/3"	R	40		<b>f.m.c. SAND</b> , little silt, trace f. gravel, gray, very compact, wet ( <b>SM-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>	630		
R-6	4.7	0.5								
S-12	0.1	0	100/1"	R	45		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>	625		
R-7	4.9	1.6								
S-13	0.3	0	100/3"	R	50		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>	620	Wash in S-13 consists of f.m.c. sand and cobble/boulder fragments.	
R-8	4.7	1								
S-14	0.5	0.2	225/6"	R	55		<b>f.m.c. SAND</b> , little silt, trace f. gravel, gray, very compact, wet ( <b>SM-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>	615		
R-9	4.5	0.4								
S-15	0.8	0	87-100/3"	R	60		No recovery	610		
							End of Boring at 60.8 ft	610		
					65					
					70			605		



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-12

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 13'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-15-10	8:20 AM	Start of Day	17.6	13	18
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/14/2010 1:45:00 PM								
FINISH DATE and TIME: 4/15/2010 3:15:00 PM								
SURFACE ELEV: 683.85 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG: 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.1	3-7-6-7	13				<b>TOPSOIL</b> <b>Clayey SILT</b> , trace f.m.c. sand, trace f. gravel, trace wood/organics, brown, medium compact, moist ( <b>FILL</b> )		Groundwater levels encountered during drilling may not reflect static groundwater conditions.	
S-2	2	1.6	5-35-52-58	87			grades to little f.m.c. sand ( <b>FILL</b> ) <b>f.m.c. SAND</b> , little silt, trace f.c. gravel, gray, very compact, moist ( <b>SM-TILL</b> ) becomes light brown ( <b>SM-TILL</b> )	680	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.		
S-3	2	2	31-34-37-27	71		5		<b>Similar Soil (SM-TILL)</b>			
S-4	0.8	0.8	28-100/4"	R							
S-5	2	1.4	19-21-16-23	37		10		<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown/gray, compact, moist ( <b>SP-TILL</b> )	675		
R-1	5	2.1				15		<b>SCHIST (BOULDERS/COBBLES)</b>	670	Auger refusal at 13'. Switch drilling methods to flush joint casing to advance boring.	
R-2	2	1.8						<b>SCHIST (BOULDERS/COBBLES)</b> <b>GRANITE (BOULDERS/COBBLES)</b>	665		
S-6	1	0.2	44-125/6"	R		20		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, gray, very compact, wet ( <b>SM-TILL</b> ) No recovery			
R-3	4	0							660		
S-7	1.8	1.3	37-51-98-100/4"	R		25		<b>f.m.c. SAND</b> , trace silt, gray, very compact, wet ( <b>SP-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>			
R-4	3.2	0.6							655		
S-8	0.9	0	27-100/5"	R		30		No recovery <b>GRANITE (BOULDERS/COBBLES)</b>			





SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-5	4.1	1.1						<b>GRANITE (BOULDERS/COBBLES)</b> <i>(continued)</i>	650		
S-9	1.3	0	31-37-100/4"		R	35		No recovery			
R-6	3.7	2.3						<b>GRANITE (BOULDERS/COBBLES)</b>	645		
S-10	1.5	0	50-54-100		R	40		No recovery		Running sands encountered while attempting sample S-10. Hole flushed with water in unsuccessful attempt to obtain sample.	
R-7	3.5	1.5						<b>GRANITE (BOULDERS/COBBLES)</b>	640		
R-8	5	1.2						<b>GRANITE (BOULDERS/COBBLES)</b>	635	No split spoon samples taken at 45' and 50' due to failure to get rods down to sample depths from running sand conditions.	
						50		End of Boring at 50 ft			
						55			630		
						60			625		
						65			620		
						70			615		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 11/27/11



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-13

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 32.5'		DRILLING METHOD: 3.75" HSA							
CLIENT: Watchtower Bible & Tract Society				WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)	
CONTRACTOR: SoilTesting					4-20-10	9:10 AM	During Drilling	10	10	11.6	
DRILLER: T. Page		INSPECTOR: K. Owens			5-6-10	12:20 PM	Well Install	16.3	20	20	
START DATE and TIME: 4/20/2010 8:30:00 AM					6-7-10	10:45 AM	Static	16.8	20	20	
FINISH DATE and TIME: 4/21/2010 8:30:00 AM											
SURFACE ELEV: 687.39 (ft; Surveyed) CHECKED BY: C. Symmes											

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.4	2-19-18-20	37				<b>TOPSOIL</b> <b>f. SAND.</b> Some Silt, little m.c. sand, trace organics, brown, compact, moist ( <b>FILL</b> )	685	Groundwater levels encountered during drilling may not reflect static groundwater conditions.	
S-2	2	1.1	15-8-6-5	14			<b>f.m.c. SAND.</b> little silt, trace c. gravel, brown, medium compact, moist ( <b>FILL</b> )				
S-3	2	0.7	14-6-7-12	13		5		<b>f.m.c. SAND.</b> little clayey silt, little f.c. gravel, trace organics, light brown, medium compact, moist ( <b>FILL</b> )		Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-4	2	1.8	23-35-33-21	68			<b>f.m.c. SAND.</b> Some Silt, trace f.c. gravel, light brown, very compact, moist ( <b>SM-TILL</b> )	680			
S-5	1.3	1.3	18-20-100/4"	R		10		<b>SILT,</b> trace f. sand, mottled light brown/brown, very compact, wet/moist ( <b>ML-TILL</b> )			
S-6	1.6	1.2	27-44-74-80/1"	R				<b>f.m.c. SAND.</b> little silt, trace f.c. gravel, light brown/gray, very compact, wet ( <b>SM-TILL</b> )	675		
S-7	1.5	1.3	24-26-15/6"	R		15		<b>f.m.c. SAND.</b> little silt, trace f.c. gravel, brown, very compact, wet ( <b>SM-TILL</b> )	670	Coarse gravel lodged in shoe of S-7.	
S-8	2	1.1	31-16-12-10	28		20		grades to Some Silt, becomes medium compact ( <b>SM-TILL</b> )	665		
S-9	2	0	WR-4-3-1	7		25		No recovery			
S-10	0.3	0.3	50/3"	R				<b>f.m.c. SAND.</b> trace silt, brown, very compact, wet ( <b>SP-TILL</b> )	660		
S-11	0.7	0.7	55-52/2"	R		30		<b>f.m.c. SAND.</b> little silt, trace f.c. gravel, brown, very compact, wet ( <b>SM-TILL</b> )			





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SUBSURFACE LOG

HOLE NUMBER TB-14

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: None		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-19-10	3:30 PM	Completion	None	50	50
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/19/2010 11:35:00 AM								
FINISH DATE and TIME: 4/19/2010 3:30:00 PM								
SURFACE ELEV: 696.81 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.7	1-7-8-11	15				<b>TOPSOIL</b> f. SAND, Some Clayey Silt, trace f.c. gravel, trace organics, brown, medium compact, wet (FILL)	695	Groundwater levels encountered during drilling may not reflect static groundwater conditions. Sample S-1 is wet, standing water at location of boring.	
S-2	2	1.1	12-19-18-8	37				f.m.c. SAND, little clayey silt, trace f. gravel, brown/orange/black/white, compact, moist (SM)			
S-3	2	1.6	13-24-21-38	45		5		f.m.c. SAND, little silt, trace f. gravel, light brown, compact, moist (SM)			
S-4	2	1.5	41-39-26-40	65				f.m.c. SAND, little silt, trace f.c. gravel, light brown, very compact, moist (SM-TILL)	690	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-5	2	1.8	24-30-41-53	71				grades to Some Clayey Silt (SM-TILL)			
S-6	1.5	0.8	26-57-82/6"	R		10		Similar Soil (SM-TILL)	685		
S-7	0.2	0	100/2"	R		15		No recovery	680	Coarse gravel in shoe of S-7. Loose boulders encountered 15-17'.	
S-8	0.4	0.4	100/5"	R		20		Similar Soil (SM-TILL)	675		
S-9	2	1.8	10-29-24-50	53		25		Clayey SILT, Some f. Sand, trace c. sand, orange/white/light brown/black, very hard, moist (COMPLETELY WEATHERED BEDROCK)	670	Completely weathered bedrock contains micaceous sand.	
S-10	2	0.8	22-25-34-60	59		30		Similar Soil (COMPLETELY WEATHERED BEDROCK)		Samples S-9 and S-10 laboratory testing results: MC = 23.1%, LL = 35.8, PL = 30.1.	



SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-11	0.9	0.9	60-100/5"	R		35		Similar Soil ( <b>COMPLETELY WEATHERED BEDROCK</b> ) <i>(continued)</i>	660		
								f.m.c. SAND. Some Silt, white/black/orange/light brown, very compact, moist ( <b>COMPLETELY WEATHERED BEDROCK</b> )			
S-12	1.5	1.3	88-70-115/6"	R		40		Similar Soil ( <b>COMPLETELY WEATHERED BEDROCK</b> )	655		
S-13	0.5	0.5	100/6"	R		45		Similar Soil ( <b>COMPLETELY WEATHERED BEDROCK</b> )	650	Hard drilling 45-46'.	
S-14	0	0	100/0"	R		50		No recovery End of Boring at 50 ft	645	Very hard drilling 49-50'.	
						55			640		
						60			635		
						65			630		
						70					



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-15

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water@ 27'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-22-10	10:05 AM	During Drilling	8.5	8	10
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/22/2010 9:20:00 AM								
FINISH DATE and TIME: 4/23/2010 9:30:00 AM								
SURFACE ELEV: 672.04 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG: 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	13-13-55-56	68				<u>TOPSOIL</u>		Groundwater levels encountered during drilling may not reflect static groundwater conditions. Concrete encountered from parking area.	▽
								<u>CONCRETE</u>	670		
S-2	2	1.1	38-21-47-46	68				<u>f.m.c. SAND</u> , trace silt, light brown/orange, very compact, moist ( <b>FILL</b> )		Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-3	2	1.3	14-39-31-28	70		5		<u>f.m.c. SAND</u> , trace silt, trace f.c. gravel, light brown, very compact, moist ( <b>SP-TILL</b> )			
S-4	2	1.3	48-48-59-75	R				<u>f.m.c. SAND</u> , little f. c. gravel, trace silt, light brown, very compact, moist ( <b>SP-TILL</b> )	665		
S-5	2	0.9	31-14-13-23	27		10		becomes medium compact, wet ( <b>SP-TILL</b> )			
S-6	2	1.4	22-15-23-36	38				<u>f.m.c. SAND</u> , little silt, little f.c. gravel, brown, compact, wet ( <b>SM-TILL</b> )	660		
S-7	2	1.4	18-20-21-46	41		15		<u>f.m.c. SAND</u> , little silt, trace f.c. gravel, brown, compact, wet ( <b>SM-TILL</b> )	655		
S-8	1.7	1.6	30-35-42-50/2"	77		20		becomes very compact ( <b>SM-TILL</b> )	650		
S-9	1.5	1	19-59-105/6"	R		25		<u>f.m.c. SAND</u> , little silt, trace f.c. gravel, gray, very compact, moist ( <b>SM-TILL</b> )			
R-1	3	0.3						<u>GRANITE (BOULDERS/COBBLES)</u>	645		
S-10	0.3	0.2	50/4"	R		30		<u>f.m.c. SAND</u> , little silt, trace f.c. gravel, gray, very compact, moist ( <b>SM-TILL</b> )			



SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-2	2	1.1				35		<b>GRANITE (BOULDERS/COBBLES)</b>	635	Auger refusal at 32'. Switch drilling methods to flush joint casing to advance boring.	
R-3	4	2.8				40		<b>GRANITE (BOULDERS/COBBLES)</b>	635		
R-4	6	2.4				45		<b>SCHIST</b> , gray/dark gray, very hard, slightly weathered, very closely fractured	630		
						45		<b>SCHIST</b> , gray/dark gray, very hard, freshly weathered, closely fractured, fair RQD	625		
R-5	6	5.1		52%		50		End of Boring at 50 ft	625		
						55			620		
						60			615		
						65			610		
						70			605		



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-16

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 25.5'		DRILLING METHOD: 3.75" HSA					
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)	
CONTRACTOR: SoilTesting			4-13-10	2:30 PM	During Drilling	4	4	6	
DRILLER: T. Page	INSPECTOR: K. Owens		4-14-10	7:45 AM	Start of Day	9	20	20	
START DATE and TIME: 4/13/2010 2:05:00 PM									
FINISH DATE and TIME: 2/14/2010 1:20:00 PM									
SURFACE ELEV: 655.87 (ft; Surveyed)		CHECKED BY: C. Symmes							

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	1-2-3-5	5				<b>TOPSOIL</b>	655	Groundwater levels encountered during drilling may not reflect static groundwater conditions.  Boulder at 3.5' Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-2	2	1.3	8-9-18-17	27			<b>f.m.c. SAND</b> , Some Clayey Silt, trace f. gravel, light brown/orange/dark brown/white, medium compact, moist ( <b>SM</b> )				
S-3	2	1.6	12-9-17-24	26		5	<b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown, medium compact, wet ( <b>SM-TILL</b> )	650			
S-4	2	0.9	36-48-51-17	99			<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown, very compact, wet ( <b>SP-TILL</b> )				
S-5	2	1	11-19-23-17	42		10	<b>f.m.c. SAND</b> , little c. gravel, trace silt, light brown, compact, wet ( <b>SP-TILL</b> )				
S-6	2	1.6	23-20-19-12	39			<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown/dark brown, compact, wet ( <b>SP-TILL</b> )	645			
S-7	2	1.7	49-64-59-113	R		15	<b>f.m.c. SAND</b> , little silt, trace f. gravel, light brown, very compact, wet ( <b>SM-TILL</b> )	640			
S-8	0.8	0.8	87-100/4"	R		20	<b>f.m.c. SAND</b> , little clayey silt, trace f. gravel, gray, very compact, wet ( <b>SM-TILL</b> )	635			
S-9	0.1	0.1	100/1"	R		25	<b>f.m.c. SAND</b> , little clayey silt, gray/orange, very compact, wet ( <b>SM-TILL</b> )	630			
R-1	2.2	2.2					<b>GRANITE (BOULDERS/COBBLES)</b>		Auger refusal at 25.5. Switch drilling methods to flush joint casing to advance boring.  Core barrel jams, terminate core run to push casing to 28'.		
R-2	4.3	2				30	<b>GRANITE (BOULDERS/COBBLES)</b>	625			





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SUBSURFACE LOG

HOLE NUMBER TB-17

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: None		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-5-10	2:45 PM	During Drilling	4	4	6
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/5/2010 1:55:00 PM								
FINISH DATE and TIME: 4/5/2010 3:10:00 PM								
SURFACE ELEV: 686.13 (ft; Surveyed)		CHECKED BY: C. Symmes						

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	1.3	0.7	5-8-50/3"	R		0		<b>f.m.c. SAND</b> , trace silt, black, very compact, moist ( <b>SUBBASE</b> ) <b>f.m.c. SAND</b> , little silt, trace f. gravel, brown, very compact, moist ( <b>FILL</b> )	685	Groundwater levels encountered during drilling may not reflect static groundwater conditions. Auger through 0.5' of pavement and begin sampling. Hard drilling 0.5-4'.	
S-2	2	0.3	19-38-8-10	46		5		<b>f.m.c. SAND</b> , little silt, trace c. gravel, light brown, compact, wet ( <b>FILL</b> )	680	Hard drilling 5-8'.	
S-3	2	0.8	8-6-10-9	16		10		<b>f.m.c. SAND</b> , little silty clay, trace f. gravel, brown, medium compact, wet ( <b>FILL</b> )	675		
S-4	2	1.2	15-31-18-35	49		10		grades to trace organics, becomes compact ( <b>FILL</b> ) <b>c. GRAVEL</b> , gray, compact, moist ( <b>FILL</b> )	675		
S-5	1.3	0.9	39-38-50/4"	R		11.3		<b>f.m.c. SAND</b> , trace silt, trace f. gravel, brown, compact, moist ( <b>FILL</b> ) <b>f.m.c. SAND</b> , little silty clay, trace f. gravel, trace asphalt, brown, very compact, wet ( <b>FILL</b> ) End of Boring at 11.3 ft	675	Augers shear off in borehole. Boring relocated to TB-17A.	
						15			670		
						20			665		
						25			660		
						30			655		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



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SUBSURFACE LOG

HOLE NUMBER TB-17A

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 23'		DRILLING METHOD: 3.75" HSA					
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)	
CONTRACTOR: SoilTesting			4-6-10	12:12 PM	Completion	6.3	22.5	28	
DRILLER: T. Page			INSPECTOR: K. Owens	4-6-10	12:35 PM	Casing Pulled	6.7	N/A	10.5
START DATE and TIME: 4/6/2010 8:15:00 AM									
FINISH DATE and TIME: 4/6/2010 12:35:00 PM									
SURFACE ELEV: 686.72 (ft; Surveyed)		CHECKED BY: C. Symmes							

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
							5			685	Groundwater levels encountered during drilling may not reflect static groundwater conditions. Auger sheared off in boring TB-17. Moved 10' north to TB-17A. Augered to 15' for S-1 without sampling.	▽
	15						10			680		
S-1	2	1.6	10-18-22-25	40			15		<b>f.m.c. SAND</b> , trace silt, trace asphalt, brown/gray/black/light brown, compact, wet ( <b>FILL</b> )	675		
S-2	1	0.8	15-100/6"	R			20		<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, brown/gray, very compact, wet ( <b>SM-TILL</b> )	670		
S-3	0.6	0.1	68-100/1"	R			25		<b>c. GRAVEL</b> , trace m.c. sand, gray, very compact, wet ( <b>GP-TILL</b> ) <b>GRANITE</b> , dark gray, very hard, slightly weathered, closely fractured, very poor RQD	665		
R-1	5	2.7			12%		25			660	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
							25			665	Auger refusal at 22.5'. Spoon taken to confirm refusal.	
							28		End of Boring at 28 ft	660		
							30			655		



PROJECT NUMBER: 21137.3000.32000 12/7/10

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SUBSURFACE LOG

HOLE NUMBER TB-18

LOCATION: Warwick, New York		DRILL FLUID: None		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-5-10	12:00 PM	During Drilling	None	3	3
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/5/2010 10:55:00 AM								
FINISH DATE and TIME: 4/5/2010 12:00:00 PM								
SURFACE ELEV: 674.97 (ft; Surveyed)		CHECKED BY: C. Symmes						

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.8	4-3-17-44	20		0		<b>Clayey SILT</b> , little f. sand, trace wood, trace organics, dark/light brown, medium compact, moist ( <b>FILL</b> )	670	Groundwater levels encountered during drilling may not reflect static groundwater conditions. Driller notes hard augering 0.5-3'. Auger refusal at 3'. Moved east 2' to confirm bedrock or boulders.	
S-2	0.9	0.2	33-75/4"	R		3		<b>f.m.c. SAND</b> , little silt, little f.c. gravel, light brown/orange/gray, medium compact, moist ( <b>SM</b> )			
						5		<b>c. GRAVEL</b> , gray, very compact, moist ( <b>GP-TILL</b> )			
						5		End of Boring at 3 ft	670		
						10			665		
						15			660		
						20			655		
						25			650		
						30			645		



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SUBSURFACE LOG

HOLE NUMBER TB-18A

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 3'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-5-10	1:45 PM	During Drilling	None	3	3
DRILLER: T. Page			INSPECTOR: K. Owens					
START DATE and TIME: 4/5/2010 12:00:00 PM								
FINISH DATE and TIME: 4/5/2010 1:45:00 PM								
SURFACE ELEV: 674.97 (ft; Surveyed)			CHECKED BY: C. Symmes					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
	3										Groundwater levels encountered during drilling may not reflect static groundwater conditions. Relocated from TB-18 to confirm bedrock or boulders. Auger to refusal at 3' without sampling. Rock core indicates refusal on bedrock.	
R-1	5	4.8			64%		5		<b>SCHIST</b> , light gray, very hard, slightly weathered, closely fractured, fair RQD	670		
R-2	5	4.8			42%		10		<b>SCHIST</b> , dark gray, very hard, moderately weathered, closely fractured, poor RQD	665		
									End of Boring at 13 ft			
							15			660		
							20			655		
							25			650		
							30			645		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11



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SUBSURFACE LOG

HOLE NUMBER TB-19

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 31'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-16-10	3:10 PM	During Drilling	6	4	8
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/16/2010 2:50:00 PM								
FINISH DATE and TIME: 4/19/2010 11:25:00 AM								
SURFACE ELEV: 699.00 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA	
S-1	2	0.3	2-4-4-10	8				<b>TOPSOIL</b>		Groundwater levels encountered during drilling may not reflect static groundwater conditions.		
S-2	2	0.5	12-12-13-13	25				<b>f.m.c. SAND</b> , little clayey silt, trace c. gravel, brown, medium compact, moist ( <b>SM</b> )	695			
S-3	2	0.6	6-11-4-6	15	5			<b>Silty CLAY</b> , trace f.m. sand, orange/white/light brown, stiff, moist ( <b>CL</b> )				
S-4	2	1.1	17-39-23-29	62				<b>f.m.c. SAND</b> , Some Clayey Silt, trace f.c. gravel, brown, very compact, wet ( <b>SM</b> )				
S-5	2	1.1	9-27-17-30	44				<b>f.m.c. SAND</b> , trace silt, trace f. gravel, brown, compact, wet ( <b>SP</b> )	690			
S-6	2	1	10-9-12-8	21		10		<b>f.m.c. SAND</b> , trace silt, trace f. gravel, brown, medium compact, wet ( <b>SP</b> )				
S-7	2	0.8	9-8-9-34	17		15		<b>Clayey SILT</b> , Some f.m.c. Sand, trace f.c. gravel, brown, very stiff, wet ( <b>ML</b> )	685			
S-8	2	1.4	42-30-31-36	61		20		<b>f.m.c. SAND</b> , trace silt, trace f. gravel, light brown, very compact, wet ( <b>SP-TILL</b> )	680			Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter encountered at 17.5'.
S-9	2	1.1	21-23-44-70	67		25		<b>Similar Soil (SP-TILL)</b>	675			Hard drilling 25-26'.
S-10	1.1	0.6	43-44-100/1"	R		30		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown, very compact, wet ( <b>SM-TILL</b> )	670			Hard drilling 28-29'.
										Auger refusal at 31'. Switch drilling methods to		



SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
R-1	5	5		78%		35	XXXXXX XXXXXX XXXXXX	<b>GRANITE</b> , gray/dark gray/brown, very hard, slightly weathered, closely fractured, good RQD (continued)	665	flush joint casing for rock core.	
								End of Boring at 36 ft	660		
						40			655		
						45			650		
						50			645		
						55			640		
						60			635		
						65			630		
						70					

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SUBSURFACE LOG

HOLE NUMBER TB-20

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 7.4'		DRILLING METHOD: 3.75" HSA			
CLIENT: Watchtower Bible & Tract Society							
CONTRACTOR: SoilTesting							
DRILLER: T. Page		INSPECTOR: K. Owens					
START DATE and TIME: 4/7/2010 9:50:00 AM							
FINISH DATE and TIME: 4/7/2010 1:05:00 PM							
SURFACE ELEV: 691.58 (ft; Surveyed)		CHECKED BY: C. Symmes					
WATER LEVEL OBSERVATIONS		DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
		4-7-10	11:00 AM	During Drilling	10	8	12
		5-6-10	12:30 PM	Well Install	9.4	13.5	13.5
		6-7-10	10:40 AM	Static	10.8	13.5	13.5

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.9	2-3-6-4	9				<b>TOPSOIL</b> <b>f.m.c. SAND</b> , trace silt, trace f. gravel, trace organics, brown, loose, moist ( <b>FILL</b> )	690	Groundwater levels encountered during drilling may not reflect static groundwater conditions.  Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter. Coarse gravel lodged in shoe of S-4. Auger refusal at 7'. Switch drilling methods to flush joint casing to advance boring.  Auger refusal at 13.5'.	
S-2	2	0.9	12-17-19-30	36			<b>f.m.c. SAND</b> , little f. c. gravel, trace silt, trace organics, brown, compact, moist ( <b>FILL</b> )				
S-3	2	0.8	12-9-11-12	20	5		<b>f.m.c. SAND</b> , little silt, trace f. gravel, trace organics, brown, medium compact, moist ( <b>FILL</b> )				
S-4	1	0.2	24-120/6"	R			<b>f.m.c. SAND</b> , Some f.c. Gravel, trace silt, brown, very compact, moist ( <b>SP-TILL</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>	685			
R-1	0.4	0.4					<b>f.m.c. SAND</b> , Some Clayey Silt, brown, loose, moist ( <b>SM-TILL</b> )				
S-5	2	1.2	3-5-4-3	9		10	<b>f.m.c. SAND</b> , little clayey silt, little f.c. gravel, brown, medium compact, wet ( <b>SM-TILL</b> )	680			
S-6	2	1.1	2-4-24-30	28							
						15		<b>SCHIST</b> , gray, very hard, freshly weathered, closely fractured, fair RQD			
R-2	5	3.3		66%							
						20		End of Boring at 18.5 ft			
						25					
						30					
									665		
									670		
									675		
									680		
									685		
									690		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 11/27/11



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SUBSURFACE LOG

HOLE NUMBER TB-21

PROJECT NUMBER: 21137.3000.32000

12/7/10

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LOCATION: Warwick, New York

DRILL FLUID: Water @ 12'

DRILLING METHOD: 3.75" HSA

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: SoilTesting

DRILLER: D. DeAngelis

INSPECTOR: K. Owens

START DATE and TIME: 4/6/2010 1:45:00 PM

FINISH DATE and TIME: 4/7/2010 9:10:00 AM

SURFACE ELEV: 711.39 (ft; Surveyed)

CHECKED BY: C. Symmes

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
4-7-10	8:50 AM	Completion	1.9'	12	15.6
4-7-10	9:00 AM	Casing Pulled	2.5	N/A	9

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.4	2-2-2-14	4				<b>TOPSOIL</b> <b>f.m. SAND.</b> Some Clayey Silt, trace gravel, trace roots, brown, loose, moist ( <b>FILL</b> )	710	Groundwater levels encountered during drilling may not reflect static groundwater conditions.	
S-2	2	1.1	13-15-7-7	22			<b>f.m.c. SAND.</b> little clayey silt, trace f. gravel, trace roots, light brown, medium compact, moist ( <b>FILL</b> ) grades to trace organics ( <b>FILL</b> )		Hard drilling 4-5'.		
S-3	2	1.3	5-3-15-19	18		5		<b>f.m.c. SAND.</b> little clayey silt, trace f. gravel. brown, very compact, moist ( <b>SM-TILL</b> )	705	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter. Hard drilling 8-12'.	
S-4	2	1.8	34-41-57-84	98			grades to trace silt ( <b>SP-TILL</b> )				
S-5	1.6	0.5	17-24-40-100/2"	64				No recovery	700		
S-6	0.1	0	50/1"	R		10					
R-1	5	5		48%		15		<b>GRANITE.</b> light gray, very hard, moderately weathered, very closely fractured, poor RQD	695	Auger refusal at 12'. Switch drilling methods to flush joint casing for rock core.	
								End of Boring at 17 ft			
						20					
						25					
						30					
									685		
									680		



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SUBSURFACE LOG

HOLE NUMBER TB-22

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 7.5'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-8-10	8:20 AM	Start of Day	7.1	7.5	7.5
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/7/2010 1:45:00 PM								
FINISH DATE and TIME: 4/8/2010 11:35:00 AM								
SURFACE ELEV: 664.42 (ft; Surveyed)		CHECKED BY: C. Symmes						

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.8	3-2-3-1	5		0-5		<b>TOPSOIL</b> <b>Clayey SILT</b> , little f.m.c. sand, trace organics, light brown, medium stiff, moist (FILL)	660	Groundwater levels encountered during drilling may not reflect static groundwater conditions.	
S-2	2	1.4	11-38-34-36	72		5-72		grades to trace f. gravel, becomes hard (FILL) <b>f.m.c. SAND</b> , Some Clayey Silt, trace f.c. gravel, light brown/gray, very compact, moist (SM-TILL)	660	Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-3	2	1.5	15-24-33-36	57		5-57		<b>f.m.c. SAND</b> , little clayey silt, trace c. gravel, light brown/gray, very compact, moist (SM-TILL)	660		
S-4	0.8	0.5	47-100/3"	R		5-10		<b>Similar Soil (SM-TILL)</b> <b>GRANITE (BOULDERS/COBBLES)</b>	660	Auger refusal at 7.5'. Switch drilling methods to flush joint casing to advance boring.	
R-1	5	2.4				10-15		<b>GRANITE</b> , light gray, very hard, slightly weathered, very closely fractured <b>GRANITE</b> , light gray, very hard, slightly weathered, closely fractured, fair RQD	655	Transition from boulders/cobbles to bedrock at 11.6' as interpreted from visual inspection of rock core.	
R-2	4.5	4.1		34%		15-17		End of Boring at 17 ft	650		
						17-20			645		
						20-25			640		
						25-30			635		

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SUBSURFACE LOG

HOLE NUMBER TB-23

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 36'		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-16-10	8:45 AM	During Drilling	10	10	12
DRILLER: T. Page	INSPECTOR: K. Owens							
START DATE and TIME: 4/16/2010 8:05:00 AM								
FINISH DATE and TIME: 4/16/2010 2:35:00 PM								
SURFACE ELEV: 687.88 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA	
S-1	1.5	1.4	8-27-92/6"	R				<b>ASPHALT</b> <b>f.m.c. SAND</b> , trace silt, trace f. gravel, trace asphalt, light brown/gray, very compact, moist ( <b>FILL</b> )	685	Groundwater levels encountered during drilling may not reflect static groundwater conditions. Auger through 0.5' of asphalt and begin sampling.		
S-2	2	1.3	62-47-55-25	R				<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, white/light brown/black, very compact, moist ( <b>FILL</b> )				
S-3	2	1.8	10-17-14-15	31		5		<b>f.m.c. SAND</b> , little clayey silt, trace f. gravel, brown/orange/dark brown, compact, moist ( <b>FILL</b> )				
S-4	2	1.1	18-15-17-18	32				<b>f.m.c. SAND</b> , little clayey silt, trace f. gravel, brown, compact, moist/wet ( <b>SM</b> )	680			
S-5	2	1.2	29-21-19-18	40		10		<b>f.m.c. SAND</b> , trace clayey silt, trace f.c. gravel, brown, compact, moist ( <b>SP</b> )				
S-6	2	1.4	9-13-11-15	24				<b>f.m.c. SAND</b> , little silt, trace f. gravel, brown, medium compact, wet ( <b>SM</b> )	675			
S-7	2	1.3	18-69-54-15	R		15		<b>f.m.c. SAND</b> , little silt, trace f. gravel, brown, very compact, wet ( <b>SM-TILL</b> )	670			Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.
S-8	2	1.4	22-32-45-34	77		20		<b>Similar Soil (SM-TILL)</b>	665			
S-9	2	1.2	19-31-46-70	77		25		<b>f.m.c. SAND</b> , trace silt, trace c. gravel, light brown, very compact, wet ( <b>SP-TILL</b> )	660			
S-10	1.3	1.1	69-52-100/3"	R		30		<b>f.m.c. SAND</b> , Some Silt, brown, very compact, wet ( <b>SM-TILL</b> )				



SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
									<b>f.m.c. SAND</b> , Some Silt, brown, very compact, wet ( <b>SM-TILL</b> ) ( <i>continued</i> )	655		
S-11	0.9	0.9		31-100/5"	R		35		<b>f.m.c. SAND</b> , trace silt, light brown/orange/white, very compact, wet ( <b>COMPLETELY WEATHERED BEDROCK</b> ) <b>GRANITE (BOULDERS/COBBLES)</b>	650	Completely weathered bedrock in samples S-11 to S-16 contain micaceous sand. Auger refusal at 36'. Switch drilling methods to flush joint casing to advance boring.	
R-1	4	0.9								650		
S-12	1.5	1.4		29-43-60/6"	R		40		<b>f.m.c. SAND</b> , little clayey silt, light brown/orange/white, very compact, moist ( <b>COMPLETELY WEATHERED BEDROCK</b> ) No recovery	645		
R-2	3.5	0								645		
S-13	1.5	0		29-39-76/6"	R		45		No recovery	640		
R-3	3.5	0							No recovery	640		
S-14	0.8	0.7		96-100/3"	R		50		<b>Similar Soil (COMPLETELY WEATHERED BEDROCK)</b> No recovery	635		
R-4	4.2	0								635		
S-15	0.5	0.3		110/6"	R		55		<b>Similar Soil (COMPLETELY WEATHERED BEDROCK)</b> No recovery	630		
R-5	4.5	0.8								630		
S-16	0.3	0.1		100/3"	R		60		<b>Similar Soil (COMPLETELY WEATHERED BEDROCK)</b> End of Boring at 60.3 ft	625		
							65			625		
							70			620		



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SUBSURFACE LOG

HOLE NUMBER TB-24

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: None		DRILLING METHOD: 3.75" HSA				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: SoilTesting			4-28-10	1:20 PM	During Drilling	15	15	17
DRILLER: T. Page			INSPECTOR: K. Owens					
START DATE and TIME: 4/28/2010 12:15:00 PM								
FINISH DATE and TIME: 4/28/2010 4:45:00 PM								
SURFACE ELEV: 712.89 (ft; Surveyed)		CHECKED BY: C. Symmes						

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	1.6	3-5-4-5	9		0		<b>TOPSOIL</b> <b>Silty CLAY</b> , Some f.m.c. Sand, light brown/orange, stiff, wet ( <b>CL</b> )		Groundwater levels encountered during drilling may not reflect static groundwater conditions.  Boulders and cobbles encountered throughout the glacial till soils based on hard drilling and auger chatter.	
S-2	2	1.4	8-7-18-25	25		5		<b>f.m.c. SAND</b> , Some Clayey Silt, trace f. gravel, light brown, medium compact, wet ( <b>SM</b> )	710		
S-3	2	1.7	11-23-22-17	45		10		<b>f.m.c. SAND</b> , Some Silt, trace f. gravel, light brown/orange/black, compact, moist ( <b>SM-TILL</b> )			
S-4	2	1.6	31-34-23-27	57		15		<b>f.m.c. SAND</b> , Some Silt, light brown/black, very compact, moist ( <b>SM-TILL</b> )	705		
S-5	1.5	1.5	16-25-50/6"	R		20		grades to trace f.c. gravel ( <b>SM-TILL</b> )			
S-6	2	1.9	17-21-41-42	62		25		<b>f.m.c. SAND</b> , Some Silt, trace f.c. gravel, gray, very compact, wet ( <b>SM-TILL</b> )	700		
S-7	2	1.8	28-19-55-90	74		30		<b>Similar Soil (SM-TILL)</b>	695		
S-8	1.5	1.5	51-50-52/6"	R		35		<b>Similar Soil (SM-TILL)</b>	690		
S-9	1.1	1.1	44-47-50/1"	R		40		<b>Similar Soil (SM-TILL)</b>	685		





SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-10	0.5	0.5		115/6"	R	█	35		<u>Similar Soil (SM-TILL)</u>	680		
S-11	0.1	0.1		100/1"	R	█	40		<u>f.m.c. SAND</u> , Some f.c. Gravel, little silt, gray, very compact, wet ( <b>SM-TILL</b> )	675		
S-12	0.1	0		100/1"	R	█	45		No recovery	670	Cobble fragment lodged in shoe of S-12.	
S-13	1.3	1.3		41-80-50/4"	R	█	48.3		<u>Similar Soil (SM-TILL)</u> End of Boring at 48.3 ft	665	Final spoon taken at 47' because the driller did not have a 5' auger to advance to 50', 3' auger was able to advance to 47'.	
							50			660		
							55			655		
							60			650		
							65			645		
							70					



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SUBSURFACE LOG

HOLE NUMBER TB-25

PROJECT NUMBER: 21137.3000.32000 12/7/10

LOCATION: Warwick, New York		DRILL FLUID: Water @ 3'		DRILLING METHOD: 4" FWC				
CLIENT: Watchtower Bible & Tract Society		WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: TransTech Drilling Services			12-3-10	3:45 PM	Casing Pulled	None	N/A	35
DRILLER: J. Leonhardt	INSPECTOR: K. Owens							
START DATE and TIME: 12/3/2010 9:20:00 AM								
FINISH DATE and TIME: 12/3/2010 3:45:00 PM								
SURFACE ELEV: 690.97 (ft; Surveyed)		CHECKED BY: J. Gorman						

SUBSURFACE LOG: 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 11/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.5	9-7-16-34	23				<b>ASPHALT</b>	690	Groundwater conditions observed during drilling may not represent static conditions. Cobble fragment in spoon of sample S-1. Sample S-2 was mottled. Roller bit grinding 3' to 4'.	
S-2	0.7	0.7	17-100/2"	R				<b>f.c. GRAVEL</b> , little f.m.c. sand, gray/black, medium compact, moist ( <b>SUBBASE</b> )			
S-3	0.3	0	100/3"	R		5		<b>f.m.c. SAND</b> , little f.c. gravel, trace silt, light brown, medium compact, moist ( <b>FILL</b> ) <b>f.m.c. SAND</b> , trace silt, trace c. gravel, light brown, very compact, moist ( <b>FILL</b> ) No recovery			
S-4	2	1.3	14-29-44-42	73				<b>f.m.c. SAND</b> , Some Silt, Some f.c. Gravel, light brown, very compact, moist ( <b>SM-TILL</b> )	685	Boulders and cobbles encountered throughout the glacial till soils based on difficult drilling and drill rig bouncing.	
S-5	2	1.3	17-16-49-57	65		10		<b>Similar Soil (SM-TILL)</b>	680	Zones of completely weathered rock in sample S-5. Sample S-5 & S-6 moisture content = 9.2%. Roller bit grinding 12' to 13'.	
S-6	2	1.4	30-49-42-35	91		15		<b>Similar Soil (SM-TILL)</b>	675	Drill rig bouncing 15' to 15.5'.	
S-7	2	1.3	15-24-58-100	82		20		<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown/gray, very compact, moist ( <b>SP-TILL</b> )	670	Drill rig bouncing 17.5' to 18'. Roller bit grinding at 19'. Zones of weathered rock in sample S-7.	
S-8	0.7	0.5	80-100/2"	R		25		<b>Similar Soil (SP-TILL)</b>	665	Slow roller bit advancement from 23' to 24.5'.	
S-9	0.1	0	100/1"	R		30		No recovery	660	Hard/slow roller bit advancement 26' to 30'. Coarse gravel in shoe of sample S-9.	



SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
								No recovery (continued)			
S-10	2	1.8	22-40-72-88	R		35		<b>f.m.c. SAND.</b> Some Silt, light brown/orange/white, very compact, moist ( <b>COMPLETELY WEATHERED BEDROCK</b> )	655	Wash from drilling operations turned to orange/brown at 34' and interpreted as top of the completely weathered rock. Sample S-10 & S-11 moisture content = 16.8%.	
S-11	2	1.5	17-23-35-52	58		40		<b>Similar Soil (COMPLETELY WEATHERED BEDROCK)</b>	650		
S-12	1.3	1.2	14-28-100/3"	R		45		<b>Similar Soil (COMPLETELY WEATHERED BEDROCK)</b>	645		
S-13	0.4	0.4	100/5"	R		48.4		<b>Similar Soil (COMPLETELY WEATHERED BEDROCK)</b> End of Boring at 48.4 ft	640		
						50			640		
						55			635		
						60			630		
						65			625		
						70					



World Headquarters of Jehovah's Witnesses

SUBSURFACE LOG

HOLE NUMBER TB-26

PROJECT NUMBER: 21137.3000.32000

12/7/10

Page 1 of 2

LOCATION: Warwick, New York

DRILL FLUID: Water @ 4'

DRILLING METHOD: 4" FWC

CLIENT: Watchtower Bible & Tract Society

CONTRACTOR: TransTech Drilling Services

DRILLER: J. Leonhardt

INSPECTOR: K. Owens

START DATE and TIME: 12/2/2010 10:15:00 AM

FINISH DATE and TIME: 12/3/2010 8:30:00 AM

SURFACE

ELEV: 680.40 (ft; Surveyed)

CHECKED BY: J. Gorman

WATER LEVEL  
OBSERVATIONS

DATE

TIME

READING  
TYPE

WATER  
DEPTH  
(ft)

CASING  
BOTTOM  
(ft)

HOLE  
BOTTOM  
(ft)

12-3-10

7:15 AM

Start of Day

20.4

20

42

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	2	0.9	19-8-15-14	23				<b>ASPHALT</b>	680		
S-2	2	1.3	10-15-26-20	41				<b>f.c. GRAVEL</b> , trace silt, trace f.m.c. sand, gray, medium compact, moist ( <b>SUBBASE</b> ) <b>f.m.c. SAND</b> , trace silt, trace f. gravel, light brown/gray, medium compact, moist ( <b>FILL</b> ) <b>f.m.c. SAND</b> , little clayey silt, trace f.c. gravel, light brown/gray, compact, moist ( <b>FILL</b> )	675	Soil mottled 2'-2.5' in Sample S-2.	
S-3	2	1.5	8-9-10-14	19		5		<b>f.m.c. SAND</b> , little clayey silt, trace f. gravel, brown, medium compact, moist ( <b>SM-TILL</b> ) <b>Similar Soil (SM-TILL)</b>	675	Boulders and cobbles encountered throughout the glacial till soils based on difficult drilling and drill rig bouncing. Sample S-4 contains zones of weathered cobbles and boulders.	
S-4	2	1.3	15-14-21-21	35							
S-5	2	0.8	17-24-30-32	54		10		<b>f.m.c. SAND</b> , trace silt, trace f.c. gravel, light brown, very compact, moist ( <b>SP-TILL</b> )	670		
S-6	2	0.9	33-40-82-45	R		15		becomes light brown and gray	665	Drill rig bouncing from 13.5' to 15' due to hard drilling.	
S-7	1.8	0.6	19-40-38-100/4"	78		20		<b>f.m.c. SAND</b> , little silt, trace f.c. gravel, light brown, very compact, moist ( <b>SM-TILL</b> )	660	Groundwater conditions observed during drilling may not represent static conditions. Roller bit grinding 22' - 22.5', driller notes it is likely a boulder.	
S-8	1.3	0.2	8-18-100/4"	R		25		<b>f.m.c. SAND</b> , Some Silt, Some f.c. Gravel, light brown, very compact, moist ( <b>SM-TILL</b> )	655	Sample S-8 & S-9 moisture content = 6.8%. Roller bit difficulty increases and remains difficult until boring termination.	
S-9	1	0.5	5-100/6"	R		30		<b>Similar Soil (SM-TILL)</b>	650		





SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft) RECOVERY (ft)	Blows Per 6" on Split Spoon Sampler	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
					35			645	Sample not taken at 35' because drilling was advancing roller bit through likely boulder from 34.5' to 37'.	
S-10	2 0.6	41-57-38-21	95		40		<b>Similar Soil (SM-TILL)</b>	640	Tip of the spoon from sample S-10 had completely weathered rock.	
S-11	2 0.3	14-16-26-34	42		45		<b>f.m.c. SAND</b> , Some clayey Silt, orange/black/white, medium compact, wet <b>(COMPLETELY WEATHERED BEDROCK)</b>	635		
S-12	2 1.6	35-27-36-44	63		50		<b>f.m.c. SAND</b> , Some clayey Silt, orange/white/black, very compact, moist <b>(COMPLETELY WEATHERED BEDROCK)</b>	630		
					52		End of Boring at 52 ft			
					55			625		
					60			620		
					65			615		
					70			610		

SUBSURFACE LOG 21137 TUXEDO BUILDING FOOTPRINT LOGS.GPJ UPDATEDCHA.GDT 1/27/11

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**APPENDIX C**

**SUMMARY TABLES**

World Headquarters of Jehovah's Witnesses  
Warwick, New York  
Final Geotechnical Engineering Report

**TABLE 4**  
**Groundwater Elevations from Piezometers (ft.)**

Date of Reading	TB-03	TB-11	TB-13	TB-20
4/7/2010	--	--	--	Installed
4/8/2010	--	--	--	689.08
4/9/2010	--	--	--	Bailed
4/12/2010	--	Installed	--	680.58
4/13/2010	--	658.8	--	682.18
4/14/2010	--	659.4	--	681.88
4/15/2010	--	657.7	--	681.88
4/16/2010	--	657.6	--	683.88
4/19/2010	--	657.3	--	681.58
4/20/2010	--	657.1	--	681.38
4/21/2010	--	656.9	Installed	680.98
4/22/2010	--	656.6	672.59	681.18
4/23/2010	--	655.9	671.89	681.08
4/26/2010	--	655.5	671.49	688.18
4/27/2010	--	655.9	670.89	687.28
4/28/2010	--	None	670.89	683.88
4/29/2010	--	None	671.09	683.38
4/30/2010	--	None	670.79	683.38
5/3/2010	--	None	670.59	682.28
5/4/2010	--	None	670.89	684.68
5/6/2010	Installed	None	671.09	682.18
6/7/2010	632.83	655.5	670.59	680.78
12/2/10	632.23	None	None	680.78
12/6/10	629.43	None	None	682.08



World Headquarters of Jehovah's Witnesses  
Warwick, New York  
Final Geotechnical Engineering Report

**TABLE 5**  
**Recommended Use of Site and Imported Soils**

Use	Site Soils					Processed Site Soils		Imported Materials			
	Uncontrolled Fill	Silt/ Clay/ Sand	Glacial Till	Completely Weathered Bedrock	Bedrock	Improved Glacial Till	Crushed Concrete/ Cobbles/ Boulders	Structural Fill	Gravel	Stone	CLSM
Landscape Areas Backfill	85% MP	85% MP	85% MP	85% MP		85% MP	Acceptable	85% MP	85% MP		
Utility Trench Backfill	90% MP	90% MP	90% MP	90% MP		90% MP	Acceptable	90% MP	90% MP		
Sidewalk and Pavement	Acceptable <sup>1</sup> (subgrade)	Acceptable <sup>1</sup> (subgrade)	Acceptable <sup>1</sup> (subgrade)			90% MP (subbase)	Acceptable	90% MP (subbase)	90% MP (subbase)	Acceptable (subbase)	
Slab on Grade		Acceptable <sup>1</sup> 95% MP	Acceptable <sup>1</sup> 95% MP	Acceptable <sup>1</sup> 95% MP	6" Cushion Required	95% MP	Acceptable	95% MP	95% MP	Acceptable	Acceptable
Foundation			Acceptable <sup>1</sup>	Acceptable <sup>1</sup>	Acceptable <sup>1</sup>						
Foundation Undercut Backfill						95% MP	Acceptable	95% MP	95% MP	Acceptable	Acceptable
Wall and Slab Drainage							Acceptable		Acceptable	Acceptable	
Retaining and Foundation Wall Backfill							Acceptable	95% MP		Acceptable	
Shrink – Swell Factor	10% - 15%	15% - 20%	15% - 20%	15% - 20%							

MP = modified proctor (ASTM D1557)

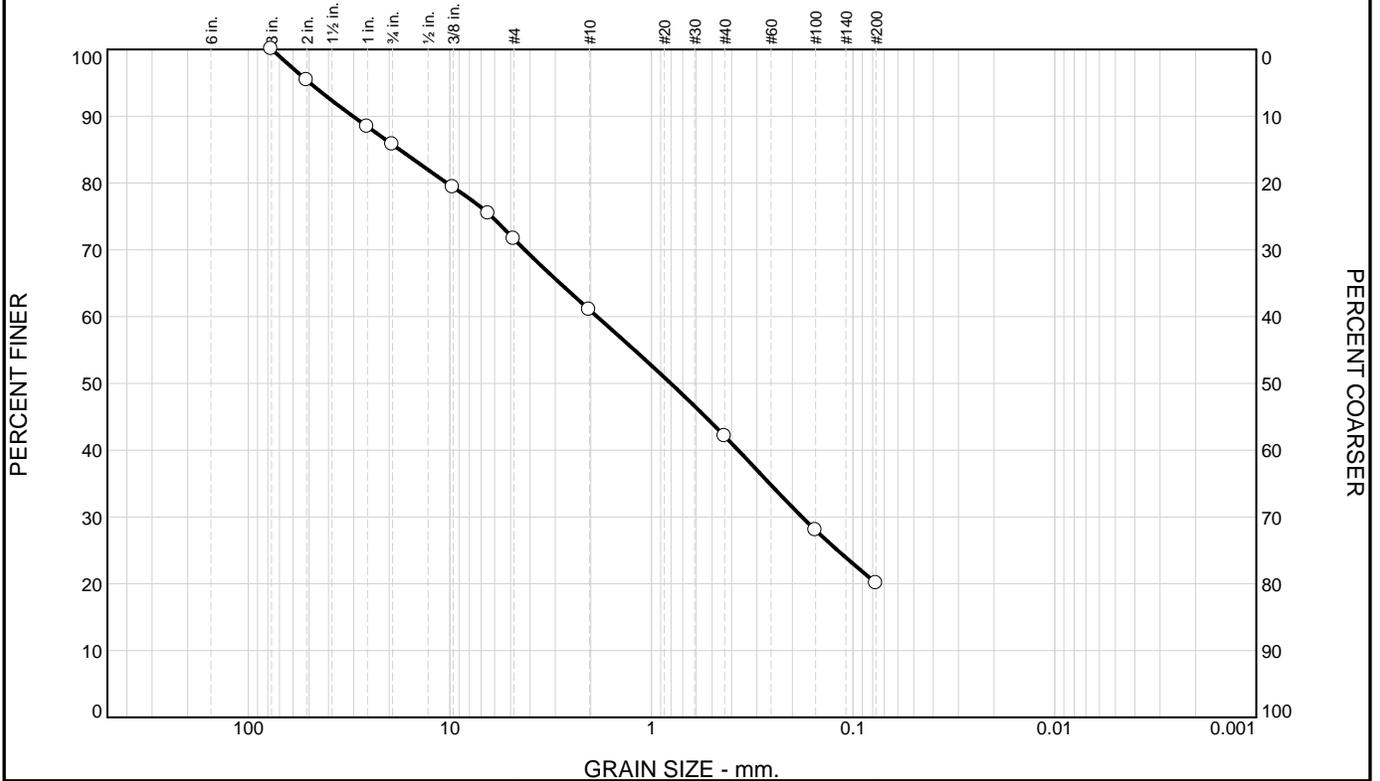
Notes: <sup>1</sup> – material to be undisturbed or compacted and proof rolled

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**APPENDIX D**

**LABORATORY RESULTS**

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.3	14.2	10.6	19.0	22.1	19.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2	95.3		
1	88.3		
.75	85.7		
.375	79.3		
.25	75.3		
#4	71.5		
#10	60.9		
#40	41.9		
#100	27.8		
#200	19.8		

**Material Description**

coarse to fine SAND, some Gravel, little Silt

**Atterberg Limits**  
 PL= NP      LL= NP      PI= NP

**Coefficients**  
 D<sub>90</sub>= 30.2666      D<sub>85</sub>= 17.7324      D<sub>60</sub>= 1.8553  
 D<sub>50</sub>= 0.7997      D<sub>30</sub>= 0.1782      D<sub>15</sub>=  
 D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**  
 USCS= SM                      AASHTO= A-1-b

**Remarks**  
 Per ASTM D422 Washed

\* (no specification provided)

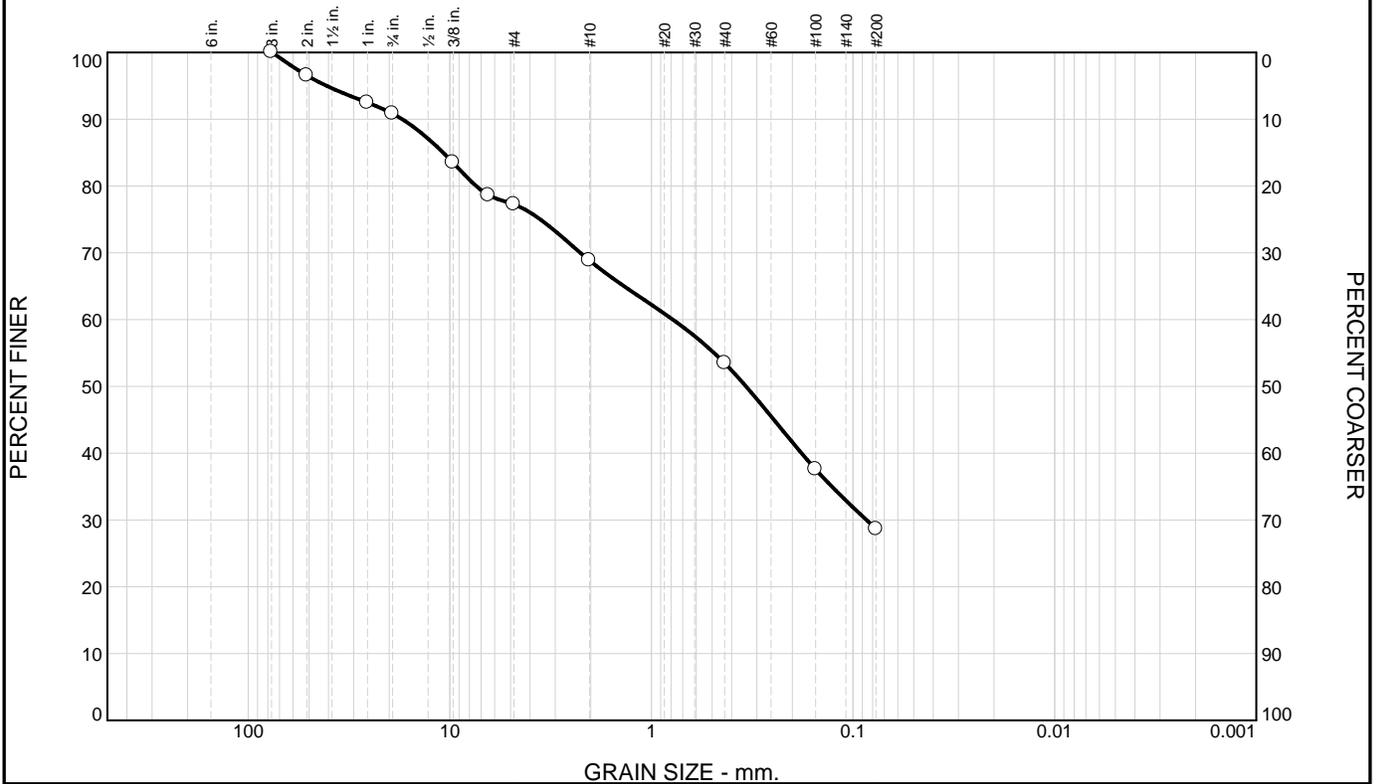
Source of Sample: Proj No 21137.3000342000  
 Sample Number: 701: TP-14,PR-1

Date: 12-21-10

<b>EVERGREEN TESTING, INC. Watervliet, NY</b>	<b>Client:</b> Clough Harbour Associates <b>Project:</b> Various Projects  <b>Project No:</b> ETE-09-152
<b>Figure</b> 701	

Tested By: JC                      Checked By: GB

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.3	13.6	8.4	15.4	24.9	28.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2	96.5		
1	92.4		
.75	90.7		
.375	83.4		
.25	78.5		
#4	77.1		
#10	68.7		
#40	53.3		
#100	37.4		
#200	28.4		

**Material Description**

coarse to fine SAND, some Silt, some Gravel

PL= NP      **Atterberg Limits**      LL= NP      PI= NP

**Coefficients**

D<sub>90</sub>= 17.2413      D<sub>85</sub>= 10.7481      D<sub>60</sub>= 0.7827  
D<sub>50</sub>= 0.3365      D<sub>30</sub>= 0.0854      D<sub>15</sub>=  
D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**

USCS= SM                      AASHTO= A-2-4(0)

**Remarks**

Per ASTM D422 Washed

\* (no specification provided)

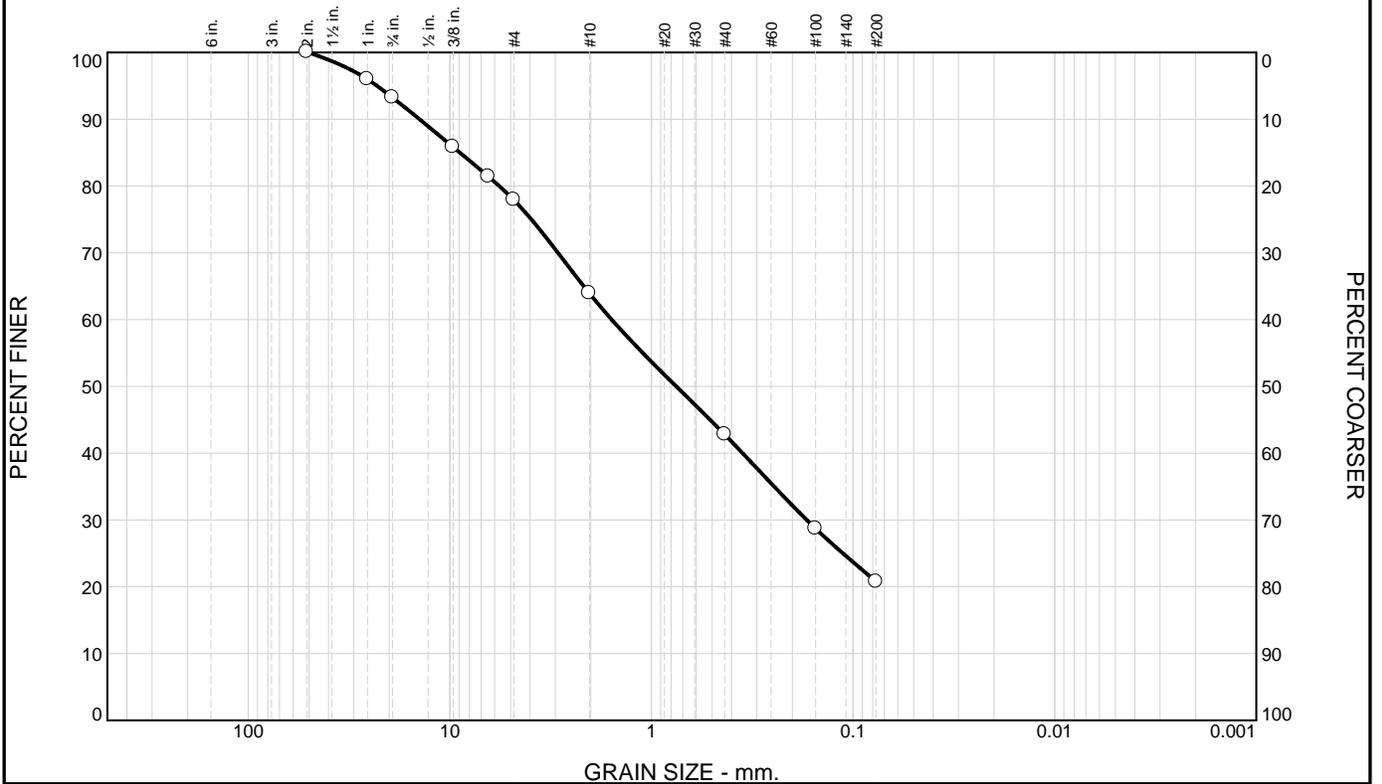
Source of Sample: Proj No 21137.3000342000  
Sample Number: 702: TP-17,PR-1

Date: 12-21-10

<b>EVERGREEN TESTING, INC. Watervliet, NY</b>	<b>Client:</b> Clough Harbour Associates <b>Project:</b> Various Projects  <b>Project No:</b> ETE-09-152
<b>Figure</b> 702	

Tested By: JC                      Checked By: GB

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.8	15.4	14.0	21.2	22.1	20.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2	100.0		
1	95.9		
.75	93.2		
.375	85.7		
.25	81.3		
#4	77.8		
#10	63.8		
#40	42.6		
#100	28.5		
#200	20.5		

**Material Description**

coarse to fine SAND, some Gravel, some Silt

PL= NP      **Atterberg Limits**      LL= NP      PI= NP

**Coefficients**

D<sub>90</sub>= 14.1012      D<sub>85</sub>= 8.8924      D<sub>60</sub>= 1.5644  
D<sub>50</sub>= 0.7504      D<sub>30</sub>= 0.1689      D<sub>15</sub>=  
D<sub>10</sub>=      C<sub>u</sub>=      C<sub>c</sub>=

**Classification**

USCS= SM      AASHTO= A-1-b

**Remarks**

Per ASTM D422 Washed

\* (no specification provided)

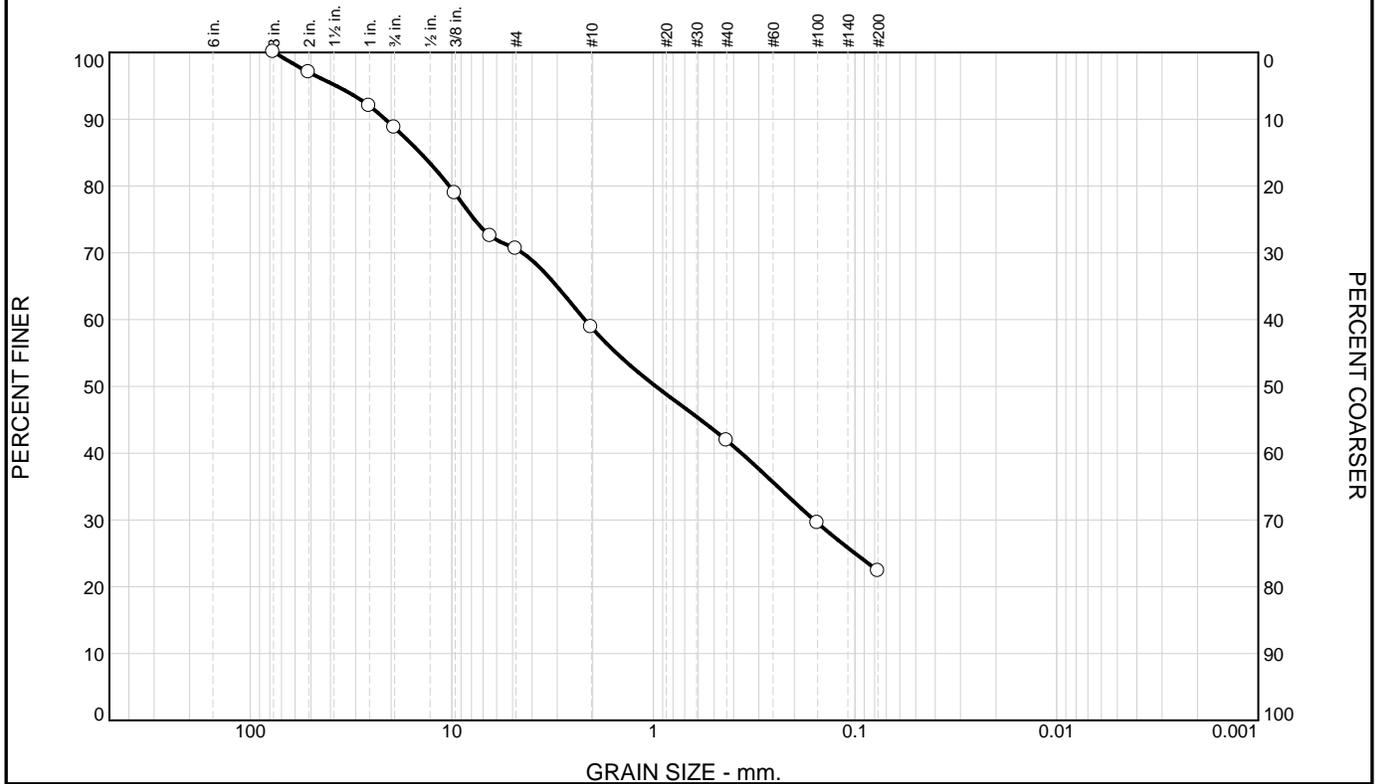
Source of Sample: Proj No 21137.3000342000  
Sample Number: 703: TP-15,PR-1

Date: 12-21-10

<b>EVERGREEN TESTING, INC. Watervliet, NY</b>	<b>Client:</b> Clough Harbour Associates <b>Project:</b> Various Projects  <b>Project No:</b> ETE-09-152
<b>Figure</b> 703	

Tested By: EM      Checked By: GB

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	11.3	18.2	11.8	17.0	19.6	22.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2	96.9		
1	91.9		
.75	88.7		
.375	78.8		
.25	72.4		
#4	70.5		
#10	58.7		
#40	41.7		
#100	29.3		
#200	22.1		

**Material Description**

coarse to fine SAND, some Gravel, some Silt

**Atterberg Limits**  
 PL= NP      LL= NP      PI= NP

**Coefficients**  
 D<sub>90</sub>= 21.3173      D<sub>85</sub>= 14.3067      D<sub>60</sub>= 2.1784  
 D<sub>50</sub>= 0.9726      D<sub>30</sub>= 0.1593      D<sub>15</sub>=  
 D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**  
 USCS= SM                      AASHTO= A-1-b

**Remarks**  
 Per ASTM D422 Washed

\* (no specification provided)

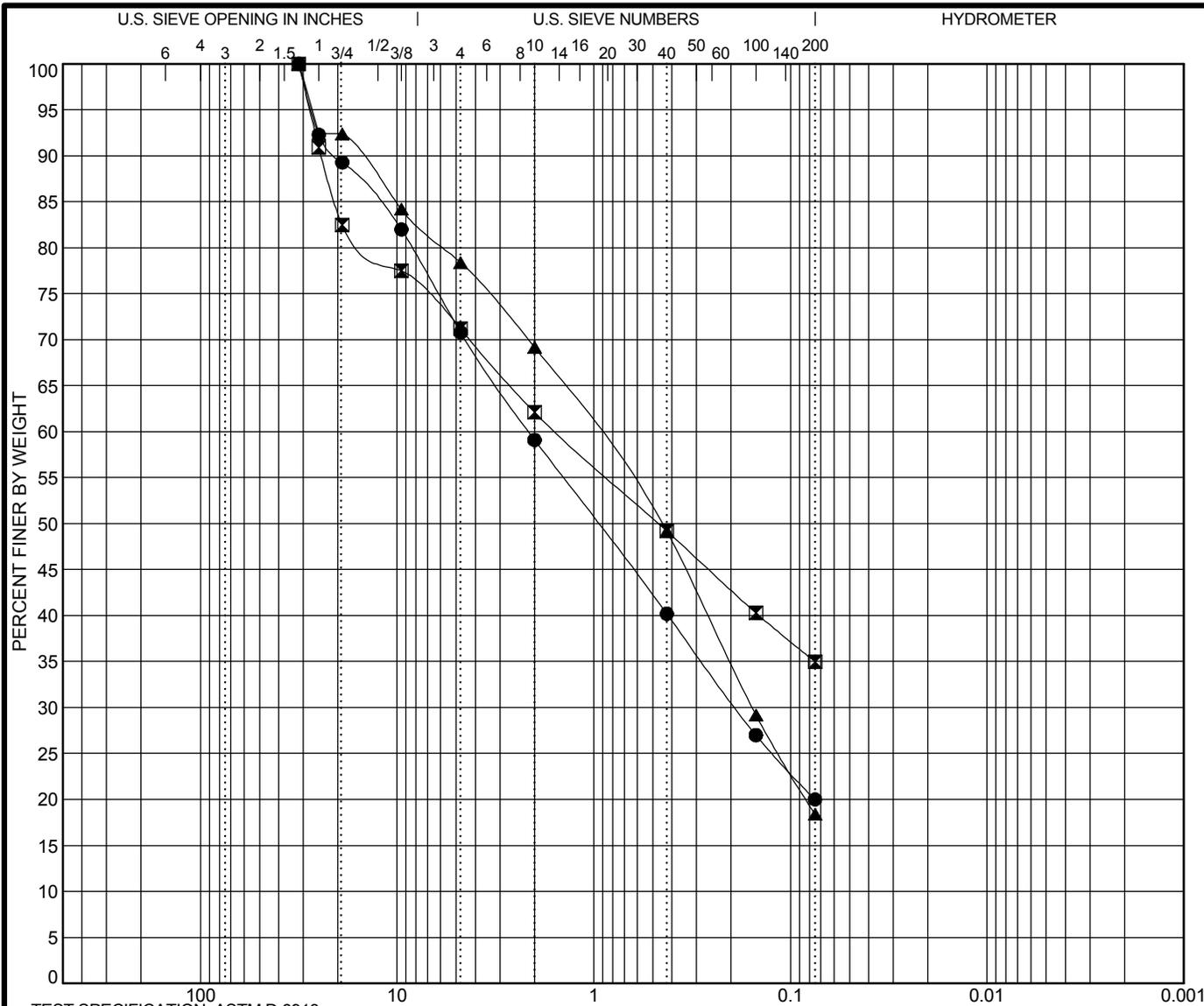
Source of Sample: Proj No 21137.3000342000  
 Sample Number: 704: TP-3,PR-1

Date: 12-21-10

<b>EVERGREEN TESTING, INC. Watervliet, NY</b>	<b>Client:</b> Clough Harbour Associates <b>Project:</b> Various Projects  <b>Project No:</b> ETE-09-152
<b>Figure</b> 704	

Tested By: JC                      Checked By: GB





TEST SPECIFICATION: ASTM D 6913

Specimen #	Depth (ft)	%Cobbles	%Gravel	%Sand	%Silt	%Clay	USCS	AASHTO	LL	PL	PI
● TP01,G1	6.0	0.0	29.2	50.8	20.0		SM				
☒ TP04,G1	1.0	0.0	28.8	36.2	35.0		SM				
▲ TP09,G2	4.0	0.0	21.6	60.0	18.4		SM				

GRAIN SIZE			
	●	☒	▲
D60	2.138	1.554	0.981
D30	0.19		0.156
D10			

SIEVE inches size	PERCENT FINER		
	●	☒	▲
1 1/4	100.0	100.0	100.0
1	92.3	90.9	92.4
3/4	89.3	82.5	92.4
3/8	82.0	77.5	84.2

SIEVE number size	PERCENT FINER		
	●	☒	▲
#4	70.8	71.2	78.4
#10	59.1	62.1	69.2
#40	40.2	49.2	49.2
#100	27.0	40.3	29.2
#200	20.0	35.0	18.4

**Classification**

- SAND, some Gravel, little silt/clay, Grayish Brown
- ☒ SAND, some Silt/Clay, some gravel, Brown
- ▲ SAND, some Gravel, little silt/clay, Brown

COEFFICIENTS			
	●	☒	▲
Cc			
Cu			

**COMMENTS**

TP01, G1 Moisture Content=9.9%

TP04, G1 Moisture Content=17.2%

TP09, G2 Moisture Content=5.5%

**Remarks**

- Tested By: SM, Checked By: CJ
- ☒ Tested By: SM, Checked By: CJ
- ▲ Tested By: SM, Checked By: CJ

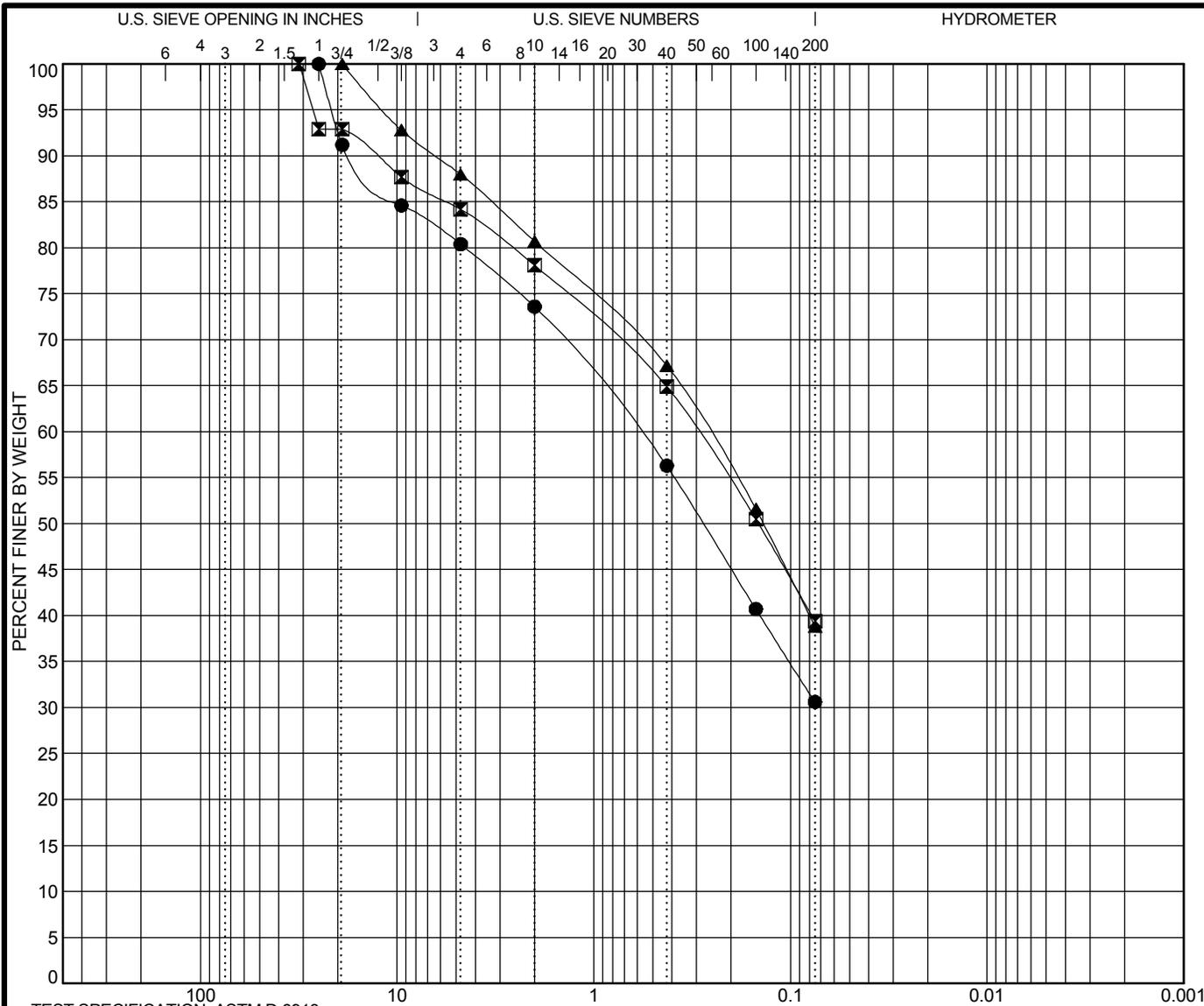
CHA GRAIN SIZE SIEVES.GPJ US LAB.GDT 1/13/11



Clough, Harbour & Associates  
 III Winners Circle  
 Albany, NY 12205  
 Telephone: (518) 453-4500  
 Fax: (518) 458-1735

**GRAIN SIZE DISTRIBUTION**

Project: Watchtower Tuxedo Park Property  
 Client: Watchtower Bible/Tract - Walkill  
 Location: Tuxedo, NY  
 Number: 21137



TEST SPECIFICATION: ASTM D 6913

Specimen #	Depth (ft)	%Cobbles	%Gravel	%Sand	%Silt	%Clay	USCS	AASHTO	LL	PL	PI
● TP09,G4	14.0	0.0	19.6	49.8	30.6		SM				
☒ TP12,G2	13.0	0.0	15.8	44.8	39.4		SM				
▲ TP12,G3	17.0	0.0	12.0	49.2	38.8		SM				

GRAIN SIZE			
	●	☒	▲
D60	0.592	0.298	0.263
D30			
D10			

COEFFICIENTS			
	●	☒	▲
Cc			
Cu			

SIEVE inches size	PERCENT FINER			SIEVE number size	PERCENT FINER		
	●	☒	▲		●	☒	▲
1 1/4		100.0		#4	80.4	84.2	88.0
1	100.0	92.9		#10	73.6	78.1	80.7
3/4	91.2	92.9	100.0	#40	56.3	64.9	67.2
3/8	84.6	87.7	92.8	#100	40.7	50.5	51.6
				#200	30.6	39.4	38.8

**Classification**

- SAND, some Silt/Clay, little gravel, Brown
- ☒ SAND and SILT/CLAY, little Gravel, Brown
- ▲ SAND and SILT/CLAY, little Gravel, Brownish Gray

**Remarks**

- Tested By: SM, Checked By: CJ
- ☒ Tested By: SM, Checked By: CJ
- ▲ Tested By: SM, Checked By: CJ

**COMMENTS**

TP09, G4 Moisture Content: 10.2%

TP12,G2 Moisture Content=11.0%

TP12, G3 Moisture Content=13.0%

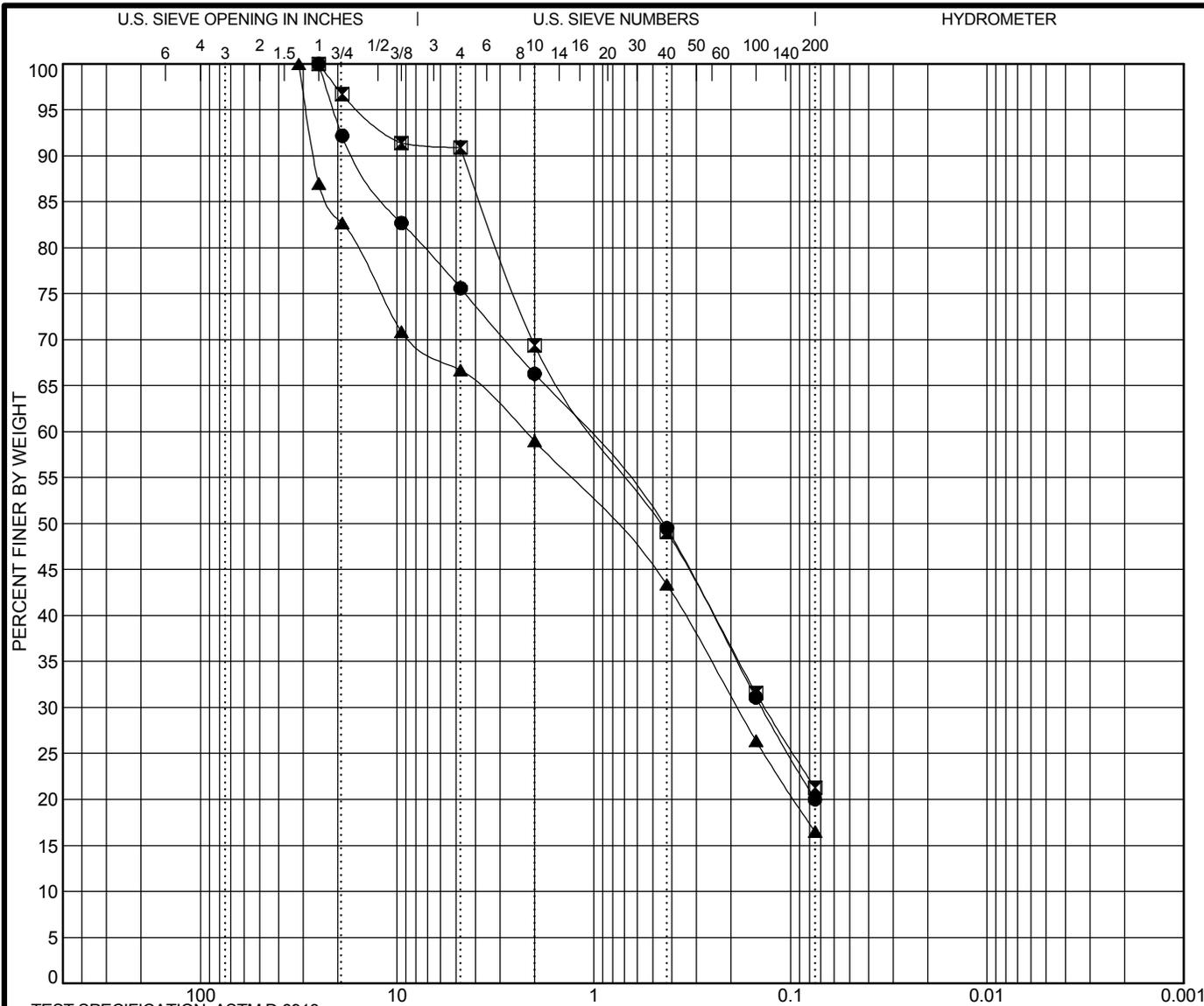
CHA GRAIN SIZE SIEVES.GPJ US LAB.GDT 1/13/11



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 Telephone: (518) 453-4500  
 Fax: (518) 458-1735

**GRAIN SIZE DISTRIBUTION**

Project: Watchtower Tuxedo Park Property  
 Client: Watchtower Bible/Tract - Walkill  
 Location: Tuxedo, NY  
 Number: 21137



TEST SPECIFICATION: ASTM D 6913

Specimen #	Depth (ft)	%Cobbles	%Gravel	%Sand	%Silt	%Clay	USCS	AASHTO	LL	PL	PI
● TP13,G2	12.0	0.0	24.4	55.6	20.0		SM				
☒ TP14,G1	6.0	0.0	9.1	69.6	21.3		SM				
▲ TP14,G2	12.0	0.0	33.3	50.2	16.5		SM				

GRAIN SIZE			
	●	☒	▲
D60	1.119	0.976	2.238
D30	0.14	0.135	0.187
D10			

COEFFICIENTS			
	●	☒	▲
Cc			
Cu			

SIEVE inches size	PERCENT FINER			SIEVE number size	PERCENT FINER		
	●	☒	▲		●	☒	▲
1 1/4			100.0	#4	75.6	90.9	66.7
1	100.0	100.0	87.0	#10	66.3	69.4	59.0
3/4	92.2	96.7	82.7	#40	49.5	49.1	43.4
3/8	82.7	91.4	70.9	#100	31.1	31.6	26.4
				#200	20.0	21.3	16.5

**Classification**

- SAND, some Gravel, little silt/clay, Brownish Gray
- ☒ SAND, some Silt/Clay, trace gravel, Brownish Gray
- ▲ SAND, some Gravel, little silt/clay, Gray

**Remarks**

- Tested By: SM, Checked By: CJ
- ☒ Tested By: SM, Checked By: CJ
- ▲ Tested By: SM, Checked By: CJ

**COMMENTS**

TP13, G2 Moisture Content=10.8%

TP14, G1 Moisture Content=8.9%

TP14, G2 Moisture Content=6.6%

CHA GRAIN SIZE SIEVES.GPJ US LAB.GDT 1/13/11

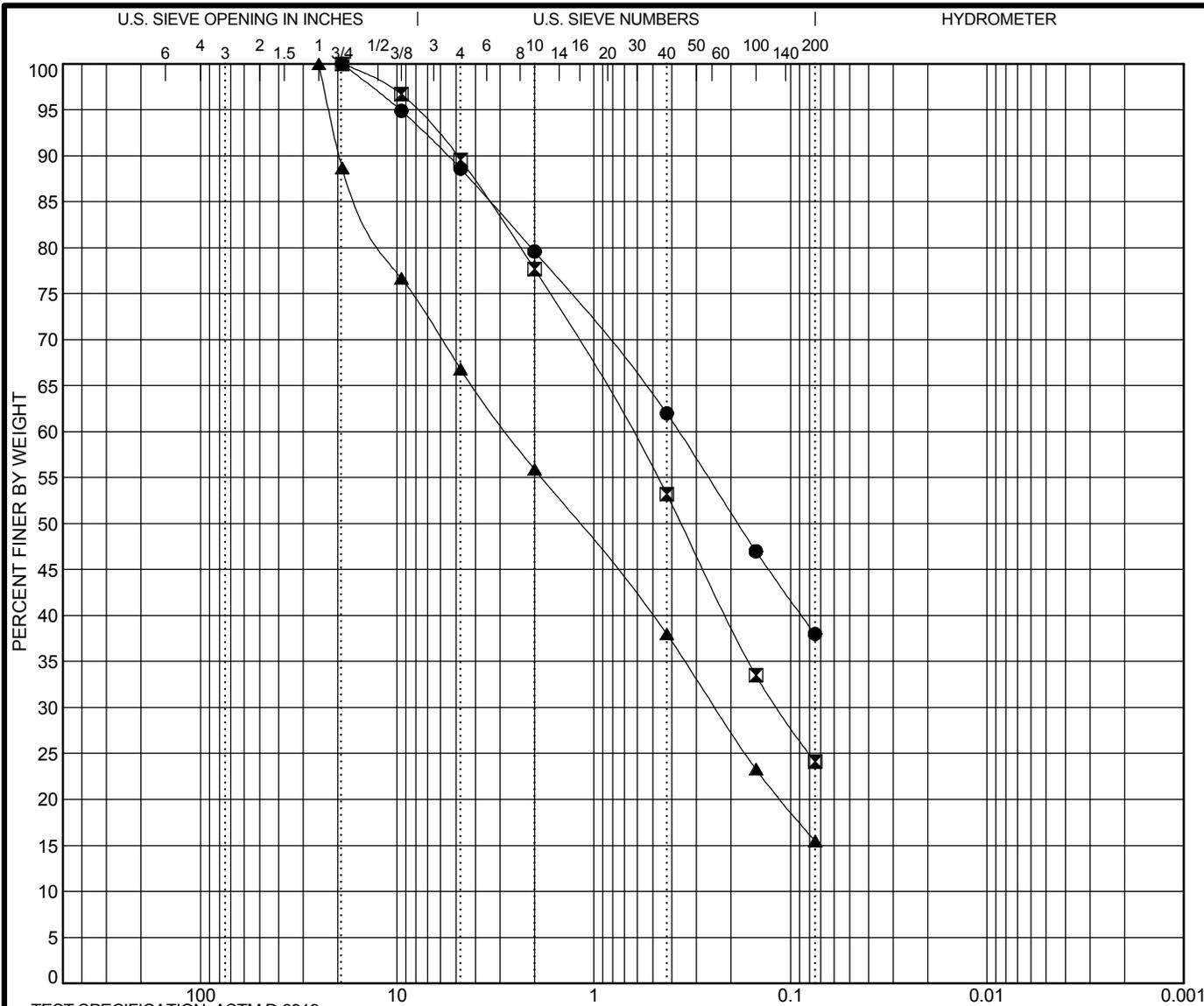


Clough, Harbour & Associates  
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 Albany, NY 12205  
 Telephone: (518) 453-4500  
 Fax: (518) 458-1735

**GRAIN SIZE DISTRIBUTION**

Project: Watchtower Tuxedo Park Property  
 Client: Watchtower Bible/Tract - Walkill  
 Location: Tuxedo, NY  
 Number: 21137





Specimen #	Depth (ft)	%Cobbles	%Gravel	%Sand	%Silt	%Clay	USCS	AASHTO	LL	PL	PI
● TP17,G2	10.0	0.0	11.4	50.6	38.0		SM				
☒ TP18,G1	2.0	0.0	10.4	65.5	24.1		SM				
▲ TP18,G2	7.0	0.0	33.2	51.3	15.5		SM				

GRAIN SIZE			
	●	☒	▲
D60	0.37	0.653	2.769
D30		0.116	0.241
D10			

COEFFICIENTS			
	●	☒	▲
Cc			
Cu			

SIEVE inches size	PERCENT FINER			SIEVE number size	PERCENT FINER		
	●	☒	▲		●	☒	▲
1 1/4				#4	88.6	89.6	66.8
1			100.0	#10	79.6	77.7	55.9
3/4	100.0	100.0	88.7	#40	62.0	53.2	38.0
3/8	94.9	96.7	76.7	#100	47.0	33.5	23.3
				#200	38.0	24.1	15.5

Classification	
●	SAND and SILT/CLAY, little gravel, Light Brown
☒	SAND, some Silt/Clay, trace gravel, Light Brown
▲	SAND, some Gravel, little silt/clay, Light Brown

Remarks	
●	Tested By: SM, Checked By: CJ
☒	Tested By: SM, Checked By: CJ
▲	Tested By: SM, Checked By: CJ

**COMMENTS**  
 TP17, G2 Moisture Content=20.3%  
 TP18, G1 Moisture Content=9.3%  
 TP18, G2 Moisture Content=5.7%

CHA GRAIN SIZE SIEVES.GPJ US LAB.GDT 1/13/11



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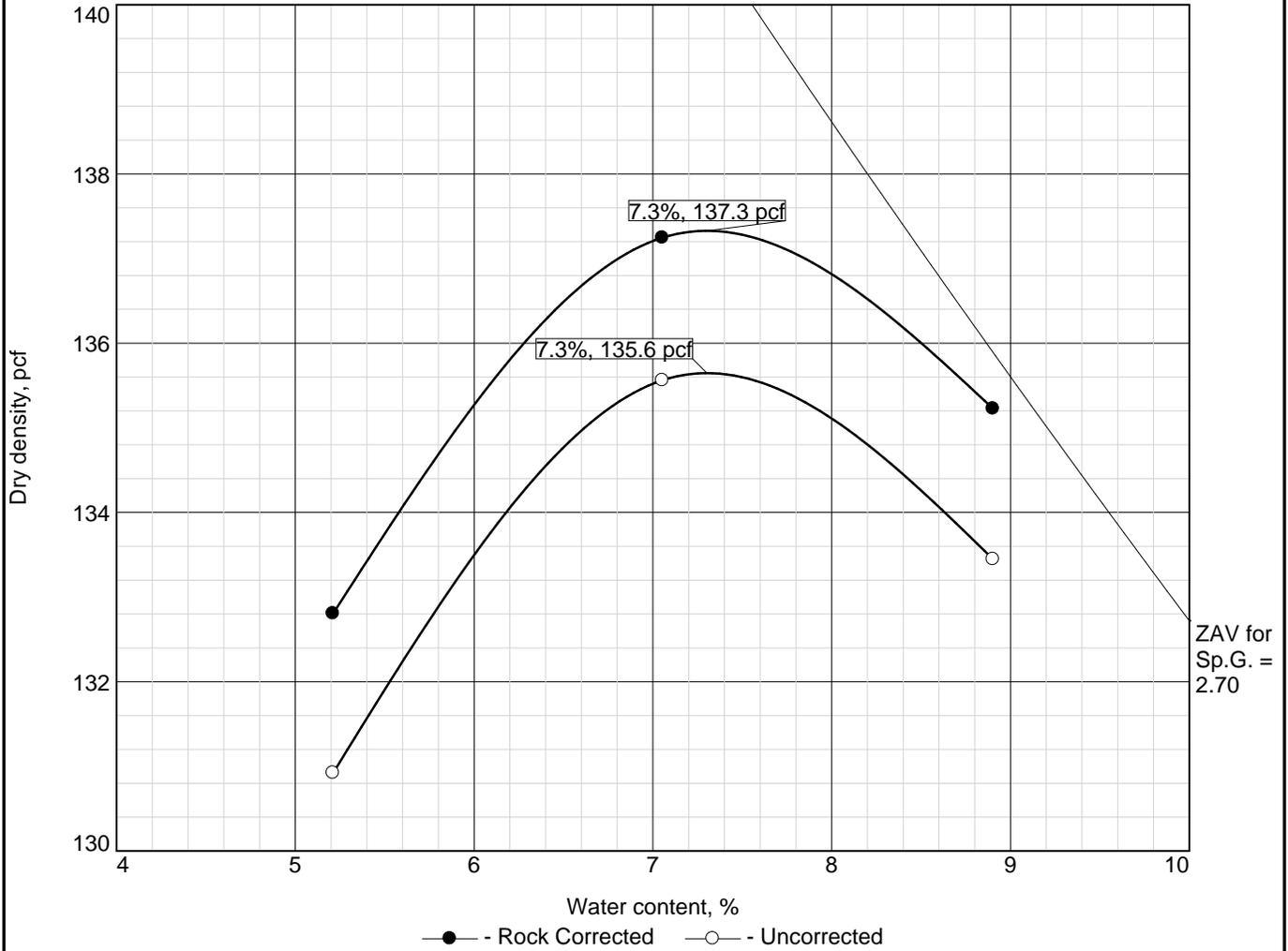
**GRAIN SIZE DISTRIBUTION**  
 Project: Watchtower Tuxedo Park Property  
 Client: Watchtower Bible/Tract - Walkill  
 Location: Tuxedo, NY  
 Number: 21137







# COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified  
 ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	SM	A-1-b		2.65	NV	NP	6.8	20.5

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 137.3 pcf	135.6 pcf	coarse to fine SAND, some Gravel, some Silt
Optimum moisture = 7.3 %	7.3 %	

<p><b>Project No.</b> ETE-09-152 <b>Client:</b> Clough Harbour Associates  <b>Project:</b> Various Projects</p> <p>○ <b>Sample Source:</b> Proj No 21137.3000342000 <b>Sample No.:</b> 703: TP-15,PR-1</p> <p style="text-align: center;"><b>EVERGREEN TESTING, INC.</b></p> <p style="text-align: center;"><b>Watervliet, NY</b></p>	<p><b>Remarks:</b></p>
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**APPENDIX E**

**PHOTOGRAPHS**

1



CAT 325BL used for excavations of test pits.

2



Fill material observed in TP-01 at ground surface.



CHA # 21137.4000.32000

**WORLD HEADQUARTERS  
OF JEHOVAH'S WITNESSES**

**WARWICK, NEW YORK**

December 7, 2010

3



Excavating TP-03 on the slope south of Sterling Forest Lake.

4



Bedrock refusal in TP-04, asphalt layer near ground surface.



CHA # 21137.4000.32000

**WORLD HEADQUARTERS  
OF JEHOVAH'S WITNESSES**

**WARWICK, NEW YORK**

December 7, 2010

5



Waste material and boulders excavated in TP-06.

6



Granite bedrock fragment excavated from TP-07



CHA # 21137.4000.32000

**WORLD HEADQUARTERS  
OF JEHOVAH'S WITNESSES**

**WARWICK, NEW YORK**

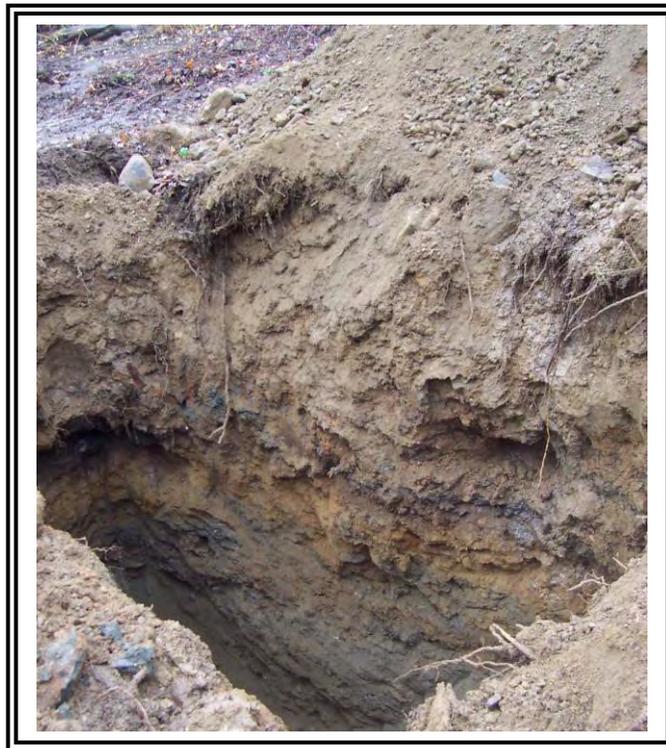
December 7, 2010

7



Spoils excavated from TP-08, boulders and cobbles encountered throughout the excavation.

8



Stratification in TP-16.



CHA # 21137.4000.32000

**WORLD HEADQUARTERS  
OF JEHOVAH'S WITNESSES**

**WARWICK, NEW YORK**

December 7, 2010

9



Gray glacial till stratification in TP-17.

10



Typical boulder excavated from test pits.



CHA # 21137.4000.32000

**WORLD HEADQUARTERS  
OF JEHOVAH'S WITNESSES**

**WARWICK, NEW YORK**

December 7, 2010



## Appendix B-2

# Site Investigation Report

## Former King's College Property Warwick, New York

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*CHA Project Number: 20024.1001.1102*

*Prepared for:*

*Watchtower Bible and Tract Society of New York, Inc.  
25 Columbia Heights  
Brooklyn, NY 11201*

*Prepared by:*



*III Winners Circle  
Albany, New York 12205  
(518) 453-4500*

*June 19, 2009*

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Figure 1	Site Location Map
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Figure 4	Soil Boring and Monitoring Well Locations – Part 2
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Table 1	Soil/Groundwater Sample Summary
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Table 4	Soil Analytical Results – Metals
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### APPENDICES

Appendix A	Subsurface Boring Logs
Appendix B	Well Construction Logs
Appendix C	Laboratory Analytical Reports – Soil Samples
Appendix D	Laboratory Analytical Reports – Groundwater Samples

## QUALIFICATIONS AND CERTIFICATION STATEMENT

This Site Investigation Report was compiled by qualified environmental scientists, engineers and employed by CHA.

This report has been prepared expressly for the use of the Watchtower Bible and Tract Society of New York, Inc. No other parties are entitled to rely upon this report unless our express written consent is first obtained. All conclusions drawn were based on CHA's review of available historical data, field inspection and analytical results from sampling performed during the course of this project. Recommendations are submitted based on CHA's knowledge, experience, and professional judgment.

Inspection and Report Completed By:



---

Sarah Burke  
Assistant Project Engineer III

Report Reviewed By:



---

Keith Cowan, C.P.G.  
Associate

## 1.0 INTRODUCTION

CHA has prepared this Site Investigation Report to summarize the results of the recently completed environmental investigation activities that were completed by CHA at the Former Kings College Property (site) in Warwick, New York. The work described herein was performed in accordance with the proposal and scope of work prepared by CHA dated April 3, 2009.

### 1.1 PROJECT BACKGROUND

The subject site is located at Sterling Lake Road in Warwick, Orange County, New York and served by an access road known as Kings College Drive that intersects Sterling Lake Road (see Figure 1). The site was formerly occupied by INCO Research and Development (INCO) and consists of the former INCO facility, a sewage treatment plant (no longer in use), sewerage system piping, and associated asphalt roads and a parking area. The remainder of the land is vacant forested land.

According to a previous Site Investigation Report completed by VFS Environmental, Inc. (VFS) in February 2006, initial construction of the INCO facility commenced in 1962 and was completed in 1964. The facility housed research, development, and foundry operations during a 20 year period from 1964 to 1984. A sewage treatment plant was constructed to handle sanitary sewage and the waste stream from the research and development facility. The sewage treatment plant was constructed to treat approximately 45,000 gallons per day.

In 2005 and 2006, a series of environmental investigations were performed in response to a potential purchase of the property. The results of these investigations are documented in the following reports:

- Phase I Environmental Site Assessment (ESA) Report dated October 31, 2005 by A. V. Avogino Associates, LLC
- Site Investigation Report dated February 6, 2006 by VFS

The Site Investigation completed by VFS included the advancement of soil borings and temporary well points and the collection of soil and groundwater samples to evaluate potential impacts attributable to areas of concern that were identified in the Phase I report. Areas of concern (AOC) included former USTs, potential subsurface contamination due to the waste sewerage piping, potential subsurface contamination due to the filter sand beds from the sewage treatment plant in a nearby wooded area, the sewage treatment plant, a former drum storage area and potential subsurface contamination due to historic operations at the former INCO facility.

Based on the information presented in the VFS report, it was concluded that the majority of the AOCs identified by the Phase I ESA have not resulted in any significant impact to the subsurface soils or groundwater. However, there were several AOCs where potential impacts were identified and additional investigation was recommended by VFS, which included the following:

- Further investigation, including the installation of monitoring wells, in the area of the piping from the former INCO facility to the wastewater treatment plant.
- Further investigation, including the installation of groundwater monitoring wells, in the area of the sand filter material at the wastewater treatment plant.
- Further investigation, including the installation of groundwater monitoring wells, in the area of the former 8,000 gallon neutralization tank and 6,000 gallon settling tank.
- The installation of a groundwater monitoring well in the area of the outdoor drum storage area.
- Further investigation, including the installation of a groundwater monitoring well, in the area of “Building A” of the former INCO facility.

## **1.2 OBJECTIVES/SCOPE OF WORK**

The objective of this site investigation was to further investigate those AOCs as recommended by VFS and provide an estimate of the cost for any remedial activities that may be determined necessary for the AOCs. To achieve this objective, CHA has completed the following scope of work:

- Installation of six soil borings in the area of the sand filter beds. Groundwater monitoring wells were installed at two of the boring locations.
- Installation of two borings in the general area of the Sewage Treatment Building. Groundwater monitoring wells were installed at both of these boring locations.
- Installation of one soil boring in the area of the outdoor drum storage area. A groundwater monitoring well was installed at this boring location.
- The installation of four soil borings in and around “Building A.”
- The collection of four background soil samples.
- Collection of soil samples from each soil boring location and analysis for Priority pollutant metals (PP metals), hexavalent chromium, titanium, and PAHs (in select locations).
- Collection of one round of groundwater samples from the newly installed groundwater monitoring wells and analysis for PP metals, hexavalent chromium, titanium and PAHs (in select locations).
- Preparation of a report to document the results of the site investigation activities.

The rationale behind the number and location of the soil borings listed above is described in detail in Section 2.0 of this report.

### **1.3 REPORT ORGANIZATION**

The report is organized into four main sections as follows. Section 1.0 is this introduction with a brief site history and scope of work. Section 2.0 discusses the scope of work and observations made while on site. Section 3.0 summarizes and discusses the analytical results of the soil and groundwater sampling. Section 4.0 provides the conclusions pertaining to the field observations and analytical data that was collected, as well as provides recommendations for any further action necessary at the site.

## **2.0 SCOPE OF WORK**

The following section documents the field investigation methodologies and sample collection activities performed by CHA for each AOC. Activities included soil boring/monitoring well installations, groundwater sampling, and surveying of site groundwater monitoring wells, each of which are described in detail in the following sections.

### **2.1 FIELD METHODOLOGIES**

#### **2.1.1 BORING/MONITORING WELL INSTALLATION**

As part of the subsurface investigation, twenty-five (25) soil borings at selected locations across the site were advanced using standard Geoprobe® drilling techniques. Drilling and well installation activities were completed between May 4 and 8, 2009 by CHA's subcontractor, Aquifer Drilling and Testing Inc., of Hartford, Connecticut. A CHA representative was on-site to provide inspection during the drilling activities. The soil borings were installed in the vicinity of the existing waste stream piping, the former sewage treatment plant area (including the sand filter beds), and "Building A." The locations of the borings are discussed in detail in Section 2.2.

At each boring location, soil samples were collected continuously throughout the depth of each boring and screened in the field by a qualified CHA scientist for the presence of visual, olfactory, or photoionic evidence of contamination. A Rae Systems, Model MiniRae 2000 photoionization detector (PID) was used to screen each sample for the presence of organic vapors. The unit was calibrated with 100 parts per million (ppm) isobutylene gas on-site prior to use.

Soil samples were collected either from a pre-determined interval, where the highest level of contamination was observed based on PID readings and visual/olfactory observation, or the interval directly above the groundwater table if no field evidence of potential impacts was observed. A summary that identifies each of the collected soil samples and associated analyses is provided in Table 1.

Soil borings were installed to depths ranging between 8 and 15 feet below ground surface (bgs). The depths of the borings varied as a result of varying geologic conditions between locations. Copies of the Subsurface Boring Logs summarizing the subsurface conditions and field screening results at each location are included as Appendix A.

In select locations, monitoring wells were installed to evaluate potential impacts to groundwater quality as a result of the former operations at the site. The new monitoring wells were constructed using a 10-foot section of 1-inch diameter, 10-slot PVC screen and were finished with the requisite length of solid PVC riser pipe. At each location, the well screen was set to straddle the surficial water table. A sand pack consisting of #1 sand was used to fill the annular space between the well screen and the borehole. A bentonite seal was placed above the sand pack and the monitoring well construction was finished with a 4- to 6-inch thick concrete surface seal. Each well was completed with a steel 4.5 inch diameter steel stickup cover.

Following completion, the top of each well riser was surveyed for relative elevation based on an assumed on-site bench mark of 100-feet (assumed datum). Water level measurements were collected on May 13, 2009 and referenced to the surveyed mark in the top of the riser. The water level data was used to calculate the relative groundwater elevations at each location and prepare a groundwater surface piezometric map. Table 2 summarizes the depths of each well and the relative top of riser and groundwater elevations at each location. Copies of Well Construction Records are provided in Appendix B.

### **2.1.2 GROUNDWATER SAMPLING**

Approximately one week following installation, a groundwater sample was collected from each of the newly installed monitoring wells and submitted for laboratory analysis. Prior to collecting a groundwater sample, each well was purged using a peristaltic pump and dedicated tubing to minimize disturbance. During the purging activities, field indicator parameters including pH, temperature, conductivity, and turbidity were measured to evaluate well stabilization. The purging activities continued until two consecutive field parameter readings were within ten percent and turbidity of the purge water was below 50 NTU. Following purging, a groundwater sample was collected for analyses using a peristaltic pump and dedicated tubing. A summary of the purging parameters is presented in Table 3.

### **2.1.3 DECONTAMINATION PROCEDURES**

During the course of the fieldwork, to minimize the potential for cross contamination during sampling, disposable sampling equipment was used whenever possible. Drilling equipment that directly contacted potentially contaminated media was decontaminated by cleaning with a high pressure water wash. Decontamination of non-disposable equipment was performed prior to use at a new location or sample collection. Decontamination of non-disposable sampling equipment included a soap/water wash, potable water rinse, distilled water rinse, and wipe-drying with a clean cloth or air drying. During groundwater sample collection, new disposable tubing was used at each well location.

## **2.2 AREA OF CONCERN INVESTIGATION ACTIVITIES**

### **2.2.1 Waste Stream Piping – Confirmation and Delineation**

Based on the VFS report, three soil sample/boring locations (of a previously collected 13 boring locations) exhibited slightly elevated levels of titanium. These sample locations include previously installed boring locations 71305-7, 72605-3, and 72605-4. In addition, one previous sample location, 71405-2 exhibited slightly elevated levels of hexavalent chromium. Sample locations are shown on Figures 3 and 4.

To further characterize and delineate the extent of potential contamination at the previously installed boring locations, four soil borings were advanced at the previous locations along the waste stream piping identified in the VFS report to confirm the elevated levels of titanium and hexavalent chromium. At each location, two additional borings were installed in the apparent downgradient direction of groundwater flow of the original boring location to delineate the extent of soil contamination. One of these additional downgradient borings was converted into a groundwater monitoring well at each investigatory location. The location of both the previous and newly installed borings that were installed along the waste stream piping are illustrated by Figures 3 and 4.

The waste stream piping soil borings (B-1 through B-12) were installed to depths ranging between 10 and 15 feet bgs. Soil samples were collected from similar depths that exhibited the elevated concentrations during the VFS site investigation. In the borings installed at the original locations, soil samples were also collected at the two foot interval below the depth of the original sample location for vertical delineation.

All soil samples collected along the waste stream piping were delivered to TestAmerica Laboratories, Inc. (TestAmerica) of Shelton, Connecticut to conduct the necessary analyses. Each sample was analyzed for the presence of priority pollutant metals (PP metals), hexavalent chromium, and titanium via EPA Method 6010B and mercury via EPA Method 7470A.

To evaluate potential impacts to groundwater quality as a result of the waste stream piping at the site, four of the soil borings were completed as 1-inch diameter monitoring wells to facilitate the collection of representative groundwater samples. As noted previously, one monitoring well was installed downgradient of each of the former VFS boring locations that exhibited potential evidence of subsurface soil impacts. The locations of the newly installed monitoring wells are illustrated on Figures 3 and 4.

All groundwater samples collected from the newly installed wells were delivered to TestAmerica to conduct the necessary analyses. Samples were analyzed for the presence of PP metals, titanium, and hexavalent chromium via USEPA Method 6010B and mercury via USEPA method 7470A.

### **2.2.2 Investigation of Sand Filter Beds**

The VFS report identified residual metal contamination, including the presence of mercury, in a number of samples collected from borings installed within the sand filter beds as well as the underlying native soils. The locations of the sand filter beds, including the previously installed borings, are illustrated by Figure 3.

To confirm and delineate the previously identified impacts, CHA installed six soil borings (B-16 through B-21) in the area of the sand bed filters. One soil boring was installed in each sand bed filter and a soil sample was collected from the underlying native soils at 0 to 2 feet, 2 to 4 feet, and 4 to 6 feet below the sand filter layer. The remaining four soil borings were advanced around the perimeter of the sand bed filters and soil samples were collected at intervals corresponding to the samples collected within the sand bed. These borings were utilized to confirm the areal and vertical extent of soil contamination. It should be noted that samples were not collected from the sand filter media as part of the investigation since previous investigation data has confirmed the presence of impacts associated with the filter bed sands.

Soil samples were delivered to TestAmerica to conduct the necessary analyses. Each sample was analyzed for the presence of PP metals, hexavalent chromium, and titanium via EPA Method 6010B and mercury via EPA Method 7470A.

To evaluate potential impacts to groundwater quality as a result of the sand filter beds, two soil borings (B-20 and B-21) were completed as 1-inch diameter monitoring wells to facilitate the collection of representative groundwater samples (Figure 3). Numerous attempts were also made to install a monitoring well at boring location B-19, located on the north side of the sand bed filters, to the desired depth; however, the attempted borings were met with refusal. Seven attempts were made and the maximum boring depth reached was 10 feet bgs. Groundwater was not encountered, and therefore a well was not installed at this location. It should be noted that monitoring wells completed in association with the investigation of the former treatment plant area were also used in delineating potential impacts from the sand filter beds due to their close proximity to each AOC. Section 2.2.3 provides a summary of the additional monitoring wells locations for the treatment plant area.

All groundwater samples were delivered to TestAmerica to conduct the necessary analyses. Samples were analyzed for the presence of PP metals, hexavalent chromium, and titanium via USEPA Method 6010B, and mercury via USEPA method 7470A.

### **2.2.3 Investigation of Wastewater Treatment Plant Area**

Remaining AOCs associated with the former wastewater treatment plant include the area of the former 8,000 gallon neutralization tank and 6,000 gallon settling tank. Due to the close proximity of the former drum storage area, this AOC has also been included under the supplemental treatment plant area investigations, which are discussed in this area.

Three borings (B-13 through B-15) were installed in the general area of the sewage treatment building, including the former drum storage area. The borings were installed at selected locations to confirm and delineate the potential subsurface impacts related to the below grade tanks and the former drum storage area. More specifically, the VFS report identified elevated levels of polynuclear aromatic hydrocarbons (PAHs) in one soil boring location (72705-1) near the drum storage area, and elevated levels of nickel and titanium in a second boring location (72705-3) near the treatment tanks. The location of the previous and recently installed boring locations are illustrated by Figure 3.

In borings B-13 through B-15, one soil sample was collected from the horizon exhibiting the highest potential for contamination based on field screening parameters. If no evidence of contamination was observed, the soil sample was collected from the six inch interval above the groundwater table.

Soil samples were delivered to TestAmerica to conduct the necessary analyses. Each sample was analyzed for the presence of PP metals, hexavalent chromium, and titanium via EPA Method 6010B and mercury via EPA Method 7470A. Additionally, soil samples collected from the area of the sewage treatment building were analyzed for PAHs via USEPA Method 8270C.

To evaluate potential impacts to groundwater quality as a result of the former sewage treatment plant and drum storage area, each of the three soil borings were completed as 1-inch diameter monitoring wells to facilitate the collection of representative groundwater samples (Figure 3).

Groundwater samples were delivered to TestAmerica to conduct the necessary analyses. Samples were analyzed for the presence of PP metals, hexavalent chromium, and titanium via USEPA Method 6010B, mercury via USEPA method 7470A, and PAHs via USEPA method 8270C.

### **Building A – Subsurface Investigation**

Four soil borings were advanced at locations in and around “Building A.” One boring was installed inside the building in the area of the historic VFS boring 9220519, which was determined by the VFS investigation to have elevated levels of PAHs. The three remaining borings were installed on the north, south, and west sides of the building to determine the extent of potential contamination and to evaluate whether the contamination detected in the former VFS boring is contained beneath the building.

The soil borings were installed at depths ranging from 8 to 15 feet bgs. A soil sample was collected from B-25, located inside the building, from the same depth that exhibited the elevated concentrations in the VFS site investigation. Soil samples were collected in the remaining three borings from the horizon exhibiting the highest potential for contamination based on field screening parameters. In the absence of field evidence of contamination, a soil sample was collected at the interval just above the groundwater table.

It should be noted that numerous attempts were made to install borings B-22 and B-23 to 15 feet bgs; however, the borings were met with refusal at approximately 8 feet bgs on three separate

attempts. A groundwater monitoring well was not installed at B-22 due to the shallow boring depth and because groundwater was not encountered.

All soil samples were submitted for analysis to TestAmerica. Each sample was analyzed for the presence of PAHs via USEPA Method 8270C.

### **Background Sampling**

Four representative background samples were collected from undeveloped/undisturbed locations at the site to determine if previously identified levels of titanium, nickel, and hexavalent chromium are attributable to background levels for the area. Three background samples (BG-1, BG-2, and BG-3) were collected from the zero to one foot interval using a hand auger. Background sample BG-4 was collected from 7 to 8 feet bgs using Geoprobe® sampling techniques. The location of the background samples are illustrated on Figure 5.

The background soil samples were submitted for analysis to TestAmerica. Each sample was analyzed for the presence of PP metals, hexavalent chromium, and titanium via EPA Method 6010B and mercury via EPA Method 7470A.

### 3.0 RESULTS

The soil analytical results are summarized in Tables 4 and 5 and copies of the laboratory reports are included in Appendix C. The soil sample results were compared to Title 6 of the New York Code, Rules and Regulations Part 375: Soil Cleanup Objectives for Unrestricted Use (SCOs). These SCOs are presented in Tables 4 and 5 for comparison to the detected parameters found at the site. Four background samples were also collected during the site investigation to provide a comparison between naturally occurring concentrations and concentrations of those parameters detected during the investigation. For reference, both the average background and individual background sample results are also presented in Tables 4 and 5.

Groundwater analytical results are summarized in Table 6 and copies of the laboratory reports are included in Appendix B. The groundwater results were compared to NYSDEC's *Technical and Operational Guidance Series (TOGS) 1.1.1 of "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" for fresh (Class GA) Groundwaters (1998)*. These values are presented in Table 6 for comparison to the detected parameters found at the site.

The soil and groundwater sample results for each area of concern at the site are summarized below.

#### 3.1 WASTE STREAM PIPING

##### Soil Sampling Results

Soil borings B-1 through B-12 were advanced in selected areas near the waste stream piping where historic sampling identified the presence of potential impacts. Samples were collected from each boring and analyzed for PP metals, titanium, and hexavalent chromium. Results indicated that nickel was detected at concentrations above the Part 375 Unrestricted SCO in nine of the twelve samples collected (Table 4). However, when the concentrations are compared to background samples collected at undisturbed areas of the site, these levels of nickel are consistent with concentrations detected in background samples. More specifically, background levels ranged from 22.6 ppm to 32.3 ppm and the investigatory sample results ranged from 18.8 ppm to 53.6 ppm. Therefore, the nickel concentrations are not considered to be attributed to site operations; rather, the existing levels are representative of site background.

There is currently no SCO for titanium in soils, therefore concentrations in background samples collected were used to evaluate titanium levels. Titanium concentrations in background samples ranged from 104 mg/kg to 555 mg/kg and titanium concentrations in the samples collected along the waste stream piping ranged from 48.3 mg/kg to 325 mg/kg. Titanium concentrations are consistent with background samples collected and are not considered to be attributed to site operations.

The remaining parameters were either not detected at the laboratory method detection limit or were detected at levels below the Part 375 Unrestricted SCOs.

## **Groundwater Results**

Groundwater samples were collected from monitoring wells MW-5, MW-7, MW-8, and MW-9, installed downgradient of the waste stream piping, and analyzed for PP metals, titanium, and hexavalent chromium. It should be noted that these wells were installed in the presumed downgradient direction of groundwater flow based on local topography and the location of the nearby lake. Due to the fact that there was only one well installed at each location, a groundwater contour map was not prepared for this area. The results are summarized on Table 6. Results indicate that thallium was detected in MW-5 and MW-7 at estimated levels above the associated groundwater standard. Due to the relatively low concentrations of thallium and the consistent detections across the site, it is not believed the concentrations are attributed to site operations. All remaining parameters were either detected below the laboratory method detection limit or detected at levels below groundwater standards.

As a result of the soil and groundwater sampling associated with the waste stream piping, CHA is of the opinion that no remedial action or additional investigation is warranted relative to this former AOC.

### **3.2 SAND FILTER BED INVESTIGATION**

#### **Soil Sampling Results**

Soil borings B-16 through B-21 were advanced in the area of the sand bed filters. Borings B-17 and B-18 were installed within the footprint of the filter beds. Soil samples were collected from each boring and analyzed for PP metals, titanium, and hexavalent chromium. The samples collected from borings B-17 and B-18 were collected from the 2-foot interval just below the sand filter media, which was readily apparent in the soil samples collected in the field. The soil samples collected from borings B-16 and B-19 to B-21 were collected at a similar interval to evaluate the potential areal extent of impacts attributable to the sand beds.

Based on the soil sample results, nickel was detected in soil samples collected from B-20 at a concentration of 32.6 mg/kg and in B-20A at a concentration of 35.6 mg/kg, which exceed the Part 375 Unrestricted SCO of 30 mg/kg. Concentrations collected in background samples ranged from 22.6 mg/kg to 32.3 mg/kg. Since the nickel concentrations are consistent with the background levels, the slightly elevated nickel concentrations are not believed to be attributed to the sand bed filters at the site.

With the exception of boring location B-21, titanium was detected at a range of 183 mg/kg to 276 mg/kg in the samples collected from borings B-16 through B-21. Titanium was detected at a concentration of 906 mg/kg in B-21, which is above the maximum titanium background concentration of 555 mg/kg detected in the background sample collected from boring BG-4. However, since this location was upgradient of the filter beds and the concentration was higher than those samples collected from directly beneath and downgradient of the filter beds, the elevated level observed in boring B-21 is likely attributable to natural variability at the site.

With the exception of the elevated titanium and nickel levels discussed above, there were no other metals detected at concentrations above the Part 375 SCOs. Since the nickel and titanium levels are generally consistent with background concentrations, this AOC does not warrant any additional remedial action with the exception of the removal of the existing sand filter bed media.

### **Groundwater Results**

Soil borings B-20 and B-21 were completed as monitoring wells MW-1 and MW-2, respectively, to evaluate potential impacts to groundwater as a result of the former operation of the sand filter beds. Groundwater samples were collected from monitoring wells MW-1 and MW-2 and analyzed for PP metals, titanium, hexavalent chromium, and PAHs. The results are summarized in Table 6.

The groundwater results indicate that thallium was detected in MW-1 at estimated levels above the associated groundwater standard. All remaining parameters were either detected below the laboratory method detection limit or detected at levels below groundwater standards. Due to the relatively low concentrations of thallium and the consistent detections across the site, the slightly elevated concentrations of thallium are not considered to be attributable to site operations.

## **3.3 WASTEWATER TREATMENT PLANT INVESTIGATION**

### **Soil Sampling Results**

Soil borings B-13 through B-15 were advanced in the area of the former wastewater treatment plant and drum storage area. Samples were collected from each boring and analyzed for PP metals, titanium, hexavalent chromium, and PAHs. Nickel was detected in the soil sample collected from B-13 (113 mg/kg) at a concentration above the Part 375 Unrestricted SCO of 30 mg/kg. This concentration appears elevated when compared to the background samples collected. The remaining parameters were either not detected at the laboratory method detection limit or were detected at concentrations below their respective Part 375 Unrestricted SCOs. As a result of the elevated level of nickel, a limited remedial program may need to be performed to address this AOC.

### **Groundwater Results**

Groundwater samples were collected from monitoring wells MW-3, MW-4 and MW-6, installed to investigate the former wastewater treatment plant and drum storage area and analyzed for PP metals, titanium, hexavalent chromium, and PAHs. The results are summarized on Table 6. Results indicate that thallium was detected in wells MW-4 and MW-6 at levels above the associated groundwater standard. Additionally, several PAHs were detected above groundwater standards in the groundwater sample collected from MW-3. These PAHs include benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene. All remaining parameters were either detected below the laboratory method detection limit or detected at levels below groundwater standards.

Due to the relatively low concentrations of thallium and the consistent detections across the site, it is not believed that the concentrations are attributable to site operations. However, due to the presence of localized elevated PAH concentrations in the vicinity of well MW-3, there appears to be a localized source that is contributing to the presence of these compounds in the groundwater. This localized source is likely the soils in the vicinity of the historical VFS boring 72705-1. Consideration should be given to a localized soil excavation program to remove those soils contributing to the observed groundwater impacts. Following the soil removal program, a limited groundwater monitoring program in this area is recommended due to the individual PAHs that were detected in groundwater samples collected. CHA is of the opinion that, due to the relatively low levels of PAHs in the groundwater and the localized area of impacts, active groundwater remediation will not be required.

### **3.4 BUILDING A**

#### **Soil Sampling Results**

Soil borings B-22 through B-25 were advanced in the area of Building A. Samples were collected from each boring and analyzed for PAHs. Results indicated that several PAHs were detected above their respective Part 375 Unrestricted SCOs in the sample collected from B-24. The results are summarized on Table 5.

The sample collected at boring location B-24 which exhibited the elevated PAH levels was collected from a depth of 0-1 foot below ground surface, where a slightly elevated PID reading of 0.5 ppm was recorded. Field screening did not identify any potential impacts at depths greater than one foot below grade. The PAHs detected in this sample include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene. All remaining PAHs were either detected at concentrations below the laboratory method detection limits or below their respective Part 375 Unrestricted SCOs. Field screening did not identify any potential impacts in any of the remaining borings installed in the vicinity of Building A.

Based on the results of the soil sampling in the vicinity of Building A, there does not appear to be any significant subsurface impacts outside of the building footprint. In addition, the soil boring that was installed within the interior of the building, immediately adjacent to the former VFS boring location, did not exhibit any field or laboratory evidence of contamination, which suggests that any elevated levels of PAHs beneath the building footprint are also localized.

The relatively low levels of PAHs detected in exterior boring B-24 are near surface and appear to be localized. Consideration should be given to excavation of and proper off-site disposal of these soils.

## **4.0 CONCLUSIONS/RECOMMENDATIONS**

### **4.1 CONCLUSIONS**

- Soil analytical results indicate that PAHs are present at boring location B-24, in the vicinity of Building A. Elevated levels of nickel and titanium were also detected in soil samples collected across the site, including the background samples. With the exception of the nickel concentrations detected in B-13, the nickel and titanium concentrations detected in the site soils are consistent with background concentrations and not considered to be attributable to site operations. The remaining parameters were either not detected at the laboratory method detection limit or detected at concentrations below the Part 375 Unrestricted Use SCOs.
- Groundwater analytical results indicate that thallium is present at concentrations above the associated groundwater standard across the site. Due to the relatively low level of thallium and the consistent levels detected across the site, the slightly elevated levels of thallium are considered representative of natural site background. Additionally, individual PAHs were detected at concentrations above groundwater standards in MW-3. The remaining parameters were either not detected at the laboratory method detection limits or were detected at concentrations below groundwater standards.
- Groundwater contours developed from groundwater elevations measured in monitoring wells MW-1 through MW-7 show that groundwater flows northeast in the vicinity of the wastewater treatment plant.

### **4.2 RECOMMENDATIONS**

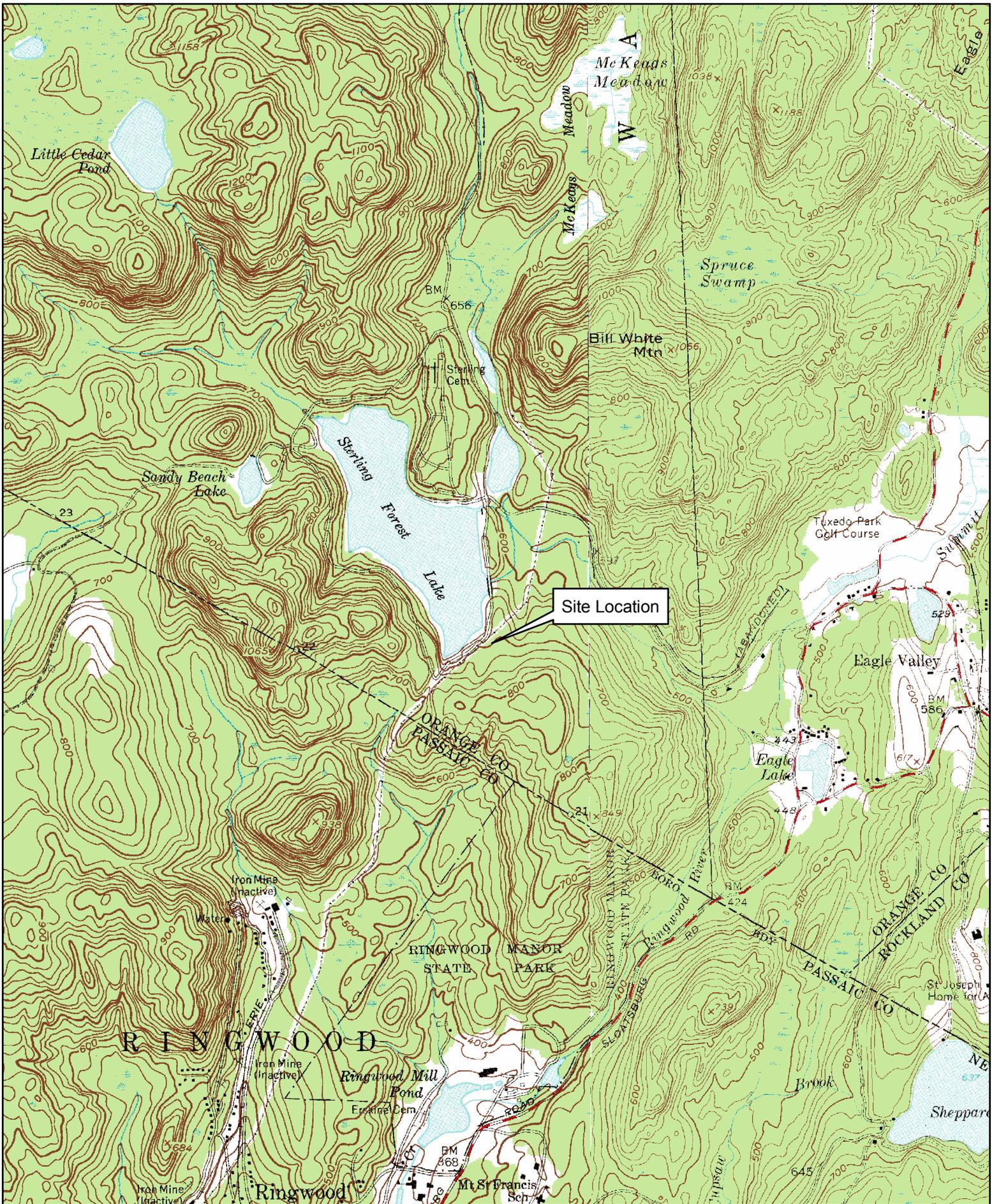
- Due to the elevated levels of PAHs detected in boring B-24, a small surficial excavation is recommended in the area. If Building A is to be demolished, it is recommended to extend the limits of the foundation excavation towards the southern corner of Building A. It is anticipated that the contamination extends two to three feet vertically. If Building A is to remain on site, it is recommended to complete a small spot excavation in the area of B-24 to remove the contaminated soil. The exact dimensions of the excavation are not known; however it is assumed the excavation can be completed as a 15 foot wide by 15 foot long by 3 foot deep excavation. Although the exact limits of PAH impacts have not been defined, there is no evidence that the PAH impacts are widespread. The cost for this excavation and associated soil disposal is estimated at approximately \$5,000 - \$10,000.
- Individual PAHs were detected in the groundwater sample collected from MW-3. Although the source of the PAHs is unknown, there is the potential that the elevated levels of PAHs could be associated with the former drum storage area and/or the operations of the wastewater treatment facility. CHA recommends that during the demolition of the wastewater treatment facility and associated neutralization/settling tanks, potentially impacted soils in this area be excavated to eliminate the most likely source of the PAH impacts to groundwater. Since the levels of PAHs in groundwater are

relatively low and localized, active groundwater treatment does not appear to be warranted. However, a groundwater monitoring program should be performed for a limited time period following removal of the PAH impacted soils to document that the source has been removed. Considering an excavation area of approximately 50' X 50' and a maximum depth of 6-8 feet below grade based on data collected from this investigation, it is estimated that soil excavation in the drum storage area will cost approximately \$75,000 - \$100,000. A groundwater monitoring program with an annual sampling event and reporting will cost approximately \$7,500 per year. It is not anticipated that groundwater monitoring would be required for more than 1 to 2 years.

- Elevated levels of nickel were detected in boring B-13. According to the results of the groundwater samples collected in this area, the groundwater is not impacted by the nickel detected in the soil. The former wastewater treatment plant has been inactive since the closure of the INCO facility and consists of a settling tank, a neutralization tank, and underground piping which may have contributed to the nickel concentrations detected in the surrounding soils. It is recommended that the tanks and piping be removed during site demolition activities and excavate and dispose of the surrounding soils properly. Since this boring location is in the vicinity of the area of PAH impacts discussed above, the costs associated with the excavation and removal of these soils has been included in the previously identified costs for removal of the PAH impacted soils.
- In the vicinity of the sand filter beds, there were no impacts identified outside the limits of the existing filter sand media. The VFS report identified slightly elevated levels of metals, including mercury, within the filter beds. Based on historical data presented in the VFS report, it is recommended that the sand filter media be excavated and properly disposed of at an off-site permitted disposal facility. It is anticipated that this material can be disposed of as non-hazardous waste based on the historical sampling data. Considering an excavation area of 75' X 75' and a depth of approximately 6-8 feet in depth, the estimated cost for excavation and proper disposal of the filter sand media is on the order of \$150,000 - \$200,000.

It should be noted that the above recommendations are considered conservative. These costs also assume that the work will be performed as part of the site demolition activities and do not include costs for disposal of construction and demolition debris (e.g. concrete, piping, etc.). Although a number of contaminants exceed unrestricted SCOs, the levels are relatively low and it should be emphasized that the New York State Department of Environmental Conservation (NYSDEC) may not require site specific remedial action for one or more AOCs. Prior to implementation of any remedial actions, the NYSDEC should be contacted to discuss the need for specific remedial actions.

## **FIGURES**



Site Location



111 Winners Circle, P.O. Box 5269 • Albany, NY 12205-0269  
 Main: (518)453-4500 • www.cloughharbour.com

### Site Location

Kings College  
 Sterling Lake Road  
 Town of Warwick, Orange County, New York

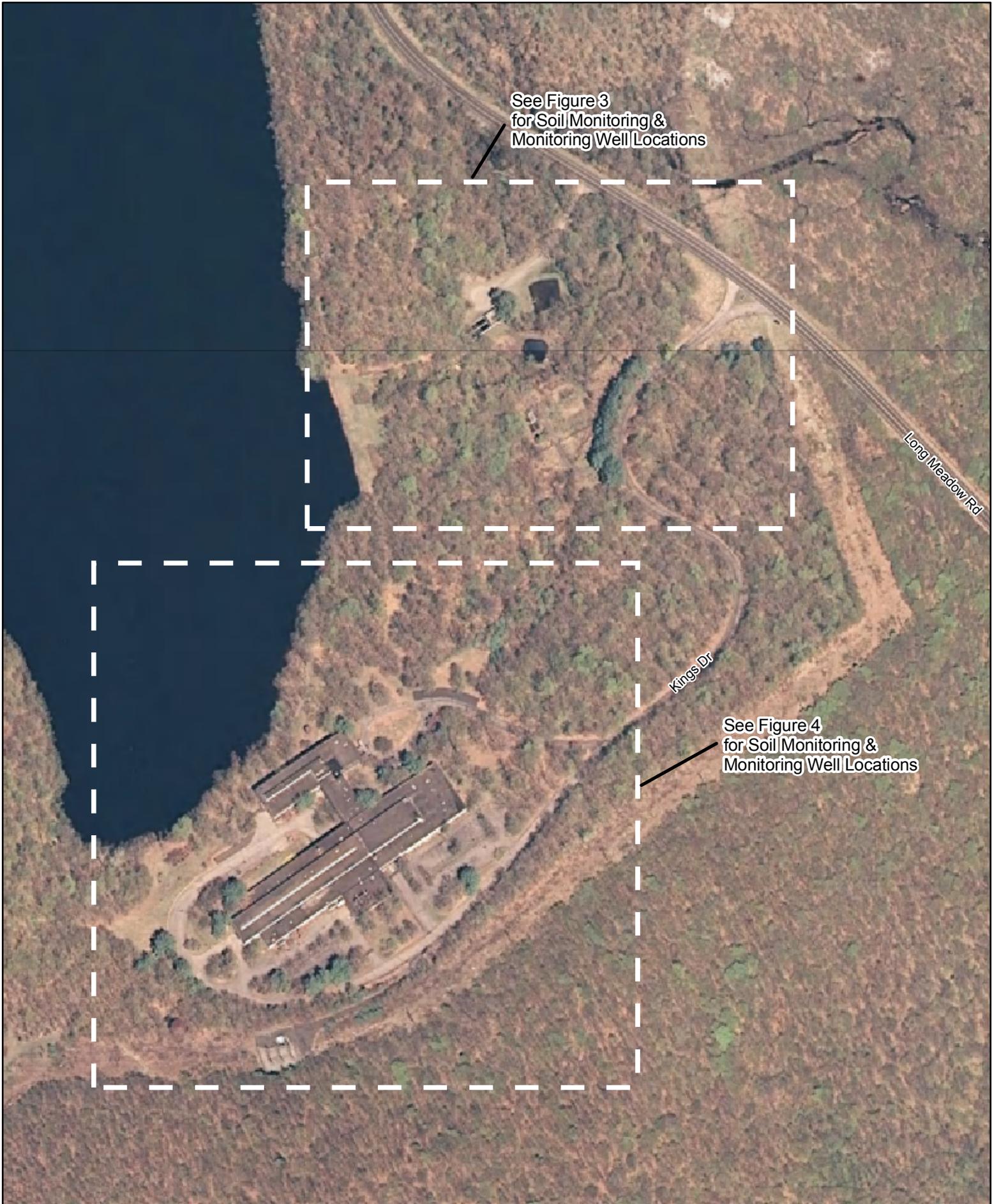


1 inch = 2,000 feet

Figure 1

Date : May 2009



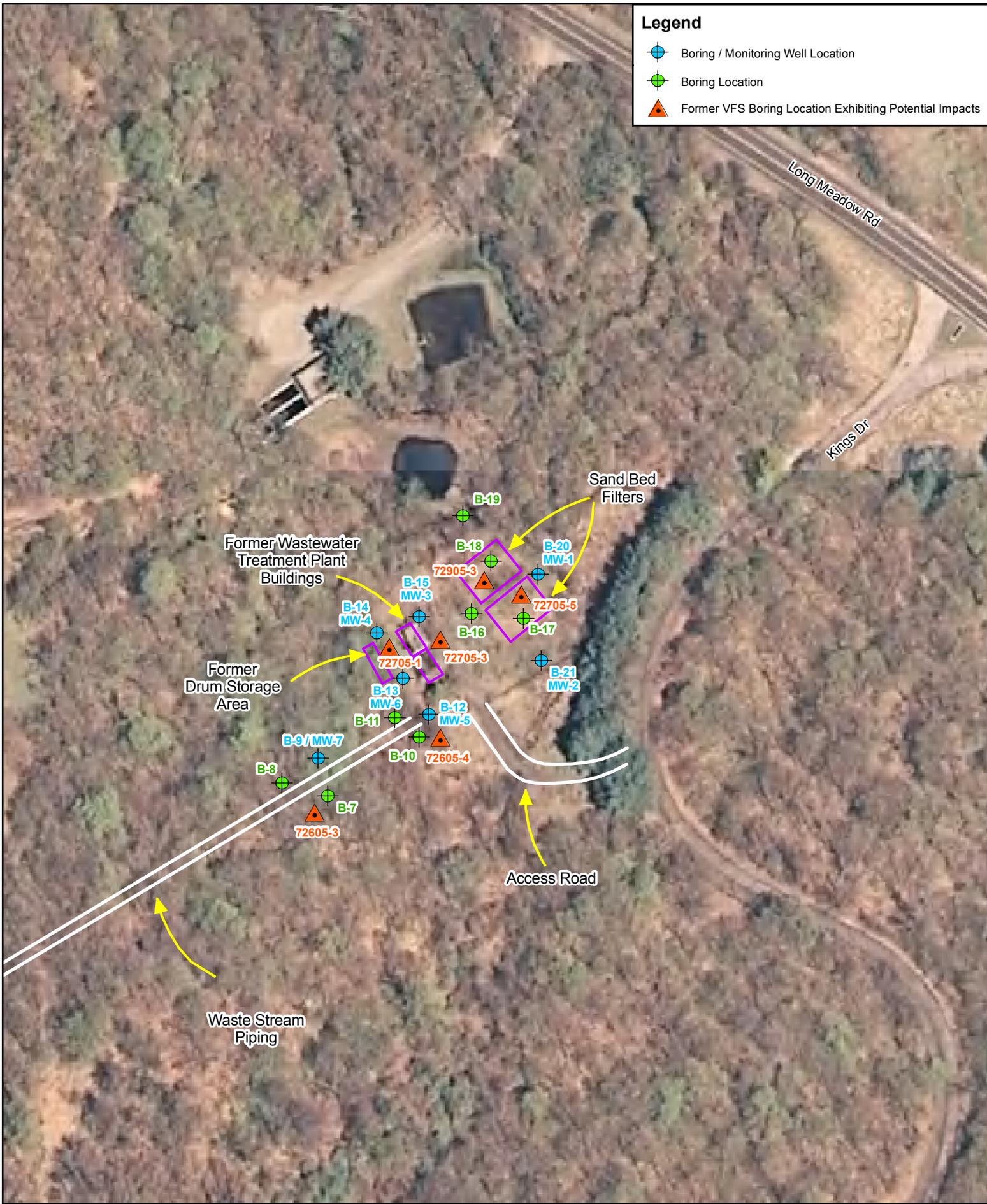


See Figure 3  
for Soil Monitoring &  
Monitoring Well Locations

See Figure 4  
for Soil Monitoring &  
Monitoring Well Locations

**Legend**

-  Boring / Monitoring Well Location
-  Boring Location
-  Former VFS Boring Location Exhibiting Potential Impacts





**Legend**

 Background Soil Sample Locations

See Figure 3  
for Soil Monitoring &  
Monitoring Well Locations

BG-1

BG-2

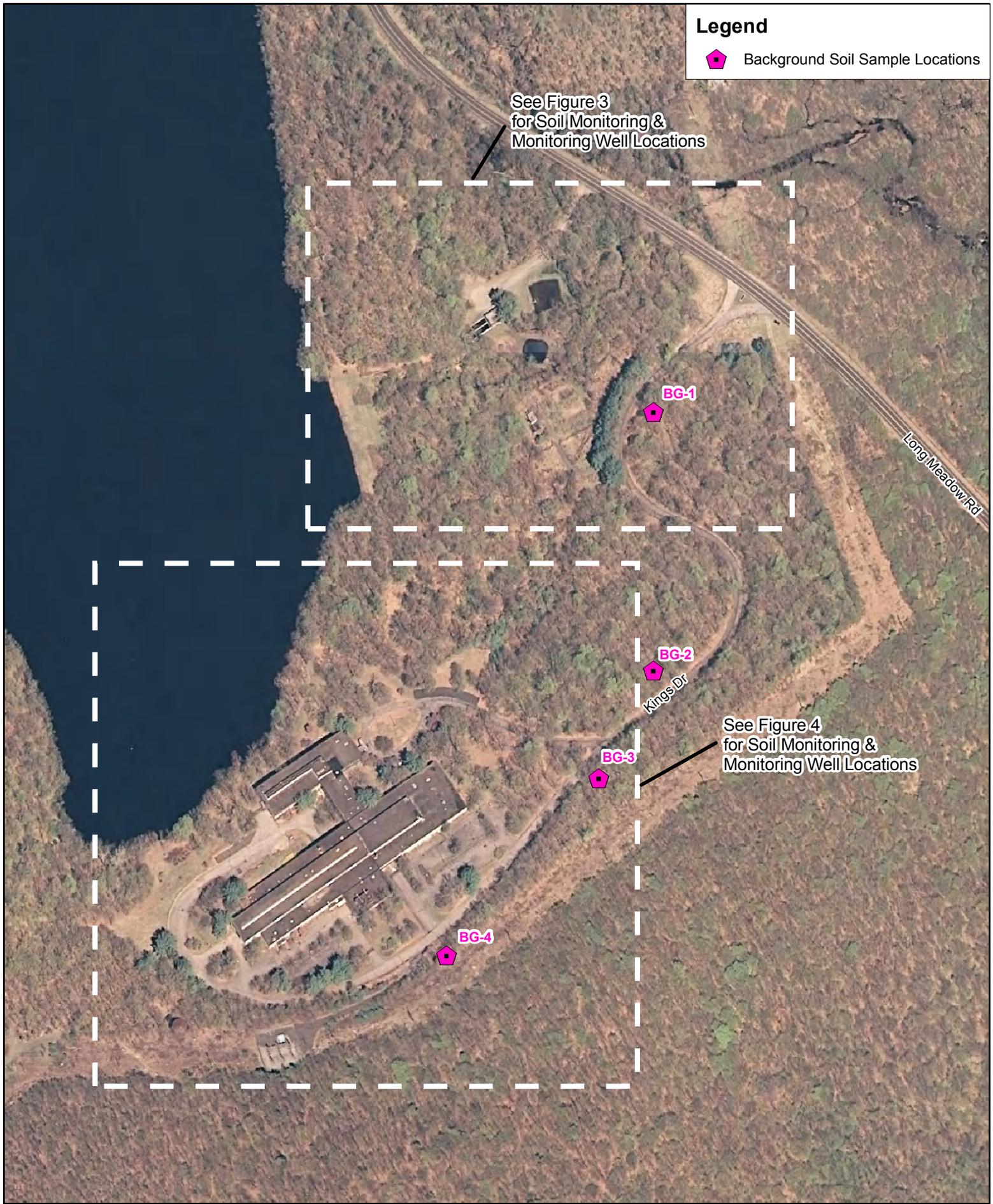
Kings Dr

See Figure 4  
for Soil Monitoring &  
Monitoring Well Locations

BG-3

BG-4

Long Meadow Rd



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**Background Soil Sample Locations**

*Kings College  
Sterling Lake Road  
Town of Warwick, Orange County, New York*



1 inch = 300 feet

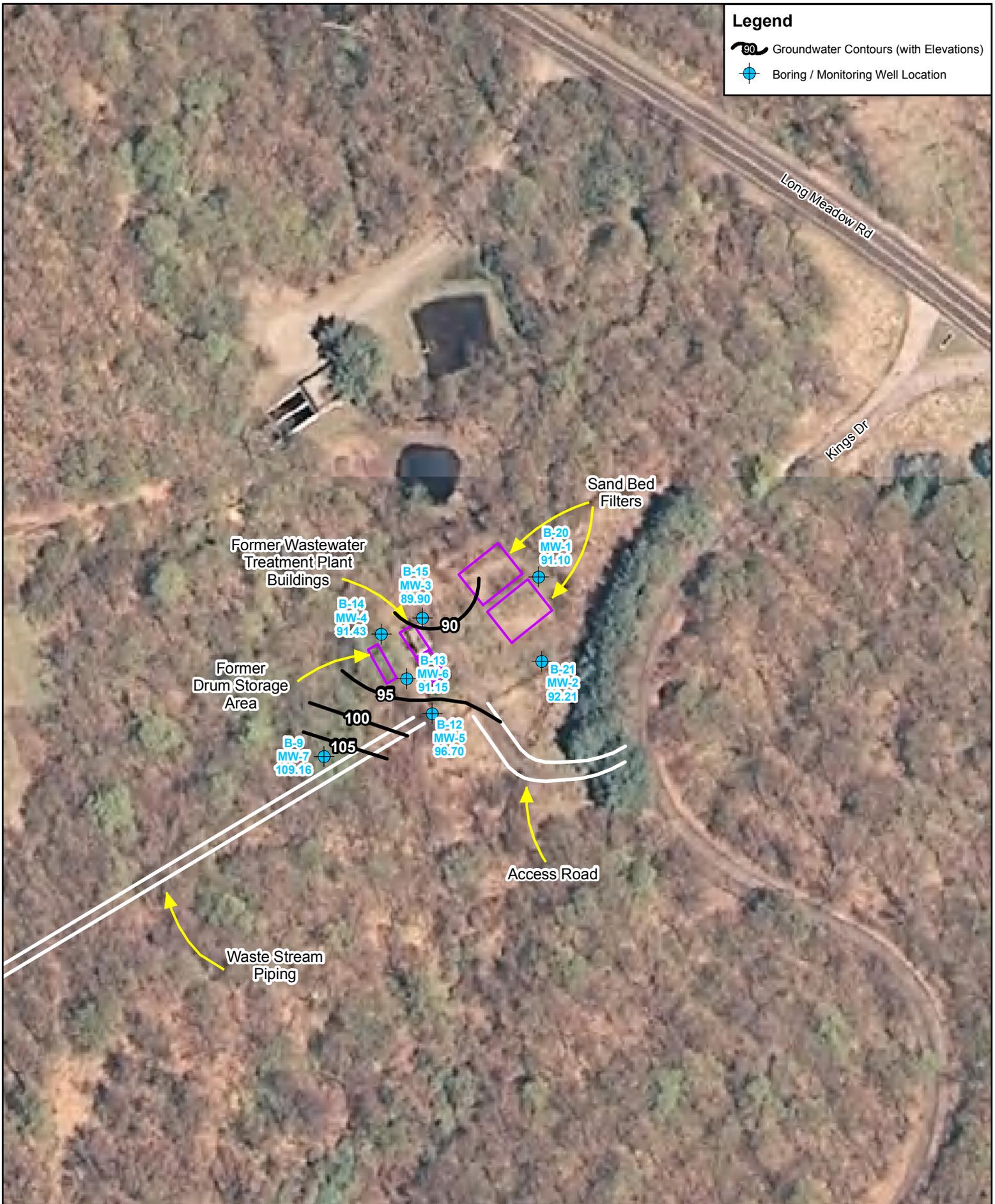
Figure 5

Date : May 2009

0 150 300  
Feet

**Legend**

-  Groundwater Contours (with Elevations)
-  Boring / Monitoring Well Location



## **TABLES**

**TABLE 1**  
**SOILAND GROUNDWATER SAMPLE SUMMARY**

**Subsurface Investigation Report**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

Type of Sample/Location	Sample ID	Sample Collection		Sample Interval	Volume	Analyses
		Date	Time			
Subsurface Soil Sample	SB-050809-SKB-1 (7.5-8)	5/8/2009	0800	7.5-8	(B)	(F)
Subsurface Soil Sample	SB-050809-SKB-1 (8-10)	5/8/2009	0805	8-10	(B)	(F)
Subsurface Soil Sample	SB-050809-SKB-2	5/8/2009	0810	7.5-8	(B)	(F)
Subsurface Soil Sample	SB-050809-SKB-3	5/8/2009	0830	7.5-8	(B)	(F)
Subsurface Soil Sample	SB-050709-SKB-4 (7.5-8)	5/7/2009	1510	7.5-8	(B)	(F)
Subsurface Soil Sample	SB-050709-SKB-4 (8-10)	5/7/2009	1510	8-10	(B)	(F)
Subsurface Soil Sample	SB-050709-SKB-5	5/7/2009	1600	7.5-8	(B)	(F)
Subsurface Soil Sample	SB-050709-SKB-6	5/7/2009	1540	7.5-8	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-7 (7-8)	5/6/2009	1300	7-8	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-7 (8-10)	5/6/2009	1305	8-10	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-7 (10-12)	5/6/2009	1310	10-12	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-7 (12-14)	5/6/2009	1315	12-14	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-8 (5-10)	5/6/2009	1330	5-10	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-9 (7-8)	5/6/2009	1350	7-8	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-10 (6-7)	5/6/2009	1210	6-7	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-10 (7-9)	5/6/2009	1215	7-9	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-10 (9-10)	5/6/2009	1220	9-10	(B)	(F)
Subsurface Soil Sample	SB-050609-SKB-11 (6-7)	5/6/2009	1225	6-7	(B)	(F)
Subsurface Soil Sample	SB-12 (6-7)	5/5/2009	1425	6-7	(B)	(F)
Subsurface Soil Sample	SB-050609-13 (0-1)	5/6/2009	1045	0-1	(C)	(F) (G)
Subsurface Soil Sample	SB-050609-SKB-13 (7-8)	5/6/2009	1015	7-8	(C)	(F) (G)
Subsurface Soil Sample	SB-14 (2-4')	5/5/2009	1150	2-4	(C)	(F) (G)
Subsurface Soil Sample	SB-14 (7-8')	5/5/2009	1155	7-8	(C)	(F) (G)
Subsurface Soil Sample	SB-15 (2-4')	5/5/2009	1055	2-4	(C)	(F) (G)
Subsurface Soil Sample	SB-15 (7-8')	5/5/2009	1100	7-8	(C)	(F) (G)
Subsurface Soil Sample	SB-16 (0-2') (8-10 bgs)	5/5/2009	0850	8-10	(B)	(F)
Subsurface Soil Sample	SB-16 (2-4') (10-12 bgs)	5/5/2009	0850	10-12	(B)	(F)
Subsurface Soil Sample	SB-16 (4-6') (12-15 bgs)	5/5/2009	0855	12-15	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-17-01	5/4/2009	1120	7-9	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-17-02	5/4/2009	1125	9-11	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-17-03	5/4/2009	1130	11-13	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-18-01	5/4/2009	1220	5-7	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-18-02	5/4/2009	1225	7-9	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-18-03	5/4/2009	1230	9-11	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-19-01	5/4/2009	1330	8-10	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-20-01	5/4/2009	1410	8-10	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-20A-01	5/4/2009	1450	5-7	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-20A-02	5/4/2009	1455	7-9	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-20A-03	5/4/2009	1500	9-11	(B)	(F)
Subsurface Soil Sample	SB-050409-SKB-20A-04	5/4/2009	1505	11-13	(B)	(F)
Subsurface Soil Sample	SB-21 (0-2') (8-10 bgs)	5/5/2009	0925	8-10	(B)	(F)
Subsurface Soil Sample	SB-21 (2-4') (10-12 bgs)	5/5/2009	1015	10-12	(B)	(F)
Subsurface Soil Sample	SB-21 (4-6') (12-14 bgs)	5/5/2009	1020	12-14	(B)	(F)
Subsurface Soil Sample	SB-050809-SKB-22	5/8/2009	0935	7.5-8	(B)	(G)
Subsurface Soil Sample	SB-050809-SKB-23	5/8/2009	0950	7.5-8	(B)	(G)
Subsurface Soil Sample	SB-050609-SKB-24	5/6/2009	1355	0-1	(A)	(G)
Subsurface Soil Sample	SB-050609-SKB-25	5/6/2009	1610	7-8	(A)	(G)
Background Soil Sample	BG-1	5/7/2009	1115	0-1	(B)	(F)
Background Soil Sample	BG-2	5/7/2009	1045	0-1	(B)	(F)
Background Soil Sample	BG-3	5/7/2009	1000	0-1	(B)	(F)
Background Soil Sample	BG-4	5/8/2009	1140	7-8	(B)	(F)
Groundwater Sample	MW-1	5/13/2009	1010	NA	(D)	(F)
Groundwater Sample	MW-2	5/13/2009	1105	NA	(D)	(F)
Groundwater Sample	MW-3	5/13/2009	1220	NA	(E)	(F) (G)
Groundwater Sample	MW-4	5/13/2009	1415	NA	(E)	(F) (G)
Groundwater Sample	MW-5	5/13/2009	1500	NA	(D)	(F)
Groundwater Sample	MW-6	5/13/2009	1315	NA	(E)	(F) (G)
Groundwater Sample	MW-7	5/13/2009	1600	NA	(D)	(F)
Groundwater Sample	MW-8	5/14/2009	1020	NA	(D)	(F)
Groundwater Sample	MW-9	5/14/2009	915	NA	(D)	(F)

Notes:

- (A) = Volume: One 4-oz. glass jar w/ no preservative
- (B) = Volume: Two 4-oz. glass jars w/ no preservatives
- (C) = Volume: Three 4-oz glass jars w/ no preservatives
- (D) = Volume: One 500 ml plastic bottle w/ no preservative and one 500 ml plastic bottle with nitric acid
- (E) = Volume: One 500 ml plastic bottle w/ no preservative, one 500 ml plastic bottle with nitric acid, and 1 one liter amb
- (F) = Analyses: PP metals (6010B), hexavalent chromium (6010B), titanium (6010B), mercury (7470A)
- (G) = Analyses: PAHs (8270C)

**Table 2**  
**Groundwater Elevations**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

<b>WELL #</b>	<b>Top of Casing Elevation (feet)</b>	<b>Depth to Groundwater</b>	<b>5/13/2009 Water Elevation (feet)</b>
MW-1	100	8.82	210.21
MW-2	102.40	10.16	207.91
MW-3	97.98	8.08	207.85
MW-4	97.49	6.06	207.79
MW-5	103.70	7.00	207.64
MW-6	96.90	5.75	200.22
MW-7	118.66	9.50	201.56

TABLE 3  
GROUNDWATER WELL FIELD SAMPLING SUMMARY  
WATCHTOWER BIBLE AND TRACT SOCIETY  
WARWICK, NEW YORK

Well I.D.	Date	Purge Rate (ml/min)	Purge Amount (Minutes)	Time Elapsed (Minutes)	Temperature (°C)	pH	Conductivity (µS/cm)	ORP/EH (MV)	Turbidity (NTU)	Water Quality
MW-1	13-May-09	100	28	0.00	10.80	7.38	241	-42.8	217	Water was gray/beige in color at beginning of purging and slowly cleared during purging. Water had no odor, no sheen, and no effervescence.
				7.00	10.02	7.18	232	-28.4	134	
				14.00	10.44	7.17	236	-13.2	68.1	
				21.00	10.41	7.29	238	-12.2	47.8	
				28.00	11.11	7.34	239	-21.1	35.0	
MW-2	13-May-09	100	26	0.00	12.05	7.63	292	-78.8	133	Water was slightly turbid, slightly tan/pale in color at beginning or purging, then slowly cleared during purging. Water had no odor, no sheen and no effervescence.
				6.00	11.85	7.66	255	-49.5	64.6	
				12.00	12.22	7.68	267	-58.9	40.6	
				19.00	11.53	7.66	252	-33.0	20.3	
				26.00	11.45	7.68	251	-26.2	14.1	
MW-3	13-May-09	100	57	0.00	14.10	7.51	325	-46.2	> 1000	Water was turbid and grayish-brown in color at beginning of purging, then slowly cleared during purging. Water had no odor, no sheen and no effervescence.
				6.00	13.38	7.59	310	-44.1	328	
				11.00	12.86	7.56	304	-38.7	218	
				17.00	13.49	7.56	299	-37.7	154	
				24.00	13.26	7.60	295	-38.3	114	
				29.00	13.30	7.48	294	-36.8	97.7	
				35.00	12.87	7.59	299	-40.4	69.9	
				44.00	13.41	7.67	299	-41	268	
				57.00	13.21	7.66	303	-39.8	56	
MW-4	13-May-09	100	25	0.00	12.43	6.78	155	-50.1	229	Water was slightly turbid and gray in color at beginning of purging, then slowly cleared during purging. Water had no odor, no sheen and no effervescence.
				5.00	11.82	6.80	159	-49.0	50.9	
				10.00	11.75	6.46	162	-38.0	30.5	
				15.00	11.74	6.33	165	-28.3	13.7	
				25.00	11.68	6.35	169	-28.7	8.23	
MW-5	13-May-09	100	16	0.00	11.62	6.47	196	-10.4	79.5	Water was slightly turbid and beige in color at beginning of purging, then slowly cleared during purging. Water had no odor, no sheen and no effervescence.
				2.00	11.20	6.31	194	4.9	255	
				6.00	11.08	6.25	195	5.5	147	
				11.00	11.11	6.31	199	7.2	35.9	
				16.00	11.22	6.46	199	1.0	15.3	
MW-6	13-May-09	100	26	0.00	12.63	7.01	249	-17.2	25.6	Water is clear and has little turbidity. Water had no odor, no sheen and no effervescence.
				6.00	12.30	7.09	254	-19.2	8.19	
				12.00	12.67	7.01	250	-16.0	7.04	
				18.00	12.96	6.88	241	-11.7	5.67	
				26.00	12.37	6.84	238	-12.9	4.91	
MW-7	13-May-09	100	40	0.00	10.73	6.87	122	-19.1	322	Water is cloudy and gray. Water had no odor, no sheen and no effervescence.
				5.00	10.65	6.65	124	-8.2	412	
				10.00	10.88	6.65	120	-4.2	317	
				15.00	10.58	6.71	119	-5.0	189	
				20.00	10.50	6.70	119	-8.3	170	
				25.00	10.84	6.79	118	-7.0	162	
				30.00	10.64	6.77	119	-5.1	123	
				35.00	11.18	6.85	119	-7.0	53.2	
				40.00	11.57	6.76	118	-1.30	48.9	
MW-8	14-May-09	100	28	0.00	10.79	6.55	259	9.0	639	Water was turbid and light brown in color at beginning of purging, then slowly cleared during purging. Water had no odor, no sheen and no effervescence.
				6.00	10.86	6.57	257	10.0	675	
				12.00	10.63	6.57	255	15.8	139	
				17.00	10.64	6.36	258	18.6	101	
				21.00	10.65	6.52	254	21.6	62.9	
				25.00	10.82	6.42	252	14.7	47.7	
				28.00	10.83	6.47	254	13.0	36.9	
MW-9	14-May-09	100	32	0.00	10.46	6.67	237	3.7	306	Water was colorless and turbid with no odor, no sheen and no effervescence.
				6.00	10.41	6.73	229	14.0	253	
				11.00	10.27	6.79	245	15.2	103	
				13.00	10.43	6.54	252	16.0	56	
				21.00	10.32	6.64	260	21.2	19.9	
				32.00	10.17	6.65	263	13.0	9.54	

**Table 4**  
**Soil Analytical Results - Metals**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

<b>sample name:</b>	SB-050809-SKB-1	SB-050809-SKB-2	SB-050809-SKB-3	SB-050709-SKB-4 (7.5-8)	SB-050709-SKB-5	SB-050709-SKB-6	SB-050609-SKB-7 (7-8)	SB-050609-SKB-8 (7-8)
<b>sample date:</b>	05/08/2009	05/08/2009	05/08/2009	05/07/2009	05/07/2009	04/30/2009	05/06/2009	05/06/2009
<b>start depth:</b>	7.5	7.5	7.5	7.5	7.5	7.5	7	7
<b>end depth:</b>	8	8	8	8	8	8	8	8
<b>boring location:</b>	B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8

Metals	Part 375 Unrestricted Use SCOs	Background Sample Range	Units								
Antimony	N/A	ND	mg/kg	< 4.4 U	< 4.6 U	< 4.8 U	< 4.5 U	< 4.4 U	< 4.6 U	< 4.6 U	< 4.4 U
Arsenic	13	ND - 3.8 J	mg/kg	2.3 J	2.4 J	2.4 J	2.2 J	2.3 J	2.6 J	3.4 J	3.1 J
Beryllium	7.2	0.48 J - 0.71 J	mg/kg	0.33 J	0.34 J	0.27 J	0.69 J	0.48 J	0.52 J	0.31 J	0.42 J
Cadmium	2.5	ND	mg/kg	< 1.3 U	< 1.4 U	< 1.5 U	< 1.4 U	< 1.3 U	< 1.4 U	< 1.4 U	< 1.3 U
Chromium	N/A	13.3 - 22.0	mg/kg	10.6	10.6	9.7	24.7	14.7	20.0	8.8	13.6
Copper	50	13.3 - 28.4	mg/kg	22.8	21.3	21.5	21.3	26.8	28.1	20.8	36.6
Hexavalent Chromium	1	ND	mg/kg	< 1.1 U	< 1.1 U	< 1.1 U	< 1.1 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.96 U
Lead	63	3.5 J - 34.7	mg/kg	3.1 J	4.1 J	4.0 J	9.0	4.3	4.5	5.4	5.9
Mercury	0.18	0.0055 J - 0.11	mg/kg	0.0047 J	< 0.057 U	0.0088 J	0.052 J	0.015 J	0.013 J	0.014 J	0.011 J
Nickel	30	22.6 - 32.3	mg/kg	<b>37.5</b>	<b>40.7</b>	27.1	<b>33.2</b>	<b>31.7</b>	<b>30.6</b>	24.2	<b>42.2</b>
Selenium	3.9	ND	mg/kg	< 10.1 U	< 10.4 U	< 11.0 U	< 10.2 U	< 10.1 U	< 10.6 U	< 10.5 U	< 9.9 U
Silver	2	ND - 0.21 J	mg/kg	< 1.3 U	< 1.4 U	0.080 J	< 1.4 U	< 1.3 U	< 1.4 U	0.67 J	0.11 J
Thallium	N/A	ND	mg/kg	< 4.0 U	< 4.2 U	1.8 J	< 4.1 U	< 4.0 U	1.4 J	3.5 J	1.1 J
Titanium	N/A	104 - 209	mg/kg	224	240	145	286	255	325	87.8	133
Zinc	109	31.7 - 67.9	mg/kg	34.3	29.0	24.1	33.4	35.8	30.7	29.5	40.2

**Notes:**

All concentrations are given in milligrams per kilogram (mg/kg).

U = The compound was not detected at the indicated concentration.

J = Indicates and estimated value

ND = Not Detected at or below the laboratory method detection limit

**BOLD** values exceed Part 375 6.8(a) unrestricted use soil cleanup objectives

N/A = No standard is given.

**Table 4**  
**Soil Analytical Results - Metals**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

				sample name:	SB-050609-SKB-9 (7-8)	SB-050609-SKB-10 (6-7)	SB-050609-SKB-11 (6-7)	SB-12 (6-7)	SB-050609-SKB-13 (0-1)	SB-14 (2-4)	SB-15 (2-4)	SB-16 (0-2) (8-10 Bgs)
				sample date:	05/06/2009	05/06/2009	05/06/2009	05/05/2009	05/06/2009	05/05/2009	05/05/2009	05/05/2009
				start depth:	7	6	6	6	0	2	2	8
				end depth:	8	7	7	7	1	4	4	10
				boring location:	B-9	B-10	B-11	B-12	B-13	B-14	B-15	B-16
Metals	Part 375 Unrestricted Use SCOs	Background Sample Range	Units									
Antimony	N/A	ND	mg/kg	< 4.4 U	< 4.6 U	< 4.7 U	< 4.9 U	< 5.0 U	< 4.6 U	< 4.3 U	< 5.2 U	
Arsenic	13	ND - 3.8 J	mg/kg	2.4 J	2.9 J	3.1 J	2.6 J	< 6.3 U	2.0 J	< 5.5 U	4.4 J	
Beryllium	7.2	0.48 J - 0.71 J	mg/kg	0.41 J	0.41 J	0.38 J	0.38 J	0.37 J	0.39 J	0.33 J	0.66 J	
Cadmium	2.5	ND	mg/kg	< 1.3 U	< 1.4 U	< 1.4 U	< 1.5 U	< 1.5 U	< 1.4 U	< 1.3 U	< 1.6 U	
Chromium	N/A	13.3 - 22.0	mg/kg	16.8	10.9	13.1	48.7	12.8	10.8	14.3	42.8	
Copper	50	13.3 - 28.4	mg/kg	30.8	39.8	11.3	17.2	19.0	20	41.3	17.7	
Hexavalent Chromium	1	ND	mg/kg	< 1.0 U	< 0.97 U	< 1.1 U	< 2.5 U	< 1.2 U	< 2.3 U	< 2.2 U	< 2.5 U	
Lead	63	3.5 J - 34.7	mg/kg	5.7	7.7	6.2	3.5 J	17.5	4.6	4.5	9.6	
Mercury	0.18	0.0055 J - 0.11	mg/kg	0.015 J	0.022 J	0.011 J	0.039 J	0.13	0.0080 J	0.0074 J	0.043 J	
Nickel	30	22.6 - 32.3	mg/kg	<b>53.6</b>	<b>45.0</b>	18.8	<b>38.6</b>	<b>113</b>	17.6	29.5	30.0	
Selenium	3.9	ND	mg/kg	< 10.1 U	< 10.4 U	< 10.7 U	< 11.1 U	< 11.3 U	< 10.5 U	< 9.7 U	< 11.8 U	
Silver	2	ND - 0.21 J	mg/kg	0.078 J	0.30 J	0.11 J	0.075 J	1.6	< 1.4 U	< 1.3 U	0.28 J	
Thallium	N/A	ND	mg/kg	< 4.0 U	1.4 J	< 4.3 U	< 4.5 U	< 4.5 U	< 4.2 U	1.1 J	2.0 J	
Titanium	N/A	104 - 209	mg/kg	184	48.3	105	298	129	201	282	260	
Zinc	109	31.7 - 67.9	mg/kg	35.2	52.4	37.8	31.3	65.3	30.6	33.5	48.3	

**Notes:**

All concentrations are given in milligrams per kilogram (mg/kg).  
U = The compound was not detected at the indicated concentration.  
J = Indicates and estimated value  
ND = Not Detected at or below the laboratory method detection limit  
**BOLD** values exceed Part 375 6.8(a) unrestricted use soil cleanup objectives  
N/A = No standard is given.

**Table 4**  
**Soil Analytical Results - Metals**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

				sample name:	SB-050409-SKB-17-01	SB-050409-SKB-18-01	SB-050409-SKB-19-01	SB-050409-SKB-20-01	SB-050409-SKB-20A-01	SB-21 (0-2) (8-10 Bgs)	SB-050709-SKB-BG1
				sample date:	05/04/2009	05/04/2009	05/04/2009	05/04/2009	05/04/2009	05/05/2009	05/07/2009
				start depth:	7	5	8	8	5	8	0
				end depth:	9	7	10	10	7	10	1
				boring location:	B-17	B-18	B-19	B-20	B-20A	B-21	BG-1
Metals	Part 375 Unrestricted Use SCOs	Background Sample Range	Units								
Antimony	N/A	ND	mg/kg	< 5.0 U	< 4.4 U	< 4.6 U	< 4.6 U	< 5.4 U	< 4.5 U	< 4.9 U	
Arsenic	13	ND - 3.8 J	mg/kg	2.2 J	< 5.6 U	4.2 J	< 5.8 U	3.0 J	1.8 J	< 6.2 U	
Beryllium	7.2	0.48 J - 0.71 J	mg/kg	0.54 J	0.37 J	0.37 J	0.34 J	0.57 J	0.32 J	0.69 J	
Cadmium	2.5	ND	mg/kg	< 1.5 U	< 1.3 U	< 1.4 U	< 1.4 U	< 1.6 U	< 1.4 U	< 1.5 U	
Chromium	N/A	13.3 - 22.0	mg/kg	36.8	19.6	12.7	16.4	21.7	8.9	15.2	
Copper	50	13.3 - 28.4	mg/kg	14.1	7.2	29.3	26.4	39.4	4.1	16.7	
Hexavalent Chromium	1	ND	mg/kg	< 2.5 U	< 2.3 U	< 2.2 U	< 2.2 U	< 2.7 U	< 2.2 U	< 1.2 U	
Lead	63	3.5 J - 34.7	mg/kg	6.1	3.3 J	10.3	4.4	15.9	0.91 J	13.1	
Mercury	0.18	0.0055 J - 0.11	mg/kg	0.018 J	0.0072 J	0.017 J	0.011 J	0.044 J	0.011 J	0.051 J	
Nickel	30	22.6 - 32.3	mg/kg	26.5	16.3	26.6	<b>32.6</b>	<b>35.6</b>	7.5	22.6	
Selenium	3.9	ND	mg/kg	< 11.3 U	< 10.0 U	< 10.5 U	< 10.3 U	< 12.4 U	< 10.1 U	< 11.1 U	
Silver	2	ND - 0.21 J	mg/kg	< 1.5 U	0.14 J	0.071 J	< 1.4 U	0.15 U	0.11 J	< 1.5 U	
Thallium	N/A	ND	mg/kg	< 4.5 U	< 4.0 U	< 4.2 U	1.2 J	1.2 J	< 4.1 U	< 4.4 U	
Titanium	N/A	104 - 209	mg/kg	276	251	183	240	242	906	261	
Zinc	109	31.7 - 67.9	mg/kg	35.2	29.9	45.1	35.7	53.0	19.0	46.7	

**Notes:**

All concentrations are given in milligrams per kilogram (mg/kg).

U = The compound was not detected at the indicated concentration.

J = Indicates and estimated value

ND = Not Detected at or below the laboratory method detection limit

**BOLD** values exceed Part 375 6.8(a) unrestricted use soil cleanup objectives

N/A = No standard is given.

**Table 4**  
**Soil Analytical Results - Metals**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

				sample name:	SB-050709-SKB-BG2	SB-050709-SKB-BG3	SB-050809-SKB-BG4
				sample date:	05/07/2009	05/07/2009	05/08/2009
				start depth:	0	0	7
				end depth:	1	1	8
				boring location:	BG-2	BG-3	BG-4
Metals	Part 375 Unrestricted Use SCOs	Background Sample Range	Units				
Antimony	N/A	ND	mg/kg	< 6.1 U	< 5.3 U	< 4.2 U	
Arsenic	13	ND - 3.8 J	mg/kg	3.8 J	3.7 J	< 5.4 U	
Beryllium	7.2	0.48 J - 0.71 J	mg/kg	0.71 J	0.65 J	0.48 J	
Cadmium	2.5	ND	mg/kg	< 1.9 U	< 1.6 U	< 1.3 U	
Chromium	N/A	13.3 - 22.0	mg/kg	22.0	20.5	13.3	
Copper	50	13.3 - 28.4	mg/kg	13.3	16.2	28.4	
Hexavalent Chromium	1	ND	mg/kg	< 1.4 U	< 1.3 U	< 1.1 U	
Lead	63	3.5 J - 34.7	mg/kg	34.7	24.0	3.5 J	
Mercury	0.18	0.0055 J - 0.11	mg/kg	0.11	0.047 J	0.0055 J	
Nickel	30	22.6 - 32.3	mg/kg	28.2	27.7	<b>32.3</b>	
Selenium	3.9	ND	mg/kg	< 14.0 U	< 12.1 U	< 9.6 U	
Silver	2	ND - 0.21 J	mg/kg	0.21 J	0.10 J	< 1.3 U	
Thallium	N/A	ND	mg/kg	< 5.6 U	< 4.8 U	< 3.9 U	
Titanium	N/A	104 - 209	mg/kg	104	209	555	
Zinc	109	31.7 - 67.9	mg/kg	67.9	61.4	31.7	

**Notes:**

All concentrations are given in milligrams per kilogram (mg/kg).

U = The compound was not detected at the indicated concentration.

J = Indicates and estimated value

ND = Not Detected at or below the laboratory method detection limit

**BOLD** values exceed Part 375 6.8(a) unrestricted use soil cleanup objectives

N/A = No standard is given.

**Table 5**  
**Soil Analytical Results - PAHs**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

		sample name:	SB-050609-SKB-13 (0-1)	SB-14 (2-4)	SB-15 (2-4)	SB-050809-SKB-22	SB-050809-SKB-23	SB-050609-SKB-24	SB-050609-SKB-25
		sample date:	05/06/2009	05/05/2009	05/05/2009	05/08/2009	05/08/2009	05/06/2009	05/06/2009
		start depth:	0	2	2	7.5	7	0	7
		end depth:	1	4	4	8	8	1	8
		boring location:	B-13	B-14	B-15	B-22	B-23	B-24	B-25
PAHs	Part 375 Unrestricted Use SCOs								
Acenaphthene	20	mg/kg	< 0.330 U	< 0.300 U	< 0.290 U	< 0.290 U	< 0.290 U	0.170 J	< 0.290 U
Acenaphthylene	100	mg/kg	0.05 J	< 0.300 U	< 0.290 U	< 0.290 U	< 0.290 U	0.280 J	< 0.290 U
Anthracene	100	mg/kg	< 0.330 U	< 0.300 U	< 0.290 U	< 0.290 U	< 0.290 U	0.700	< 0.290 U
Benzo(a)Anthracene	1	mg/kg	< 0.330 U	0.071 J	0.04 J	< 0.290 U	< 0.290 U	<b>6.700</b>	< 0.290 U
Benzo(a)Pyrene	1	mg/kg	0.03 J	0.100 J	0.042 J	< 0.290 U	< 0.290 U	<b>8.300</b>	< 0.290 U
Benzo(b)Fluoranthene	1	mg/kg	< 0.330 U	0.094 J	< 0.290 U	< 0.290 U	< 0.290 U	<b>7.700</b>	< 0.290 U
Benzo(G,H,I)Perylene	100	mg/kg	< 0.330 U	0.024 J	< 0.290 U	< 0.290 U	< 0.290 U	4.600	< 0.290 U
Benzo(k)Fluoranthene	0.8	mg/kg	< 0.330 U	0.040 J	< 0.290 U	< 0.290 U	< 0.290 U	<b>3.100</b>	< 0.290 U
Chrysene	1	mg/kg	0.028 J	0.068 J	0.039 J	< 0.290 U	< 0.290 U	<b>6.800</b>	< 0.290 U
Dibenzo(A,H)Anthracene	0.33	mg/kg	< 0.330 U	< 0.300 U	< 0.290 U	< 0.290 U	< 0.290 U	<b>1.700</b>	< 0.290 U
Fluoranthene	100	mg/kg	0.024 J	0.044 J	0.05 J	0.017 J	< 0.290 U	6.400	< 0.290 U
Fluorene	30	mg/kg	< 0.330 U	< 0.300 U	< 0.290 U	< 0.290 U	< 0.290 U	0.110 J	< 0.290 U
Indeno(1,2,3-Cd)Pyrene	0.5	mg/kg	< 0.330 U	0.058 J	< 0.290 U	< 0.290 U	< 0.290 U	<b>5.600</b>	< 0.290 U
2-Methylnaphthalene	N/A	mg/kg	< 0.330 U	< 0.300 U	< 0.290 U	< 0.290 U	< 0.290 U	0.040 J	< 0.290 U
Naphthalene	12	mg/kg	< 0.330 U	0.051 J	< 0.290 U	< 0.290 U	< 0.290 U	< 0.600 U	< 0.290 U
Phenanthrene	100	mg/kg	< 0.330 U	< 0.300 U	< 0.290 U	0.019 J	< 0.290 U	1.200	< 0.290 U
Pyrene	100	mg/kg	0.02 J	0.059 J	0.055 J	0.017 J	< 0.290 U	6.800	< 0.290 U

**Notes:**

All concentrations are given in milligrams per kilogram (mg/kg).  
U = The compound was not detected at the indicated concentration.  
J = Indicates and estimated value  
**BOLD** values exceed Part 375 6.8(a) unrestricted use soil cleanup objectives  
N/A = No standard is given.

**Table 6**  
**Groundwater Analytical Results**  
**Watchtower Bible and Tract Society**  
**1 King Drive, Warwick, NY**

sample name:		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
sample date:		5/13/2009	5/13/2009	5/13/2009	5/13/2009	5/13/2009	5/13/2009	5/13/2009	5/14/2009	5/14/2009
Chemical Name	TOGS 1.1.1 Class GA									
<b>Metals</b>										
Antimony	6 ug/l	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U
Arsenic	50 ug/l	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U
Beryllium	3 ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Cadmium	10 ug/l	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Chromium	100 ug/l	2.6 J	1.8 J	1.3 J	2.4 J	1.1 J	2.3 J	2.6 J	5.8	1.7 J
Copper	1000 ug/l	7.8	4.5 J	5.5	7.6	5.8	6.0	10.0	17.9	6.4
Lead	50 ug/l	2.5 J	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U	< 15.0 U
Nickel	200 ug/l	2.9 J	< 5.0 U	3.1 J	4.3 J	7.4	19.2	7.0	21.6	5.2
Selenium	20 ug/l	< 38.0 U	< 38.0 U	< 38.0 U	< 38.0 U	< 38.0 U	< 38.0 U	< 38.0 U	< 38.0 U	< 38.0 U
Silver	100 ug/l	< 5.0 U	< 5.0 U	< 5.0 U	0.26 J	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U
Thallium	0.5 ug/l	<b>4.0</b> J	< 15.0 U	< 15.0 U	<b>6.1</b> J	<b>5.8</b> J	<b>6.3</b> J	<b>4.0</b> J	< 15.0 U	< 15.0 U
Titanium	N/A N/A	34.8	33.2	34.7	62.3	11.3 J	41.6	60.5	95.3	35.3
Zinc	5000 ug/l	15.2 J	9.2 J	10.6 J	12.9 J	8.3 J	12.5 J	12.3 J	41.4	28.3
Chromium 3+	N/A ug/l	< 10. U	< 10. U	< 10. U	< 10. U	< 10. U	< 10. U	< 10. U		
Hexavalent Chromium	100 ug/l	< 10. U	< 10. U	< 10. U	< 10. U	8.9 J	6.5 J	< 10. U	< 10. U	< 10. U
Mercury	1.4 ug/l	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
<b>PAHs</b>										
2-Methylnaphthalene	N/A ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Acenaphthene	20 ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Acenaphthylene	N/A ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Anthracene	50 ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Benzo(a)Anthracene	0.002 ug/l	NA	NA	<b>0.83</b> J	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Benzo(a)Pyrene	0 ug/l	NA	NA	<b>0.97</b> J	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Benzo(b)Fluoranthene	0.002 ug/l	NA	NA	<b>1.0</b> J	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Benzo(G,H,I)Perylene	N/A ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Benzo(k)Fluoranthene	0.002 ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Chrysene	0.002 ug/l	NA	NA	<b>0.77</b> J	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Dibenzo(A,H)Anthracene	N/A ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Fluoranthene	50 ug/l	NA	NA	1.1 J	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Fluorene	50 ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Indeno(1,2,3-Cd)Pyrene	0.002 ug/l	NA	NA	<b>0.33</b> J	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Naphthalene	10 ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Phenanthrene	50 ug/l	NA	NA	< 4.3 U	< 4.3 U	NA	< 4.3 U	NA	NA	NA
Pyrene	50 ug/l	NA	NA	0.99 J	< 4.3 U	NA	< 4.3 U	NA	NA	NA

**Notes:**

All concentrations are given in micrograms per liter (µg/l).

U = The compound was not detected at the indicated concentration.

J = Indicates and estimated value

**BOLD** values exceed TOGS groundwater standards

N/A = No standard is given.

NA = The compound was not analyzed

## **APPENDIX A**



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-1**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York

DRILL FLUID:

DRILLING METHOD: Geoprobe

CLIENT: Watchtower Bible and Track Society of New York, Inc

DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: Eric Holmes

INSPECTOR: Sarah Burke

WATER LEVEL OBSERVATIONS DURING DRILLING

START DATE and TIME: 5/8/2009 7:45:00 AM

FINISH DATE and TIME: 5/8/2009 8:05:00 AM

SURFACE ELEV:

CHECKED BY: Sarah Newell

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3.3	0.0				0		<b>TOPSOIL (TOPSOIL)</b>			
							2		<b>m.c. SAND</b> some Silt, little f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
S-2	5	3	0.0				4		<b>f.m. SAND and CLAY</b> little f. gravel, brown, no staining, no odor ( <b>SC/CL</b> )			
							6		<b>SILT and CLAY</b> some f. Sand, little c. gravel, dark brown, moist, no staining, no odor ( <b>ML/CL</b> )			
							8		<b>f.m. SAND</b> some Clay, little f. gravel, brown, wet, no staining, no odor ( <b>SP</b> )			
							8		<b>m.c. SAND</b> some c. Gravel, little silt, brown, wet, no staining, no odor ( <b>SM</b> )			
							10		End of Boring at 10 ft			

Soil sample SB-050809-SKB-1(7.5-8) collected from 7.5' to 8' at 08:00  
Soil sample SB-050809-SKB-1(8-10) collected from 8' to 10' at 08:05

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATED: CHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-2**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-8-09	00:00	4		
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/8/2009 8:05:00 AM							
FINISH DATE and TIME: 5/8/2009 8:15:00 AM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3	0.0			2		<b>TOPSOIL</b> , brown, moist ( <b>TOPSOIL</b> )			
								<b>f.m. SAND</b> , little silt, little f. gravel, trace clay, brown, moist, no staining, no odor ( <b>SM</b> )			
S-2	5	3.5	0.0			4		<b>c. GRAVEL</b> , moist, no staining, no odor ( <b>GP</b> )			
								<b>f.m. SAND</b> , little silt, little f. gravel, trace clay, brown, wet, no staining, no odor ( <b>SM</b> )			
								<b>m.c. SAND</b> , some f. Gravel, little clay, brown, saturated, no staining, no odor ( <b>SP</b> )			
								<b>c. GRAVEL</b> , saturated, no staining, no odor ( <b>GP</b> )			
			0.0			8		<b>m.c. SAND</b> , some f. Gravel, little clay, brown, saturated, no staining, no odor ( <b>SP</b> )			
						10		End of Boring at 10 ft			

Soil sample SB-050809-SKB-2 collected from 7.7' to 8' at 08:10



GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-3**

PROJECT NUMBER: 20024.1001.1102

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LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-8-09	00:00	8		
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/8/2009 8:15:00 AM							
FINISH DATE and TIME: 5/8/2009 8:30:00 AM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3.5	0.0				0		<b>TOPSOIL (TOPSOIL)</b>			
							2		<b>m.c. SAND</b> little clay, little f. gravel, brown, moist, no staining, no odor ( <b>SP</b> )			
							4		<b>f.m. SAND and CLAY</b> trace f. gravel, brown, moist, no staining, no odor ( <b>SC/CL</b> ) <b>CLAY</b> , some f. Sand, brown, moist, no staining, no odor ( <b>CL</b> )			
S-2	5	3.5	0.0				6		<b>c. GRAVEL</b> moist, no staining, no odor ( <b>GP</b> ) <b>f.m. SAND and CLAY</b> and Clay, some f.c. Gravel, brown, moist, no staining, no odor ( <b>SC/CL</b> )		Collected sample SB-050809-SKB-3 collected from 7.5' to 8'	
							8		<b>c. GRAVEL</b> moist, no staining, no odor ( <b>GP</b> ) <b>m.c. SAND</b> some c. Gravel, little clay, brown, moist, no staining, no odor ( <b>SP</b> ) becomes wet			
							10		<b>f. SAND</b> some Silt, brown, wet, no staining, no odor ( <b>SM</b> ) <b>m.c. SAND</b> some f. Gravel, brown, saturated, no staining, no odor ( <b>SP</b> )			
S-3	5	5	0.0				12		<b>f.m. SAND</b> little silt, little f. gravel, trace clay, brown, wet, no staining, no odor ( <b>SM</b> )			
							14					
							16		End of Boring at 15 ft			

GEOPROBE LOG 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-4

PROJECT NUMBER: 20024.1001.1102

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LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-7-09	00:00	4		
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/7/2009 3:00:00 PM							
FINISH DATE and TIME: 5/7/2009 3:15:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	2.5		0.0			0		<b>TOPSOIL (TOPSOIL)</b>			
							2		<b>CLAY and SILT</b> , little f. sand, dark brown, moist, no staining, no odor ( <b>CL/ML</b> )			
							4		<b>f. SAND</b> , some Silt, little clay, trace f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
							6		becomes wet			
							8		<b>f.m. SAND</b> some Silt, little clay, brown, wet, no staining, no odor ( <b>SM</b> )			
S-2	5	3.5		0.0			8		<b>f.m. SAND and SILT</b> some f. Gravel, trace clay, dark brown, moist, no staining, no odor ( <b>SM</b> )		Soil sample SB-050709-SKB-4 (7.5-8) collected from 7.5' to 8' at 15:10	
							8		<b>CLAY and SILT</b> , some f.m. Sand, little f. gravel, red-brown, wet, no staining, no odor ( <b>CL/ML</b> )		Soil sample SB-050709-SKB-4 (8-10) collected from 8' to 10' at 15:10	
							8		<b>f.m. SAND</b> some Silt, trace clay, trace f. gravel, brown, wet, no staining, no odor ( <b>SM</b> )			
							10		End of Boring at 10 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-5**

PROJECT NUMBER: 20024.1001.1102

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LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/7/2009 3:45:00 PM							
FINISH DATE and TIME: 5/7/2009 4:00:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
							0		<b>TOPSOIL (TOPSOIL)</b>			
S-1	5	3		0.0			2		<b>f.m. SAND</b> some Silt, little f.c. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
							4		<b>f.m. SAND</b> some Silt, some Organics, little f. gravel, dark brown, moist, no staining, no odor ( <b>SM</b> )			
							6		<b>f.m. SAND and CLAY</b> some Organics, little silt, dark brown, moist, no staining, no odor ( <b>SC/CL</b> )			
S-2	5	4		0.0			8		<b>f.m. SAND</b> some Silt, trace f. gravel, trace clay, red-brown, moist, no staining, no odor ( <b>SM</b> )		Collected sample SB-050709-SKB-5 collected from 7.5' to 8' at 16:00	
							10		<b>f.m.c. SAND</b> some Silt, little f. gravel, brown, saturated, no staining, no odor ( <b>SM</b> )			
S-3	5	5		0.0			12		<b>m.c. SAND and SILT</b> little f. gravel, trace clay, brown, moist, no staining, no odor ( <b>SM</b> )			
							14					
							16		End of Boring at 15 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-6

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York

DRILL FLUID:

DRILLING METHOD: Geoprobe

CLIENT: Watchtower Bible and Track Society of New York, Inc

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: Eric Holmes

INSPECTOR: Sarah Burke

START DATE and TIME: 5/7/2009 3:15:00 PM

FINISH DATE and TIME: 5/7/2009 3:45:00 PM

SURFACE ELEV:

CHECKED BY: Sarah Newell

WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
		5-7-09	00:00	7	

SAMP./CORE NUMBER	SAMP. ADV. LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3	0.0			0		<b>TOPSOIL (TOPSOIL)</b>			
						2		<b>f.m. SAND</b> some Silt, trace clay, trace f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
						4		<b>c. GRAVEL (GP)</b>			
						4		<b>f.m. SAND and SILT</b> little f. gravel, dark brown, no staining, no odor ( <b>SM</b> )			
						6		<b>m.c. SAND</b> some Clay, trace f. gravel, brown, moist, no staining, no odor ( <b>SP</b> )			
S-2	5	4.5	0.0			8		<b>f.m. SAND</b> some Silt, little clay, little f. gravel, red-brown, no staining, no odor ( <b>SM</b> )		Soil sample SB-050709-SKB-6 collected from 7.5' to 8' at 15:40	
						10		End of Boring at 10 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09





CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-7**

PROJECT NUMBER: 20024.1001.1102

Page 1 of 1

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc.		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-6-09	00:00	4.5		
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/6/2009 12:45:00 PM							
FINISH DATE and TIME: 5/6/2009 1:15:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3		0.0			2		<b>f.m.c. SAND</b> trace silt, brown, moist ( <b>SP</b> )			
							4		<b>m.c. SAND</b> some Silt, little f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
							6		becomes wet			
S-2	5	4		0.0			8		<b>f.m. SAND</b> trace silt, trace f. gravel, dark brown, saturated, no staining, no odor ( <b>SP</b> )		Soil sample SB-050609-SKB-7(7-8) collected from 7' to 8' at 13:00	
							10		<b>f.m. SAND</b> some Silt, little f. gravel, brown, wet, no staining, no odor ( <b>SM</b> )		Soil sample SB-050609-SKB-7(8-10) collected from 8' to 10' at 13:05	
S-3	5	3.5		0.0			12		<b>f.m. SAND</b> some Silt, some Clay, little f. gravel, brown, wet, no staining, no odor ( <b>SM</b> )		Soil sample SB-050609-SKB-7(12-14) collected from 12' to 14' at 13:10	
							14		<b>c. GRAVEL</b> wet, no staining, no odor ( <b>GP</b> )			
							15		End of Boring at 15 ft			
							16					

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-8**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York  
 CLIENT: Watchtower Bible and Track Society of New York, Inc  
 CONTRACTOR: Aquifer Drilling & Testing, Inc.  
 DRILLER: Eric Holmes INSPECTOR: Sarah Burke  
 START DATE and TIME: 5/6/2009 1:15:00 PM  
 FINISH DATE and TIME: 5/6/2009 1:45:00 PM  
 SURFACE ELEV: CHECKED BY: Sarah Newell

DRILL FLUID:		DRILLING METHOD: Geoprobe			
WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	4	0.0				0		<b>TOPSOIL (TOPSOIL)</b>			
							2		<b>f.m. SAND</b> some Silt, little f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
							3		<b>c. GRAVEL</b> moist, no staining, no odor ( <b>GP</b> )			
							4		<b>f.m. SAND</b> some Silt, little f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
							5		<b>f.m. SAND</b> little f. gravel, trace silt, gray-brown, moist, no staining, no odor ( <b>SP</b> )		Soil lithology from 5 to 10' based on interpretation of less than 50% recovery. Actual lithology may vary.	
							6		becomes brown			
S-2	5	1	0.0				8				Collected sample SB-050609-SKB-8(5-10) between 5 to 10'.	
							10		<b>f.m. SAND and CLAY</b> little f. gravel, brown, wet, no staining, no odor ( <b>SC/CL</b> )			
S-3	5	3	0.0				12					
							14					
							15		End of Boring at 15 ft			
							16					

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ\_UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-9**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York  
 CLIENT: Watchtower Bible and Track Society of New York, Inc.  
 CONTRACTOR: Aquifer Drilling & Testing, Inc.  
 DRILLER: Eric Holmes      INSPECTOR: Sarah Burke  
 START DATE and TIME: 5/6/2009 1:45:00 PM  
 FINISH DATE and TIME: 5/6/2009 2:00:00 PM  
 SURFACE ELEV:      CHECKED BY: Sarah Newell

DRILL FLUID:		DRILLING METHOD: Geoprobe			
WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	5-6-09	00:00	7		

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
									<b>TOPSOIL (TOPSOIL)</b>			
S-1	5	4		0.0			2		<b>f.m. SAND</b> little silt, trace f. gravel, light brown, moist, no staining, no odor ( <b>SM</b> )			
							4		<b>m.c. SAND</b> some f.c. Gravel, little silt, gray, moist, no staining, no odor ( <b>SM</b> )  becomes brown			
S-2	5	3		0.0			8		<b>f.m. SAND</b> some f.c. Gravel, little silt, gray, moist, no staining, no odor ( <b>SM</b> )  becomes wet		Soil sample SB-050609-SKB-9(7-8) collected from 7' to 8' at 13:50	
S-3	5	2.5		0.0			12		<b>f.m. SAND</b> some Clay, little f. gravel, brown, wet, no staining, no odor ( <b>SP</b> )			
							14					
							16		End of Boring at 15 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ\_UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-10**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-6-09	00:00	4		
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/6/2009 11:50:00 AM							
FINISH DATE and TIME: 5/6/2009 12:10:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3	0.0				0		<b>TOPSOIL (TOPSOIL)</b>			
							1		<b>c. GRAVEL</b> moist, no staining, no odor ( <b>GP</b> )			
S-2	5	2	0.0				2		<b>f.m. SAND</b> little f. gravel, trace silt, brown, moist, no staining, no odor ( <b>SP</b> )			
							4		becomes wet			
							5		<b>f.m.c. SAND</b> some f. Gravel, trace silt, brown, wet, no staining, no odor ( <b>SP</b> )			Soil lithology and sample depths from 5 to 10' based on interpretation of less than 50% recovery. Actual lithology and sample depths may vary.
							7		<b>m.c. SAND</b> some f. Gravel, black-brown, wet, no staining, no odor ( <b>SP</b> )			Soil sample SB-050609-SKB-10(6-7) collected from 6' to 7'
							8		<b>f.m. SAND</b> some Silt, little f. gravel, no staining, no odor ( <b>SM</b> )			Soil sample SB-050609-SKB-10(7-9) collected from 7' to 9'
							10		End of Boring at 10 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-11**

PROJECT NUMBER: 20024.1001.1102

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LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-6-09	00:00	4		
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/6/2009 12:15:00 PM							
FINISH DATE and TIME: 5/6/2009 12:35:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
				0.0					<b>TOPSOIL (TOPSOIL)</b>			
S-1	5	4		0.2			2		<b>f.m. SAND</b> trace f. gravel, trace silt, red-brown, moist, no staining, no odor ( <b>SP</b> )			
				0.0			4		becomes wet			▽
				0.0			6		<b>f.m. SAND</b> some f.c. Gravel, red-brown, saturated, no staining, no odor ( <b>SP</b> )		Soil sample SB-050609-SKB-11(6-7) collected from 6 to 7'	
S-2	5	3		0.0			8		<b>f.m. SAND</b> some Silt, little f.c. gravel, brown, wet, no staining, no odor ( <b>SM</b> )			
							10		<b>m.c. SAND and f.c. GRAVEL</b> some Silt, brown, saturated, no staining, no odor ( <b>SP/GP</b> )			
S-3	5	3		0.0			12					
							14					
							16		End of Boring at 15 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-12

PROJECT NUMBER: 20024.1001.1102

Page 1 of 1

LOCATION: Warwick, New York  
 CLIENT: Watchtower Bible and Track Society of New York, Inc.  
 CONTRACTOR: Aquifer Drilling & Testing, Inc.  
 DRILLER: Eric Holmes      INSPECTOR: Jaime Herrick  
 START DATE and TIME: 5/5/2009 2:15:00 PM  
 FINISH DATE and TIME: 5/5/2009 2:30:00 PM  
 SURFACE ELEV.:      CHECKED BY: Sarah Newell

DRILL FLUID:		DRILLING METHOD: Geoprobe			
WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	5-5-09	00:00	4.5		

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
				0.0			0		<u>f.m. SAND</u> little silt, brown, no staining, no odor ( <b>SM</b> )			
S-1	5	2.8					2					
S-2				0.3			4					
							6		<u>f.m. SAND</u> some f.c. Gravel, little silt, brown, wet, no staining, no odor ( <b>SM</b> ) <u>f.m.c. SAND</u> some f.c. Gravel, little silt, brown, wet, no staining, no odor ( <b>SM</b> )			
S-3	5	3		0.0			8					
							10		<u>f.m.c. SAND</u> some f.c. Gravel, wet, no staining, no odor ( <b>SP</b> ) <u>f.c. GRAVEL</u> wet, no staining, no odor ( <b>GP</b> )			
S-4	5	4		0.0			12					
							14		<u>f.m. SAND and SILT</u> some f.c. Gravel, no staining, no odor ( <b>SM</b> )			
							16		End of Boring at 15 ft			



Soil sample SB-12 (6-7') collected from 6' to 7' at 14:25

GEOPROBE LOG 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-13**

PROJECT NUMBER: 20024.1001.1102

Page 1 of 1

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-6-09	00:00	4		
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/6/2009 10:00:00 AM							
FINISH DATE and TIME: 5/6/2009 11:00:00 AM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3		2.6			0		<b>TOPSOIL</b> , moist, no staining, no odor ( <b>TOPSOIL</b> )		Soil sample SB-050609-SKB-13(0-1) collected from 0 to 1'	▽
				0.3			2		<b>f.m. SAND</b> trace silt, brown, moist, no staining, no odor ( <b>SP</b> )			
				0.0			4		<b>m.c. SAND</b> trace silt, brown, wet, no staining, no odor ( <b>SP</b> )			
				0.0			6		<b>m.c. SAND</b> brown, saturated, no staining, no odor ( <b>SP</b> )			
S-2	5	3		0.0			7		becomes some f. Gravel		Soil sample SB-050609-SKB-13(7-8) collected from 7 to 8'	
							8		<b>m.c. SAND</b> some f.c. Gravel, gray, saturated, no staining, no odor ( <b>SP</b> )			
							10		<b>f. SAND and CLAY</b> some f. Gravel, wet, no staining, no odor ( <b>SC/CL</b> )			
							10		End of Boring at 10 ft	Refusal at 10'		

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09





CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-15**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Jaime Herrick						
START DATE and TIME: 5/5/2009 10:55:00 AM							
FINISH DATE and TIME: 5/5/2009 11:30:00 AM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
				0.4			2		<b>ASPHALT (FILL)</b> <b>f.m. SAND</b> some f.c. Gravel, some Silt, brown, dry, no staining, no odor. <b>(SM)</b>		Soil sample SB-15 (2-4') collected from 2' to 4' at 10:55	
S-1	5	3		1.3			4		<b>f.m.c. SAND and SILT</b> some c. Gravel, brown, dry, no staining, no odor <b>(SM)</b>		Soil sample SB-15 (7-8') collected from 7' to 8' at 11:00	
S-2	5	3.9		0.0			8		<b>f. SAND and SILT</b> some f.c. Gravel, brown, dry, no staining, no odor <b>(SM)</b>			
				0.2			10		becomes gray, moist <b>f.c. GRAVEL and SILT</b> wet, no staining, no odor <b>(GM)</b>		Soil lithology from 10' to 12' based on interpretation of less than 50% recovery. Actual lithology may vary.	
S-3	2	0.5		0.0			12		End of Boring at 12 ft		Refusal at 12'	
							14					
							16					

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-16

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-5-09	00:00	10.9		
DRILLER: Eric Holmes	INSPECTOR: Jaime Herrick						
START DATE and TIME: 5/5/2009 8:35:00 AM							
FINISH DATE and TIME: 5/5/2009 9:05:00 AM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	2.5	0.0			0-2		<b>TOPSOIL (TOPSOIL)</b>			
						2-4		<b>f. SAND and SILT</b> some f.c. Gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
						4-6		<b>c. GRAVEL</b> brown, moist, no staining, no odor ( <b>GP</b> )			
S-2	5	1.8	0.5			6-10		<b>SILT and CLAY</b> some f. Sand, some f. Gravel, drak gray/black, moist, no staining, slight sewage odor ( <b>CL-ML</b> )		Soil lithology from 5 to 10' based on interpretation of less than 50% recovery. Actual lithology may vary.	
						8-10				Soil sample SB-16 (0-2') collected from 8' to 10' at 08:50	
						10-12				Soil sample SB-16 (2-4') collected from 10' to 12' at 08:50	
S-3	5	3	0.4			12-15		<b>f. SAND and SILT</b> some Clay, some f.c. Gravel, brown, moist, no staining, slight sewage odor ( <b>SM</b> )		Soil sample SB-16 (4-6') collected from 12' to 15' at 08:55	
						15-16		End of Boring at 15 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09





CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-17**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/4/2009 11:15:00 AM							
FINISH DATE and TIME: 5/4/2009 11:45:00 AM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	5		0.0			2		<b>f.m. SAND</b> brown, moist, no staining, no odor ( <b>SP</b> )			
							4		<b>f.m. SAND</b> little f. gravel, trace silt, gray moist, no staining, no odor ( <b>SP</b> )			
S-2	5	5		0.0			8		<b>CLAY</b> , little f. sand, trace f. gravel, black, wet, no staining, no odor ( <b>CL</b> )		Soil sample SB-050409-SKB-17-01 collected from 7' to 9' at 11:20	
							10		<b>f.m. SAND</b> some f. Gravel, little silt, little clay, light brown and gray, wet, no staining, no odor ( <b>SM</b> )		Soil sample SB-050409-SKB-17-02 collected from 9' to 11' at 11:25	
							12		<b>m.c. SAND</b> little f. gravel, brown, saturated, no staining, no odor ( <b>SP</b> )			
S-3	5	5		0.0			12		<b>f.m. SAND</b> some f. Gravel, little silt, little clay, brown, saturated, no staining, no odor ( <b>SM</b> )		Soil sample SB-050409-SKB-17-03 collected from 11' to 13' at 11:30	
							14					
							16		End of Boring at 15 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATED: CHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-18**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/4/2009 12:00:00 PM							
FINISH DATE and TIME: 5/4/2009 12:15:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3	0.0			2		<u>m.c. SAND</u> brown, moist, no staining, no odor ( <b>SP</b> )		Boring B-18 was abandoned and moved 5' to boring B-18A due to refusal at 7'	
						4		<u>c. GRAVEL</u> moist, no staining, no odor ( <b>GP</b> )			
						5		<u>m.c. SAND</u> some f. Gravel, brown, moist, no staining, no odor ( <b>SP</b> )			
			0.0			6		<u>CLAY</u> , olive-gray, moist, no staining, no odor ( <b>CL</b> )			
S-2	5	2				7		End of Boring at 7 ft		Refusal at 7'	
						8					
						10					

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-18A**

PROJECT NUMBER: 20024.1001.1102

Page 1 of 1

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/4/2009 12:15:00 PM							
FINISH DATE and TIME: 5/4/2009 12:30:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3		0.0			2		<b>m.c. SAND</b> brown, moist, no staining, no odor ( <b>SP</b> )			
							4		<b>c. GRAVEL</b> moist, no staining, no odor ( <b>GP</b> )			
							6		<b>CLAY</b> , some m.c. Sand, trace c. gravel, dark gray, moist, no staining, no odor ( <b>CL</b> )		Soil sample SB-SKB-050409-18-01 collected from 5' to 7' at 12:20	
S-2	5	3		0.0			8		<b>CLAY</b> , some Silt, trace f. gravel, black, moist, no staining, no odor ( <b>CL</b> )		Soil sample SB-SKB-050409-18-02 collected from 7' to 9' at 12:25	
							10		<b>m.c. SAND</b> some c. Gravel, trace silt, brown, moist, no staining, no odor ( <b>SP</b> )		Soil sample SB-SKB-050409-18-03 collected from 9' to 11' at 12:30	
S-3	4	5		0.0			12		<b>f.m. SAND and CLAY</b> little c. gravel, gray, wet, no staining, no odor ( <b>SC/CL</b> )			
							14		becomes saturated			
							16		End of Boring at 15 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-19**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/4/2009 12:40:00 PM							
FINISH DATE and TIME: 5/4/2009 1:40:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	4		0.8			0		<b>TOPSOIL</b> , brown, moist ( <b>TOPSOIL</b> )		Seven attempts made at boring location B-19 to a maximum depth of 10'.	
				3.3			2		<b>f. SAND</b> , little silt, red-brown, moist, no staining, no odor ( <b>SM</b> )			
				0.3					<b>f. SAND</b> , trace silt, trace f. gravel, brown, moist, no staining, no odor ( <b>SP</b> )			
				0.0			4		<b>f.m. SAND</b> , some f. Gravel, little silt, brown, moist, no staining, no odor ( <b>SM</b> )			
S-2	5	2		0.0			6				Soil lithology from 5 to 10' based on interpretation of less than 50% recovery. Actual lithology may vary.	
				0.0			8					
				0.0			10		becomes wet End of Boring at 10 ft		Refusal at 10'	

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-20

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York

DRILL FLUID:

DRILLING METHOD: Geoprobe

CLIENT: Watchtower Bible and Track Society of New York, Inc

DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: Eric Holmes

INSPECTOR: Sarah Burke

WATER LEVEL OBSERVATIONS DURING DRILLING

START DATE and TIME: 5/4/2009 2:00:00 PM

FINISH DATE and TIME: 5/4/2009 2:25:00 PM

SURFACE ELEV:

CHECKED BY: Sarah Newell

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3	0.0			0		<b>TOPSOIL (TOPSOIL)</b>		Four attempts made at boring location B-20 to a maximum depth of 10'.	
						1		<b>f. SAND</b> , red-brown, moist, no odor, no staining ( <b>SP</b> )			
						2		<b>f.m. SAND</b> , trace silt, trace f. gravel, light brown, moist, no odor, no staining ( <b>SP</b> )			
						4		<b>f.m. SAND</b> , some Silt, little f.c. gravel, gray, moist, no odor, no staining ( <b>SM</b> )			
S-2	5	2	0.0			5		<b>m.c. SAND</b> , some Silt, some f.c. Gravel, gray, moist, no odor, no staining ( <b>SM</b> )		Soil lithology from 5 to 10' based on interpretation of less than 50% recovery. Actual lithology may vary.	
						8		Soil sample SB-050409-SKB-20-01 collected from 8' to 10' at 14:10. Sample depth is based on interpretation of less than 50% recovery. Actual sample depth may vary.			
						10		End of Boring at 10 ft		Refusal at 10'	

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-20A**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/4/2009 2:25:00 PM							
FINISH DATE and TIME: 5/4/2009							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	2		0.0			0-2		<b>TOPSOIL (TOPSOIL)</b>		Soil lithology from 0 to 5' based on interpretation of less than 50% recovery. Actual lithology may vary.	
							2-4		<b>f.m. SAND</b> little f.c. gravel, trace silt, brown, moist, no staining, no odor ( <b>SP</b> )  becomes some f.c. Gravel			
S-2	5	3		0.0			4-6		<b>m.c. SAND</b> some f. Gravel, some Silt, gray, moist, no staining, no odor ( <b>SM</b> )		Soil sample SB-050409-SKB-20A-01 collected from 5' to 7' at 14:50.	
							6-8		<b>CLAY</b> , dark gray, moist ( <b>CL</b> )		Soil sample SB-050409-SKB-20A-02 collected from 7' to 9' at 14:55.	
							8-10		<b>CLAY</b> , some f.c. Gravel, some f. Sand, gray, wet, no staining, no odor ( <b>CL</b> )		Soil sample SB-050409-SKB-20A-03 collected from 9' to 11' at 15:00.	
S-3	5			0.0			10-12		<b>CLAY</b> , some f.c. Gravel, some f. Sand, gray, wet, no staining, no odor ( <b>CL</b> )		Soil sample SB-050409-SKB-20A-04 collected from 11' to 13' at 15:05.	
							12-14		<b>CLAY and f. SAND</b> some f.c. Gravel, brown, saturated, no staining, no odor ( <b>CL/SC</b> )			
							14-15					
							15		End of Boring at 15 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-21**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.			5-5-09	00:00	11		
DRILLER: Eric Holmes	INSPECTOR: Jaime Herrick						
START DATE and TIME: 5/5/2009 9:15:00 AM							
FINISH DATE and TIME: 5/5/2009 10:20:00 AM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	2.5	0.0				0		<b>TOPSOIL (TOPSOIL)</b> <b>f.m. SAND</b> some f.c. Gravel, some Silt, dry, brown, no staining, no odor ( <b>SM</b> )			
							5		<b>f.m. SAND</b> some f.c. Gravel, dry, brown, slight sewage odor ( <b>SP</b> )			
S-2	5	2.5	1.6				8		<b>f.m SAND and SILT</b> trace f.c. gravel, brown, moist, slight sewage odor ( <b>SM</b> )		Soil sample SB-21 (0-2') collected from 8' to 10' at 09:25	
							10		<b>f.m SAND and SILT</b> trace f.c. gravel, brown/gray, moist ( <b>SM</b> )		Soil sample SB-21 (2-4') collected from 10' to 12' at 10:15.	
S-3	5	1.5	0.5				12		<b>f.m.c.SAND</b> some c. Gravel, some Silt, brown/gray, moist, no staining, no odor ( <b>SM</b> )		Soil sample SB-21 (4-6') collected from 12' to 14' at 10:20.	
							15		<b>f.m. SAND</b> trace f.c. gravel, trace silt, brown, wet, no staining, no odor ( <b>SP</b> )		Soil lithology and sample depths from 10' to 15' based on interpretation of less than 50% recovery. Actual lithology and sample depths may vary.	
S-4	5	3.8	0.0				20		End of Boring at 20 ft			

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-22

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York

DRILL FLUID:

DRILLING METHOD: Geoprobe

CLIENT: Watchtower Bible and Track Society of New York, Inc

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: Eric Holmes

INSPECTOR: Sarah Burke

WATER LEVEL  
OBSERVATIONS  
DURING  
DRILLING

DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
5-8-09	00:00	7.5		

START DATE and TIME: 5/8/2009 9:05:00 AM

FINISH DATE and TIME: 5/8/2009 9:40:00 AM

SURFACE ELEV:

CHECKED BY: Sarah Newell

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATED: CHA.GDT 6/18/09

SAMP./CORE NUMBER	SAMP. ADV. LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3	0.0			0		<b>TOPSOIL (TOPSOIL)</b>			
						2		<b>f.m. SAND</b> some Silt, little clay, little f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
						4		<b>m.c. SAND and SILT</b> little c. gravel, trace clay, brown, moist, no staining, no odor ( <b>SM</b> )			
						4		<b>f.m. SAND</b> some Clay, little silt, little f. gravel, brown, moist, no staining, no odor ( <b>SC</b> )			
						6		<b>f.m. SAND</b> trace silt, trace f. gravel, red-brown, moist, no staining, no odor ( <b>SP</b> )			
S-2	3	3	0.0			6		<b>f.m. SAND</b> some Clay, little silt, little f. gravel, brown, moist, no staining, no odor ( <b>SC</b> )			
						7.5		<b>f.m. SAND</b> some Silt, little clay, little f. gravel, light brown, wet, no staining, no odor ( <b>SM</b> )		Soil sample SB-050809-SKB-22 collected from 7' to 7.5' at 09:35	
						8		End of Boring at 8 ft		Refusal at 8'	



CLOUGH HARBOUR & ASSOCIATES LLP

**Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-23**

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York

DRILL FLUID:

DRILLING METHOD: Geoprobe

CLIENT: Watchtower Bible and Track Society of New York, Inc

DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

CONTRACTOR: Aquifer Drilling & Testing, Inc.

DRILLER: Eric Holmes

INSPECTOR: Sarah Burke

WATER LEVEL OBSERVATIONS DURING DRILLING

START DATE and TIME: 5/8/2009 9:40:00 AM

FINISH DATE and TIME: 5/8/2009 10:00:00 AM

SURFACE ELEV:

CHECKED BY: Sarah Newell

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	3.5		0.0			0-2		<b>TOPSOIL (TOPSOIL)</b>			
							2-7.5		<b>m.c. SAND</b> some Silt, little f.c. gravel, trace clay, brown, moist, no staining, no odor ( <b>SM</b> )			
S-2	3	2		0.0			7.5-8		<b>f.m. SAND</b> some f.c. Gravel, trace silt, red-brown, moist, no staining, no odor ( <b>SP</b> )		Soil sample SB-050809-SKB-23 collected from 7.5' to 8' at 08:50	
							8		End of Boring at 8 ft		Refusal at 8'	

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-24

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York		DRILL FLUID:		DRILLING METHOD: Geoprobe			
CLIENT: Watchtower Bible and Track Society of New York, Inc		WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
CONTRACTOR: Aquifer Drilling & Testing, Inc.							
DRILLER: Eric Holmes	INSPECTOR: Sarah Burke						
START DATE and TIME: 5/6/2009 3:30:00 PM							
FINISH DATE and TIME: 5/8/2009 4:00:00 PM							
SURFACE ELEV:		CHECKED BY: Sarah Newell					

SAMP./CORE NUMBER	SAMP. ADV. (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	2.5	0.0			0		<b>TOPSOIL (TOPSOIL)</b>		Soil sample SB-050609-SKB-24 collected from 0' to 1' at 13:55	
						2		<b>f.m. SAND</b> little f.c. gravel, trace silt, brown, moist, no staining, no odor ( <b>SP</b> )			
						4					
S-2	5	2.5	0.0			6		<b>m.c. SAND</b> little silt, little clay, little f. gravel, brown, moist, no staining, no odor ( <b>SM</b> )			
						8		becomes wet			
						10		<b>f. SAND and SILT</b> little clay, trace f. gravel, light brown, wet, no staining, no odor ( <b>SM</b> )			
						12		<b>f.m. SAND</b> some Silt, little clay, little f.c. gravel, brown, wet, no staining, no odor ( <b>SM</b> )			
S-3	5	3	0.0			14					
						16		End of Boring at 15 ft			

GEOPROBE LOG 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09



CLOUGH HARBOUR & ASSOCIATES LLP

Former Kings College Property  
SUBSURFACE LOG  
HOLE NUMBER B-25

PROJECT NUMBER: 20024.1001.1102

LOCATION: Warwick, New York  
 CLIENT: Watchtower Bible and Track Society of New York, Inc.  
 CONTRACTOR: Aquifer Drilling & Testing, Inc.  
 DRILLER: Eric Holmes      INSPECTOR: Sarah Burke  
 START DATE and TIME: 5/6/2009 4:00:00 PM  
 FINISH DATE and TIME: 5/6/2009 4:15:00 PM  
 SURFACE ELEV:      CHECKED BY: Sarah Newell

DRILL FLUID:		DRILLING METHOD: Geoprobe			
WATER LEVEL OBSERVATIONS DURING DRILLING	DATE	TIME	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

SAMP./CORE NUMBER	SAMP. ADV. (ft)	LEN. CORE (ft)	RECOVERY (ft)	PID Readings (ppm)	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, Water Return, etc.	WATER LEVELS AND/OR WELL DATA
S-1	5	4					2 4 6 8 10		<p><b>f.m.c. SAND</b>, little f. gravel, trace silt, brown, moist, no staining, no odor (<b>SP</b>)</p> <p>End of Boring at 10 ft</p>		Soil sample SB-050609-SKB-25 collected from 7' to 8' at 16:10	

GEOPROBE LOG: 20024.1001BORINGLOGS.GPJ UPDATEDCHA.GDT 6/18/09

## **APPENDIX B**



# WELL CONSTRUCTION LOG

BORING NO. B-20A

WELL NO. MW-1

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

CONTRACTOR: Aquifer Drilling and Testing

PROJECT NO.: 20024.1001.1102

SHEET NO.: 1 OF 1

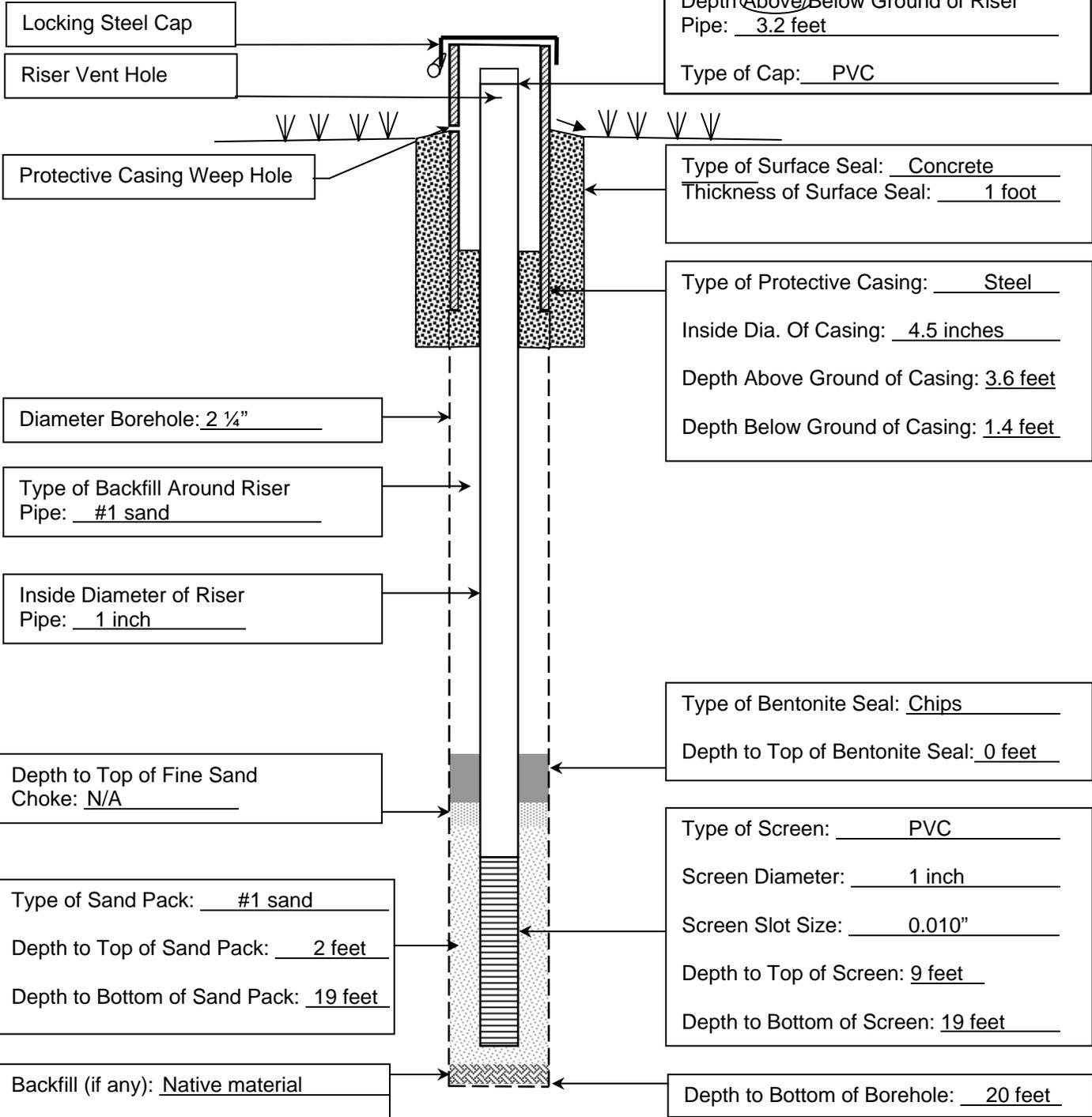
ELEVATION: Not surveyed

START DATE: 5/4/09 TIME: 3:30

FINISH DATE: 5/4/09 TIME: 4:00

DRILLER: Erin Holmes

INSPECTOR: Sarah Burke





# WELL CONSTRUCTION LOG

BORING NO. B-21

WELL NO. MW-2

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

CONTRACTOR: Aquifer Drilling and Testing

PROJECT NO.: 20024.1001.1102

SHEET NO.: 1 OF 1

ELEVATION: Not surveyed

START DATE: 5/5/09 TIME:

FINISH DATE: 5/5/09 TIME:

DRILLER: Erin Holmes

INSPECTOR: Sarah Burke

Locking Steel Cap

Riser Vent Hole

Protective Casing Weep Hole

Diameter Borehole: 2 1/4"

Type of Backfill Around Riser Pipe: #1 sand

Inside Diameter of Riser Pipe: 1 inch

Depth to Top of Fine Sand Choke: N/A

Type of Sand Pack: #1 sand  
Depth to Top of Sand Pack: 1 feet  
Depth to Bottom of Sand Pack: 19 feet

Backfill (if any): Native material

Depth ~~Above~~ Below Ground of Riser Pipe: 3.5 feet  
Type of Cap: PVC

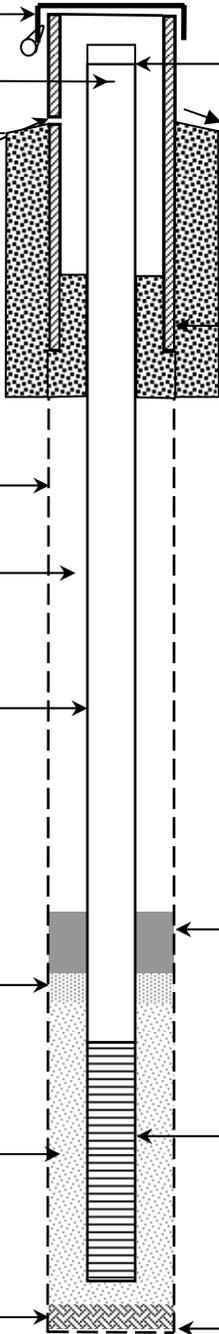
Type of Surface Seal: Concrete  
Thickness of Surface Seal: 1 foot

Type of Protective Casing: Steel  
Inside Dia. Of Casing: 4.5 inches  
Depth Above Ground of Casing: 4 feet  
Depth Below Ground of Casing: 1 foot

Type of Bentonite Seal: Chips  
Depth to Top of Bentonite Seal: 0 feet

Type of Screen: PVC  
Screen Diameter: 1 inch  
Screen Slot Size: 0.010"  
Depth to Top of Screen: 9 feet  
Depth to Bottom of Screen: 19 feet

Depth to Bottom of Borehole: 20 feet





# WELL CONSTRUCTION LOG

BORING NO. B-15

WELL NO. MW-3

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

CONTRACTOR: Aquifer Drilling and Testing

PROJECT NO.: 20024.1001.1102

SHEET NO.: 1 OF 1

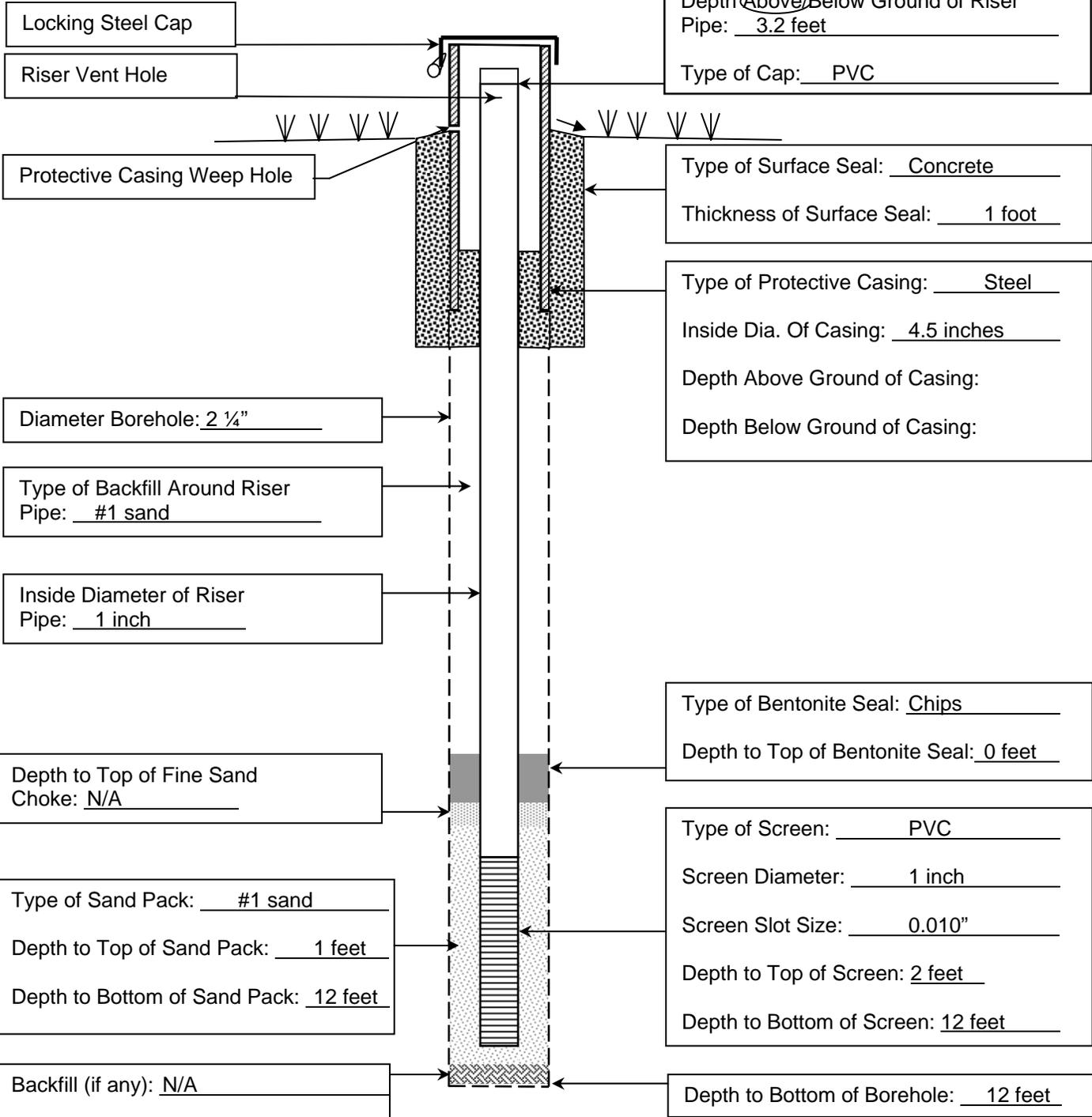
ELEVATION: Not surveyed

START DATE: 5/5/09 TIME:

FINISH DATE: 5/5/09 TIME:

DRILLER: Erin Holmes

INSPECTOR: Jamie Herrick III



Locking Steel Cap

Riser Vent Hole

Protective Casing Weep Hole

Diameter Borehole: 2 1/4"

Type of Backfill Around Riser Pipe: #1 sand

Inside Diameter of Riser Pipe: 1 inch

Depth to Top of Fine Sand Choke: N/A

Type of Sand Pack: #1 sand  
Depth to Top of Sand Pack: 1 foot  
Depth to Bottom of Sand Pack: 12 feet

Backfill (if any): N/A

Depth ~~Above~~/Below Ground of Riser Pipe: 3.2 feet

Type of Cap: PVC

Type of Surface Seal: Concrete

Thickness of Surface Seal: 1 foot

Type of Protective Casing: Steel

Inside Dia. Of Casing: 4.5 inches

Depth Above Ground of Casing:

Depth Below Ground of Casing:

Type of Bentonite Seal: Chips

Depth to Top of Bentonite Seal: 0 feet

Type of Screen: PVC

Screen Diameter: 1 inch

Screen Slot Size: 0.010"

Depth to Top of Screen: 2 feet

Depth to Bottom of Screen: 12 feet

Depth to Bottom of Borehole: 12 feet



# WELL CONSTRUCTION LOG

BORING NO. B-14

WELL NO. MW-4

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

PROJECT NO.: 20024.1001.1102

CONTRACTOR: Aquifer Drilling and Testing

SHEET NO.: 1 OF 1

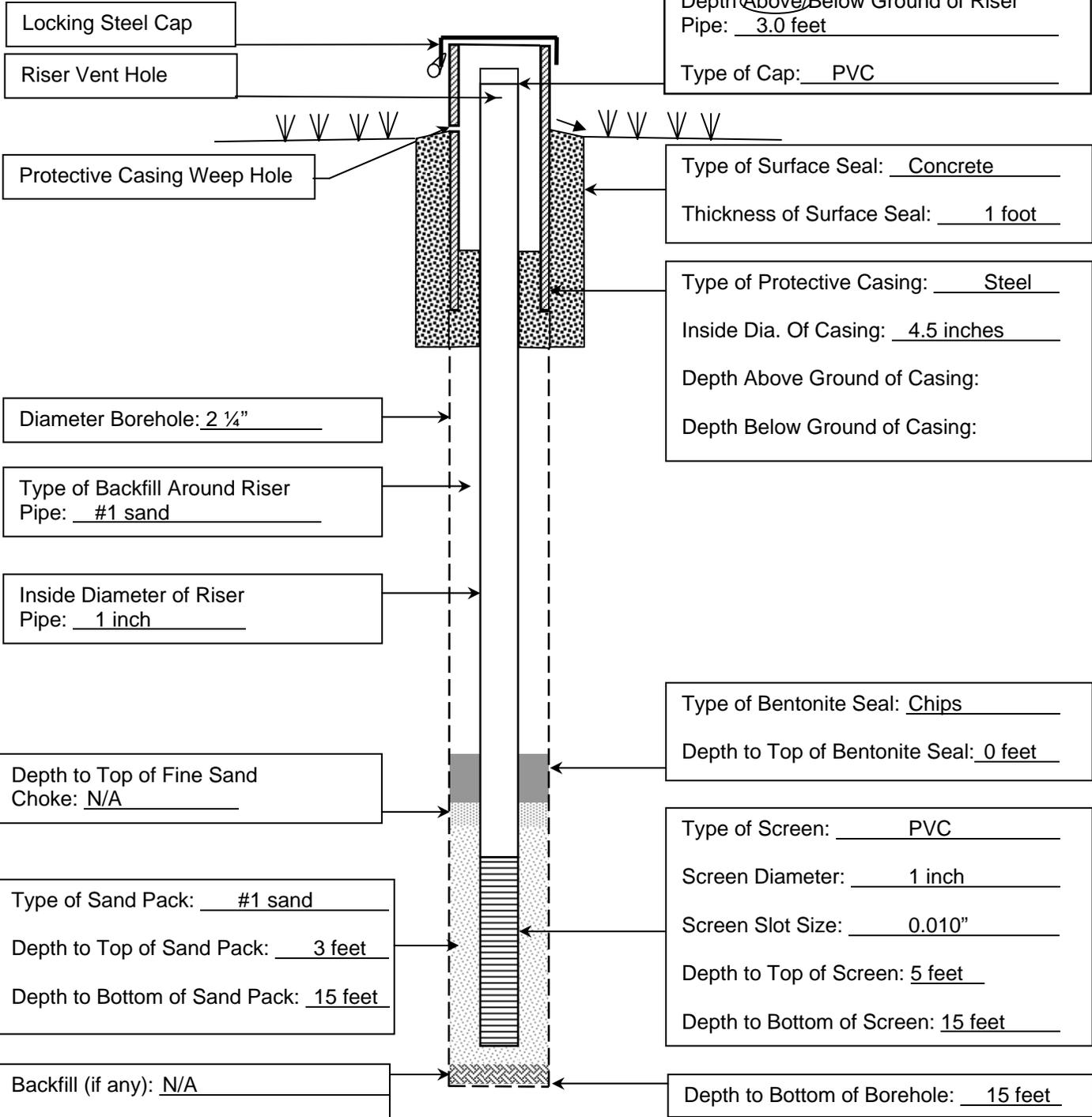
ELEVATION: Not surveyed

START DATE: 5/5/09 TIME:

FINISH DATE: 5/5/09 TIME:

DRILLER: Erin Holmes

INSPECTOR: Jamie Herrick III



Locking Steel Cap

Riser Vent Hole

Protective Casing Weep Hole

Diameter Borehole: 2 1/4"

Type of Backfill Around Riser Pipe: #1 sand

Inside Diameter of Riser Pipe: 1 inch

Depth to Top of Fine Sand Choke: N/A

Type of Sand Pack: #1 sand  
Depth to Top of Sand Pack: 3 feet  
Depth to Bottom of Sand Pack: 15 feet

Backfill (if any): N/A

Depth ~~Above~~/Below Ground of Riser Pipe: 3.0 feet

Type of Cap: PVC

Type of Surface Seal: Concrete

Thickness of Surface Seal: 1 foot

Type of Protective Casing: Steel

Inside Dia. Of Casing: 4.5 inches

Depth Above Ground of Casing:

Depth Below Ground of Casing:

Type of Bentonite Seal: Chips

Depth to Top of Bentonite Seal: 0 feet

Type of Screen: PVC

Screen Diameter: 1 inch

Screen Slot Size: 0.010"

Depth to Top of Screen: 5 feet

Depth to Bottom of Screen: 15 feet

Depth to Bottom of Borehole: 15 feet



# WELL CONSTRUCTION LOG

BORING NO. B-12

WELL NO. MW-5

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

CONTRACTOR: Aquifer Drilling and Testing

PROJECT NO.: 20024.1001.1102

SHEET NO.: 1 OF 1

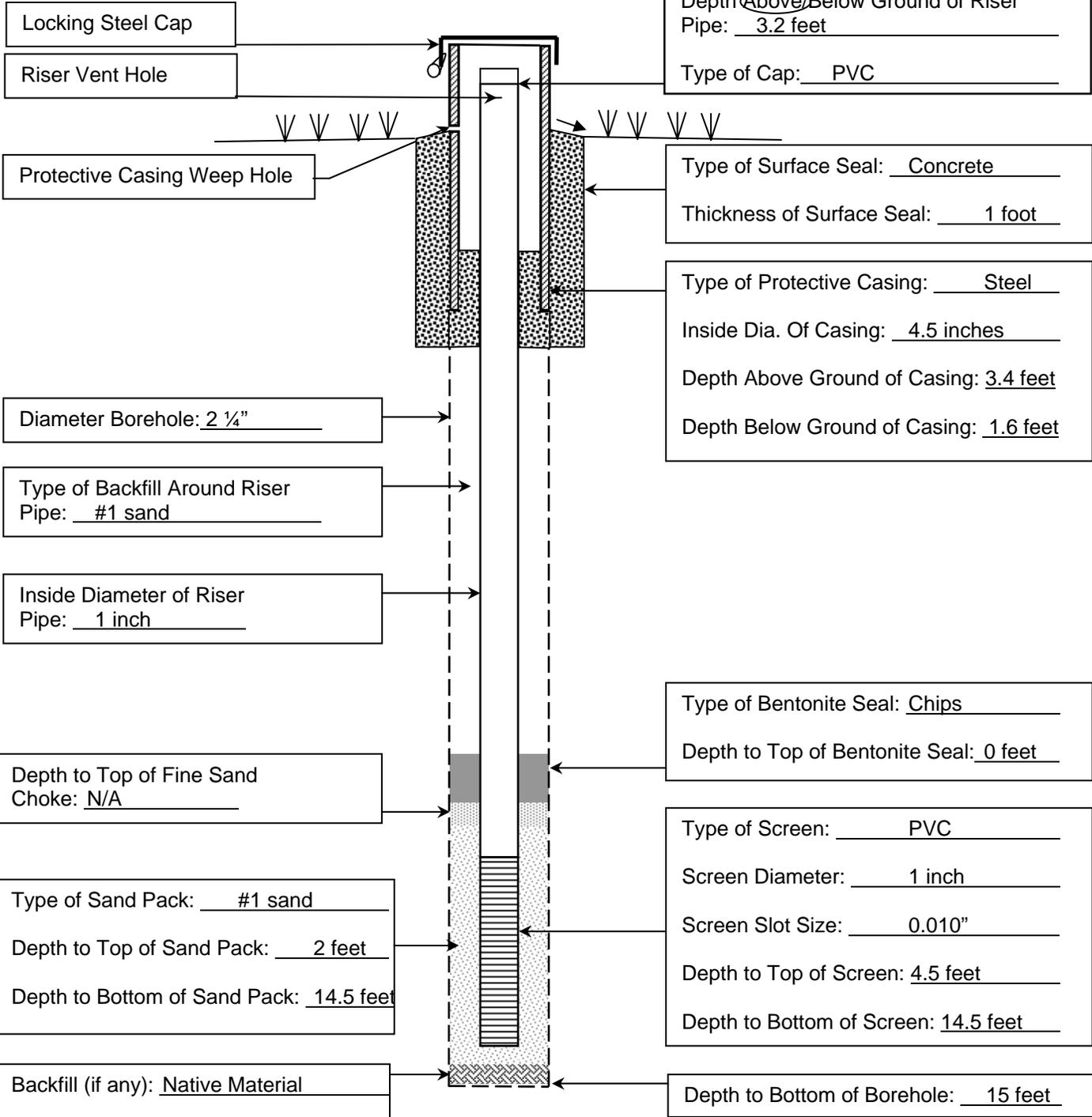
ELEVATION: Not surveyed

START DATE: 5/5/09 TIME:

FINISH DATE: 5/5/09 TIME:

DRILLER: Erin Holmes

INSPECTOR: Jamie Herrick III





# WELL CONSTRUCTION LOG

BORING NO. B-13

WELL NO. MW-6

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

CONTRACTOR: Aquifer Drilling and Testing

PROJECT NO.: 20024.1001.1102

SHEET NO.: 1 OF 1

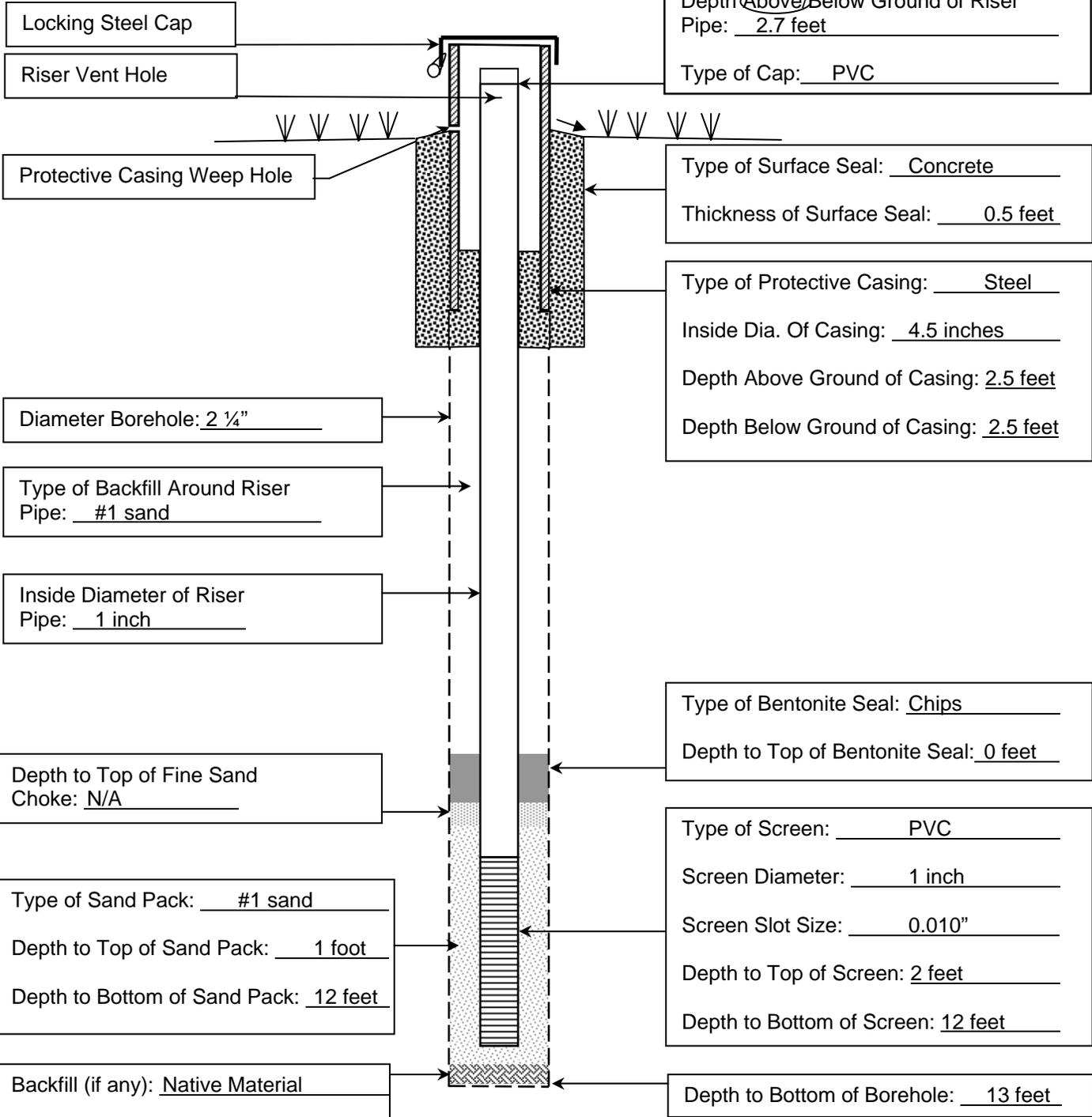
ELEVATION: Not surveyed

START DATE: 5/6/09 TIME: 11:00

FINISH DATE: 5/6/09 TIME: 11:30

DRILLER: Erin Holmes

INSPECTOR: Sarah Burke



PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

CONTRACTOR: Aquifer Drilling and Testing

PROJECT NO.: 20024.1001.1102

SHEET NO.: 1 OF 1

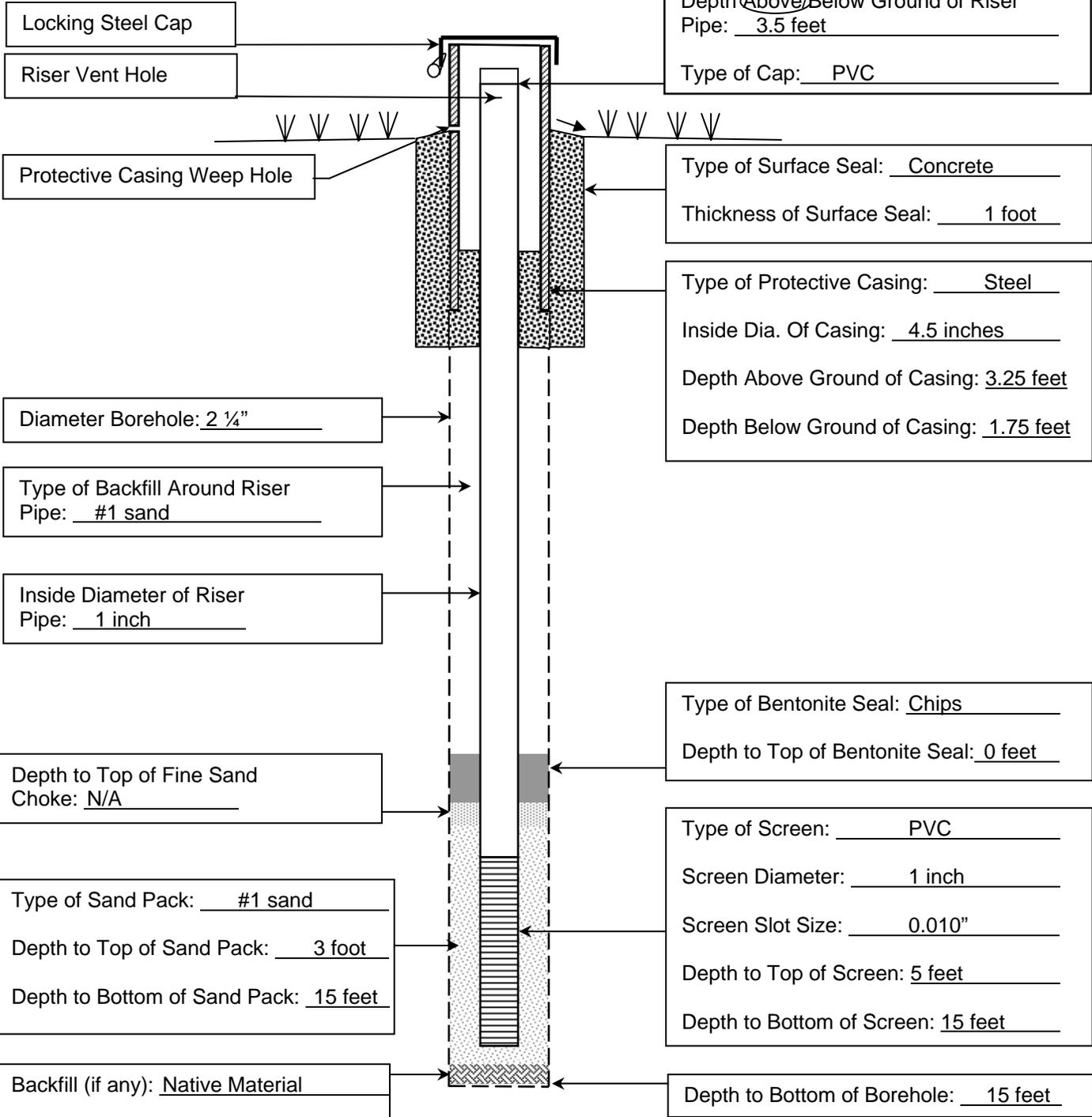
ELEVATION: Not surveyed

START DATE: 5/6/09 TIME: 1400

FINISH DATE: 5/6/09 TIME: 1420

DRILLER: Erin Holmes

INSPECTOR: Sarah Burke





# WELL CONSTRUCTION LOG

BORING NO. B-5

WELL NO. MW-8

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

PROJECT NO.: 20024.1001.1102

CONTRACTOR: Aquifer Drilling and Testing

SHEET NO.: 1 OF 1

ELEVATION: Not surveyed

START DATE: 5/7/09 TIME: 1600

FINISH DATE: 5/7/09 TIME: 1615

DRILLER: Erin Holmes

INSPECTOR: Sarah Burke

Locking Steel Cap

Riser Vent Hole

Protective Casing Weep Hole

Diameter Borehole: 2 1/4"

Type of Backfill Around Riser Pipe: #1 sand

Inside Diameter of Riser Pipe: 1 inch

Depth to Top of Fine Sand Choke: N/A

Type of Sand Pack: #1 sand  
Depth to Top of Sand Pack: 2 feet  
Depth to Bottom of Sand Pack: 15 feet

Backfill (if any): Native Material

Depth ~~Above~~ Below Ground of Riser Pipe: 3.5 feet  
Type of Cap: PVC

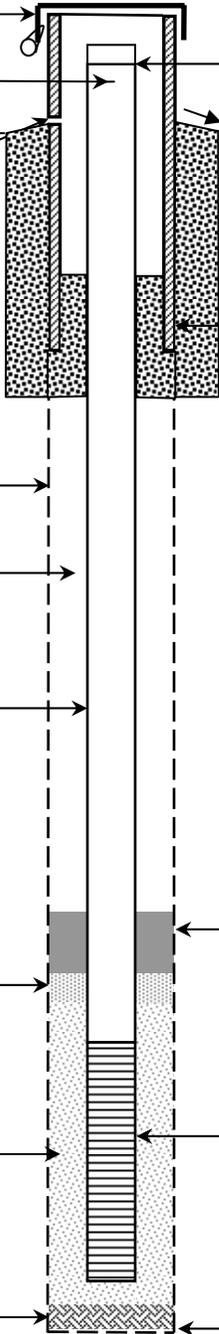
Type of Surface Seal: Concrete  
Thickness of Surface Seal: 1 foot

Type of Protective Casing: Steel  
Inside Dia. Of Casing: 4.5 inches  
Depth Above Ground of Casing: 3.7 feet  
Depth Below Ground of Casing: 1.3 feet

Type of Bentonite Seal: Chips  
Depth to Top of Bentonite Seal: 0 feet

Type of Screen: PVC  
Screen Diameter: 1 inch  
Screen Slot Size: 0.010"  
Depth to Top of Screen: 4 feet  
Depth to Bottom of Screen: 14 feet

Depth to Bottom of Borehole: 15 feet





# WELL CONSTRUCTION LOG

BORING NO. B-3

WELL NO. MW-9

PROJECT & LOCATION: Former Kings College Campus, 1 King Street, Warwick, NY

CLIENT: Watchtower Bible and Tract Society of New York

CONTRACTOR: Aquifer Drilling and Testing

PROJECT NO.: 20024.1001.1102

SHEET NO.: 1 OF 1

ELEVATION: Not surveyed

START DATE: 5/8/09 TIME: 0830

FINISH DATE: 5/8/09 TIME: 0845

DRILLER: Erin Holmes

INSPECTOR: Sarah Burke

Locking Steel Cap

Riser Vent Hole

Protective Casing Weep Hole

Diameter Borehole: 2 1/4"

Type of Backfill Around Riser Pipe: #1 sand

Inside Diameter of Riser Pipe: 1 inch

Depth to Top of Fine Sand Choke: N/A

Type of Sand Pack: #1 sand  
Depth to Top of Sand Pack: 2 feet  
Depth to Bottom of Sand Pack: 14 feet

Backfill (if any): Native Material

Depth ~~Above~~ Below Ground of Riser Pipe: 3.5 feet  
Type of Cap: PVC

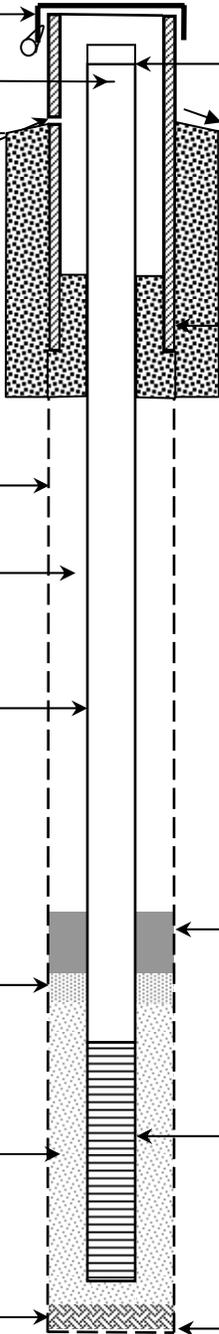
Type of Surface Seal: Concrete  
Thickness of Surface Seal: 1 foot

Type of Protective Casing: Steel  
Inside Dia. Of Casing: 4.5 inches  
Depth Above Ground of Casing: 4 feet  
Depth Below Ground of Casing: 1 foot

Type of Bentonite Seal: Chips  
Depth to Top of Bentonite Seal: 0 feet

Type of Screen: PVC  
Screen Diameter: 1 inch  
Screen Slot Size: 0.010"  
Depth to Top of Screen: 4 feet  
Depth to Bottom of Screen: 14 feet

Depth to Bottom of Borehole: 15 feet



## **APPENDIX C**

## ANALYTICAL REPORT

Job Number: 220-9006-1

SDG Number: 220-9006

Job Description: 20024.1001.1002 Former Kings College

For:

Clough Harbour & Associates LLP

3 Winner Circle

PO BOX 5269

Albany, NY 12205-0269

Attention: Mr. Seth Fowler



Approved for release.  
Cheryl Cascella  
5/20/2009 3:24 PM

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Designee for  
Jill M Duhancik  
Project Manager I  
jill.duhancik@testamericainc.com  
05/20/2009

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Project Manager.

TestAmerica Connecticut Certifications and Approvals: CTDOH PH-047, MADEP CT023, RIDOH A43, NYDOH 10602, NY NELAP 10602, NHDES 2528, NJDEP CT410, ME DOH CT023, UT DOH 2032614458

**TestAmerica Laboratories, Inc.**

TestAmerica Connecticut 128 Long Hill Cross Road, Shelton, CT 06484

Tel (203) 929-8140 Fax (203) 929-8142 [www.testamericainc.com](http://www.testamericainc.com)



**Job Narrative**  
**220-J9006-1**

**Comments**

No additional comments.

**Receipt**

All samples were received in good condition within temperature requirements.

**GC/MS Semi VOA**

No analytical or quality issues were noted.

**Metals**

No analytical or quality issues were noted.

**General Chemistry**

No analytical or quality issues were noted.

**Organic Prep**

No analytical or quality issues were noted.

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9006-1</b>	<b>SB-050409-SKB-17-01</b>					
Arsenic		2.2	J	6.3	mg/Kg	6010B
Beryllium		0.54	J	1.5	mg/Kg	6010B
Chromium		36.8		1.5	mg/Kg	6010B
Copper		14.1		1.8	mg/Kg	6010B
Lead		6.1		4.5	mg/Kg	6010B
Nickel		26.5		1.5	mg/Kg	6010B
Zinc		35.2		7.5	mg/Kg	6010B
Titanium		276		4.5	mg/Kg	6010B
Mercury		0.018	J	0.060	mg/Kg	7471A
Percent Moisture		18.5		0.100	%	Moisture
Percent Solids		81.5		0.100	%	Moisture
<b>220-9006-4</b>	<b>SB-050409-SKB-18-01</b>					
Silver		0.14	J	1.3	mg/Kg	6010B
Beryllium		0.37	J	1.3	mg/Kg	6010B
Chromium		19.6		1.3	mg/Kg	6010B
Copper		7.2		1.6	mg/Kg	6010B
Lead		3.3	J	4.0	mg/Kg	6010B
Nickel		16.3		1.3	mg/Kg	6010B
Zinc		29.9		6.7	mg/Kg	6010B
Titanium		251		4.0	mg/Kg	6010B
Mercury		0.0072	J	0.053	mg/Kg	7471A
Percent Moisture		10.0		0.100	%	Moisture
Percent Solids		90.0		0.100	%	Moisture
<b>220-9006-7</b>	<b>SB-050409-SKB-19-01</b>					
Silver		0.071	J	1.4	mg/Kg	6010B
Arsenic		4.2	J	5.9	mg/Kg	6010B
Beryllium		0.37	J	1.4	mg/Kg	6010B
Chromium		12.7		1.4	mg/Kg	6010B
Copper		29.3		1.7	mg/Kg	6010B
Lead		10.3		4.2	mg/Kg	6010B
Nickel		26.6		1.4	mg/Kg	6010B
Zinc		45.1		7.0	mg/Kg	6010B
Titanium		183		4.2	mg/Kg	6010B
Mercury		0.017	J	0.052	mg/Kg	7471A
Percent Moisture		10.5		0.100	%	Moisture
Percent Solids		89.5		0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9006-8</b>	<b>SB-050409-SKB-20-01</b>					
Beryllium		0.34	J	1.4	mg/Kg	6010B
Chromium		16.4		1.4	mg/Kg	6010B
Copper		26.4		1.7	mg/Kg	6010B
Lead		4.4		4.1	mg/Kg	6010B
Nickel		32.6		1.4	mg/Kg	6010B
Thallium		1.2	J	4.1	mg/Kg	6010B
Zinc		35.7		6.9	mg/Kg	6010B
Titanium		240		4.1	mg/Kg	6010B
Mercury		0.011	J	0.051	mg/Kg	7471A
Percent Moisture		9.83		0.100	%	Moisture
Percent Solids		90.2		0.100	%	Moisture
<b>220-9006-9</b>	<b>SB-050409-SKB-20A-01</b>					
Silver		0.15	J	1.6	mg/Kg	6010B
Arsenic		3.0	J	6.9	mg/Kg	6010B
Beryllium		0.57	J	1.6	mg/Kg	6010B
Chromium		21.7		1.6	mg/Kg	6010B
Copper		39.4		2.0	mg/Kg	6010B
Lead		15.9		4.9	mg/Kg	6010B
Nickel		35.6		1.6	mg/Kg	6010B
Thallium		1.2	J	4.9	mg/Kg	6010B
Zinc		53.0		8.2	mg/Kg	6010B
Titanium		242		4.9	mg/Kg	6010B
Mercury		0.044	J	0.063	mg/Kg	7471A
Percent Moisture		25.6		0.100	%	Moisture
Percent Solids		74.4		0.100	%	Moisture
<b>220-9006-13</b>	<b>SB-12 (6-7)</b>					
Silver		0.075	J	1.5	mg/Kg	6010B
Arsenic		2.6	J	6.2	mg/Kg	6010B
Beryllium		0.38	J	1.5	mg/Kg	6010B
Chromium		48.7		1.5	mg/Kg	6010B
Copper		17.2		1.8	mg/Kg	6010B
Lead		3.5	J	4.5	mg/Kg	6010B
Nickel		38.6		1.5	mg/Kg	6010B
Zinc		31.3		7.4	mg/Kg	6010B
Titanium		298		4.5	mg/Kg	6010B
Mercury		0.039	J	0.061	mg/Kg	7471A
Percent Moisture		19.0		0.100	%	Moisture
Percent Solids		81.0		0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9006-14</b>	<b>SB-14 (2-4)</b>					
Naphthalene		51	J	300	ug/Kg	8270C
Fluoranthene		44	J	300	ug/Kg	8270C
Pyrene		59	J	300	ug/Kg	8270C
Benzo[a]anthracene		71	J	300	ug/Kg	8270C
Chrysene		68	J	300	ug/Kg	8270C
Benzo[b]fluoranthene		94	J	300	ug/Kg	8270C
Benzo[k]fluoranthene		40	J	300	ug/Kg	8270C
Benzo[a]pyrene		100	J	300	ug/Kg	8270C
Indeno[1,2,3-cd]pyrene		58	J	300	ug/Kg	8270C
Benzo[g,h,i]perylene		24	J	300	ug/Kg	8270C
Arsenic		2.0	J	5.9	mg/Kg	6010B
Beryllium		0.39	J	1.4	mg/Kg	6010B
Chromium		10.8		1.4	mg/Kg	6010B
Copper		20.0		1.7	mg/Kg	6010B
Lead		4.6		4.2	mg/Kg	6010B
Nickel		17.6		1.4	mg/Kg	6010B
Zinc		30.6		7.0	mg/Kg	6010B
Titanium		201		4.2	mg/Kg	6010B
Mercury		0.0080	J	0.054	mg/Kg	7471A
Percent Moisture		10.8		0.100	%	Moisture
Percent Solids		89.2		0.100	%	Moisture
<b>220-9006-16</b>	<b>SB-15 (2-4)</b>					
Fluoranthene		50	J	290	ug/Kg	8270C
Pyrene		55	J	290	ug/Kg	8270C
Benzo[a]anthracene		40	J	290	ug/Kg	8270C
Chrysene		39	J	290	ug/Kg	8270C
Benzo[a]pyrene		42	J	290	ug/Kg	8270C
Beryllium		0.33	J	1.3	mg/Kg	6010B
Chromium		14.3		1.3	mg/Kg	6010B
Copper		41.3		1.6	mg/Kg	6010B
Lead		4.5		3.9	mg/Kg	6010B
Nickel		29.5		1.3	mg/Kg	6010B
Thallium		1.1	J	3.9	mg/Kg	6010B
Zinc		33.5		6.5	mg/Kg	6010B
Titanium		282		3.9	mg/Kg	6010B
Mercury		0.0074	J	0.053	mg/Kg	7471A
Percent Moisture		6.97		0.100	%	Moisture
Percent Solids		93.0		0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9006-18</b>	<b>SB-16 (0-2) (8-10 BGS)</b>					
Silver		0.28	J	1.6	mg/Kg	6010B
Arsenic		4.4	J	6.6	mg/Kg	6010B
Beryllium		0.66	J	1.6	mg/Kg	6010B
Chromium		42.8		1.6	mg/Kg	6010B
Copper		17.7		1.9	mg/Kg	6010B
Lead		9.6		4.7	mg/Kg	6010B
Nickel		30.0		1.6	mg/Kg	6010B
Thallium		2.0	J	4.7	mg/Kg	6010B
Zinc		48.3		7.8	mg/Kg	6010B
Titanium		260		4.7	mg/Kg	6010B
Mercury		0.043	J	0.062	mg/Kg	7471A
Percent Moisture		21.2		0.100	%	Moisture
Percent Solids		78.8		0.100	%	Moisture
<b>220-9006-21</b>	<b>SB-21 (0-2) (8-10 BGS)</b>					
Silver		0.11	J	1.4	mg/Kg	6010B
Arsenic		1.8	J	5.7	mg/Kg	6010B
Beryllium		0.32	J	1.4	mg/Kg	6010B
Chromium		8.9		1.4	mg/Kg	6010B
Copper		4.1		1.6	mg/Kg	6010B
Lead		0.91	J	4.1	mg/Kg	6010B
Nickel		7.5		1.4	mg/Kg	6010B
Zinc		19.0		6.8	mg/Kg	6010B
Titanium		906		4.1	mg/Kg	6010B
Mercury		0.011	J	0.053	mg/Kg	7471A
Percent Moisture		9.34		0.100	%	Moisture
Percent Solids		90.7		0.100	%	Moisture

## METHOD SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

<b>Description</b>	<b>Lab Location</b>	<b>Method</b>	<b>Preparation Method</b>
<b>Matrix: Solid</b>			
Semivolatiles Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	TAL CT	SW846 8270C	
Automated Soxhlet Extraction	TAL CT		SW846 3541
Metals (ICP)	TAL CT	SW846 6010B	
Preparation, Metals	TAL CT		SW846 3050B
Mercury (CVAA)	TAL CT	SW846 7471A	
Preparation, Mercury	TAL CT		SW846 7471A
Chromium, Hexavalent	TAL EDI	SW846 7196A	
Alkaline Digestion (Chromium, Hexavalent)	TAL EDI		SW846 3060A
Percent Moisture	TAL CT	EPA Moisture	

### Lab References:

TAL CT = TestAmerica Connecticut

TAL EDI = TestAmerica Edison

### Method References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 8270C	Jonas, Stephan	SJ
SW846 6010B	Petronchak, Nestor	NP
SW846 7471A	Voytek, Joseph F	JFV
SW846 7196A	Carlone, John	JC
EPA Moisture	Capece, Bill	BC

## SAMPLE SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
220-9006-1	SB-050409-SKB-17-01	Solid	05/04/2009 1120	05/05/2009 1940
220-9006-4	SB-050409-SKB-18-01	Solid	05/04/2009 1220	05/05/2009 1940
220-9006-7	SB-050409-SKB-19-01	Solid	05/04/2009 1330	05/05/2009 1940
220-9006-8	SB-050409-SKB-20-01	Solid	05/04/2009 1410	05/05/2009 1940
220-9006-9	SB-050409-SKB-20A-01	Solid	05/04/2009 1450	05/05/2009 1940
220-9006-13	SB-12 (6-7)	Solid	05/05/2009 1425	05/05/2009 1940
220-9006-14	SB-14 (2-4)	Solid	05/05/2009 1150	05/05/2009 1940
220-9006-16	SB-15 (2-4)	Solid	05/05/2009 1055	05/05/2009 1940
220-9006-18	SB-16 (0-2) (8-10 Bgs)	Solid	05/05/2009 0845	05/05/2009 1940
220-9006-21	SB-21 (0-2) (8-10 Bgs)	Solid	05/05/2009 0925	05/05/2009 1940

# **SAMPLE RESULTS**

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

Client Sample ID: SB-14 (2-4)

Lab Sample ID: 220-9006-14

Date Sampled: 05/05/2009 1150

Client Matrix: Solid

% Moisture: 10.8

Date Received: 05/05/2009 1940

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27032	Instrument ID:	HP 6890/5975
Preparation:	3541	Prep Batch: 220-26886	Lab File ID:	C11135.D
Dilution:	1.0		Initial Weight/Volume:	15.23 g
Date Analyzed:	05/09/2009 1923		Final Weight/Volume:	1.0 mL
Date Prepared:	05/06/2009 1315		Injection Volume:	1.0 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		51	J	15	300
2-Methylnaphthalene		300	U	8.5	300
Acenaphthylene		300	U	15	300
Acenaphthene		300	U	18	300
Fluorene		300	U	18	300
Phenanthrene		300	U	15	300
Anthracene		300	U	12	300
Fluoranthene		44	J	15	300
Pyrene		59	J	14	300
Benzo[a]anthracene		71	J	11	300
Chrysene		68	J	22	300
Benzo[b]fluoranthene		94	J	8.0	300
Benzo[k]fluoranthene		40	J	27	300
Benzo[a]pyrene		100	J	8.1	300
Indeno[1,2,3-cd]pyrene		58	J	19	300
Dibenz(a,h)anthracene		300	U	23	300
Benzo[g,h,i]perylene		24	J	19	300

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	60	34 - 120
Phenol-d5	58	36 - 120
Nitrobenzene-d5	59	38 - 120
2-Fluorobiphenyl	59	41 - 120
2,4,6-Tribromophenol	59	37 - 120
Terphenyl-d14	78	32 - 125

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

**Client Sample ID: SB-15 (2-4)**

Lab Sample ID: 220-9006-16

Date Sampled: 05/05/2009 1055

Client Matrix: Solid

% Moisture: 7.0

Date Received: 05/05/2009 1940

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 220-27032	Instrument ID: HP 6890/5975
Preparation: 3541	Prep Batch: 220-26886	Lab File ID: C11136.D
Dilution: 1.0		Initial Weight/Volume: 15.02 g
Date Analyzed: 05/09/2009 1950		Final Weight/Volume: 1.0 mL
Date Prepared: 05/06/2009 1315		Injection Volume: 1.0 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		290	U	15	290
2-Methylnaphthalene		290	U	8.3	290
Acenaphthylene		290	U	14	290
Acenaphthene		290	U	17	290
Fluorene		290	U	17	290
Phenanthrene		290	U	14	290
Anthracene		290	U	11	290
Fluoranthene		50	J	14	290
Pyrene		55	J	14	290
Benzo[a]anthracene		40	J	10	290
Chrysene		39	J	21	290
Benzo[b]fluoranthene		290	U	7.7	290
Benzo[k]fluoranthene		290	U	26	290
Benzo[a]pyrene		42	J	7.8	290
Indeno[1,2,3-cd]pyrene		290	U	19	290
Dibenz(a,h)anthracene		290	U	23	290
Benzo[g,h,i]perylene		290	U	19	290

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	63	34 - 120
Phenol-d5	62	36 - 120
Nitrobenzene-d5	61	38 - 120
2-Fluorobiphenyl	61	41 - 120
2,4,6-Tribromophenol	51	37 - 120
Terphenyl-d14	78	32 - 125

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

**Client Sample ID: SB-050409-SKB-17-01**

Lab Sample ID: 220-9006-1

Date Sampled: 05/04/2009 1120

Client Matrix: Solid

% Moisture: 18.5

Date Received: 05/05/2009 1940

### 6010B Metals (ICP)

Method: 6010B

Analysis Batch: 220-27207

Instrument ID:

Perkin Elmer ICP

Preparation: 3050B

Prep Batch: 220-27098

Lab File ID:

N/A

Dilution: 1.0

Initial Weight/Volume: 2.04 g

Date Analyzed: 05/15/2009 1544

Final Weight/Volume: 250 mL

Date Prepared: 05/13/2009 1043

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Silver		1.5	U	0.075	1.5
Arsenic		2.2	J	2.0	6.3
Beryllium		0.54	J	0.075	1.5
Cadmium		1.5	U	0.30	1.5
Chromium		36.8		0.15	1.5
Copper		14.1		0.57	1.8
Lead		6.1		0.93	4.5
Nickel		26.5		0.30	1.5
Selenium		11.3	U	3.8	11.3
Thallium		4.5	U	1.1	4.5
Zinc		35.2		1.5	7.5
Antimony		5.0	U	1.5	5.0
Titanium		276		0.075	4.5

### 7471A Mercury (CVAA)

Method: 7471A

Analysis Batch: 220-27239

Instrument ID:

Perkin Elmer FIMS

Preparation: 7471A

Prep Batch: 220-27233

Lab File ID:

N/A

Dilution: 1.0

Initial Weight/Volume: 0.61 g

Date Analyzed: 05/18/2009 1504

Final Weight/Volume: 50 mL

Date Prepared: 05/18/2009 1201

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.018	J	0.0048	0.060



















## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### General Chemistry

**Client Sample ID: SB-050409-SKB-17-01**

Lab Sample ID: 220-9006-1

Date Sampled: 05/04/2009 1120

Client Matrix: Solid

% Moisture: 18.5

Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.5	U	mg/Kg	2.5	2.5	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1155			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	18.5		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	81.5		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

**Client Sample ID: SB-050409-SKB-18-01**

Lab Sample ID: 220-9006-4

Date Sampled: 05/04/2009 1220

Client Matrix: Solid

% Moisture: 10.0

Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.3	U	mg/Kg	2.3	2.3	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1155			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	10.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	90.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

**Client Sample ID: SB-050409-SKB-19-01**

Lab Sample ID: 220-9006-7

Date Sampled: 05/04/2009 1330

Client Matrix: Solid

% Moisture: 10.5

Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.2	U	mg/Kg	2.2	2.2	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	10.5		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	89.5		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### General Chemistry

**Client Sample ID: SB-050409-SKB-20-01**

Lab Sample ID: 220-9006-8  
Client Matrix: Solid

% Moisture: 9.8

Date Sampled: 05/04/2009 1410  
Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.2	U	mg/Kg	2.2	2.2	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	9.83		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	90.2		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

**Client Sample ID: SB-050409-SKB-20A-01**

Lab Sample ID: 220-9006-9  
Client Matrix: Solid

% Moisture: 25.6

Date Sampled: 05/04/2009 1450  
Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.7	U	mg/Kg	2.7	2.7	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	25.6		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	74.4		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

**Client Sample ID: SB-12 (6-7)**

Lab Sample ID: 220-9006-13  
Client Matrix: Solid

% Moisture: 19.0

Date Sampled: 05/05/2009 1425  
Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.5	U	mg/Kg	2.5	2.5	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	19.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	81.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### General Chemistry

**Client Sample ID: SB-14 (2-4)**

Lab Sample ID: 220-9006-14      Date Sampled: 05/05/2009 1150  
Client Matrix: Solid      % Moisture: 10.8      Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.3	U	mg/Kg	2.3	2.3	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	10.8		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	89.2		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

**Client Sample ID: SB-15 (2-4)**

Lab Sample ID: 220-9006-16      Date Sampled: 05/05/2009 1055  
Client Matrix: Solid      % Moisture: 7.0      Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.2	U	mg/Kg	2.2	2.2	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	6.97		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	93.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

**Client Sample ID: SB-16 (0-2) (8-10 Bgs)**

Lab Sample ID: 220-9006-18      Date Sampled: 05/05/2009 0845  
Client Matrix: Solid      % Moisture: 21.2      Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.5	U	mg/Kg	2.5	2.5	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	21.2		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	78.8		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### General Chemistry

**Client Sample ID: SB-21 (0-2) (8-10 Bgs)**

Lab Sample ID: 220-9006-21  
Client Matrix: Solid

% Moisture: 9.3

Date Sampled: 05/05/2009 0925  
Date Received: 05/05/2009 1940

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Cr (VI)	2.2	U	mg/Kg	2.2	2.2	1.0	7196A
	Anly Batch: 460-5964	Date Analyzed	05/11/2009	1325			DryWt Corrected: Y
	Prep Batch: 460-5948	Date Prepared:	05/11/2009	0915			
Percent Moisture	9.34		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			
Percent Solids	90.7		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26916	Date Analyzed	05/06/2009	1623			

## DATA REPORTING QUALIFIERS

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS Semi VOA		
	U	Analyzed for but not detected.
	J	Indicates an estimated value.
Metals		
	U	Indicates analyzed for but not detected.
	J	Sample result is greater than the MDL but below the CRDL
General Chemistry		
	*	Duplicate analysis not within control limits.
	U	Indicates analyzed for but not detected.

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>GC/MS Semi VOA</b>					
<b>Prep Batch: 220-26886</b>					
LCS 220-26886/2-A	Lab Control Sample	T	Solid	3541	
MB 220-26886/1-A	Method Blank	T	Solid	3541	
220-9006-14	SB-14 (2-4)	T	Solid	3541	
220-9006-16	SB-15 (2-4)	T	Solid	3541	
<b>Analysis Batch:220-26954</b>					
LCS 220-26886/2-A	Lab Control Sample	T	Solid	8270C	220-26886
MB 220-26886/1-A	Method Blank	T	Solid	8270C	220-26886
<b>Analysis Batch:220-27032</b>					
220-9006-14	SB-14 (2-4)	T	Solid	8270C	220-26886
220-9006-16	SB-15 (2-4)	T	Solid	8270C	220-26886

#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 220-27098</b>					
LCS 220-27098/2-A	Lab Control Sample	T	Solid	3050B	
MB 220-27098/1-A	Method Blank	T	Solid	3050B	
220-9006-1	SB-050409-SKB-17-01	T	Solid	3050B	
220-9006-4	SB-050409-SKB-18-01	T	Solid	3050B	
220-9006-7	SB-050409-SKB-19-01	T	Solid	3050B	
220-9006-8	SB-050409-SKB-20-01	T	Solid	3050B	
220-9006-9	SB-050409-SKB-20A-01	T	Solid	3050B	
220-9006-13	SB-12 (6-7)	T	Solid	3050B	
220-9006-14	SB-14 (2-4)	T	Solid	3050B	
220-9006-16	SB-15 (2-4)	T	Solid	3050B	
220-9006-18	SB-16 (0-2) (8-10 Bgs)	T	Solid	3050B	
220-9006-21	SB-21 (0-2) (8-10 Bgs)	T	Solid	3050B	
<b>Analysis Batch:220-27207</b>					
LCS 220-27098/2-A	Lab Control Sample	T	Solid	6010B	220-27098
MB 220-27098/1-A	Method Blank	T	Solid	6010B	220-27098
220-9006-1	SB-050409-SKB-17-01	T	Solid	6010B	220-27098
<b>Prep Batch: 220-27233</b>					
LCS 220-27233/2-A	Lab Control Sample	T	Solid	7471A	
MB 220-27233/1-A	Method Blank	T	Solid	7471A	
220-9006-1	SB-050409-SKB-17-01	T	Solid	7471A	
220-9006-4	SB-050409-SKB-18-01	T	Solid	7471A	
220-9006-7	SB-050409-SKB-19-01	T	Solid	7471A	
220-9006-8	SB-050409-SKB-20-01	T	Solid	7471A	
220-9006-9	SB-050409-SKB-20A-01	T	Solid	7471A	
220-9006-13	SB-12 (6-7)	T	Solid	7471A	
220-9006-14	SB-14 (2-4)	T	Solid	7471A	
220-9006-16	SB-15 (2-4)	T	Solid	7471A	
220-9006-18	SB-16 (0-2) (8-10 Bgs)	T	Solid	7471A	
220-9006-21	SB-21 (0-2) (8-10 Bgs)	T	Solid	7471A	
<b>Analysis Batch:220-27239</b>					
LCS 220-27233/2-A	Lab Control Sample	T	Solid	7471A	220-27233
MB 220-27233/1-A	Method Blank	T	Solid	7471A	220-27233
220-9006-1	SB-050409-SKB-17-01	T	Solid	7471A	220-27233
220-9006-4	SB-050409-SKB-18-01	T	Solid	7471A	220-27233
220-9006-7	SB-050409-SKB-19-01	T	Solid	7471A	220-27233
220-9006-8	SB-050409-SKB-20-01	T	Solid	7471A	220-27233
220-9006-9	SB-050409-SKB-20A-01	T	Solid	7471A	220-27233
220-9006-13	SB-12 (6-7)	T	Solid	7471A	220-27233
220-9006-14	SB-14 (2-4)	T	Solid	7471A	220-27233
220-9006-16	SB-15 (2-4)	T	Solid	7471A	220-27233
220-9006-18	SB-16 (0-2) (8-10 Bgs)	T	Solid	7471A	220-27233
220-9006-21	SB-21 (0-2) (8-10 Bgs)	T	Solid	7471A	220-27233

TestAmerica Connecticut

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Analysis Batch:220-27247</b>					
220-9006-4	SB-050409-SKB-18-01	T	Solid	6010B	220-27098
220-9006-7	SB-050409-SKB-19-01	T	Solid	6010B	220-27098
220-9006-8	SB-050409-SKB-20-01	T	Solid	6010B	220-27098
220-9006-9	SB-050409-SKB-20A-01	T	Solid	6010B	220-27098
220-9006-13	SB-12 (6-7)	T	Solid	6010B	220-27098
220-9006-14	SB-14 (2-4)	T	Solid	6010B	220-27098
220-9006-16	SB-15 (2-4)	T	Solid	6010B	220-27098
220-9006-18	SB-16 (0-2) (8-10 Bgs)	T	Solid	6010B	220-27098
220-9006-21	SB-21 (0-2) (8-10 Bgs)	T	Solid	6010B	220-27098

#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>General Chemistry</b>					
<b>Prep Batch: 460-5948</b>					
LCS 460-5948/2-A	Lab Control Sample	T	Solid	3060A	
LCSI 460-5948/3-A	Lab Control Sample Insoluble	T	Solid	3060A	
MB 460-5948/1-A	Method Blank	T	Solid	3060A	
220-9006-1	SB-050409-SKB-17-01	T	Solid	3060A	
220-9006-4	SB-050409-SKB-18-01	T	Solid	3060A	
220-9006-7	SB-050409-SKB-19-01	T	Solid	3060A	
220-9006-8	SB-050409-SKB-20-01	T	Solid	3060A	
220-9006-9	SB-050409-SKB-20A-01	T	Solid	3060A	
220-9006-13	SB-12 (6-7)	T	Solid	3060A	
220-9006-14	SB-14 (2-4)	T	Solid	3060A	
220-9006-16	SB-15 (2-4)	T	Solid	3060A	
220-9006-18	SB-16 (0-2) (8-10 Bgs)	T	Solid	3060A	
220-9006-21	SB-21 (0-2) (8-10 Bgs)	T	Solid	3060A	
<b>Analysis Batch:460-5964</b>					
LCS 460-5948/2-A	Lab Control Sample	T	Solid	7196A	460-5948
LCSI 460-5948/3-A	Lab Control Sample Insoluble	T	Solid	7196A	460-5948
MB 460-5948/1-A	Method Blank	T	Solid	7196A	460-5948
220-9006-1	SB-050409-SKB-17-01	T	Solid	7196A	460-5948
220-9006-4	SB-050409-SKB-18-01	T	Solid	7196A	460-5948
220-9006-7	SB-050409-SKB-19-01	T	Solid	7196A	460-5948
220-9006-8	SB-050409-SKB-20-01	T	Solid	7196A	460-5948
220-9006-9	SB-050409-SKB-20A-01	T	Solid	7196A	460-5948
220-9006-13	SB-12 (6-7)	T	Solid	7196A	460-5948
220-9006-14	SB-14 (2-4)	T	Solid	7196A	460-5948
220-9006-16	SB-15 (2-4)	T	Solid	7196A	460-5948
220-9006-18	SB-16 (0-2) (8-10 Bgs)	T	Solid	7196A	460-5948
220-9006-21	SB-21 (0-2) (8-10 Bgs)	T	Solid	7196A	460-5948
<b>Analysis Batch:220-26916</b>					
220-9006-1	SB-050409-SKB-17-01	T	Solid	Moisture	
220-9006-4	SB-050409-SKB-18-01	T	Solid	Moisture	
220-9006-4DU	Duplicate	T	Solid	Moisture	
220-9006-7	SB-050409-SKB-19-01	T	Solid	Moisture	
220-9006-8	SB-050409-SKB-20-01	T	Solid	Moisture	
220-9006-9	SB-050409-SKB-20A-01	T	Solid	Moisture	
220-9006-13	SB-12 (6-7)	T	Solid	Moisture	
220-9006-14	SB-14 (2-4)	T	Solid	Moisture	
220-9006-16	SB-15 (2-4)	T	Solid	Moisture	
220-9006-18	SB-16 (0-2) (8-10 Bgs)	T	Solid	Moisture	
220-9006-21	SB-21 (0-2) (8-10 Bgs)	T	Solid	Moisture	

**Report Basis**

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

### Surrogate Recovery Report

#### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

##### Client Matrix: Solid

Lab Sample ID	Client Sample ID	2FP %Rec	PHL %Rec	NBZ %Rec	FBP %Rec	TBP %Rec	TPH %Rec
220-9006-14	SB-14 (2-4)	60	58	59	59	59	78
220-9006-16	SB-15 (2-4)	63	62	61	61	51	78
MB 220-26886/1-A		72	69	73	71	68	80
LCS 220-26886/2-A		64	61	63	64	68	76

Surrogate	Acceptance Limits
2FP = 2-Fluorophenol	34-120
PHL = Phenol-d5	36-120
NBZ = Nitrobenzene-d5	38-120
FBP = 2-Fluorobiphenyl	41-120
TBP = 2,4,6-Tribromophenol	37-120
TPH = Terphenyl-d14	32-125

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

Sdg Number: 220-9006

**Method Blank - Batch: 220-26886**

**Method: 8270C**

**Preparation: 3541**

Lab Sample ID: MB 220-26886/1-A

Analysis Batch: 220-26954

Instrument ID: HP 6890/5975

Client Matrix: Solid

Prep Batch: 220-26886

Lab File ID: C11066.D

Dilution: 1.0

Units: ug/Kg

Initial Weight/Volume: 15.0 g

Date Analyzed: 05/07/2009 1043

Final Weight/Volume: 1.0 mL

Date Prepared: 05/06/2009 0854

Injection Volume: 1.0 uL

Analyte	Result	Qual	MDL	RL
Naphthalene	270	U	14	270
2-Methylnaphthalene	270	U	7.7	270
Acenaphthylene	270	U	13	270
Acenaphthene	270	U	16	270
Fluorene	270	U	16	270
Phenanthrene	270	U	13	270
Anthracene	270	U	11	270
Fluoranthene	270	U	13	270
Pyrene	270	U	13	270
Benzo[a]anthracene	270	U	9.6	270
Chrysene	270	U	20	270
Benzo[b]fluoranthene	270	U	7.2	270
Benzo[k]fluoranthene	270	U	24	270
Benzo[a]pyrene	270	U	7.3	270
Indeno[1,2,3-cd]pyrene	270	U	18	270
Dibenz(a,h)anthracene	270	U	21	270
Benzo[g,h,i]perylene	270	U	18	270

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	72	34 - 120
Phenol-d5	69	36 - 120
Nitrobenzene-d5	73	38 - 120
2-Fluorobiphenyl	71	41 - 120
2,4,6-Tribromophenol	68	37 - 120
Terphenyl-d14	80	32 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

**Lab Control Sample - Batch: 220-26886**

**Method: 8270C**  
**Preparation: 3541**

Lab Sample ID: LCS 220-26886/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/07/2009 1110  
Date Prepared: 05/06/2009 0854

Analysis Batch: 220-26954  
Prep Batch: 220-26886  
Units: ug/Kg

Instrument ID: HP 6890/5975  
Lab File ID: C11067.D  
Initial Weight/Volume: 15.0 g  
Final Weight/Volume: 1.0 mL  
Injection Volume: 1.0 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Naphthalene	2670	1910	72	55 - 120	
2-Methylnaphthalene	2670	1920	72	56 - 120	
Acenaphthylene	2670	1980	74	57 - 120	
Acenaphthene	2670	1990	74	57 - 120	
Fluorene	2670	2010	76	58 - 120	
Phenanthrene	2670	2260	85	58 - 120	
Anthracene	2670	2240	84	58 - 120	
Fluoranthene	2670	2320	87	57 - 120	
Pyrene	2670	2370	89	54 - 121	
Benzo[a]anthracene	2670	2300	86	58 - 120	
Chrysene	2670	2280	86	57 - 120	
Benzo[b]fluoranthene	2670	2340	88	54 - 120	
Benzo[k]fluoranthene	2670	2390	90	53 - 120	
Benzo[a]pyrene	2670	2270	85	44 - 120	
Indeno[1,2,3-cd]pyrene	2670	2440	91	37 - 120	
Dibenz(a,h)anthracene	2670	2480	93	39 - 120	
Benzo[g,h,i]perylene	2670	2450	92	37 - 120	

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	64	34 - 120
Phenol-d5	61	36 - 120
Nitrobenzene-d5	63	38 - 120
2-Fluorobiphenyl	64	41 - 120
2,4,6-Tribromophenol	68	37 - 120
Terphenyl-d14	76	32 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### Method Blank - Batch: 220-27098

Method: 6010B  
Preparation: 3050B

Lab Sample ID: MB 220-27098/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/15/2009 1457  
Date Prepared: 05/13/2009 1043

Analysis Batch: 220-27207  
Prep Batch: 220-27098  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 2.00 g  
Final Weight/Volume: 250 mL

Analyte	Result	Qual	MDL	RL
Silver	1.2	U	0.062	1.2
Arsenic	5.2	U	1.7	5.2
Beryllium	1.2	U	0.062	1.2
Cadmium	1.2	U	0.25	1.2
Chromium	1.2	U	0.12	1.2
Copper	0.82	J	0.48	1.5
Lead	1.4	J	0.78	3.8
Nickel	1.2	U	0.25	1.2
Selenium	9.4	U	3.1	9.4
Thallium	3.8	U	0.88	3.8
Zinc	6.2	U	1.2	6.2
Antimony	4.1	U	1.3	4.1
Titanium	3.8	U	0.062	3.8

### Lab Control Sample - Batch: 220-27098

Method: 6010B  
Preparation: 3050B

Lab Sample ID: LCS 220-27098/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/15/2009 1500  
Date Prepared: 05/13/2009 1043

Analysis Batch: 220-27207  
Prep Batch: 220-27098  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 250 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Silver	75.0	77.18	103	80 - 120	
Arsenic	250	256.3	103	80 - 120	
Beryllium	25.0	26.48	106	80 - 120	
Cadmium	75.0	77.18	103	80 - 120	
Chromium	75.0	79.12	105	80 - 120	
Copper	75.0	81.70	109	80 - 120	
Lead	250	264.8	106	80 - 120	
Nickel	75.0	79.99	107	80 - 120	
Selenium	125	137.5	110	80 - 120	
Thallium	250	251.4	101	80 - 120	
Zinc	75.0	80.45	107	80 - 120	
Antimony	250	262.9	105	80 - 120	
Titanium	250	258.9	104	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### Method Blank - Batch: 220-27233

Lab Sample ID: MB 220-27233/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/18/2009 1457  
Date Prepared: 05/18/2009 1201

Analysis Batch: 220-27239  
Prep Batch: 220-27233  
Units: mg/Kg

### Method: 7471A Preparation: 7471A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.050	U	0.0040	0.050

### Lab Control Sample - Batch: 220-27233

Lab Sample ID: LCS 220-27233/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/18/2009 1457  
Date Prepared: 05/18/2009 1201

Analysis Batch: 220-27239  
Prep Batch: 220-27233  
Units: mg/Kg

### Method: 7471A Preparation: 7471A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.415	100	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### Method Blank - Batch: 460-5948

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: MB 460-5948/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/11/2009 1155  
Date Prepared: 05/11/2009 0915

Analysis Batch: 460-5964  
Prep Batch: 460-5948  
Units: mg/Kg

Instrument ID: HexChrom Spectrophotom  
Lab File ID: N/A  
Initial Weight/Volume: 1.0 g  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	RL	RL
Cr (VI)	0.050	U	0.050	0.050

### Lab Control Sample - Batch: 460-5948

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: LCS 460-5948/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/11/2009 1155  
Date Prepared: 05/11/2009 0915

Analysis Batch: 460-5964  
Prep Batch: 460-5948  
Units: mg/Kg

Instrument ID: HexChrom Spectrophotom  
Lab File ID: N/A  
Initial Weight/Volume: 1.0 g  
Final Weight/Volume: 100 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Cr (VI)	0.389	0.375	97	85 - 115	

### Lab Control Sample Insoluble - Batch: 460-5948

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: LCS 460-5948/3-A  
Client Matrix: Solid  
Dilution: 50  
Date Analyzed: 05/11/2009 1155  
Date Prepared: 05/11/2009 0915

Analysis Batch: 460-5964  
Prep Batch: 460-5948  
Units: mg/Kg

Instrument ID: HexChrom Spectrophotom  
Lab File ID: N/A  
Initial Weight/Volume: 1.0 g  
Final Weight/Volume: 100 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Cr (VI)	17.7	16.83	95	85 - 115	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1  
Sdg Number: 220-9006

### Duplicate - Batch: 220-26916

**Method: Moisture**  
**Preparation: N/A**

Lab Sample ID: 220-9006-4  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/06/2009 1623  
Date Prepared: N/A

Analysis Batch: 220-26916  
Prep Batch: N/A  
Units: %

Instrument ID: No Equipment Assigned  
Lab File ID: N/A  
Initial Weight/Volume:  
Final Weight/Volume:

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	10.0	13.2	27	20	*
Percent Solids	90.0	86.8	4	20	

Calculations are performed before rounding to avoid round-off errors in calculated results.

# MISCELLANEOUS DATA

# Chain of Custody Record

\* Note - on hold samples on job  
200-9006-2

9006-1

TAL-4142 (0907)

Client: **CHA** Project Manager: **Seth Fowler** Date: **5/5/09** Chain of Custody Number: **388247**

Address: **III Winner's Circle** Telephone Number (Area Code)/Fax Number: **(518) 453-4500 / (518) 453-4773** Lab Number: **3** Page **1** of **3**

City: **Albany** State: **NY** Zip Code: **12205** Site Contact: Lab Contact:

Project Name and Location (State): Carrier/Waybill Number:

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix						Containers & Preservatives						PP Metals (6016)	Hexavalent Chromium (6016)	Mercury (7470)	Titanium (6016)	Analysis (Attach list if more space is needed)	Special Instructions/Conditions of Receipt
			Air	Aqueous	Sed	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH								
1 SB-050409-SKB-17-01	5/4/09	1120				X		1							X	X	X	X		
2 SB-050409-SKB-17-02	5/4/09	1125				X		1							X	X	X	X		Hold for Analysis
3 SB-050409-SKB-17-03	5/4/09	1130				X		1							X	X	X	X		Hold for Analysis
4 SB-050409-SKB-18-01	5/4/09	1220				X		1							X	X	X	X		
5 SB-050409-SKB-18-02	5/4/09	1225				X		1							X	X	X	X		Hold for Analysis
6 SB-050409-SKB-18-03	5/4/09	1230				X		1							X	X	X	X		Hold for Analysis
7 SB-050409-SKB-19-01	5/4/09	1330				X		1							X	X	X	X		* Label reads: SB-050409-SKB-01 @ 1330 (KB) 5/6/09
<del>SB-050409-SKB-19-02</del>	<del>5/4/09</del>					X		1							X	X	X	X		Hold for Analysis
<del>SB-050409-SKB-19-03</del>	<del>5/4/09</del>					X		1							X	X	X	X		Hold for Analysis
8 SB-050409-SKB-20-01	5/4/09	1410				X		1							X	X	X	X		
9 SB-050409-SKB-20A-01	5/4/09	1450				X		1							X	X	X	X		
10 SB-050409-SKB-20A-02	5/4/09	1455				X		1							X	X	X	X		Hold for Analysis

Possible Hazard Identification:  Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal:  Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:  24 Hours  48 Hours  7 Days  14 Days  21 Days  Other \_\_\_\_\_

QC Requirements (Specify):

1. Relinquished By: <i>[Signature]</i>	Date: <b>5/5/09</b> Time: <b>1715</b>	1. Received By: <i>[Signature]</i>	Date: <b>5/5/09</b> Time: <b>1715</b>
2. Relinquished By: <i>[Signature]</i>	Date: <b>5/5/09</b> Time: <b>1940</b>	2. Received By: <i>[Signature]</i>	Date: _____ Time: _____
3. Relinquished By: _____	Date: _____ Time: _____	3. Received By: _____	Date: _____ Time: _____

Comments: **Samples # 01-12 split volume into a 2oz jar for CR6 subcontract test. (KB) 5/6/09**

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

passed rad screen *[Signature]*

# Chain of Custody Record

\* Note - on hold samples on job  
220-9006-2

9006-1

TAL-4142 (0907)

Client: CHA  
Watchtower Bible and Tract Society of NY

Project Manager: Seah Fowler

Date: 5/5/09

Chain of Custody Number: 388245

Address: III Winner's Circle

Telephone Number (Area Code): (516) 453-7500 / Fax Number: (516) 453-4773

Lab Number: \_\_\_\_\_

Page 2 of 3

City: Albany State: NY Zip Code: 12205

Site Contact: \_\_\_\_\_ Lab Contact: \_\_\_\_\_

Project Name and Location (State): \_\_\_\_\_ Carrier/Waybill Number: \_\_\_\_\_

Contract/Purchase Order/Quote No.: 20024-1001-1102

Matrix: \_\_\_\_\_ Containers & Preservatives: \_\_\_\_\_

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix				Containers & Preservatives								Special Instructions/ Conditions of Receipt						
			Air	Aqueous	Sed.	Soil	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	PP Metals (6010)	Hexavalent Chromium (6010)		Mercury (7470)	Titanium (6010)	PAH (2270)			
SB-050409-SKB-20A-03	5/4/09	1500				X		1													Hold for analysis
SB-050409-SKB-20A-04	5/4/09	1505				X		1													Hold for analysis
SB-12 (6-7')	5/5/09	2:25pm				X		2													
SB-14 (2-4')		11:50am				X		3													
SB-14 (7-8')		11:55am				X		3													Hold for Analysis
SB-15 (2-4')		10:55am				X		3													
SB-15 (7-8')		11:00am				X		3													Hold for Analysis
SB-16 (0-2') (8-10' Bgs)		8:45am				X		2													
SB-16 (2-4') (10-12' Bgs)		8:50am				X		2													
SB-16 (4-6') (12-15' Bgs)		8:55am				X		2													

Possible Hazard Identification:  Non-Hazard  Flammable  Skin Irritant  Poison B  Unknown

Sample Disposal:  Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months

(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required:  24 Hours  48 Hours  7 Days  14 Days  21 Days  Other \_\_\_\_\_

QC Requirements (Specify): \_\_\_\_\_

1. Relinquished By: <u>J. S. Stovall III</u>	Date: <u>5/5/09</u>	Time: <u>1715</u>	1. Received By: <u>[Signature]</u>	Date: <u>5/5/09</u>	Time: <u>1715</u>
2. Relinquished By: <u>[Signature]</u>	Date: <u>5/5/09</u>	Time: <u>1940</u>	2. Received By: _____	Date: _____	Time: _____
3. Relinquished By: _____	Date: _____	Time: _____	3. Received By: _____	Date: _____	Time: _____

Comments: \_\_\_\_\_

passed rad screen  
4.2c

# Chain of Custody Record

Connecticut  
 128 Long Hill Cross Road  
 Shelton, CT 06484  
 Tel: 203-929-8140  
 Fax: 203-929-8142

\* Note - on hold  
 Samples on job  
 200-9006-2

9006-1

TAL-0015 (0508)

Client: **CHA** Project Manager: **Seth Fawc-** Date: **5/5/09** Chain of Custody Number: **017054**  
 Address: **14 Winners Circle** Telephone Number (Area Code)/Fax Number/e-mail address: **(518) 453-4500 / (518) 453-4777** Field Telephone Number: \_\_\_\_\_  
 City: **A/bany** State: **NY** Zip Code: **12205** Site Contact: \_\_\_\_\_ Lab Contact: \_\_\_\_\_ Page **3** of **3**

Project Name and Location (State): **Kings Ckase Property** Analysis (Attach list if more space is needed)  
 Contract/Purchase Order/Project No.: **20074.1001.1102** Sample Disposal:  Disposal By Lab (A fee may be assessed if samples are retained longer than 1 month)  Return To Client  Archive For \_\_\_\_\_ Months

Field Sample I.D. (Containers for each sample may be combined on one line)	Collection Date	Collection Time	Matrix			Containers & Preservatives							PP metals	Hex chrom	mercury	Titanium	Comments	
			Aqueous	Solid	Other	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAs2/NaOH	Other						
21 SB-21 (0-2') (8-10 Bgs)	5/5/09	9:25am		X			2							X	X	X	X	
22 SB-21 (2-4') (10-12 Bgs)	↓	10:15am		X			2							X	X	X	X	
23 SB-21 (4-6') (12-14 Bgs)	↓	10:20am		X			2							X	X	X	X	

Turn Around Time Required (business days) Report / EDD Requirements:  24 Hours  48 Hours  5 Days  10 Days  15 Days  Other \_\_\_\_\_  
 State Regulatory QC Requirements: \_\_\_\_\_

1. Relinquished By: **J. Henry III** Date: **5/5/09** Time: **1715** 1. Received By: **[Signature]** Date: **5/5/09** Time: **1715**  
 2. Relinquished By: **[Signature]** Date: **5/5/09** Time: **1940** 2. Received By: **[Signature]** Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 3. Received By: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Cooler Temps: \_\_\_\_\_ Passed Rad. Screen (Lab Use Only):  Yes  No

Comments: \_\_\_\_\_



## TESTAMERICA CONNECTICUT - CHAIN OF CUSTODY ATOMIC SPECTROSCOPY DEPARTMENT

Job Number: 9006 Sample Numbers: 1, 4, 7, 9, 13-14, 16, 18, 21  
Prep Batch Number: 27098, 27233

WATER SOIL - SLUDGE - TCLP/SPLP

I confirm that I have performed the preparation below following SOP guidelines and authorize the transfer of these digestates to the metals instrument lab.:

Sample Prep:

Bill Caprese  
Analysts  
[Signature]  
Analysts

5-13-09 ICP  
Date(s)

5/18/09 Mercury  
Date(s)

I confirm that I have performed the analysis below following SOP guidelines:

Analysis:

[Signature]  
Analysts  
[Signature]  
Chemist

5/19/09 ICP  
Date(s)

5/18/09 Mercury  
Date(s)

I have reviewed and authorized the release of the job:

Complete: [Signature]  
Supervisor

5/19/09  
Date

JOB NO: 720-9006

Fraction: BNA / Pesticide-PCB / Herbicide / O/P Pesticide / DRO / CT ETPH / Other  
(Circle one)

SAMPLE IN (Extractions)					SAMPLE IN (Extractions)				
Sample(s)	Date	Time	Sign.	Location	Sample(s)	Date	Time	Sign.	Location
14816	5-7	10:49	✓	36					

SAMPLE OUT					SAMPLE IN			
Sample(s)	Date	Time	Code	Sign.	Date	Time	Location	Sign.
14,16	05/08	9:00	AN	SS	05/08	11:20	36	SS

Codes: SC = Screening

AN = Analysis

Verified By: ANS

Date: 5/18/09

Lab Form: SMF01203.CT

## Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

SDG Number: 220-9006

**Login Number: 9006**

**List Source: TestAmerica Connecticut**

**Creator: Blocker, Kristina**

**List Number: 1**

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	False	#7, see coc notes.
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	False	#1-12 splitting required for subcontract.

## Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9006-1

SDG Number: 220-9006

**Login Number: 9006**

**Creator: Rinard, Kimberley A**

**List Number: 1**

**List Source: TestAmerica Edison**

**List Creation: 05/07/09 01:40 PM**

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	1 deg C
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

## ANALYTICAL REPORT

Job Number: 220-9024-1

SDG Number: 220-9024

Job Description: 20024.1001.1102 Former Kings College Ca

For:

Clough Harbour & Associates LLP

3 Winner Circle

PO BOX 5269

Albany, NY 12205-0269

Attention: Mr. Seth Fowler



Approved for release.  
Cheryl Cascella  
5/21/2009 9:45 PM

---

Designee for  
Jill M Duhancik  
Project Manager I  
jill.duhancik@testamericainc.com  
05/21/2009

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Project Manager.

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**TestAmerica Laboratories, Inc.**

TestAmerica Connecticut 128 Long Hill Cross Road, Shelton, CT 06484

Tel (203) 929-8140 Fax (203) 929-8142 [www.testamericainc.com](http://www.testamericainc.com)



**Job Narrative**  
**220-J9024-1**

**Comments**

No additional comments.

**Receipt**

All samples were received in good condition within temperature requirements.

**GC/MS Semi VOA**

No analytical or quality issues were noted.

**Metals**

No analytical or quality issues were noted.

**General Chemistry**

Method(s) 7196A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 137906 were outside control limits. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

**Organic Prep**

No analytical or quality issues were noted.

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
<b>220-9024-2</b>	<b>SB-050609-SKB-13 (0-1)</b>				
Acenaphthylene		50 J	330	ug/Kg	8270C
Fluoranthene		24 J	330	ug/Kg	8270C
Pyrene		20 J	330	ug/Kg	8270C
Chrysene		28 J	330	ug/Kg	8270C
Benzo[a]pyrene		30 J	330	ug/Kg	8270C
Silver		1.6	1.5	mg/Kg	6010B
Beryllium		0.37 J	1.5	mg/Kg	6010B
Chromium		12.8	1.5	mg/Kg	6010B
Copper		19.0	1.8	mg/Kg	6010B
Lead		17.5	4.5	mg/Kg	6010B
Nickel		113	1.5	mg/Kg	6010B
Zinc		65.3	7.5	mg/Kg	6010B
Titanium		129	4.5	mg/Kg	6010B
Mercury		0.13	0.058	mg/Kg	7471A
Percent Moisture		18.4	0.100	%	Moisture
Percent Solids		81.6	0.100	%	Moisture
<b>220-9024-3</b>	<b>SB-050609-SKB-10 (6-7)</b>				
Silver		0.30 J	1.4	mg/Kg	6010B
Arsenic		2.9 J	5.8	mg/Kg	6010B
Beryllium		0.41 J	1.4	mg/Kg	6010B
Chromium		10.9	1.4	mg/Kg	6010B
Copper		39.8	1.7	mg/Kg	6010B
Lead		7.7	4.2	mg/Kg	6010B
Nickel		45.0	1.4	mg/Kg	6010B
Thallium		1.4 J	4.2	mg/Kg	6010B
Zinc		52.4	6.9	mg/Kg	6010B
Titanium		48.3	4.2	mg/Kg	6010B
Mercury		0.022 J	0.055	mg/Kg	7471A
Percent Moisture		9.82	0.100	%	Moisture
Percent Solids		90.2	0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9024-6</b>	<b>SB-050609-SKB-11 (6-7)</b>					
Silver		0.11	J	1.4	mg/Kg	6010B
Arsenic		3.1	J	6.0	mg/Kg	6010B
Beryllium		0.38	J	1.4	mg/Kg	6010B
Chromium		13.1		1.4	mg/Kg	6010B
Copper		11.3		1.7	mg/Kg	6010B
Lead		6.2		4.3	mg/Kg	6010B
Nickel		18.8		1.4	mg/Kg	6010B
Zinc		37.8		7.1	mg/Kg	6010B
Titanium		105		4.3	mg/Kg	6010B
Mercury		0.011	J	0.055	mg/Kg	7471A
Percent Moisture		15.4		0.100	%	Moisture
Percent Solids		84.6		0.100	%	Moisture
<b>220-9024-7</b>	<b>SB-050609-SKB-7 (7-8)</b>					
Silver		0.67	J	1.4	mg/Kg	6010B
Arsenic		3.4	J	5.9	mg/Kg	6010B
Beryllium		0.31	J	1.4	mg/Kg	6010B
Chromium		8.8		1.4	mg/Kg	6010B
Copper		20.8		1.7	mg/Kg	6010B
Lead		5.4		4.2	mg/Kg	6010B
Nickel		24.2		1.4	mg/Kg	6010B
Thallium		3.5	J	4.2	mg/Kg	6010B
Zinc		29.5		7.0	mg/Kg	6010B
Titanium		87.8		4.2	mg/Kg	6010B
Mercury		0.014	J	0.057	mg/Kg	7471A
Percent Moisture		14.2		0.100	%	Moisture
Percent Solids		85.8		0.100	%	Moisture
<b>220-9024-11</b>	<b>SB-050609-SKB-8 (7-8)</b>					
Silver		0.11	J	1.3	mg/Kg	6010B
Arsenic		3.1	J	5.6	mg/Kg	6010B
Beryllium		0.42	J	1.3	mg/Kg	6010B
Chromium		13.6		1.3	mg/Kg	6010B
Copper		36.6		1.6	mg/Kg	6010B
Lead		5.9		4.0	mg/Kg	6010B
Nickel		42.2		1.3	mg/Kg	6010B
Thallium		1.1	J	4.0	mg/Kg	6010B
Zinc		40.2		6.6	mg/Kg	6010B
Titanium		133		4.0	mg/Kg	6010B
Mercury		0.011	J	0.052	mg/Kg	7471A
Percent Moisture		8.79		0.100	%	Moisture
Percent Solids		91.2		0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9024-12</b>	<b>SB-050609-SKB-9 (7-8)</b>					
Silver		0.078	J	1.3	mg/Kg	6010B
Arsenic		2.4	J	5.6	mg/Kg	6010B
Beryllium		0.41	J	1.3	mg/Kg	6010B
Chromium		16.8		1.3	mg/Kg	6010B
Copper		30.8		1.6	mg/Kg	6010B
Lead		5.7		4.0	mg/Kg	6010B
Nickel		53.6		1.3	mg/Kg	6010B
Zinc		35.2		6.7	mg/Kg	6010B
Titanium		184		4.0	mg/Kg	6010B
Mercury		0.015	J	0.051	mg/Kg	7471A
Percent Moisture		9.99		0.100	%	Moisture
Percent Solids		90.0		0.100	%	Moisture
<b>220-9024-13</b>	<b>SB-050609-SKB-24</b>					
2-Methylnaphthalene		40	J	600	ug/Kg	8270C
Acenaphthylene		280	J	600	ug/Kg	8270C
Acenaphthene		170	J	600	ug/Kg	8270C
Fluorene		110	J	600	ug/Kg	8270C
Phenanthrene		1200		600	ug/Kg	8270C
Anthracene		700		600	ug/Kg	8270C
Fluoranthene		6400		600	ug/Kg	8270C
Pyrene		6800		600	ug/Kg	8270C
Benzo[a]anthracene		6700		600	ug/Kg	8270C
Chrysene		6800		600	ug/Kg	8270C
Benzo[b]fluoranthene		7700		600	ug/Kg	8270C
Benzo[k]fluoranthene		3100		600	ug/Kg	8270C
Benzo[a]pyrene		8300		600	ug/Kg	8270C
Indeno[1,2,3-cd]pyrene		5600		600	ug/Kg	8270C
Dibenz(a,h)anthracene		1700		600	ug/Kg	8270C
Benzo[g,h,i]perylene		4600		600	ug/Kg	8270C
Percent Moisture		12.0		0.100	%	Moisture
Percent Solids		88.0		0.100	%	Moisture
<b>220-9024-14</b>	<b>SB-050609-SKB-25</b>					
Percent Moisture		7.44		0.100	%	Moisture
Percent Solids		92.6		0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9024-15</b>	<b>SB-050709-SKB-BG3</b>					
Silver		0.10	J	1.6	mg/Kg	6010B
Arsenic		3.7	J	6.8	mg/Kg	6010B
Beryllium		0.65	J	1.6	mg/Kg	6010B
Chromium		20.5		1.6	mg/Kg	6010B
Copper		16.2		1.9	mg/Kg	6010B
Lead		24.0		4.8	mg/Kg	6010B
Nickel		27.7		1.6	mg/Kg	6010B
Zinc		61.4		8.0	mg/Kg	6010B
Titanium		209		4.8	mg/Kg	6010B
Mercury		0.047	J	0.064	mg/Kg	7471A
Percent Moisture		23.9		0.100	%	Moisture
Percent Solids		76.1		0.100	%	Moisture
<b>220-9024-16</b>	<b>SB-050709-SKB-BG2</b>					
Silver		0.21	J	1.9	mg/Kg	6010B
Arsenic		3.8	J	7.8	mg/Kg	6010B
Beryllium		0.71	J	1.9	mg/Kg	6010B
Chromium		22.0		1.9	mg/Kg	6010B
Copper		13.3		2.2	mg/Kg	6010B
Lead		34.7		5.6	mg/Kg	6010B
Nickel		28.2		1.9	mg/Kg	6010B
Zinc		67.9		9.3	mg/Kg	6010B
Titanium		104		5.6	mg/Kg	6010B
Mercury		0.11		0.074	mg/Kg	7471A
Percent Moisture		32.9		0.100	%	Moisture
Percent Solids		67.1		0.100	%	Moisture
<b>220-9024-17</b>	<b>SB-050709-SKB-BG1</b>					
Beryllium		0.69	J	1.5	mg/Kg	6010B
Chromium		15.2		1.5	mg/Kg	6010B
Copper		16.7		1.8	mg/Kg	6010B
Lead		13.1		4.4	mg/Kg	6010B
Nickel		22.6		1.5	mg/Kg	6010B
Zinc		46.7		7.4	mg/Kg	6010B
Titanium		261		4.4	mg/Kg	6010B
Mercury		0.051	J	0.057	mg/Kg	7471A
Percent Moisture		18.9		0.100	%	Moisture
Percent Solids		81.1		0.100	%	Moisture

## METHOD SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

<b>Description</b>	<b>Lab Location</b>	<b>Method</b>	<b>Preparation Method</b>
<b>Matrix: Solid</b>			
Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	TAL CT	SW846 8270C	
Automated Soxhlet Extraction	TAL CT		SW846 3541
Metals (ICP)	TAL CT	SW846 6010B	
Preparation, Metals	TAL CT		SW846 3050B
Mercury (CVAA)	TAL CT	SW846 7471A	
Preparation, Mercury	TAL CT		SW846 7471A
Chromium, Hexavalent	TAL SAV	SW846 7196A	
Alkaline Digestion (Chromium, Hexavalent)	TAL SAV		SW846 3060A
Percent Moisture	TAL CT	EPA Moisture	

### Lab References:

TAL CT = TestAmerica Connecticut

TAL SAV = TestAmerica Savannah

### Method References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 8270C	Jonas, Stephan	SJ
SW846 6010B	Petronchak, Nestor	NP
SW846 7471A	Voytek, Joseph F	JFV
SW846 7196A	Ross, Jon	JR
EPA Moisture	Capece, Bill	BC

## SAMPLE SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
220-9024-2	SB-050609-SKB-13 (0-1)	Solid	05/06/2009 1045	05/07/2009 1905
220-9024-3	SB-050609-SKB-10 (6-7)	Solid	05/06/2009 1210	05/07/2009 1905
220-9024-6	SB-050609-SKB-11 (6-7)	Solid	05/06/2009 1225	05/07/2009 1905
220-9024-7	SB-050609-SKB-7 (7-8)	Solid	05/06/2009 1300	05/07/2009 1905
220-9024-11	SB-050609-SKB-8 (7-8)	Solid	05/06/2009 1330	05/07/2009 1905
220-9024-12	SB-050609-SKB-9 (7-8)	Solid	05/06/2009 1350	05/07/2009 1905
220-9024-13	SB-050609-SKB-24	Solid	05/06/2009 1355	05/07/2009 1905
220-9024-14	SB-050609-SKB-25	Solid	05/06/2009 1610	05/07/2009 1905
220-9024-15	SB-050709-SKB-BG3	Solid	05/07/2009 1000	05/07/2009 1905
220-9024-16	SB-050709-SKB-BG2	Solid	05/07/2009 1045	05/07/2009 1905
220-9024-17	SB-050709-SKB-BG1	Solid	05/07/2009 1115	05/07/2009 1905

# **SAMPLE RESULTS**

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

Client Sample ID: SB-050609-SKB-13 (0-1)

Lab Sample ID: 220-9024-2

Date Sampled: 05/06/2009 1045

Client Matrix: Solid

% Moisture: 18.4

Date Received: 05/07/2009 1905

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27058	Instrument ID:	HP 6890/5975
Preparation:	3541	Prep Batch: 220-26962	Lab File ID:	C11163.D
Dilution:	1.0		Initial Weight/Volume:	15.04 g
Date Analyzed:	05/11/2009 2143		Final Weight/Volume:	1 mL
Date Prepared:	05/08/2009 0815		Injection Volume:	1.0 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		330	U	17	330
2-Methylnaphthalene		330	U	9.4	330
Acenaphthylene		50	J	16	330
Acenaphthene		330	U	20	330
Fluorene		330	U	20	330
Phenanthrene		330	U	16	330
Anthracene		330	U	13	330
Fluoranthene		24	J	16	330
Pyrene		20	J	16	330
Benzo[a]anthracene		330	U	12	330
Chrysene		28	J	24	330
Benzo[b]fluoranthene		330	U	8.8	330
Benzo[k]fluoranthene		330	U	30	330
Benzo[a]pyrene		30	J	8.9	330
Indeno[1,2,3-cd]pyrene		330	U	21	330
Dibenz(a,h)anthracene		330	U	26	330
Benzo[g,h,i]perylene		330	U	22	330

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	50	34 - 120
Phenol-d5	48	36 - 120
Nitrobenzene-d5	52	38 - 120
2-Fluorobiphenyl	52	41 - 120
2,4,6-Tribromophenol	57	37 - 120
Terphenyl-d14	54	32 - 125

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

**Client Sample ID: SB-050609-SKB-24**

Lab Sample ID: 220-9024-13

Date Sampled: 05/06/2009 1355

Client Matrix: Solid

% Moisture: 12.0

Date Received: 05/07/2009 1905

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27068	Instrument ID: HP 6890/5975
Preparation:	3541	Prep Batch: 220-26962	Lab File ID: C11173.D
Dilution:	2.0		Initial Weight/Volume: 15.37 g
Date Analyzed:	05/12/2009 1406		Final Weight/Volume: 1 mL
Date Prepared:	05/08/2009 0815		Injection Volume: 1.0 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		600	U	31	600
2-Methylnaphthalene		40	J	17	600
Acenaphthylene		280	J	29	600
Acenaphthene		170	J	35	600
Fluorene		110	J	36	600
Phenanthrene		1200		30	600
Anthracene		700		23	600
Fluoranthene		6400		30	600
Pyrene		6800		28	600
Benzo[a]anthracene		6700		21	600
Chrysene		6800		44	600
Benzo[b]fluoranthene		7700		16	600
Benzo[k]fluoranthene		3100		54	600
Benzo[a]pyrene		8300		16	600
Indeno[1,2,3-cd]pyrene		5600		39	600
Dibenz(a,h)anthracene		1700		47	600
Benzo[g,h,i]perylene		4600		39	600

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	73	34 - 120
Phenol-d5	75	36 - 120
Nitrobenzene-d5	68	38 - 120
2-Fluorobiphenyl	81	41 - 120
2,4,6-Tribromophenol	88	37 - 120
Terphenyl-d14	81	32 - 125

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

**Client Sample ID: SB-050609-SKB-25**

Lab Sample ID: 220-9024-14

Date Sampled: 05/06/2009 1610

Client Matrix: Solid

% Moisture: 7.4

Date Received: 05/07/2009 1905

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27058	Instrument ID: HP 6890/5975
Preparation:	3541	Prep Batch: 220-26962	Lab File ID: C11150.D
Dilution:	1.0		Initial Weight/Volume: 15.28 g
Date Analyzed:	05/11/2009 1554		Final Weight/Volume: 1 mL
Date Prepared:	05/08/2009 0815		Injection Volume: 1.0 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		290	U	15	290
2-Methylnaphthalene		290	U	8.2	290
Acenaphthylene		290	U	14	290
Acenaphthene		290	U	17	290
Fluorene		290	U	17	290
Phenanthrene		290	U	14	290
Anthracene		290	U	11	290
Fluoranthene		290	U	14	290
Pyrene		290	U	13	290
Benzo[a]anthracene		290	U	10	290
Chrysene		290	U	21	290
Benzo[b]fluoranthene		290	U	7.6	290
Benzo[k]fluoranthene		290	U	26	290
Benzo[a]pyrene		290	U	7.7	290
Indeno[1,2,3-cd]pyrene		290	U	19	290
Dibenz(a,h)anthracene		290	U	22	290
Benzo[g,h,i]perylene		290	U	19	290

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	54	34 - 120
Phenol-d5	53	36 - 120
Nitrobenzene-d5	54	38 - 120
2-Fluorobiphenyl	53	41 - 120
2,4,6-Tribromophenol	55	37 - 120
Terphenyl-d14	64	32 - 125

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

Client Sample ID: SB-050609-SKB-13 (0-1)

Lab Sample ID: 220-9024-2

Date Sampled: 05/06/2009 1045

Client Matrix: Solid

% Moisture: 18.4

Date Received: 05/07/2009 1905

### 6010B Metals (ICP)

Method: 6010B

Analysis Batch: 220-27207

Instrument ID:

Perkin Elmer ICP

Preparation: 3050B

Prep Batch: 220-27156

Lab File ID:

N/A

Dilution: 1.0

Initial Weight/Volume: 2.03 g

Date Analyzed: 05/15/2009 1314

Final Weight/Volume: 250 mL

Date Prepared: 05/14/2009 1313

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Silver		1.6		0.075	1.5
Arsenic		6.3	U	2.0	6.3
Beryllium		0.37	J	0.075	1.5
Cadmium		1.5	U	0.30	1.5
Chromium		12.8		0.15	1.5
Copper		19.0		0.57	1.8
Lead		17.5		0.94	4.5
Nickel		113		0.30	1.5
Selenium		11.3	U	3.8	11.3
Thallium		4.5	U	1.1	4.5
Zinc		65.3		1.5	7.5
Antimony		5.0	U	1.5	5.0
Titanium		129		0.075	4.5

### 7471A Mercury (CVAA)

Method: 7471A

Analysis Batch: 220-27334

Instrument ID:

Perkin Elmer FIMS

Preparation: 7471A

Prep Batch: 220-27300

Lab File ID:

N/A

Dilution: 1.0

Initial Weight/Volume: 0.63 g

Date Analyzed: 05/21/2009 1136

Final Weight/Volume: 50 mL

Date Prepared: 05/20/2009 1453

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.13		0.0047	0.058



















## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

### General Chemistry

**Client Sample ID: SB-050609-SKB-11 (6-7)**

Lab Sample ID: 220-9024-6  
Client Matrix: Solid

% Moisture: 15.4

Date Sampled: 05/06/2009 1225  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.1	U	mg/Kg	0.26	1.1	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	15.4		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			
Percent Solids	84.6		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			

**Client Sample ID: SB-050609-SKB-7 (7-8)**

Lab Sample ID: 220-9024-7  
Client Matrix: Solid

% Moisture: 14.2

Date Sampled: 05/06/2009 1300  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.0	U	mg/Kg	0.24	1.0	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	14.2		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			
Percent Solids	85.8		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

### General Chemistry

**Client Sample ID: SB-050609-SKB-8 (7-8)**

Lab Sample ID: 220-9024-11  
Client Matrix: Solid

% Moisture: 8.8

Date Sampled: 05/06/2009 1330  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	0.96	U	mg/Kg	0.22	0.96	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	8.79		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			
Percent Solids	91.2		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			

**Client Sample ID: SB-050609-SKB-9 (7-8)**

Lab Sample ID: 220-9024-12  
Client Matrix: Solid

% Moisture: 10.0

Date Sampled: 05/06/2009 1350  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.0	U	mg/Kg	0.24	1.0	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	9.99		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			
Percent Solids	90.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			

**Client Sample ID: SB-050609-SKB-24**

Lab Sample ID: 220-9024-13  
Client Matrix: Solid

Date Sampled: 05/06/2009 1355  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	12.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			
Percent Solids	88.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

### General Chemistry

**Client Sample ID: SB-050609-SKB-25**

Lab Sample ID: 220-9024-14  
Client Matrix: Solid

Date Sampled: 05/06/2009 1610  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	7.44		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed		05/08/2009 1412			
Percent Solids	92.6		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed		05/08/2009 1412			

**Client Sample ID: SB-050709-SKB-BG3**

Lab Sample ID: 220-9024-15  
Client Matrix: Solid

% Moisture: 23.9

Date Sampled: 05/07/2009 1000  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.3	U	mg/Kg	0.30	1.3	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed		05/14/2009 1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:		05/13/2009 1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	23.9		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed		05/08/2009 1412			
Percent Solids	76.1		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed		05/08/2009 1412			

**Client Sample ID: SB-050709-SKB-BG2**

Lab Sample ID: 220-9024-16  
Client Matrix: Solid

% Moisture: 32.9

Date Sampled: 05/07/2009 1045  
Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.4	U	mg/Kg	0.33	1.4	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed		05/14/2009 1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:		05/13/2009 1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	32.9		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed		05/08/2009 1412			
Percent Solids	67.1		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed		05/08/2009 1412			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

### General Chemistry

Client Sample ID: SB-050709-SKB-BG1

Lab Sample ID: 220-9024-17

Date Sampled: 05/07/2009 1115

Client Matrix: Solid

% Moisture: 18.9

Date Received: 05/07/2009 1905

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.2	U	mg/Kg	0.28	1.2	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	18.9		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			
Percent Solids	81.1		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-26981	Date Analyzed	05/08/2009	1412			

## DATA REPORTING QUALIFIERS

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS Semi VOA		
	U	Analyzed for but not detected.
	J	Indicates an estimated value.
Metals		
	U	Indicates analyzed for but not detected.
	J	Sample result is greater than the MDL but below the CRDL
General Chemistry		
	U	Indicates analyzed for but not detected.
	N	Spiked sample recovery is not within control limits.

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>GC/MS Semi VOA</b>					
<b>Prep Batch: 220-26962</b>					
LCS 220-26962/2-A	Lab Control Sample	T	Solid	3541	
MB 220-26962/1-A	Method Blank	T	Solid	3541	
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	3541	
220-9024-13	SB-050609-SKB-24	T	Solid	3541	
220-9024-14	SB-050609-SKB-25	T	Solid	3541	
<b>Analysis Batch:220-27058</b>					
LCS 220-26962/2-A	Lab Control Sample	T	Solid	8270C	220-26962
MB 220-26962/1-A	Method Blank	T	Solid	8270C	220-26962
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	8270C	220-26962
220-9024-14	SB-050609-SKB-25	T	Solid	8270C	220-26962
<b>Analysis Batch:220-27068</b>					
220-9024-13	SB-050609-SKB-24	T	Solid	8270C	220-26962

**Report Basis**

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 220-27156</b>					
LCS 220-27156/2-A	Lab Control Sample	T	Solid	3050B	
MB 220-27156/1-A	Method Blank	T	Solid	3050B	
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	3050B	
220-9024-3	SB-050609-SKB-10 (6-7)	T	Solid	3050B	
220-9024-6	SB-050609-SKB-11 (6-7)	T	Solid	3050B	
220-9024-7	SB-050609-SKB-7 (7-8)	T	Solid	3050B	
220-9024-11	SB-050609-SKB-8 (7-8)	T	Solid	3050B	
<b>Prep Batch: 220-27190</b>					
LCS 220-27190/2-A	Lab Control Sample	T	Solid	3050B	
MB 220-27190/1-A	Method Blank	T	Solid	3050B	
220-9024-12	SB-050609-SKB-9 (7-8)	T	Solid	3050B	
220-9024-15	SB-050709-SKB-BG3	T	Solid	3050B	
220-9024-16	SB-050709-SKB-BG2	T	Solid	3050B	
220-9024-17	SB-050709-SKB-BG1	T	Solid	3050B	
<b>Analysis Batch:220-27207</b>					
LCS 220-27156/2-A	Lab Control Sample	T	Solid	6010B	220-27156
MB 220-27156/1-A	Method Blank	T	Solid	6010B	220-27156
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	6010B	220-27156
<b>Analysis Batch:220-27247</b>					
LCS 220-27190/2-A	Lab Control Sample	T	Solid	6010B	220-27190
MB 220-27190/1-A	Method Blank	T	Solid	6010B	220-27190
220-9024-3	SB-050609-SKB-10 (6-7)	T	Solid	6010B	220-27156
220-9024-6	SB-050609-SKB-11 (6-7)	T	Solid	6010B	220-27156
220-9024-7	SB-050609-SKB-7 (7-8)	T	Solid	6010B	220-27156
220-9024-11	SB-050609-SKB-8 (7-8)	T	Solid	6010B	220-27156
220-9024-12	SB-050609-SKB-9 (7-8)	T	Solid	6010B	220-27190
220-9024-15	SB-050709-SKB-BG3	T	Solid	6010B	220-27190
220-9024-16	SB-050709-SKB-BG2	T	Solid	6010B	220-27190
220-9024-17	SB-050709-SKB-BG1	T	Solid	6010B	220-27190
<b>Prep Batch: 220-27300</b>					
LCS 220-27300/2-A	Lab Control Sample	T	Solid	7471A	
MB 220-27300/1-A	Method Blank	T	Solid	7471A	
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	7471A	
220-9024-3	SB-050609-SKB-10 (6-7)	T	Solid	7471A	
220-9024-6	SB-050609-SKB-11 (6-7)	T	Solid	7471A	
220-9024-7	SB-050609-SKB-7 (7-8)	T	Solid	7471A	
220-9024-11	SB-050609-SKB-8 (7-8)	T	Solid	7471A	
220-9024-12	SB-050609-SKB-9 (7-8)	T	Solid	7471A	
220-9024-15	SB-050709-SKB-BG3	T	Solid	7471A	
220-9024-16	SB-050709-SKB-BG2	T	Solid	7471A	
220-9024-17	SB-050709-SKB-BG1	T	Solid	7471A	

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## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Analysis Batch:220-27334</b>					
LCS 220-27300/2-A	Lab Control Sample	T	Solid	7471A	220-27300
MB 220-27300/1-A	Method Blank	T	Solid	7471A	220-27300
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	7471A	220-27300
220-9024-3	SB-050609-SKB-10 (6-7)	T	Solid	7471A	220-27300
220-9024-6	SB-050609-SKB-11 (6-7)	T	Solid	7471A	220-27300
220-9024-7	SB-050609-SKB-7 (7-8)	T	Solid	7471A	220-27300
220-9024-11	SB-050609-SKB-8 (7-8)	T	Solid	7471A	220-27300
220-9024-12	SB-050609-SKB-9 (7-8)	T	Solid	7471A	220-27300
220-9024-15	SB-050709-SKB-BG3	T	Solid	7471A	220-27300
220-9024-16	SB-050709-SKB-BG2	T	Solid	7471A	220-27300
220-9024-17	SB-050709-SKB-BG1	T	Solid	7471A	220-27300

#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>General Chemistry</b>					
<b>Analysis Batch:220-26981</b>					
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	Moisture	
220-9024-3	SB-050609-SKB-10 (6-7)	T	Solid	Moisture	
220-9024-6	SB-050609-SKB-11 (6-7)	T	Solid	Moisture	
220-9024-7	SB-050609-SKB-7 (7-8)	T	Solid	Moisture	
220-9024-11	SB-050609-SKB-8 (7-8)	T	Solid	Moisture	
220-9024-12	SB-050609-SKB-9 (7-8)	T	Solid	Moisture	
220-9024-13	SB-050609-SKB-24	T	Solid	Moisture	
220-9024-14	SB-050609-SKB-25	T	Solid	Moisture	
220-9024-15	SB-050709-SKB-BG3	T	Solid	Moisture	
220-9024-16	SB-050709-SKB-BG2	T	Solid	Moisture	
220-9024-17	SB-050709-SKB-BG1	T	Solid	Moisture	
<b>Prep Batch: 680-137701</b>					
LCS 680-137701/2-A	Lab Control Sample	T	Solid	3060A	
MB 680-137701/1-A	Method Blank	T	Solid	3060A	
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	3060A	
220-9024-2DU	Duplicate	T	Solid	3060A	
220-9024-2MS	Matrix Spike	T	Solid	3060A	
220-9024-2MSD	Matrix Spike Duplicate	T	Solid	3060A	
220-9024-3	SB-050609-SKB-10 (6-7)	T	Solid	3060A	
220-9024-6	SB-050609-SKB-11 (6-7)	T	Solid	3060A	
220-9024-7	SB-050609-SKB-7 (7-8)	T	Solid	3060A	
220-9024-11	SB-050609-SKB-8 (7-8)	T	Solid	3060A	
220-9024-12	SB-050609-SKB-9 (7-8)	T	Solid	3060A	
220-9024-15	SB-050709-SKB-BG3	T	Solid	3060A	
220-9024-16	SB-050709-SKB-BG2	T	Solid	3060A	
220-9024-17	SB-050709-SKB-BG1	T	Solid	3060A	
<b>Analysis Batch:680-137906</b>					
LCS 680-137701/2-A	Lab Control Sample	T	Solid	7196A	680-137701
MB 680-137701/1-A	Method Blank	T	Solid	7196A	680-137701
220-9024-2	SB-050609-SKB-13 (0-1)	T	Solid	7196A	680-137701
220-9024-2DU	Duplicate	T	Solid	7196A	680-137701
220-9024-2MS	Matrix Spike	T	Solid	7196A	680-137701
220-9024-2MSD	Matrix Spike Duplicate	T	Solid	7196A	680-137701
220-9024-3	SB-050609-SKB-10 (6-7)	T	Solid	7196A	680-137701
220-9024-6	SB-050609-SKB-11 (6-7)	T	Solid	7196A	680-137701
220-9024-7	SB-050609-SKB-7 (7-8)	T	Solid	7196A	680-137701
220-9024-11	SB-050609-SKB-8 (7-8)	T	Solid	7196A	680-137701
220-9024-12	SB-050609-SKB-9 (7-8)	T	Solid	7196A	680-137701
220-9024-15	SB-050709-SKB-BG3	T	Solid	7196A	680-137701
220-9024-16	SB-050709-SKB-BG2	T	Solid	7196A	680-137701
220-9024-17	SB-050709-SKB-BG1	T	Solid	7196A	680-137701

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## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

### QC Association Summary

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Report Basis</u>	<u>Client Matrix</u>	<u>Method</u>	<u>Prep Batch</u>
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#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

### Surrogate Recovery Report

#### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

##### Client Matrix: Solid

Lab Sample ID	Client Sample ID	2FP %Rec	PHL %Rec	NBZ %Rec	FBP %Rec	TBP %Rec	TPH %Rec
220-9024-2	SB-050609-SKB-13 (0-1)	50	48	52	52	57	54
220-9024-13	SB-050609-SKB-24	73	75	68	81	88	81
220-9024-14	SB-050609-SKB-25	54	53	54	53	55	64
MB 220-26962/1-A		63	61	62	62	62	68
LCS 220-26962/2-A		61	59	63	62	65	73

Surrogate	Acceptance Limits
2FP = 2-Fluorophenol	34-120
PHL = Phenol-d5	36-120
NBZ = Nitrobenzene-d5	38-120
FBP = 2-Fluorobiphenyl	41-120
TBP = 2,4,6-Tribromophenol	37-120
TPH = Terphenyl-d14	32-125

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

Sdg Number: 220-9024

**Method Blank - Batch: 220-26962**

**Method: 8270C**

**Preparation: 3541**

Lab Sample ID: MB 220-26962/1-A

Analysis Batch: 220-27058

Instrument ID: HP 6890/5975

Client Matrix: Solid

Prep Batch: 220-26962

Lab File ID: C11143.D

Dilution: 1.0

Units: ug/Kg

Initial Weight/Volume: 15 g

Date Analyzed: 05/11/2009 1245

Final Weight/Volume: 1 mL

Date Prepared: 05/08/2009 0815

Injection Volume: 1.0 uL

Analyte	Result	Qual	MDL	RL
Naphthalene	270	U	14	270
2-Methylnaphthalene	270	U	7.7	270
Acenaphthylene	270	U	13	270
Acenaphthene	270	U	16	270
Fluorene	270	U	16	270
Phenanthrene	270	U	13	270
Anthracene	270	U	11	270
Fluoranthene	270	U	13	270
Pyrene	270	U	13	270
Benzo[a]anthracene	270	U	9.6	270
Chrysene	270	U	20	270
Benzo[b]fluoranthene	270	U	7.2	270
Benzo[k]fluoranthene	270	U	24	270
Benzo[a]pyrene	270	U	7.3	270
Indeno[1,2,3-cd]pyrene	270	U	18	270
Dibenz(a,h)anthracene	270	U	21	270
Benzo[g,h,i]perylene	270	U	18	270

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	63	34 - 120
Phenol-d5	61	36 - 120
Nitrobenzene-d5	62	38 - 120
2-Fluorobiphenyl	62	41 - 120
2,4,6-Tribromophenol	62	37 - 120
Terphenyl-d14	68	32 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

**Lab Control Sample - Batch: 220-26962**

**Method: 8270C**  
**Preparation: 3541**

Lab Sample ID: LCS 220-26962/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/11/2009 1312  
Date Prepared: 05/08/2009 0815

Analysis Batch: 220-27058  
Prep Batch: 220-26962  
Units: ug/Kg

Instrument ID: HP 6890/5975  
Lab File ID: C11144.D  
Initial Weight/Volume: 15 g  
Final Weight/Volume: 1 mL  
Injection Volume: 1.0 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Naphthalene	2670	1830	69	55 - 120	
2-Methylnaphthalene	2670	1790	67	56 - 120	
Acenaphthylene	2670	1880	71	57 - 120	
Acenaphthene	2670	1830	69	57 - 120	
Fluorene	2670	1890	71	58 - 120	
Phenanthrene	2670	2000	75	58 - 120	
Anthracene	2670	2010	75	58 - 120	
Fluoranthene	2670	1990	75	57 - 120	
Pyrene	2670	2180	82	54 - 121	
Benzo[a]anthracene	2670	2070	78	58 - 120	
Chrysene	2670	2100	79	57 - 120	
Benzo[b]fluoranthene	2670	1940	73	54 - 120	
Benzo[k]fluoranthene	2670	2020	76	53 - 120	
Benzo[a]pyrene	2670	2280	86	44 - 120	
Indeno[1,2,3-cd]pyrene	2670	2200	83	37 - 120	
Dibenz(a,h)anthracene	2670	2180	82	39 - 120	
Benzo[g,h,i]perylene	2670	2250	84	37 - 120	

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	61	34 - 120
Phenol-d5	59	36 - 120
Nitrobenzene-d5	63	38 - 120
2-Fluorobiphenyl	62	41 - 120
2,4,6-Tribromophenol	65	37 - 120
Terphenyl-d14	73	32 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

### Method Blank - Batch: 220-27156

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: MB 220-27156/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/15/2009 1228  
Date Prepared: 05/14/2009 1313

Analysis Batch: 220-27207  
Prep Batch: 220-27156  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 2.00 g  
Final Weight/Volume: 250 mL

Analyte	Result	Qual	MDL	RL
Silver	1.2	U	0.062	1.2
Arsenic	5.2	U	1.7	5.2
Beryllium	1.2	U	0.062	1.2
Cadmium	1.2	U	0.25	1.2
Chromium	1.2	U	0.12	1.2
Copper	1.5	U	0.48	1.5
Lead	0.87	J	0.78	3.8
Nickel	1.2	U	0.25	1.2
Selenium	9.4	U	3.1	9.4
Thallium	3.8	U	0.88	3.8
Zinc	6.2	U	1.2	6.2
Antimony	4.1	U	1.3	4.1
Titanium	3.8	U	0.062	3.8

### Lab Control Sample - Batch: 220-27156

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: LCS 220-27156/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/15/2009 1231  
Date Prepared: 05/14/2009 1313

Analysis Batch: 220-27207  
Prep Batch: 220-27156  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 250 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Silver	75.0	78.68	105	80 - 120	
Arsenic	250	256.4	103	80 - 120	
Beryllium	25.0	26.99	108	80 - 120	
Cadmium	75.0	78.06	104	80 - 120	
Chromium	75.0	80.15	107	80 - 120	
Copper	75.0	81.07	108	80 - 120	
Lead	250	265.6	106	80 - 120	
Nickel	75.0	80.85	108	80 - 120	
Selenium	125	135.7	109	80 - 120	
Thallium	250	255.7	102	80 - 120	
Zinc	75.0	79.63	106	80 - 120	
Antimony	250	265.1	106	80 - 120	
Titanium	250	262.4	105	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

### Method Blank - Batch: 220-27190

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: MB 220-27190/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/18/2009 1432  
Date Prepared: 05/15/2009 1045

Analysis Batch: 220-27247  
Prep Batch: 220-27190  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 2.00 g  
Final Weight/Volume: 250 mL

Analyte	Result	Qual	MDL	RL
Silver	1.2	U	0.062	1.2
Arsenic	5.2	U	1.7	5.2
Beryllium	1.2	U	0.062	1.2
Cadmium	1.2	U	0.25	1.2
Chromium	1.2	U	0.12	1.2
Copper	1.5	U	0.48	1.5
Lead	0.83	J	0.78	3.8
Nickel	1.2	U	0.25	1.2
Selenium	9.4	U	3.1	9.4
Thallium	3.8	U	0.88	3.8
Zinc	6.2	U	1.2	6.2
Antimony	4.1	U	1.3	4.1
Titanium	3.8	U	0.062	3.8

### Lab Control Sample - Batch: 220-27190

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: LCS 220-27190/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/18/2009 1435  
Date Prepared: 05/15/2009 1045

Analysis Batch: 220-27247  
Prep Batch: 220-27190  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 250 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Silver	75.0	78.00	104	80 - 120	
Arsenic	250	265.2	106	80 - 120	
Beryllium	25.0	27.14	109	80 - 120	
Cadmium	75.0	78.69	105	80 - 120	
Chromium	75.0	80.92	108	80 - 120	
Copper	75.0	82.10	109	80 - 120	
Lead	250	268.4	107	80 - 120	
Nickel	75.0	82.10	109	80 - 120	
Selenium	125	136.8	109	80 - 120	
Thallium	250	260.1	104	80 - 120	
Zinc	75.0	80.62	107	80 - 120	
Antimony	250	267.2	107	80 - 120	
Titanium	250	263.6	105	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

### Method Blank - Batch: 220-27300

Lab Sample ID: MB 220-27300/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/21/2009 1126  
Date Prepared: 05/20/2009 1453

Analysis Batch: 220-27334  
Prep Batch: 220-27300  
Units: mg/Kg

### Method: 7471A Preparation: 7471A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.050	U	0.0040	0.050

### Lab Control Sample - Batch: 220-27300

Lab Sample ID: LCS 220-27300/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/21/2009 1127  
Date Prepared: 05/20/2009 1453

Analysis Batch: 220-27334  
Prep Batch: 220-27300  
Units: mg/Kg

### Method: 7471A Preparation: 7471A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.426	102	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

**Method Blank - Batch: 680-137701**

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: MB 680-137701/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/14/2009 1553  
Date Prepared: 05/13/2009 1159

Analysis Batch: 680-137906  
Prep Batch: 680-137701  
Units: mg/Kg

Instrument ID: KoneLab1  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	MDL	RL
Chromium, hexavalent	1.0	U	0.23	1.0

**Lab Control Sample - Batch: 680-137701**

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: LCS 680-137701/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/14/2009 1553  
Date Prepared: 05/13/2009 1159

Analysis Batch: 680-137906  
Prep Batch: 680-137701  
Units: mg/Kg

Instrument ID: KoneLab1  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 100 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chromium, hexavalent	20.0	17.63	88	80 - 120	

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 680-137701**

**Method: 7196A**  
**Preparation: 3060A**

MS Lab Sample ID: 220-9024-2  
Client Matrix: Solid  
Dilution: 2.0  
Date Analyzed: 05/14/2009 1606  
Date Prepared: 05/13/2009 1159

Analysis Batch: 680-137906  
Prep Batch: 680-137701

Instrument ID: KoneLab1  
Lab File ID: N/A  
Initial Weight/Volume: 1.06 g  
Final Weight/Volume: 100 mL

MSD Lab Sample ID: 220-9024-2  
Client Matrix: Solid  
Dilution: 2.0  
Date Analyzed: 05/14/2009 1606  
Date Prepared: 05/13/2009 1159

Analysis Batch: 680-137906  
Prep Batch: 680-137701

Instrument ID: KoneLab1  
Lab File ID: N/A  
Initial Weight/Volume: 1.06 g  
Final Weight/Volume: 100 mL

Analyte	<u>% Rec.</u>		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Chromium, hexavalent	52	57	80 - 120	9	30	N	N

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1  
Sdg Number: 220-9024

**Duplicate - Batch: 680-137701**

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: 220-9024-2  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/14/2009 1553  
Date Prepared: 05/13/2009 1159

Analysis Batch: 680-137906  
Prep Batch: 680-137701  
Units: mg/Kg

Instrument ID: KoneLab1  
Lab File ID: N/A  
Initial Weight/Volume: 1.06 g  
Final Weight/Volume: 100 mL

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Chromium, hexavalent	1.2	U	1.2	NC	30	U

Calculations are performed before rounding to avoid round-off errors in calculated results.

# MISCELLANEOUS DATA





TestAmerica - Connecticut  
Internal Chain-of-Custody

200-9024  
CHA

Trip Blank:

QC:

Air:

FB:

Soil: #1-17

Water:

Date Received: 5-7-09

Sample #: 1-17

Locations: R-3C

Laboratory Sample #	Relinquished by	Accepted by	Date	Time	Reason	Relinquished by	Accepted by	Date	Time
2, 13, 14	LB	JA	5/8	7:50	ET	JA	LB	5/8	10:55
4, 10, 11, 17	LB	BC	5/8	10:50	MH	BC	LB	5/9	14:25
3, 10, 11	LB	BC	5/14	10:00	MH	BC	LB	5/14	15:10
12, 15, 16, 17	LB	BC	5/15	10:05	MH	BC	LB	5/15	11:50
2, 3, 10, 11, 12, 15-17	LB	BC	5/30	14:30	MH	BC	LB	5/30	15:00

05/21/2009

JOB NO: 220-9024

Fraction: BNA / Pesticide-PCB / Herbicide / O/P Pesticide / DRO / CT ETPH / Other  
(Circle one)

SAMPLE IN (Extractions)					SAMPLE IN (Extractions)				
Sample(s)	Date	Time	Sign.	Location	Sample(s)	Date	Time	Sign.	Location
2,13,14	5/8	15:07	TD	36					

SAMPLE OUT					SAMPLE IN			
Sample(s)	Date	Time	Code	Sign.	Date	Time	Location	Sign.
2,13,14	05/11	10:00	AN	SS	05/11	10:50	36	SS
13	05/12	10:00	AN	SS	05/12	13:20	36	SS

Codes: SC = Screening

AN = Analysis

Verified By: 

Date: 5/18/09

Lab Form: SMF01203.CT

## TESTAMERICA CONNECTICUT - CHAIN OF CUSTODY ATOMIC SPECTROSCOPY DEPARTMENT

Job Number: 9024 Sample Numbers: 8-3, 6-7, 11-17

Prep Batch Number: 27156, 2790, 27300

WATER - SOIL SLUDGE - TCLP/SPL

I confirm that I have performed the preparation below following SOP guidelines and authorize the transfer of these digestates to the metals instrument lab.:

Sample Prep:

Bill Capice  
Analysts

5-14-9 ICP  
Date(s)

[Signature]  
Analysts

5/21/09 Mercury  
Date(s)

I confirm that I have performed the analysis below following SOP guidelines:

Analysis:

[Signature]  
Analysts

5/21/09 ICP  
Date(s)

[Signature]  
Chemist

5/21/09 Mercury  
Date(s)

I have reviewed and authorized the release of the job:

Complete: [Signature]  
Supervisor

5/21/09  
Date

# Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

SDG Number: 220-9024

**Login Number: 9024**

**Creator: Teixeira, Maria L**

**List Number: 1**

**List Source: TestAmerica Connecticut**

<b>Question</b>	<b>T / F / NA</b>	<b>Comment</b>
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

# Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9024-1

SDG Number: 220-9024

**Login Number: 9024**

**Creator: Hall, Karl I**

**List Number: 1**

**List Source: TestAmerica Savannah**

**List Creation: 05/09/09 02:06 PM**

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

## ANALYTICAL REPORT

Job Number: 220-9045-1

SDG Number: 220-9045

Job Description: 20024.1001.1102 Former Kings College

For:

Clough Harbour & Associates LLP

3 Winner Circle

PO BOX 5269

Albany, NY 12205-0269

Attention: Mr. Seth Fowler



Approved for release.  
Cheryl Cascella  
5/21/2009 10:23 PM

---

Designee for  
Jill M Duhancik  
Project Manager I  
jill.duhancik@testamericainc.com  
05/21/2009

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Project Manager.

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**TestAmerica Laboratories, Inc.**

TestAmerica Connecticut 128 Long Hill Cross Road, Shelton, CT 06484

Tel (203) 929-8140 Fax (203) 929-8142 [www.testamericainc.com](http://www.testamericainc.com)



**Job Narrative**  
**220-J9045-1**

**Comments**

No additional comments.

**Receipt**

All samples were received in good condition within temperature requirements.

**GC/MS Semi VOA**

No analytical or quality issues were noted.

**Metals**

No analytical or quality issues were noted.

**General Chemistry**

Method(s) 7196A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for batch 137906 were outside control limits. The associated laboratory control sample (LCS) met acceptance criteria.

No other analytical or quality issues were noted.

**Organic Prep**

No analytical or quality issues were noted.

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9045-1</b>	<b>SB-050709-SKB-4 (7.5-8)</b>					
Arsenic		2.2	J	5.7	mg/Kg	6010B
Beryllium		0.69	J	1.4	mg/Kg	6010B
Chromium		24.7		1.4	mg/Kg	6010B
Copper		21.3		1.6	mg/Kg	6010B
Lead		9.0		4.1	mg/Kg	6010B
Nickel		33.2		1.4	mg/Kg	6010B
Zinc		33.4		6.8	mg/Kg	6010B
Titanium		286		4.1	mg/Kg	6010B
Mercury		0.052	J	0.053	mg/Kg	7471A
Percent Moisture		12.1		0.100	%	Moisture
Percent Solids		87.9		0.100	%	Moisture
<b>220-9045-3</b>	<b>SB-050709-SKB-5</b>					
Arsenic		2.3	J	5.6	mg/Kg	6010B
Beryllium		0.48	J	1.3	mg/Kg	6010B
Chromium		14.7		1.3	mg/Kg	6010B
Copper		26.8		1.6	mg/Kg	6010B
Lead		4.3		4.0	mg/Kg	6010B
Nickel		31.7		1.3	mg/Kg	6010B
Zinc		35.8		6.7	mg/Kg	6010B
Titanium		255		4.0	mg/Kg	6010B
Mercury		0.015	J	0.052	mg/Kg	7471A
Percent Moisture		11.5		0.100	%	Moisture
Percent Solids		88.5		0.100	%	Moisture
<b>220-9045-4</b>	<b>SB-050709-SKB-6</b>					
Arsenic		2.6	J	5.9	mg/Kg	6010B
Beryllium		0.52	J	1.4	mg/Kg	6010B
Chromium		20.0		1.4	mg/Kg	6010B
Copper		28.1		1.7	mg/Kg	6010B
Lead		4.5		4.2	mg/Kg	6010B
Nickel		30.6		1.4	mg/Kg	6010B
Thallium		1.4	J	4.2	mg/Kg	6010B
Zinc		30.7		7.0	mg/Kg	6010B
Titanium		325		4.2	mg/Kg	6010B
Mercury		0.013	J	0.054	mg/Kg	7471A
Percent Moisture		12.1		0.100	%	Moisture
Percent Solids		87.9		0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9045-5</b>	<b>SB-050809-SKB-1 (7.5-8)</b>					
Arsenic		2.3	J	5.6	mg/Kg	6010B
Beryllium		0.33	J	1.3	mg/Kg	6010B
Chromium		10.6		1.3	mg/Kg	6010B
Copper		22.8		1.6	mg/Kg	6010B
Lead		3.1	J	4.0	mg/Kg	6010B
Nickel		37.5		1.3	mg/Kg	6010B
Zinc		34.3		6.7	mg/Kg	6010B
Titanium		224		4.0	mg/Kg	6010B
Mercury		0.0047	J	0.052	mg/Kg	7471A
Percent Moisture		10.4		0.100	%	Moisture
Percent Solids		89.6		0.100	%	Moisture
<b>220-9045-7</b>	<b>SB-050809-SKB-2</b>					
Arsenic		2.4	J	5.8	mg/Kg	6010B
Beryllium		0.34	J	1.4	mg/Kg	6010B
Chromium		10.6		1.4	mg/Kg	6010B
Copper		21.3		1.7	mg/Kg	6010B
Lead		4.1	J	4.2	mg/Kg	6010B
Nickel		40.7		1.4	mg/Kg	6010B
Zinc		29.0		6.9	mg/Kg	6010B
Titanium		240		4.2	mg/Kg	6010B
Percent Moisture		13.0		0.100	%	Moisture
Percent Solids		87.0		0.100	%	Moisture
<b>220-9045-8</b>	<b>SB-050809-SKB-3</b>					
Silver		0.080	J	1.5	mg/Kg	6010B
Arsenic		2.4	J	6.2	mg/Kg	6010B
Beryllium		0.27	J	1.5	mg/Kg	6010B
Chromium		9.7		1.5	mg/Kg	6010B
Copper		21.5		1.8	mg/Kg	6010B
Lead		4.0	J	4.4	mg/Kg	6010B
Nickel		27.1		1.5	mg/Kg	6010B
Thallium		1.8	J	4.4	mg/Kg	6010B
Zinc		24.1		7.3	mg/Kg	6010B
Titanium		145		4.4	mg/Kg	6010B
Mercury		0.0088	J	0.060	mg/Kg	7471A
Percent Moisture		16.8		0.100	%	Moisture
Percent Solids		83.2		0.100	%	Moisture

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9045-9</b>	<b>SB-050809-SKB-22</b>					
Phenanthrene		19	J	290	ug/Kg	8270C
Fluoranthene		17	J	290	ug/Kg	8270C
Pyrene		17	J	290	ug/Kg	8270C
Percent Moisture		9.41		0.100	%	Moisture
Percent Solids		90.6		0.100	%	Moisture
<b>220-9045-10</b>	<b>SB-050809-SKB-23</b>					
Percent Moisture		9.23		0.100	%	Moisture
Percent Solids		90.8		0.100	%	Moisture
<b>220-9045-11</b>	<b>SB-050809-SKB-BG4</b>					
Beryllium		0.48	J	1.3	mg/Kg	6010B
Chromium		13.3		1.3	mg/Kg	6010B
Copper		28.4		1.5	mg/Kg	6010B
Lead		3.5	J	3.9	mg/Kg	6010B
Nickel		32.3		1.3	mg/Kg	6010B
Zinc		31.7		6.4	mg/Kg	6010B
Titanium		555		3.9	mg/Kg	6010B
Mercury		0.0055	J	0.055	mg/Kg	7471A
Percent Moisture		7.32		0.100	%	Moisture
Percent Solids		92.7		0.100	%	Moisture

## METHOD SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

<b>Description</b>	<b>Lab Location</b>	<b>Method</b>	<b>Preparation Method</b>
<b>Matrix: Solid</b>			
Semivolatiles Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	TAL CT	SW846 8270C	
Automated Soxhlet Extraction	TAL CT		SW846 3541
Metals (ICP)	TAL CT	SW846 6010B	
Preparation, Metals	TAL CT		SW846 3050B
Mercury (CVAA)	TAL CT	SW846 7471A	
Preparation, Mercury	TAL CT		SW846 7471A
Chromium, Hexavalent	TAL SAV	SW846 7196A	
Alkaline Digestion (Chromium, Hexavalent)	TAL SAV		SW846 3060A
Percent Moisture	TAL CT	EPA Moisture	

### Lab References:

TAL CT = TestAmerica Connecticut

TAL SAV = TestAmerica Savannah

### Method References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 8270C	Jonas, Stephan	SJ
SW846 6010B	Petronchak, Nestor	NP
SW846 7471A	Voytek, Joseph F	JFV
SW846 7196A	Ross, Jon	JR
EPA Moisture	Capece, Bill	BC

## SAMPLE SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
220-9045-1	SB-050709-SKB-4 (7.5-8)	Solid	05/07/2009 1510	05/08/2009 1805
220-9045-3	SB-050709-SKB-5	Solid	05/07/2009 1600	05/08/2009 1805
220-9045-4	SB-050709-SKB-6	Solid	04/30/2009 1540	05/08/2009 1805
220-9045-5	SB-050809-SKB-1 (7.5-8)	Solid	05/08/2009 0800	05/08/2009 1805
220-9045-7	SB-050809-SKB-2	Solid	05/08/2009 0810	05/08/2009 1805
220-9045-8	SB-050809-SKB-3	Solid	05/08/2009 0830	05/08/2009 1805
220-9045-9	SB-050809-SKB-22	Solid	05/08/2009 0935	05/08/2009 1805
220-9045-10	SB-050809-SKB-23	Solid	05/08/2009 0950	05/08/2009 1805
220-9045-11	SB-050809-SKB-BG4	Solid	05/08/2009 1140	05/08/2009 1805

# **SAMPLE RESULTS**

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

**Client Sample ID: SB-050809-SKB-22**

Lab Sample ID: 220-9045-9

Date Sampled: 05/08/2009 0935

Client Matrix: Solid

% Moisture: 9.4

Date Received: 05/08/2009 1805

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27058	Instrument ID: HP 6890/5975
Preparation:	3541	Prep Batch: 220-27000	Lab File ID: C11157.D
Dilution:	1.0		Initial Weight/Volume: 15.32 g
Date Analyzed:	05/11/2009 1903		Final Weight/Volume: 1 mL
Date Prepared:	05/09/2009 0816		Injection Volume: 1.0 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		290	U	15	290
2-Methylnaphthalene		290	U	8.3	290
Acenaphthylene		290	U	14	290
Acenaphthene		290	U	17	290
Fluorene		290	U	18	290
Phenanthrene		19	J	14	290
Anthracene		290	U	11	290
Fluoranthene		17	J	14	290
Pyrene		17	J	14	290
Benzo[a]anthracene		290	U	10	290
Chrysene		290	U	22	290
Benzo[b]fluoranthene		290	U	7.8	290
Benzo[k]fluoranthene		290	U	26	290
Benzo[a]pyrene		290	U	7.9	290
Indeno[1,2,3-cd]pyrene		290	U	19	290
Dibenz(a,h)anthracene		290	U	23	290
Benzo[g,h,i]perylene		290	U	19	290

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	56	34 - 120
Phenol-d5	53	36 - 120
Nitrobenzene-d5	57	38 - 120
2-Fluorobiphenyl	58	41 - 120
2,4,6-Tribromophenol	60	37 - 120
Terphenyl-d14	63	32 - 125

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

**Client Sample ID: SB-050809-SKB-23**

Lab Sample ID: 220-9045-10

Date Sampled: 05/08/2009 0950

Client Matrix: Solid

% Moisture: 9.2

Date Received: 05/08/2009 1805

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27058	Instrument ID: HP 6890/5975
Preparation:	3541	Prep Batch: 220-27000	Lab File ID: C11158.D
Dilution:	1.0		Initial Weight/Volume: 15.16 g
Date Analyzed:	05/11/2009 1929		Final Weight/Volume: 1 mL
Date Prepared:	05/09/2009 0816		Injection Volume: 1.0 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Naphthalene		290	U	15	290
2-Methylnaphthalene		290	U	8.4	290
Acenaphthylene		290	U	14	290
Acenaphthene		290	U	17	290
Fluorene		290	U	18	290
Phenanthrene		290	U	14	290
Anthracene		290	U	11	290
Fluoranthene		290	U	15	290
Pyrene		290	U	14	290
Benzo[a]anthracene		290	U	10	290
Chrysene		290	U	22	290
Benzo[b]fluoranthene		290	U	7.8	290
Benzo[k]fluoranthene		290	U	26	290
Benzo[a]pyrene		290	U	8.0	290
Indeno[1,2,3-cd]pyrene		290	U	19	290
Dibenz(a,h)anthracene		290	U	23	290
Benzo[g,h,i]perylene		290	U	19	290

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	53	34 - 120
Phenol-d5	50	36 - 120
Nitrobenzene-d5	52	38 - 120
2-Fluorobiphenyl	53	41 - 120
2,4,6-Tribromophenol	52	37 - 120
Terphenyl-d14	61	32 - 125

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

**Client Sample ID: SB-050709-SKB-4 (7.5-8)**

Lab Sample ID: 220-9045-1

Date Sampled: 05/07/2009 1510

Client Matrix: Solid

% Moisture: 12.1

Date Received: 05/08/2009 1805

### 6010B Metals (ICP)

Method: 6010B

Analysis Batch: 220-27207

Instrument ID:

Perkin Elmer ICP

Preparation: 3050B

Prep Batch: 220-27156

Lab File ID:

N/A

Dilution: 1.0

Initial Weight/Volume: 2.09 g

Date Analyzed: 05/15/2009 1308

Final Weight/Volume: 250 mL

Date Prepared: 05/14/2009 1313

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Silver		1.4	U	0.068	1.4
Arsenic		2.2	J	1.8	5.7
Beryllium		0.69	J	0.068	1.4
Cadmium		1.4	U	0.27	1.4
Chromium		24.7		0.14	1.4
Copper		21.3		0.52	1.6
Lead		9.0		0.84	4.1
Nickel		33.2		0.27	1.4
Selenium		10.2	U	3.4	10.2
Thallium		4.1	U	0.95	4.1
Zinc		33.4		1.4	6.8
Antimony		4.5	U	1.4	4.5
Titanium		286		0.068	4.1

### 7471A Mercury (CVAA)

Method: 7471A

Analysis Batch: 220-27239

Instrument ID:

Perkin Elmer FIMS

Preparation: 7471A

Prep Batch: 220-27233

Lab File ID:

N/A

Dilution: 1.0

Initial Weight/Volume: 0.65 g

Date Analyzed: 05/18/2009 1518

Final Weight/Volume: 50 mL

Date Prepared: 05/18/2009 1201

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.052	J	0.0042	0.053















## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

### General Chemistry

**Client Sample ID: SB-050709-SKB-6**

Lab Sample ID: 220-9045-4  
Client Matrix: Solid

% Moisture: 12.1

Date Sampled: 04/30/2009 1540  
Date Received: 05/08/2009 1805

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.0	U	mg/Kg	0.24	1.0	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1557			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1159			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	12.1		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			
Percent Solids	87.9		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			

**Client Sample ID: SB-050809-SKB-1 (7.5-8)**

Lab Sample ID: 220-9045-5  
Client Matrix: Solid

% Moisture: 10.4

Date Sampled: 05/08/2009 0800  
Date Received: 05/08/2009 1805

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.1	U	mg/Kg	0.25	1.1	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1601			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1232			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	10.4		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			
Percent Solids	89.6		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

### General Chemistry

**Client Sample ID: SB-050809-SKB-2**

Lab Sample ID: 220-9045-7  
Client Matrix: Solid

% Moisture: 13.0

Date Sampled: 05/08/2009 0810  
Date Received: 05/08/2009 1805

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.1	U	mg/Kg	0.25	1.1	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1601			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1232			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	13.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			
Percent Solids	87.0		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			

**Client Sample ID: SB-050809-SKB-3**

Lab Sample ID: 220-9045-8  
Client Matrix: Solid

% Moisture: 16.8

Date Sampled: 05/08/2009 0830  
Date Received: 05/08/2009 1805

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.1	U	mg/Kg	0.24	1.1	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed	05/14/2009	1601			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:	05/13/2009	1232			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	16.8		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			
Percent Solids	83.2		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			

**Client Sample ID: SB-050809-SKB-22**

Lab Sample ID: 220-9045-9  
Client Matrix: Solid

Date Sampled: 05/08/2009 0935  
Date Received: 05/08/2009 1805

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	9.41		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			
Percent Solids	90.6		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed	05/11/2009	1418			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

### General Chemistry

**Client Sample ID: SB-050809-SKB-23**

Lab Sample ID: 220-9045-10  
Client Matrix: Solid

Date Sampled: 05/08/2009 0950  
Date Received: 05/08/2009 1805

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	9.23		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed		05/11/2009 1418			
Percent Solids	90.8		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed		05/11/2009 1418			

**Client Sample ID: SB-050809-SKB-BG4**

Lab Sample ID: 220-9045-11  
Client Matrix: Solid

% Moisture: 7.3

Date Sampled: 05/08/2009 1140  
Date Received: 05/08/2009 1805

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chromium, hexavalent	1.1	U	mg/Kg	0.25	1.1	1.0	7196A
	Anly Batch: 680-137906	Date Analyzed		05/14/2009 1601			DryWt Corrected: Y
	Prep Batch: 680-137701	Date Prepared:		05/13/2009 1232			

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	7.32		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed		05/11/2009 1418			
Percent Solids	92.7		%	0.100	0.100	1.0	Moisture
	Anly Batch: 220-27026	Date Analyzed		05/11/2009 1418			

## DATA REPORTING QUALIFIERS

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS Semi VOA		
	U	Analyzed for but not detected.
	J	Indicates an estimated value.
Metals		
	U	Indicates analyzed for but not detected.
	J	Sample result is greater than the MDL but below the CRDL
General Chemistry		
	U	Indicates analyzed for but not detected.

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

### QC Association Summary

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Report Basis</u>	<u>Client Matrix</u>	<u>Method</u>	<u>Prep Batch</u>
<b>GC/MS Semi VOA</b>					
<b>Prep Batch: 220-27000</b>					
LCS 220-27000/2-A	Lab Control Sample	T	Solid	3541	
MB 220-27000/1-A	Method Blank	T	Solid	3541	
220-9045-9	SB-050809-SKB-22	T	Solid	3541	
220-9045-10	SB-050809-SKB-23	T	Solid	3541	
<b>Analysis Batch:220-27058</b>					
LCS 220-27000/2-A	Lab Control Sample	T	Solid	8270C	220-27000
MB 220-27000/1-A	Method Blank	T	Solid	8270C	220-27000
220-9045-9	SB-050809-SKB-22	T	Solid	8270C	220-27000
220-9045-10	SB-050809-SKB-23	T	Solid	8270C	220-27000

#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 220-27156</b>					
LCS 220-27156/2-A	Lab Control Sample	T	Solid	3050B	
MB 220-27156/1-A	Method Blank	T	Solid	3050B	
220-9045-1	SB-050709-SKB-4 (7.5-8)	T	Solid	3050B	
220-9045-3	SB-050709-SKB-5	T	Solid	3050B	
220-9045-4	SB-050709-SKB-6	T	Solid	3050B	
220-9045-5	SB-050809-SKB-1 (7.5-8)	T	Solid	3050B	
220-9045-7	SB-050809-SKB-2	T	Solid	3050B	
220-9045-8	SB-050809-SKB-3	T	Solid	3050B	
220-9045-11	SB-050809-SKB-BG4	T	Solid	3050B	
<b>Analysis Batch:220-27207</b>					
LCS 220-27156/2-A	Lab Control Sample	T	Solid	6010B	220-27156
MB 220-27156/1-A	Method Blank	T	Solid	6010B	220-27156
220-9045-1	SB-050709-SKB-4 (7.5-8)	T	Solid	6010B	220-27156
<b>Prep Batch: 220-27233</b>					
LCS 220-27233/2-A	Lab Control Sample	T	Solid	7471A	
MB 220-27233/1-A	Method Blank	T	Solid	7471A	
220-9045-1	SB-050709-SKB-4 (7.5-8)	T	Solid	7471A	
220-9045-3	SB-050709-SKB-5	T	Solid	7471A	
220-9045-4	SB-050709-SKB-6	T	Solid	7471A	
220-9045-5	SB-050809-SKB-1 (7.5-8)	T	Solid	7471A	
220-9045-7	SB-050809-SKB-2	T	Solid	7471A	
220-9045-8	SB-050809-SKB-3	T	Solid	7471A	
<b>Analysis Batch:220-27239</b>					
LCS 220-27233/2-A	Lab Control Sample	T	Solid	7471A	220-27233
MB 220-27233/1-A	Method Blank	T	Solid	7471A	220-27233
220-9045-1	SB-050709-SKB-4 (7.5-8)	T	Solid	7471A	220-27233
220-9045-3	SB-050709-SKB-5	T	Solid	7471A	220-27233
220-9045-4	SB-050709-SKB-6	T	Solid	7471A	220-27233
220-9045-5	SB-050809-SKB-1 (7.5-8)	T	Solid	7471A	220-27233
220-9045-7	SB-050809-SKB-2	T	Solid	7471A	220-27233
220-9045-8	SB-050809-SKB-3	T	Solid	7471A	220-27233
<b>Analysis Batch:220-27247</b>					
220-9045-3	SB-050709-SKB-5	T	Solid	6010B	220-27156
220-9045-4	SB-050709-SKB-6	T	Solid	6010B	220-27156
220-9045-5	SB-050809-SKB-1 (7.5-8)	T	Solid	6010B	220-27156
220-9045-7	SB-050809-SKB-2	T	Solid	6010B	220-27156
220-9045-8	SB-050809-SKB-3	T	Solid	6010B	220-27156
220-9045-11	SB-050809-SKB-BG4	T	Solid	6010B	220-27156

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 220-27300</b>					
LCS 220-27300/2-A	Lab Control Sample	T	Solid	7471A	
MB 220-27300/1-A	Method Blank	T	Solid	7471A	
220-9045-11	SB-050809-SKB-BG4	T	Solid	7471A	
220-9045-11DU	Duplicate	T	Solid	7471A	
220-9045-11MS	Matrix Spike	T	Solid	7471A	
<b>Analysis Batch:220-27334</b>					
LCS 220-27300/2-A	Lab Control Sample	T	Solid	7471A	220-27300
MB 220-27300/1-A	Method Blank	T	Solid	7471A	220-27300
220-9045-11	SB-050809-SKB-BG4	T	Solid	7471A	220-27300
220-9045-11DU	Duplicate	T	Solid	7471A	220-27300
220-9045-11MS	Matrix Spike	T	Solid	7471A	220-27300

#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>General Chemistry</b>					
<b>Analysis Batch:220-27026</b>					
220-9045-1	SB-050709-SKB-4 (7.5-8)	T	Solid	Moisture	
220-9045-3	SB-050709-SKB-5	T	Solid	Moisture	
220-9045-4	SB-050709-SKB-6	T	Solid	Moisture	
220-9045-5	SB-050809-SKB-1 (7.5-8)	T	Solid	Moisture	
220-9045-7	SB-050809-SKB-2	T	Solid	Moisture	
220-9045-8	SB-050809-SKB-3	T	Solid	Moisture	
220-9045-9	SB-050809-SKB-22	T	Solid	Moisture	
220-9045-10	SB-050809-SKB-23	T	Solid	Moisture	
220-9045-11	SB-050809-SKB-BG4	T	Solid	Moisture	
<b>Prep Batch: 680-137701</b>					
LCS 680-137701/2-A	Lab Control Sample	T	Solid	3060A	
MB 680-137701/1-A	Method Blank	T	Solid	3060A	
220-9045-1	SB-050709-SKB-4 (7.5-8)	T	Solid	3060A	
220-9045-3	SB-050709-SKB-5	T	Solid	3060A	
220-9045-4	SB-050709-SKB-6	T	Solid	3060A	
220-9045-5	SB-050809-SKB-1 (7.5-8)	T	Solid	3060A	
220-9045-7	SB-050809-SKB-2	T	Solid	3060A	
220-9045-8	SB-050809-SKB-3	T	Solid	3060A	
220-9045-11	SB-050809-SKB-BG4	T	Solid	3060A	
<b>Analysis Batch:680-137906</b>					
LCS 680-137701/2-A	Lab Control Sample	T	Solid	7196A	680-137701
MB 680-137701/1-A	Method Blank	T	Solid	7196A	680-137701
220-9045-1	SB-050709-SKB-4 (7.5-8)	T	Solid	7196A	680-137701
220-9045-3	SB-050709-SKB-5	T	Solid	7196A	680-137701
220-9045-4	SB-050709-SKB-6	T	Solid	7196A	680-137701
220-9045-5	SB-050809-SKB-1 (7.5-8)	T	Solid	7196A	680-137701
220-9045-7	SB-050809-SKB-2	T	Solid	7196A	680-137701
220-9045-8	SB-050809-SKB-3	T	Solid	7196A	680-137701
220-9045-11	SB-050809-SKB-BG4	T	Solid	7196A	680-137701

**Report Basis**

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

### Surrogate Recovery Report

#### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

##### Client Matrix: Solid

Lab Sample ID	Client Sample ID	2FP %Rec	PHL %Rec	NBZ %Rec	FBP %Rec	TBP %Rec	TPH %Rec
220-9045-9	SB-050809-SKB-22	56	53	57	58	60	63
220-9045-10	SB-050809-SKB-23	53	50	52	53	52	61
MB 220-27000/1-A		56	54	55	57	55	57
LCS 220-27000/2-A		58	56	58	58	60	66

Surrogate	Acceptance Limits
2FP = 2-Fluorophenol	34-120
PHL = Phenol-d5	36-120
NBZ = Nitrobenzene-d5	38-120
FBP = 2-Fluorobiphenyl	41-120
TBP = 2,4,6-Tribromophenol	37-120
TPH = Terphenyl-d14	32-125

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

**Method Blank - Batch: 220-27000**

**Method: 8270C**  
**Preparation: 3541**

Lab Sample ID: MB 220-27000/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/11/2009 1151  
Date Prepared: 05/09/2009 0816

Analysis Batch: 220-27058  
Prep Batch: 220-27000  
Units: ug/Kg

Instrument ID: HP 6890/5975  
Lab File ID: C11141.D  
Initial Weight/Volume: 15 g  
Final Weight/Volume: 1 mL  
Injection Volume: 1.0 uL

Analyte	Result	Qual	MDL	RL
Naphthalene	270	U	14	270
2-Methylnaphthalene	270	U	7.7	270
Acenaphthylene	270	U	13	270
Acenaphthene	270	U	16	270
Fluorene	270	U	16	270
Phenanthrene	270	U	13	270
Anthracene	270	U	11	270
Fluoranthene	270	U	13	270
Pyrene	270	U	13	270
Benzo[a]anthracene	270	U	9.6	270
Chrysene	270	U	20	270
Benzo[b]fluoranthene	270	U	7.2	270
Benzo[k]fluoranthene	270	U	24	270
Benzo[a]pyrene	270	U	7.3	270
Indeno[1,2,3-cd]pyrene	270	U	18	270
Dibenz(a,h)anthracene	270	U	21	270
Benzo[g,h,i]perylene	270	U	18	270

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	56	34 - 120
Phenol-d5	54	36 - 120
Nitrobenzene-d5	55	38 - 120
2-Fluorobiphenyl	57	41 - 120
2,4,6-Tribromophenol	55	37 - 120
Terphenyl-d14	57	32 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

Sdg Number: 220-9045

### Lab Control Sample - Batch: 220-27000

**Method: 8270C**

**Preparation: 3541**

Lab Sample ID: LCS 220-27000/2-A

Analysis Batch: 220-27058

Instrument ID: HP 6890/5975

Client Matrix: Solid

Prep Batch: 220-27000

Lab File ID: C11142.D

Dilution: 1.0

Units: ug/Kg

Initial Weight/Volume: 15 g

Date Analyzed: 05/11/2009 1218

Final Weight/Volume: 1 mL

Date Prepared: 05/09/2009 0816

Injection Volume: 1.0 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Naphthalene	2670	1690	63	55 - 120	
2-Methylnaphthalene	2670	1680	63	56 - 120	
Acenaphthylene	2670	1800	68	57 - 120	
Acenaphthene	2670	1750	66	57 - 120	
Fluorene	2670	1810	68	58 - 120	
Phenanthrene	2670	1840	69	58 - 120	
Anthracene	2670	1810	68	58 - 120	
Fluoranthene	2670	1820	68	57 - 120	
Pyrene	2670	1990	75	54 - 121	
Benzo[a]anthracene	2670	1850	70	58 - 120	
Chrysene	2670	1900	71	57 - 120	
Benzo[b]fluoranthene	2670	1800	67	54 - 120	
Benzo[k]fluoranthene	2670	1850	69	53 - 120	
Benzo[a]pyrene	2670	2080	78	44 - 120	
Indeno[1,2,3-cd]pyrene	2670	1960	73	37 - 120	
Dibenz(a,h)anthracene	2670	2000	75	39 - 120	
Benzo[g,h,i]perylene	2670	1990	75	37 - 120	

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	58	34 - 120
Phenol-d5	56	36 - 120
Nitrobenzene-d5	58	38 - 120
2-Fluorobiphenyl	58	41 - 120
2,4,6-Tribromophenol	60	37 - 120
Terphenyl-d14	66	32 - 125

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

**Method Blank - Batch: 220-27156**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: MB 220-27156/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/15/2009 1228  
Date Prepared: 05/14/2009 1313

Analysis Batch: 220-27207  
Prep Batch: 220-27156  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 2.00 g  
Final Weight/Volume: 250 mL

Analyte	Result	Qual	MDL	RL
Silver	1.2	U	0.062	1.2
Arsenic	5.2	U	1.7	5.2
Beryllium	1.2	U	0.062	1.2
Cadmium	1.2	U	0.25	1.2
Chromium	1.2	U	0.12	1.2
Copper	1.5	U	0.48	1.5
Lead	0.87	J	0.78	3.8
Nickel	1.2	U	0.25	1.2
Selenium	9.4	U	3.1	9.4
Thallium	3.8	U	0.88	3.8
Zinc	6.2	U	1.2	6.2
Antimony	4.1	U	1.3	4.1
Titanium	3.8	U	0.062	3.8

**Lab Control Sample - Batch: 220-27156**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: LCS 220-27156/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/15/2009 1231  
Date Prepared: 05/14/2009 1313

Analysis Batch: 220-27207  
Prep Batch: 220-27156  
Units: mg/Kg

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 250 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Silver	75.0	78.68	105	80 - 120	
Arsenic	250	256.4	103	80 - 120	
Beryllium	25.0	26.99	108	80 - 120	
Cadmium	75.0	78.06	104	80 - 120	
Chromium	75.0	80.15	107	80 - 120	
Copper	75.0	81.07	108	80 - 120	
Lead	250	265.6	106	80 - 120	
Nickel	75.0	80.85	108	80 - 120	
Selenium	125	135.7	109	80 - 120	
Thallium	250	255.7	102	80 - 120	
Zinc	75.0	79.63	106	80 - 120	
Antimony	250	265.1	106	80 - 120	
Titanium	250	262.4	105	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

### Method Blank - Batch: 220-27233

Lab Sample ID: MB 220-27233/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/18/2009 1457  
Date Prepared: 05/18/2009 1201

Analysis Batch: 220-27239  
Prep Batch: 220-27233  
Units: mg/Kg

### Method: 7471A Preparation: 7471A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.050	U	0.0040	0.050

### Lab Control Sample - Batch: 220-27233

Lab Sample ID: LCS 220-27233/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/18/2009 1457  
Date Prepared: 05/18/2009 1201

Analysis Batch: 220-27239  
Prep Batch: 220-27233  
Units: mg/Kg

### Method: 7471A Preparation: 7471A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.415	100	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

### Method Blank - Batch: 220-27300

**Method: 7471A**  
**Preparation: 7471A**

Lab Sample ID: MB 220-27300/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/21/2009 1126  
Date Prepared: 05/20/2009 1453

Analysis Batch: 220-27334  
Prep Batch: 220-27300  
Units: mg/Kg

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.050	U	0.0040	0.050

### Lab Control Sample - Batch: 220-27300

**Method: 7471A**  
**Preparation: 7471A**

Lab Sample ID: LCS 220-27300/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/21/2009 1127  
Date Prepared: 05/20/2009 1453

Analysis Batch: 220-27334  
Prep Batch: 220-27300  
Units: mg/Kg

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.60 g  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.426	102	80 - 120	

### Matrix Spike - Batch: 220-27300

**Method: 7471A**  
**Preparation: 7471A**

Lab Sample ID: 220-9045-11  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/21/2009 1130  
Date Prepared: 05/20/2009 1453

Analysis Batch: 220-27334  
Prep Batch: 220-27300  
Units: mg/Kg

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.62 g  
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0055 J	0.174	0.174	97	75 - 125	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

### Duplicate - Batch: 220-27300

**Method: 7471A**  
**Preparation: 7471A**

Lab Sample ID: 220-9045-11  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/21/2009 1129  
Date Prepared: 05/20/2009 1453

Analysis Batch: 220-27334  
Prep Batch: 220-27300  
Units: mg/Kg

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 0.63 g  
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Mercury	0.0055 J	0.00823	40	20	J

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1  
Sdg Number: 220-9045

### Method Blank - Batch: 680-137701

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: MB 680-137701/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/14/2009 1553  
Date Prepared: 05/13/2009 1159

Analysis Batch: 680-137906  
Prep Batch: 680-137701  
Units: mg/Kg

Instrument ID: KoneLab1  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	MDL	RL
Chromium, hexavalent	1.0	U	0.23	1.0

### Lab Control Sample - Batch: 680-137701

**Method: 7196A**  
**Preparation: 3060A**

Lab Sample ID: LCS 680-137701/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Date Analyzed: 05/14/2009 1553  
Date Prepared: 05/13/2009 1159

Analysis Batch: 680-137906  
Prep Batch: 680-137701  
Units: mg/Kg

Instrument ID: KoneLab1  
Lab File ID: N/A  
Initial Weight/Volume: 1.00 g  
Final Weight/Volume: 100 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chromium, hexavalent	20.0	17.63	88	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

# MISCELLANEOUS DATA





## TESTAMERICA CONNECTICUT - CHAIN OF CUSTODY ATOMIC SPECTROSCOPY DEPARTMENT

Job Number: 9045 Sample Numbers: 1, 3-5, 7-8, 11

Prep Batch Number: 27156, 27233, 27300

WATER - (SOIL) - SLUDGE - TCLP/SPLP

I confirm that I have performed the preparation below following SOP guidelines and authorize the transfer of these digestates to the metals instrument lab.:

Sample Prep:

<u>Bill Capace</u> Analyst	<u>5-14-9</u> Date(s)	ICP
<u>[Signature]</u> Analysts	<u>5/18/09</u> Date(s)	Mercury

I confirm that I have performed the analysis below following SOP guidelines:

Analysis:

<u>[Signature]</u> Analysts	<u>5/21/09</u> Date(s)	ICP
<u>[Signature]</u> Chemist	<u>5/18/09</u> Date(s)	Mercury

I have reviewed and authorized the release of the job:

Complete:	<u>[Signature]</u> Supervisor	<u>5/21/09</u> Date
-----------	----------------------------------	------------------------

# Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

SDG Number: 220-9045

**Login Number: 9045**

**Creator: Teixeira, Maria L**

**List Number: 1**

**List Source: TestAmerica Connecticut**

<b>Question</b>	<b>T / F / NA</b>	<b>Comment</b>
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

# Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9045-1

SDG Number: 220-9045

**Login Number: 9045**

**Creator: Kicklighter, Marilyn**

**List Number: 1**

**List Source: TestAmerica Savannah**

**List Creation: 05/12/09 03:17 PM**

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

## **APPENDIX D**

## ANALYTICAL REPORT

Job Number: 220-9063-1

SDG Number: 220-9063

Job Description: 20024.1001.1102 Former Kings College

For:

Clough Harbour & Associates LLP

3 Winner Circle

PO BOX 5269

Albany, NY 12205-0269

Attention: Mr. Seth Fowler



Approved for release.  
Patty A. Mercure  
5/27/2009 1:42 PM

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Designee for  
Jill M Duhancik  
Project Manager I  
jill.duhancik@testamericainc.com  
05/27/2009

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Project Manager.

TestAmerica Connecticut Certifications and Approvals: CTDOH PH-047, MADEP CT023, RIDOH A43, NYDOH 10602, NY NELAP 10602, NHDES 2528, NJDEP CT410, ME DOH CT023, UT DOH 2032614458

**TestAmerica Laboratories, Inc.**

TestAmerica Connecticut 128 Long Hill Cross Road, Shelton, CT 06484

Tel (203) 929-8140 Fax (203) 929-8142 [www.testamericainc.com](http://www.testamericainc.com)



**Job Narrative**  
**220-J9063-1**

**Comments**

No additional comments.

**Receipt**

All samples were received in good condition within temperature requirements.

**GC/MS Semi VOA**

No analytical or quality issues were noted.

**Metals**

No analytical or quality issues were noted.

**General Chemistry**

No analytical or quality issues were noted.

**Organic Prep**

No analytical or quality issues were noted.

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

Lab Sample ID	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9063-1</b>	<b>MW-1</b>					
Chromium		2.6	J	5.0	ug/L	6010B
Copper		7.8		5.0	ug/L	6010B
Lead		2.5	J	15.0	ug/L	6010B
Nickel		2.9	J	5.0	ug/L	6010B
Thallium		4.0	J	15.0	ug/L	6010B
Zinc		15.2	J	25.0	ug/L	6010B
Titanium		34.8		15.0	ug/L	6010B
<b>220-9063-2</b>	<b>MW-2</b>					
Chromium		1.8	J	5.0	ug/L	6010B
Copper		4.5	J	5.0	ug/L	6010B
Zinc		9.2	J	25.0	ug/L	6010B
Titanium		33.2		15.0	ug/L	6010B
<b>220-9063-3</b>	<b>MW-3</b>					
Fluoranthene		1.1	J	4.3	ug/L	8270C
Pyrene		0.99	J	4.3	ug/L	8270C
Benzo[a]anthracene		0.83	J	4.3	ug/L	8270C
Chrysene		0.77	J	4.3	ug/L	8270C
Benzo[b]fluoranthene		1.0	J	4.3	ug/L	8270C
Benzo[a]pyrene		0.97	J	4.3	ug/L	8270C
Indeno[1,2,3-cd]pyrene		0.33	J	4.3	ug/L	8270C
Chromium		1.3	J	5.0	ug/L	6010B
Copper		5.5		5.0	ug/L	6010B
Nickel		3.1	J	5.0	ug/L	6010B
Zinc		10.6	J	25.0	ug/L	6010B
Titanium		34.7		15.0	ug/L	6010B
<b>220-9063-4</b>	<b>MW-4</b>					
Silver		0.26	J	5.0	ug/L	6010B
Chromium		2.4	J	5.0	ug/L	6010B
Copper		7.6		5.0	ug/L	6010B
Nickel		4.3	J	5.0	ug/L	6010B
Thallium		6.1	J	15.0	ug/L	6010B
Zinc		12.9	J	25.0	ug/L	6010B
Titanium		62.3		15.0	ug/L	6010B

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

Lab Sample ID Analyte	Client Sample ID	Result / Qualifier		Reporting Limit	Units	Method
<b>220-9063-5</b>	<b>MW-5</b>					
Chromium		1.1	J	5.0	ug/L	6010B
Copper		5.8		5.0	ug/L	6010B
Nickel		7.4		5.0	ug/L	6010B
Thallium		5.8	J	15.0	ug/L	6010B
Zinc		8.3	J	25.0	ug/L	6010B
Titanium		11.3	J	15.0	ug/L	6010B
Cr (VI)		0.0089	J	0.010	mg/L	7196A
<b>220-9063-6</b>	<b>MW-6</b>					
Chromium		2.3	J	5.0	ug/L	6010B
Copper		6.0		5.0	ug/L	6010B
Nickel		19.2		5.0	ug/L	6010B
Thallium		6.3	J	15.0	ug/L	6010B
Zinc		12.5	J	25.0	ug/L	6010B
Titanium		41.6		15.0	ug/L	6010B
Cr (VI)		0.0065	J	0.010	mg/L	7196A
<b>220-9063-7</b>	<b>MW-7</b>					
Chromium		2.6	J	5.0	ug/L	6010B
Copper		10.0		5.0	ug/L	6010B
Nickel		7.0		5.0	ug/L	6010B
Thallium		4.0	J	15.0	ug/L	6010B
Zinc		12.3	J	25.0	ug/L	6010B
Titanium		60.5		15.0	ug/L	6010B

## METHOD SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

<b>Description</b>	<b>Lab Location</b>	<b>Method</b>	<b>Preparation Method</b>
<b>Matrix Water</b>			
Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	TAL CT	SW846 8270C	
Liquid-Liquid Extraction (Separatory Funnel)	TAL CT		SW846 3510C
Metals (ICP)	TAL CT	SW846 6010B	
Preparation, Total Metals	TAL CT		SW846 3010A
Mercury (CVAA)	TAL CT	SW846 7470A	
Preparation, Mercury	TAL CT		SW846 7470A
Chromium, Hexavalent	TAL CT	SW846 7196A	

### Lab References:

TAL CT = TestAmerica Connecticut

### Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 8270C	Jonas, Stephan	SJ
SW846 6010B	Petronchak, Nestor	NP
SW846 7470A	Voytek, Joseph F	JFV
SW846 7196A	Mendoza, Julia	JM
SW846 7196A	Nemeth, Doreen	DN

## SAMPLE SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
220-9063-1	MW-1	Water	05/13/2009 1010	05/13/2009 1845
220-9063-2	MW-2	Water	05/13/2009 1105	05/13/2009 1845
220-9063-3	MW-3	Water	05/13/2009 1220	05/13/2009 1845
220-9063-4	MW-4	Water	05/13/2009 1415	05/13/2009 1845
220-9063-5	MW-5	Water	05/13/2009 1500	05/13/2009 1845
220-9063-6	MW-6	Water	05/13/2009 1315	05/13/2009 1845
220-9063-7	MW-7	Water	05/13/2009 1600	05/13/2009 1845

# **SAMPLE RESULTS**

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

**Client Sample ID: MW-3**

Lab Sample ID: 220-9063-3

Date Sampled: 05/13/2009 1220

Client Matrix: Water

Date Received: 05/13/2009 1845

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27179	Instrument ID: HP 6890/5975
Preparation:	3510C	Prep Batch: 220-27141	Lab File ID: C11225.D
Dilution:	1.0		Initial Weight/Volume: 920 mL
Date Analyzed:	05/14/2009 1548		Final Weight/Volume: 1 mL
Date Prepared:	05/14/2009 0839		Injection Volume: 1.0 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	4.3	U	0.33	4.3
2-Methylnaphthalene	4.3	U	0.29	4.3
Acenaphthylene	4.3	U	0.37	4.3
Acenaphthene	4.3	U	0.34	4.3
Fluorene	4.3	U	0.28	4.3
Phenanthrene	4.3	U	0.30	4.3
Anthracene	4.3	U	0.32	4.3
Fluoranthene	1.1	J	0.34	4.3
Pyrene	0.99	J	0.36	4.3
Benzo[a]anthracene	0.83	J	0.33	4.3
Chrysene	0.77	J	0.27	4.3
Benzo[b]fluoranthene	1.0	J	0.39	4.3
Benzo[k]fluoranthene	4.3	U	0.43	4.3
Benzo[a]pyrene	0.97	J	0.38	4.3
Indeno[1,2,3-cd]pyrene	0.33	J	0.30	4.3
Dibenz(a,h)anthracene	4.3	U	0.41	4.3
Benzo[g,h,i]perylene	4.3	U	0.39	4.3

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	31	13 - 120
Phenol-d5	20	10 - 120
Nitrobenzene-d5	59	40 - 120
2-Fluorobiphenyl	64	39 - 120
2,4,6-Tribromophenol	74	36 - 120
Terphenyl-d14	58	10 - 120

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

Client Sample ID: MW-4

Lab Sample ID: 220-9063-4

Date Sampled: 05/13/2009 1415

Client Matrix: Water

Date Received: 05/13/2009 1845

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method:	8270C	Analysis Batch: 220-27179	Instrument ID:	HP 6890/5975
Preparation:	3510C	Prep Batch: 220-27141	Lab File ID:	C11226.D
Dilution:	1.0		Initial Weight/Volume:	930 mL
Date Analyzed:	05/14/2009 1615		Final Weight/Volume:	1 mL
Date Prepared:	05/14/2009 0839		Injection Volume:	1.0 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	4.3	U	0.32	4.3
2-Methylnaphthalene	4.3	U	0.29	4.3
Acenaphthylene	4.3	U	0.37	4.3
Acenaphthene	4.3	U	0.33	4.3
Fluorene	4.3	U	0.28	4.3
Phenanthrene	4.3	U	0.30	4.3
Anthracene	4.3	U	0.31	4.3
Fluoranthene	4.3	U	0.33	4.3
Pyrene	4.3	U	0.35	4.3
Benzo[a]anthracene	4.3	U	0.32	4.3
Chrysene	4.3	U	0.27	4.3
Benzo[b]fluoranthene	4.3	U	0.39	4.3
Benzo[k]fluoranthene	4.3	U	0.43	4.3
Benzo[a]pyrene	4.3	U	0.38	4.3
Indeno[1,2,3-cd]pyrene	4.3	U	0.30	4.3
Dibenz(a,h)anthracene	4.3	U	0.41	4.3
Benzo[g,h,i]perylene	4.3	U	0.39	4.3

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	37	13 - 120
Phenol-d5	24	10 - 120
Nitrobenzene-d5	69	40 - 120
2-Fluorobiphenyl	75	39 - 120
2,4,6-Tribromophenol	86	36 - 120
Terphenyl-d14	69	10 - 120

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

**Client Sample ID: MW-6**

Lab Sample ID: 220-9063-6

Date Sampled: 05/13/2009 1315

Client Matrix: Water

Date Received: 05/13/2009 1845

### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

Method: 8270C	Analysis Batch: 220-27179	Instrument ID: HP 6890/5975
Preparation: 3510C	Prep Batch: 220-27141	Lab File ID: C11227.D
Dilution: 1.0		Initial Weight/Volume: 940 mL
Date Analyzed: 05/14/2009 1642		Final Weight/Volume: 1 mL
Date Prepared: 05/14/2009 0839		Injection Volume: 1.0 uL

Analyte	Result (ug/L)	Qualifier	MDL	RL
Naphthalene	4.3	U	0.32	4.3
2-Methylnaphthalene	4.3	U	0.29	4.3
Acenaphthylene	4.3	U	0.36	4.3
Acenaphthene	4.3	U	0.33	4.3
Fluorene	4.3	U	0.28	4.3
Phenanthrene	4.3	U	0.30	4.3
Anthracene	4.3	U	0.31	4.3
Fluoranthene	4.3	U	0.33	4.3
Pyrene	4.3	U	0.35	4.3
Benzo[a]anthracene	4.3	U	0.32	4.3
Chrysene	4.3	U	0.27	4.3
Benzo[b]fluoranthene	4.3	U	0.38	4.3
Benzo[k]fluoranthene	4.3	U	0.43	4.3
Benzo[a]pyrene	4.3	U	0.37	4.3
Indeno[1,2,3-cd]pyrene	4.3	U	0.30	4.3
Dibenz(a,h)anthracene	4.3	U	0.40	4.3
Benzo[g,h,i]perylene	4.3	U	0.38	4.3

Surrogate	%Rec	Acceptance Limits
2-Fluorophenol	34	13 - 120
Phenol-d5	22	10 - 120
Nitrobenzene-d5	66	40 - 120
2-Fluorobiphenyl	70	39 - 120
2,4,6-Tribromophenol	84	36 - 120
Terphenyl-d14	72	10 - 120

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

**Client Sample ID: MW-1**

Lab Sample ID: 220-9063-1  
Client Matrix: Water

Date Sampled: 05/13/2009 1010  
Date Received: 05/13/2009 1845

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27368	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27343	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/22/2009 1401		Final Weight/Volume:	50 mL
Date Prepared:	05/21/2009 1100			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	2.6	J	0.50	5.0
Copper	7.8		1.5	5.0
Lead	2.5	J	2.5	15.0
Nickel	2.9	J	1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	4.0	J	3.5	15.0
Zinc	15.2	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	34.8		0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27295	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27289	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/20/2009 1349		Final Weight/Volume:	50 mL
Date Prepared:	05/20/2009 1121			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

**Client Sample ID: MW-2**

Lab Sample ID: 220-9063-2

Date Sampled: 05/13/2009 1105

Client Matrix: Water

Date Received: 05/13/2009 1845

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27368	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27343	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/22/2009 1404		Final Weight/Volume:	50 mL
Date Prepared:	05/21/2009 1100			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	1.8	J	0.50	5.0
Copper	4.5	J	1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	5.0	U	1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	15.0	U	3.5	15.0
Zinc	9.2	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	33.2		0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27295	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27289	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/20/2009 1350		Final Weight/Volume:	50 mL
Date Prepared:	05/20/2009 1121			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

**Client Sample ID: MW-3**

Lab Sample ID: 220-9063-3  
Client Matrix: Water

Date Sampled: 05/13/2009 1220  
Date Received: 05/13/2009 1845

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27368	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27343	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/22/2009 1414		Final Weight/Volume:	50 mL
Date Prepared:	05/21/2009 1100			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	1.3	J	0.50	5.0
Copper	5.5		1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	3.1	J	1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	15.0	U	3.5	15.0
Zinc	10.6	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	34.7		0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27295	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27289	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/20/2009 1351		Final Weight/Volume:	50 mL
Date Prepared:	05/20/2009 1121			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

**Client Sample ID: MW-4**

Lab Sample ID: 220-9063-4

Date Sampled: 05/13/2009 1415

Client Matrix: Water

Date Received: 05/13/2009 1845

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27368	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27343	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/22/2009 1417		Final Weight/Volume:	50 mL
Date Prepared:	05/21/2009 1100			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	0.26	J	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	2.4	J	0.50	5.0
Copper	7.6		1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	4.3	J	1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	6.1	J	3.5	15.0
Zinc	12.9	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	62.3		0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27295	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27289	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/20/2009 1352		Final Weight/Volume:	50 mL
Date Prepared:	05/20/2009 1121			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

**Client Sample ID: MW-5**

Lab Sample ID: 220-9063-5

Date Sampled: 05/13/2009 1500

Client Matrix: Water

Date Received: 05/13/2009 1845

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27368	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27343	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/22/2009 1420		Final Weight/Volume:	50 mL
Date Prepared:	05/21/2009 1100			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	1.1	J	0.50	5.0
Copper	5.8		1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	7.4		1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	5.8	J	3.5	15.0
Zinc	8.3	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	11.3	J	0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27372	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27350	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/22/2009 1638		Final Weight/Volume:	50 mL
Date Prepared:	05/22/2009 1042			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

**Client Sample ID: MW-6**

Lab Sample ID: 220-9063-6

Date Sampled: 05/13/2009 1315

Client Matrix: Water

Date Received: 05/13/2009 1845

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27368	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27343	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/22/2009 1424		Final Weight/Volume:	50 mL
Date Prepared:	05/21/2009 1100			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	2.3	J	0.50	5.0
Copper	6.0		1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	19.2		1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	6.3	J	3.5	15.0
Zinc	12.5	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	41.6		0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27372	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27350	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/22/2009 1641		Final Weight/Volume:	50 mL
Date Prepared:	05/22/2009 1042			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

**Client Sample ID: MW-7**

Lab Sample ID: 220-9063-7

Date Sampled: 05/13/2009 1600

Client Matrix: Water

Date Received: 05/13/2009 1845

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27368	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27343	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/22/2009 1427		Final Weight/Volume:	50 mL
Date Prepared:	05/21/2009 1100			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	2.6	J	0.50	5.0
Copper	10.0		1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	7.0		1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	4.0	J	3.5	15.0
Zinc	12.3	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	60.5		0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27372	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27350	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/22/2009 1642		Final Weight/Volume:	50 mL
Date Prepared:	05/22/2009 1042			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

### General Chemistry

**Client Sample ID: MW-1**

Lab Sample ID: 220-9063-1  
Client Matrix: Water

Date Sampled: 05/13/2009 1010  
Date Received: 05/13/2009 1845

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (III)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27437	Date Analyzed		05/27/2009 0942			
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27115	Date Analyzed		05/13/2009 1932			

**Client Sample ID: MW-2**

Lab Sample ID: 220-9063-2  
Client Matrix: Water

Date Sampled: 05/13/2009 1105  
Date Received: 05/13/2009 1845

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (III)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27437	Date Analyzed		05/27/2009 0942			
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27115	Date Analyzed		05/13/2009 1933			

**Client Sample ID: MW-3**

Lab Sample ID: 220-9063-3  
Client Matrix: Water

Date Sampled: 05/13/2009 1220  
Date Received: 05/13/2009 1845

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (III)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27437	Date Analyzed		05/27/2009 0942			
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27115	Date Analyzed		05/13/2009 1934			

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

### General Chemistry

**Client Sample ID: MW-4**

Lab Sample ID: 220-9063-4  
Client Matrix: Water

Date Sampled: 05/13/2009 1415  
Date Received: 05/13/2009 1845

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (III)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27437	Date Analyzed		05/27/2009 0942			
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27115	Date Analyzed		05/13/2009 1935			

**Client Sample ID: MW-5**

Lab Sample ID: 220-9063-5  
Client Matrix: Water

Date Sampled: 05/13/2009 1500  
Date Received: 05/13/2009 1845

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (III)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27437	Date Analyzed		05/27/2009 0942			
Cr (VI)	0.0089	J	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27115	Date Analyzed		05/13/2009 1936			

**Client Sample ID: MW-6**

Lab Sample ID: 220-9063-6  
Client Matrix: Water

Date Sampled: 05/13/2009 1315  
Date Received: 05/13/2009 1845

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (III)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27437	Date Analyzed		05/27/2009 0942			
Cr (VI)	0.0065	J	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27115	Date Analyzed		05/13/2009 1937			

**Client Sample ID: MW-7**

Lab Sample ID: 220-9063-7  
Client Matrix: Water

Date Sampled: 05/13/2009 1600  
Date Received: 05/13/2009 1845

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (III)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27437	Date Analyzed		05/27/2009 0942			
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27115	Date Analyzed		05/13/2009 1938			

## DATA REPORTING QUALIFIERS

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
GC/MS Semi VOA		
	U	Analyzed for but not detected.
	J	Indicates an estimated value.
Metals		
	U	Indicates analyzed for but not detected.
	J	Sample result is greater than the MDL but below the CRDL
General Chemistry		
	U	Indicates analyzed for but not detected.
	J	Sample result is greater than the MDL but below the CRDL

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

### QC Association Summary

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Report Basis</u>	<u>Client Matrix</u>	<u>Method</u>	<u>Prep Batch</u>
<b>GC/MS Semi VOA</b>					
<b>Prep Batch: 220-27141</b>					
LCS 220-27141/2-A	Lab Control Sample	T	Water	3510C	
MB 220-27141/1-A	Method Blank	T	Water	3510C	
220-9063-3	MW-3	T	Water	3510C	
220-9063-4	MW-4	T	Water	3510C	
220-9063-6	MW-6	T	Water	3510C	
<b>Analysis Batch:220-27179</b>					
LCS 220-27141/2-A	Lab Control Sample	T	Water	8270C	220-27141
MB 220-27141/1-A	Method Blank	T	Water	8270C	220-27141
220-9063-3	MW-3	T	Water	8270C	220-27141
220-9063-4	MW-4	T	Water	8270C	220-27141
220-9063-6	MW-6	T	Water	8270C	220-27141

#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 220-27289</b>					
LCS 220-27289/2-A	Lab Control Sample	T	Water	7470A	
MB 220-27289/1-A	Method Blank	T	Water	7470A	
220-9063-1	MW-1	T	Water	7470A	
220-9063-2	MW-2	T	Water	7470A	
220-9063-3	MW-3	T	Water	7470A	
220-9063-4	MW-4	T	Water	7470A	
<b>Analysis Batch:220-27295</b>					
LCS 220-27289/2-A	Lab Control Sample	T	Water	7470A	220-27289
MB 220-27289/1-A	Method Blank	T	Water	7470A	220-27289
220-9063-1	MW-1	T	Water	7470A	220-27289
220-9063-2	MW-2	T	Water	7470A	220-27289
220-9063-3	MW-3	T	Water	7470A	220-27289
220-9063-4	MW-4	T	Water	7470A	220-27289
<b>Prep Batch: 220-27343</b>					
LCS 220-27343/2-A	Lab Control Sample	T	Water	3010A	
MB 220-27343/1-A	Method Blank	T	Water	3010A	
220-9063-1	MW-1	T	Water	3010A	
220-9063-2	MW-2	T	Water	3010A	
220-9063-3	MW-3	T	Water	3010A	
220-9063-4	MW-4	T	Water	3010A	
220-9063-5	MW-5	T	Water	3010A	
220-9063-6	MW-6	T	Water	3010A	
220-9063-7	MW-7	T	Water	3010A	
<b>Prep Batch: 220-27350</b>					
LCS 220-27350/2-A	Lab Control Sample	T	Water	7470A	
MB 220-27350/1-A	Method Blank	T	Water	7470A	
220-9063-5	MW-5	T	Water	7470A	
220-9063-5DU	Duplicate	T	Water	7470A	
220-9063-5MS	Matrix Spike	T	Water	7470A	
220-9063-6	MW-6	T	Water	7470A	
220-9063-7	MW-7	T	Water	7470A	
<b>Analysis Batch:220-27368</b>					
LCS 220-27343/2-A	Lab Control Sample	T	Water	6010B	220-27343
MB 220-27343/1-A	Method Blank	T	Water	6010B	220-27343
220-9063-1	MW-1	T	Water	6010B	220-27343
220-9063-2	MW-2	T	Water	6010B	220-27343
220-9063-3	MW-3	T	Water	6010B	220-27343
220-9063-4	MW-4	T	Water	6010B	220-27343
220-9063-5	MW-5	T	Water	6010B	220-27343
220-9063-6	MW-6	T	Water	6010B	220-27343
220-9063-7	MW-7	T	Water	6010B	220-27343

TestAmerica Connecticut

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Analysis Batch:220-27372</b>					
LCS 220-27350/2-A	Lab Control Sample	T	Water	7470A	220-27350
MB 220-27350/1-A	Method Blank	T	Water	7470A	220-27350
220-9063-5	MW-5	T	Water	7470A	220-27350
220-9063-5DU	Duplicate	T	Water	7470A	220-27350
220-9063-5MS	Matrix Spike	T	Water	7470A	220-27350
220-9063-6	MW-6	T	Water	7470A	220-27350
220-9063-7	MW-7	T	Water	7470A	220-27350

**Report Basis**

T = Total

### General Chemistry

<b>Analysis Batch:220-27115</b>					
LCS 220-27115/10	Lab Control Sample	T	Water	7196A	
MB 220-27115/9	Method Blank	T	Water	7196A	
220-9063-1	MW-1	T	Water	7196A	
220-9063-2	MW-2	T	Water	7196A	
220-9063-3	MW-3	T	Water	7196A	
220-9063-4	MW-4	T	Water	7196A	
220-9063-5	MW-5	T	Water	7196A	
220-9063-6	MW-6	T	Water	7196A	
220-9063-7	MW-7	T	Water	7196A	
<b>Analysis Batch:220-27437</b>					
220-9063-1	MW-1	T	Water	7196A	
220-9063-2	MW-2	T	Water	7196A	
220-9063-3	MW-3	T	Water	7196A	
220-9063-4	MW-4	T	Water	7196A	
220-9063-5	MW-5	T	Water	7196A	
220-9063-6	MW-6	T	Water	7196A	
220-9063-7	MW-7	T	Water	7196A	

**Report Basis**

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

### Surrogate Recovery Report

#### 8270C Semivolatile Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

##### Client Matrix: Water

Lab Sample ID	Client Sample ID	2FP %Rec	PHL %Rec	NBZ %Rec	FBP %Rec	TBP %Rec	TPH %Rec
220-9063-3	MW-3	31	20	59	64	74	58
220-9063-4	MW-4	37	24	69	75	86	69
220-9063-6	MW-6	34	22	66	70	84	72
MB 220-27141/1-A		33	23	58	62	78	75
LCS 220-27141/2-A		35	23	62	69	81	82

Surrogate	Acceptance Limits
2FP = 2-Fluorophenol	13-120
PHL = Phenol-d5	10-120
NBZ = Nitrobenzene-d5	40-120
FBP = 2-Fluorobiphenyl	39-120
TBP = 2,4,6-Tribromophenol	36-120
TPH = Terphenyl-d14	10-120

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

### Method Blank - Batch: 220-27141

**Method: 8270C**

**Preparation: 3510C**

Lab Sample ID: MB 220-27141/1-A

Analysis Batch: 220-27179

Instrument ID: HP 6890/5975

Client Matrix: Water

Prep Batch: 220-27141

Lab File ID: C11223.D

Dilution: 1.0

Units: ug/L

Initial Weight/Volume: 1000 mL

Date Analyzed: 05/14/2009 1454

Final Weight/Volume: 1 mL

Date Prepared: 05/14/2009 0839

Injection Volume: 1.0 uL

Analyte	Result	Qual	MDL	RL
Naphthalene	4.0	U	0.30	4.0
2-Methylnaphthalene	4.0	U	0.27	4.0
Acenaphthylene	4.0	U	0.34	4.0
Acenaphthene	4.0	U	0.31	4.0
Fluorene	4.0	U	0.26	4.0
Phenanthrene	4.0	U	0.28	4.0
Anthracene	4.0	U	0.29	4.0
Fluoranthene	4.0	U	0.31	4.0
Pyrene	4.0	U	0.33	4.0
Benzo[a]anthracene	4.0	U	0.30	4.0
Chrysene	4.0	U	0.25	4.0
Benzo[b]fluoranthene	4.0	U	0.36	4.0
Benzo[k]fluoranthene	4.0	U	0.40	4.0
Benzo[a]pyrene	4.0	U	0.35	4.0
Indeno[1,2,3-cd]pyrene	4.0	U	0.28	4.0
Dibenz(a,h)anthracene	4.0	U	0.38	4.0
Benzo[g,h,i]perylene	4.0	U	0.36	4.0

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	33	13 - 120
Phenol-d5	23	10 - 120
Nitrobenzene-d5	58	40 - 120
2-Fluorobiphenyl	62	39 - 120
2,4,6-Tribromophenol	78	36 - 120
Terphenyl-d14	75	10 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

Sdg Number: 220-9063

### Lab Control Sample - Batch: 220-27141

**Method: 8270C**

**Preparation: 3510C**

Lab Sample ID: LCS 220-27141/2-A

Analysis Batch: 220-27179

Instrument ID: HP 6890/5975

Client Matrix: Water

Prep Batch: 220-27141

Lab File ID: C11224.D

Dilution: 1.0

Units: ug/L

Initial Weight/Volume: 1000 mL

Date Analyzed: 05/14/2009 1521

Final Weight/Volume: 1 mL

Date Prepared: 05/14/2009 0839

Injection Volume: 1.0 uL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Naphthalene	40.0	27.7	69	42 - 120	
2-Methylnaphthalene	40.0	29.6	74	44 - 120	
Acenaphthylene	40.0	33.5	84	52 - 120	
Acenaphthene	40.0	33.5	84	52 - 120	
Fluorene	40.0	34.9	87	61 - 120	
Phenanthrene	40.0	37.4	94	63 - 120	
Anthracene	40.0	37.4	93	60 - 120	
Fluoranthene	40.0	37.5	94	56 - 120	
Pyrene	40.0	38.2	96	62 - 120	
Benzo[a]anthracene	40.0	37.3	93	60 - 120	
Chrysene	40.0	38.0	95	59 - 120	
Benzo[b]fluoranthene	40.0	37.6	94	59 - 120	
Benzo[k]fluoranthene	40.0	37.9	95	58 - 120	
Benzo[a]pyrene	40.0	41.2	103	51 - 120	
Indeno[1,2,3-cd]pyrene	40.0	39.7	99	48 - 120	
Dibenz(a,h)anthracene	40.0	40.2	101	47 - 120	
Benzo[g,h,i]perylene	40.0	39.5	99	48 - 120	

Surrogate	% Rec	Acceptance Limits
2-Fluorophenol	35	13 - 120
Phenol-d5	23	10 - 120
Nitrobenzene-d5	62	40 - 120
2-Fluorobiphenyl	69	39 - 120
2,4,6-Tribromophenol	81	36 - 120
Terphenyl-d14	82	10 - 120

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

### Method Blank - Batch: 220-27343

**Method: 6010B**  
**Preparation: 3010A**

Lab Sample ID: MB 220-27343/1-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1313  
Date Prepared: 05/21/2009 1100

Analysis Batch: 220-27368  
Prep Batch: 220-27343  
Units: ug/L

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	5.0	U	0.50	5.0
Copper	2.5	J	1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	5.0	U	1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	15.0	U	3.5	15.0
Zinc	9.8	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	15.0	U	0.25	15.0

### Lab Control Sample - Batch: 220-27343

**Method: 6010B**  
**Preparation: 3010A**

Lab Sample ID: LCS 220-27343/2-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1316  
Date Prepared: 05/21/2009 1100

Analysis Batch: 220-27368  
Prep Batch: 220-27343  
Units: ug/L

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 50 mL  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Silver	300	309	103	80 - 120	
Arsenic	1000	1060	106	80 - 120	
Beryllium	100	113	113	80 - 120	
Cadmium	300	314	105	80 - 120	
Chromium	300	326	109	80 - 120	
Copper	300	348	116	80 - 120	
Lead	1000	1090	109	80 - 120	
Nickel	300	329	110	80 - 120	
Selenium	500	539	108	80 - 120	
Thallium	1000	1050	105	80 - 120	
Zinc	300	348	116	80 - 120	
Antimony	1000	1060	106	80 - 120	
Titanium	1000	1080	108	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

### Method Blank - Batch: 220-27289

Lab Sample ID: MB 220-27289/1-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/20/2009 1324  
Date Prepared: 05/20/2009 1121

Analysis Batch: 220-27295  
Prep Batch: 220-27289  
Units: ug/L

### Method: 7470A Preparation: 7470A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 25 mL  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.20	U	0.060	0.20

### Lab Control Sample - Batch: 220-27289

Lab Sample ID: LCS 220-27289/2-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/20/2009 1325  
Date Prepared: 05/20/2009 1121

Analysis Batch: 220-27295  
Prep Batch: 220-27289  
Units: ug/L

### Method: 7470A Preparation: 7470A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 50 mL  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	5.00	5.36	107	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

**Method Blank - Batch: 220-27350**

**Method: 7470A**  
**Preparation: 7470A**

Lab Sample ID: MB 220-27350/1-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1636  
Date Prepared: 05/22/2009 1042

Analysis Batch: 220-27372  
Prep Batch: 220-27350  
Units: ug/L

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 25 mL  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.20	U	0.060	0.20

**Lab Control Sample - Batch: 220-27350**

**Method: 7470A**  
**Preparation: 7470A**

Lab Sample ID: LCS 220-27350/2-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1637  
Date Prepared: 05/22/2009 1042

Analysis Batch: 220-27372  
Prep Batch: 220-27350  
Units: ug/L

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 50 mL  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	5.00	5.29	106	80 - 120	

**Matrix Spike - Batch: 220-27350**

**Method: 7470A**  
**Preparation: 7470A**

Lab Sample ID: 220-9063-5  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1640  
Date Prepared: 05/22/2009 1042

Analysis Batch: 220-27372  
Prep Batch: 220-27350  
Units: ug/L

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 25 mL  
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.20 U	2.00	2.02	101	75 - 125	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

### Duplicate - Batch: 220-27350

**Method: 7470A**  
**Preparation: 7470A**

Lab Sample ID: 220-9063-5  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1639  
Date Prepared: 05/22/2009 1042

Analysis Batch: 220-27372  
Prep Batch: 220-27350  
Units: ug/L

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 25 mL  
Final Weight/Volume: 50 mL

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.20	U	0.20	NC	20	U

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1  
Sdg Number: 220-9063

### Method Blank - Batch: 220-27115

**Method: 7196A**  
**Preparation: N/A**

Lab Sample ID: MB 220-27115/9  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/13/2009 1433  
Date Prepared: N/A

Analysis Batch: 220-27115  
Prep Batch: N/A  
Units: mg/L

Instrument ID: WC Spectrophotometer  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	MDL	RL
Cr (VI)	0.010	U	0.0027	0.010

### Lab Control Sample - Batch: 220-27115

**Method: 7196A**  
**Preparation: N/A**

Lab Sample ID: LCS 220-27115/10  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/13/2009 1434  
Date Prepared: N/A

Analysis Batch: 220-27115  
Prep Batch: N/A  
Units: mg/L

Instrument ID: WC Spectrophotometer  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 100 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Cr (VI)	0.278	0.267	96	85 - 115	

Calculations are performed before rounding to avoid round-off errors in calculated results.

9063

Connecticut  
128 Long Hill Cross Road  
Shelton, CT 06484  
Tel: 203-929-8140  
Fax: 203-929-8142

Chain of  
Custody Record

TAL-0015 (0508)

Client: **CMA** Chain of Custody Number: **017055**

Address: **III Winners Circle** Date: **5/13/09**

City: **Albany** Field Telephone Number: **518-852-3550**

State: **NY** Zip Code: **12205** Lab Contact: **Sarah Burke**

Project Manager: **Seth Fowler**

Telephone Number (Area Code)/Fax Number/e-mail address: **518-453-4547**

Analysis (Attach list if more space is needed)

Field Sample I.D. (Containers for each sample may be combined on one line)	Collection Date	Collection Time	Matrix		Containers & Preservatives						Comments			
			Aqueous	Solid	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc		Other		
MW-1	5/13/09	1010	X		1									
MW-2		1105	X		1									
MW-3		1200	X		2									
MW-4		1415	X		2									
MW-5		1500	X		1									
MW-6		1315	X		2									
MW-7		1600	X		1									PASSED RAD SCREEN

State Regulatory QC Requirements

Turn Around Time Required (business days) Report:  10 Days  15 Days  Other

1. Relinquished By: **Sarah Burke** Date: **5/13/09** Time: **1020**

2. Relinquished By: **[Signature]** Date: **5/13/09** Time: **6:45**

3. Received By: **[Signature]** Date: **5-13-09** Time: **6:45**

Passed Rad. Screen (Lab Use Only)  Yes  No

Comments: **05/27/09**

DISTRIBUTION: **WHITE** - Stays with the Samples; **CANARY** - Returned to Client with Report; **PINK** - Field Copy

**3.0°C probe # 1**

Job Number: 200-9063  
 Client: CHA  
 Client Project:

TESTAMERICA CONNECTICUT  
 PRESERVATIVE RECORD

Lab Number	Preservative	pH	Adjustment (mLs)	pH after Adjustment	Preservative Lot Number	Initials	Date
9063	HNO3	6.2	NA	NA	NA	NA	5-13-09
2		6.7					
3		6.7					
4		6.7					
5		6.7					
6		6.7					
9063	HNO3	6.2	NA	NA	NA	NA	5-13-09

## Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9063-1

SDG Number: 220-9063

**Login Number: 9063**

**Creator: Teixeira, Maria L**

**List Number: 1**

**List Source: TestAmerica Connecticut**

<b>Question</b>	<b>T / F / NA</b>	<b>Comment</b>
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

## ANALYTICAL REPORT

Job Number: 220-9075-1

SDG Number: 220-9075

Job Description: 20024.1001.1102 Former Kings College Ca

For:

Clough Harbour & Associates LLP

3 Winner Circle

PO BOX 5269

Albany, NY 12205-0269

Attention: Mr. Seth Fowler



Approved for release.  
Cheryl Cascella  
5/27/2009 12:13 PM

---

Designee for  
Jill M Duhancik  
Project Manager I  
jill.duhancik@testamericainc.com  
05/27/2009

The test results in this report meet all NELAP requirements unless specified within the case narrative. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Project Manager.

TestAmerica Connecticut Certifications and Approvals: CTDOH PH-047, MADEP CT023, RIDOH A43, NYDOH 10602, NY NELAP 10602, NHDES 2528, NJDEP CT410, ME DOH CT023, UT DOH 2032614458

**TestAmerica Laboratories, Inc.**

TestAmerica Connecticut 128 Long Hill Cross Road, Shelton, CT 06484

Tel (203) 929-8140 Fax (203) 929-8142 [www.testamericainc.com](http://www.testamericainc.com)



**Job Narrative**  
**220-J9075-1**

**Comments**

No additional comments.

**Receipt**

All samples were received in good condition within temperature requirements.

**Metals**

No analytical or quality issues were noted.

**General Chemistry**

No analytical or quality issues were noted.

## EXECUTIVE SUMMARY - Detections

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

Lab Sample ID	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
<b>220-9075-1</b>	<b>MW-8</b>				
Chromium		5.8	5.0	ug/L	6010B
Copper		17.9	5.0	ug/L	6010B
Nickel		21.6	5.0	ug/L	6010B
Zinc		41.4	25.0	ug/L	6010B
Titanium		95.3	15.0	ug/L	6010B
<b>220-9075-2</b>	<b>MW-9</b>				
Chromium		1.7 J	5.0	ug/L	6010B
Copper		6.4	5.0	ug/L	6010B
Nickel		5.2	5.0	ug/L	6010B
Zinc		28.3	25.0	ug/L	6010B
Titanium		35.3	15.0	ug/L	6010B
<b>220-9075-3</b>	<b>CHA-1</b>				
Copper		4.2 J	5.0	ug/L	6010B
Nickel		3.8 J	5.0	ug/L	6010B
Thallium		4.5 J	15.0	ug/L	6010B
Zinc		14.5 J	25.0	ug/L	6010B
Titanium		15.2	15.0	ug/L	6010B

## METHOD SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

<b>Description</b>	<b>Lab Location</b>	<b>Method</b>	<b>Preparation Method</b>
<b>Matrix</b> <b>Water</b>			
Metals (ICP)	TAL CT	SW846 6010B	
Preparation, Total Metals	TAL CT		SW846 3010A
Mercury (CVAA)	TAL CT	SW846 7470A	
Preparation, Mercury	TAL CT		SW846 7470A
Chromium, Hexavalent	TAL CT	SW846 7196A	

### Lab References:

TAL CT = TestAmerica Connecticut

### Method References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 6010B	Petronchak, Nestor	NP
SW846 7470A	Voytek, Joseph F	JFV
SW846 7196A	Tillotson, Ray	RT

## SAMPLE SUMMARY

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
220-9075-1	MW-8	Water	05/14/2009 1020	05/14/2009 1730
220-9075-2	MW-9	Water	05/14/2009 0915	05/14/2009 1730
220-9075-3	CHA-1	Water	05/14/2009 0830	05/14/2009 1730

# **SAMPLE RESULTS**

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1  
Sdg Number: 220-9075

**Client Sample ID: MW-8**

Lab Sample ID: 220-9075-1  
Client Matrix: Water

Date Sampled: 05/14/2009 1020  
Date Received: 05/14/2009 1730

### 6010B Metals (ICP)

Method: 6010B                      Analysis Batch: 220-27432                      Instrument ID: Perkin Elmer ICP  
Preparation: 3010A                      Prep Batch: 220-27408                      Lab File ID: N/A  
Dilution: 1.0                      Initial Weight/Volume: 100 mL  
Date Analyzed: 05/26/2009 1656                      Final Weight/Volume: 50 mL  
Date Prepared: 05/26/2009 1314

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	5.8		0.50	5.0
Copper	17.9		1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	21.6		1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	15.0	U	3.5	15.0
Zinc	41.4		5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	95.3		0.25	15.0

### 7470A Mercury (CVAA)

Method: 7470A                      Analysis Batch: 220-27372                      Instrument ID: Perkin Elmer FIMS  
Preparation: 7470A                      Prep Batch: 220-27350                      Lab File ID: N/A  
Dilution: 1.0                      Initial Weight/Volume: 25 mL  
Date Analyzed: 05/22/2009 1652                      Final Weight/Volume: 50 mL  
Date Prepared: 05/22/2009 1042

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20



## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

**Client Sample ID: CHA-1**

Lab Sample ID: 220-9075-3

Date Sampled: 05/14/2009 0830

Client Matrix: Water

Date Received: 05/14/2009 1730

### 6010B Metals (ICP)

Method:	6010B	Analysis Batch: 220-27432	Instrument ID:	Perkin Elmer ICP
Preparation:	3010A	Prep Batch: 220-27408	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	100 mL
Date Analyzed:	05/26/2009 1703		Final Weight/Volume:	50 mL
Date Prepared:	05/26/2009 1314			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	5.0	U	0.50	5.0
Copper	4.2	J	1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	3.8	J	1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	4.5	J	3.5	15.0
Zinc	14.5	J	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	15.2		0.25	15.0

### 7470A Mercury (CVAA)

Method:	7470A	Analysis Batch: 220-27372	Instrument ID:	Perkin Elmer FIMS
Preparation:	7470A	Prep Batch: 220-27350	Lab File ID:	N/A
Dilution:	1.0		Initial Weight/Volume:	25 mL
Date Analyzed:	05/22/2009 1653		Final Weight/Volume:	50 mL
Date Prepared:	05/22/2009 1042			

Analyte	Result (ug/L)	Qualifier	MDL	RL
Mercury	0.20	U	0.060	0.20

## Analytical Data

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

---

### General Chemistry

**Client Sample ID: MW-8**

Lab Sample ID: 220-9075-1

Client Matrix: Water

Date Sampled: 05/14/2009 1020

Date Received: 05/14/2009 1730

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27183	Date Analyzed	05/14/2009	1831			

**Client Sample ID: MW-9**

Lab Sample ID: 220-9075-2

Client Matrix: Water

Date Sampled: 05/14/2009 0915

Date Received: 05/14/2009 1730

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27183	Date Analyzed	05/14/2009	1932			

**Client Sample ID: CHA-1**

Lab Sample ID: 220-9075-3

Client Matrix: Water

Date Sampled: 05/14/2009 0830

Date Received: 05/14/2009 1730

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Cr (VI)	0.010	U	mg/L	0.0027	0.010	1.0	7196A
	Anly Batch: 220-27183	Date Analyzed	05/14/2009	1833			

## DATA REPORTING QUALIFIERS

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

<b>Lab Section</b>	<b>Qualifier</b>	<b>Description</b>
Metals		
	U	Indicates analyzed for but not detected.
	J	Sample result is greater than the MDL but below the CRDL
General Chemistry		
	U	Indicates analyzed for but not detected.

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 220-27350</b>					
LCS 220-27350/2-A	Lab Control Sample	T	Water	7470A	
MB 220-27350/1-A	Method Blank	T	Water	7470A	
220-9075-1	MW-8	T	Water	7470A	
220-9075-2	MW-9	T	Water	7470A	
220-9075-3	CHA-1	T	Water	7470A	
<b>Analysis Batch:220-27372</b>					
LCS 220-27350/2-A	Lab Control Sample	T	Water	7470A	220-27350
MB 220-27350/1-A	Method Blank	T	Water	7470A	220-27350
220-9075-1	MW-8	T	Water	7470A	220-27350
220-9075-2	MW-9	T	Water	7470A	220-27350
220-9075-3	CHA-1	T	Water	7470A	220-27350
<b>Prep Batch: 220-27408</b>					
LCS 220-27408/2-A	Lab Control Sample	T	Water	3010A	
MB 220-27408/1-A	Method Blank	T	Water	3010A	
220-9075-1	MW-8	T	Water	3010A	
220-9075-2	MW-9	T	Water	3010A	
220-9075-3	CHA-1	T	Water	3010A	
220-9075-3DU	Duplicate	T	Water	3010A	
220-9075-3MS	Matrix Spike	T	Water	3010A	
<b>Analysis Batch:220-27432</b>					
LCS 220-27408/2-A	Lab Control Sample	T	Water	6010B	220-27408
MB 220-27408/1-A	Method Blank	T	Water	6010B	220-27408
220-9075-1	MW-8	T	Water	6010B	220-27408
220-9075-2	MW-9	T	Water	6010B	220-27408
220-9075-3	CHA-1	T	Water	6010B	220-27408
220-9075-3DU	Duplicate	T	Water	6010B	220-27408
220-9075-3MS	Matrix Spike	T	Water	6010B	220-27408

**Report Basis**

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

Sdg Number: 220-9075

### QC Association Summary

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Report Basis</u>	<u>Client Matrix</u>	<u>Method</u>	<u>Prep Batch</u>
<b>General Chemistry</b>					
<b>Analysis Batch:220-27183</b>					
LCS 220-27183/10	Lab Control Sample	T	Water	7196A	
MB 220-27183/9	Method Blank	T	Water	7196A	
220-9075-1	MW-8	T	Water	7196A	
220-9075-2	MW-9	T	Water	7196A	
220-9075-3	CHA-1	T	Water	7196A	

#### Report Basis

T = Total

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1  
Sdg Number: 220-9075

### Method Blank - Batch: 220-27408

**Method: 6010B**  
**Preparation: 3010A**

Lab Sample ID: MB 220-27408/1-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/26/2009 1722  
Date Prepared: 05/26/2009 1314

Analysis Batch: 220-27432  
Prep Batch: 220-27408  
Units: ug/L

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Silver	5.0	U	0.25	5.0
Arsenic	15.0	U	4.0	15.0
Beryllium	5.0	U	0.25	5.0
Cadmium	5.0	U	1.0	5.0
Chromium	5.0	U	0.50	5.0
Copper	5.0	U	1.5	5.0
Lead	15.0	U	2.5	15.0
Nickel	5.0	U	1.0	5.0
Selenium	38.0	U	12.5	38.0
Thallium	15.0	U	3.5	15.0
Zinc	25.0	U	5.0	25.0
Antimony	15.0	U	5.0	15.0
Titanium	15.0	U	0.25	15.0

### Lab Control Sample - Batch: 220-27408

**Method: 6010B**  
**Preparation: 3010A**

Lab Sample ID: LCS 220-27408/2-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/26/2009 1726  
Date Prepared: 05/26/2009 1314

Analysis Batch: 220-27432  
Prep Batch: 220-27408  
Units: ug/L

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 50 mL  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Silver	300	306	102	80 - 120	
Arsenic	1000	1050	105	80 - 120	
Beryllium	100	107	107	80 - 120	
Cadmium	300	315	105	80 - 120	
Chromium	300	321	107	80 - 120	
Copper	300	323	108	80 - 120	
Lead	1000	1060	106	80 - 120	
Nickel	300	323	108	80 - 120	
Selenium	500	543	109	80 - 120	
Thallium	1000	1000	100	80 - 120	
Zinc	300	320	107	80 - 120	
Antimony	1000	1050	105	80 - 120	
Titanium	1000	1050	105	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1  
Sdg Number: 220-9075

### Matrix Spike - Batch: 220-27408

Method: 6010B  
Preparation: 3010A

Lab Sample ID: 220-9075-3  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/26/2009 1709  
Date Prepared: 05/26/2009 1314

Analysis Batch: 220-27432  
Prep Batch: 220-27408  
Units: ug/L

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 50 mL

Analyte	Sample	Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Silver	5.0	U	25.0	26.5	106	75 - 125	
Arsenic	15.0	U	40.0	41.3	103	75 - 125	
Beryllium	5.0	U	25.0	25.9	104	75 - 125	
Cadmium	5.0	U	50.0	49.6	99	75 - 125	
Chromium	5.0	U	100	101	101	75 - 125	
Copper	4.2	J	125	126	97	75 - 125	
Lead	15.0	U	20.0	16.9	85	75 - 125	
Nickel	3.8	J	250	247	97	75 - 125	
Selenium	38.0	U	50.0	40.2	80	75 - 125	
Thallium	4.5	J	50.0	53.3	98	75 - 125	
Zinc	14.5	J	250	255	96	75 - 125	
Antimony	15.0	U	600	633	105	75 - 125	
Titanium	15.2		500	539	105	75 - 125	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1  
Sdg Number: 220-9075

**Duplicate - Batch: 220-27408**

**Method: 6010B**  
**Preparation: 3010A**

Lab Sample ID: 220-9075-3  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/26/2009 1706  
Date Prepared: 05/26/2009 1314

Analysis Batch: 220-27432  
Prep Batch: 220-27408  
Units: ug/L

Instrument ID: Perkin Elmer ICP  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 50 mL

Analyte	Sample	Result/Qual	Result	RPD	Limit	Qual
Silver	5.0	U	5.0	NC	20	U
Arsenic	15.0	U	15.0	NC	20	U
Beryllium	5.0	U	5.0	NC	20	U
Cadmium	5.0	U	5.0	NC	20	U
Chromium	5.0	U	0.960	NC	20	J
Copper	4.2	J	5.67	30	20	
Lead	15.0	U	15.0	NC	20	U
Nickel	3.8	J	4.12	9	20	J
Selenium	38.0	U	38.0	NC	20	U
Thallium	4.5	J	15.0	NC	20	U
Zinc	14.5	J	13.8	5	20	J
Antimony	15.0	U	15.0	NC	20	U
Titanium	15.2		20.5	30	20	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1  
Sdg Number: 220-9075

### Method Blank - Batch: 220-27350

Lab Sample ID: MB 220-27350/1-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1636  
Date Prepared: 05/22/2009 1042

Analysis Batch: 220-27372  
Prep Batch: 220-27350  
Units: ug/L

### Method: 7470A Preparation: 7470A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 25 mL  
Final Weight/Volume: 50 mL

Analyte	Result	Qual	MDL	RL
Mercury	0.20	U	0.060	0.20

### Lab Control Sample - Batch: 220-27350

Lab Sample ID: LCS 220-27350/2-A  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/22/2009 1637  
Date Prepared: 05/22/2009 1042

Analysis Batch: 220-27372  
Prep Batch: 220-27350  
Units: ug/L

### Method: 7470A Preparation: 7470A

Instrument ID: Perkin Elmer FIMS 100  
Lab File ID: N/A  
Initial Weight/Volume: 50 mL  
Final Weight/Volume: 50 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	5.00	5.29	106	80 - 120	

Calculations are performed before rounding to avoid round-off errors in calculated results.

## Quality Control Results

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1  
Sdg Number: 220-9075

### Method Blank - Batch: 220-27183

Lab Sample ID: MB 220-27183/9  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/14/2009 1823  
Date Prepared: N/A

Analysis Batch: 220-27183  
Prep Batch: N/A  
Units: mg/L

### Method: 7196A Preparation: N/A

Instrument ID: WC Spectrophotometer  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	MDL	RL
Cr (VI)	0.010	U	0.0027	0.010

### Lab Control Sample - Batch: 220-27183

Lab Sample ID: LCS 220-27183/10  
Client Matrix: Water  
Dilution: 1.0  
Date Analyzed: 05/14/2009 1824  
Date Prepared: N/A

Analysis Batch: 220-27183  
Prep Batch: N/A  
Units: mg/L

### Method: 7196A Preparation: N/A

Instrument ID: WC Spectrophotometer  
Lab File ID: N/A  
Initial Weight/Volume: 100 mL  
Final Weight/Volume: 100 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Cr (VI)	0.278	0.268	96	85 - 115	

Calculations are performed before rounding to avoid round-off errors in calculated results.

# **MISCELLANEOUS DOCUMENTS**

9075

**Chain of Custody Record**

**Connecticut**  
 128 Long Hill Cross Road  
 Shelton, CT 06484  
 Tel: 203-929-8140  
 Fax: 203-929-8142

TAL-0015 (0508)

*Client* **CHA** *Project Manager* **Seth Fowler** *Date* **5/14/09** *Chain of Custody Number* **016907**  
*Address* **III Winner's Circle** *Telephone Number (Area Code)/Fax Number/e-mail address* **518-453-4547** *Field Telephone Number* **518-852-3550** *Page* **22** *of* **26**

*City* **Albany** *State* **NY** *Zip Code* **12205** *Site Contact* **Sarah Burke** *Lab Contact* \_\_\_\_\_  
*Project Name and Location (State)* **King's College, Warwick, NY** *Sample Disposal*  Return To Client  Disposal By Lab  Archive For \_\_\_\_\_ Months *(A fee may be assessed if samples are retained longer than 1 month)*

*Contract/Purchase Order/Project No.* **20024.1001.1102**

Field Sample I.D. <i>(Containers for each sample may be combined on one line)</i>	Collection Date	Collection Time	Matrix			Containers & Preservatives										Analysis (Attach list if more space is needed)	Comments				
			Aqueous	Solid	Other	Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc2	NaOH	Other	ppm	Hexavalent Chromium			Titanium	Mercury		
MW-8	5/14/09	10:20	X			1		1								X	X	X	X		
MW-9	5/14/09	9:15	X			1		1								X	X	X	X		
CHA-1	5/14/09	8:30	X			1		1								X	X	X	X		

*Turn Around Time Required (business days) Report / EDD Requirements*  
 24 Hours  48 Hours  5 Days  10 Days  15 Days  Other \_\_\_\_\_  
*State Regulatory QC Requirements*

1. Relinquished By **Sarah Burke** *Date* **5/14/09** *Time* **1410** 1. Received By \_\_\_\_\_ *Date* **5/14/09** *Time* **1730**  
 2. Relinquished By \_\_\_\_\_ *Date* \_\_\_\_\_ *Time* \_\_\_\_\_ 2. Received By \_\_\_\_\_ *Date* **5-14-09** *Time* **1730**  
 3. Received By \_\_\_\_\_ *Date* \_\_\_\_\_ *Time* \_\_\_\_\_ Cooler Temps \_\_\_\_\_ Passed Rad. Screen (Lab Use Only)  
 Yes  No

*Comments* \_\_\_\_\_ **PASSED RAD SCREEN** **PROBET 1**  
**Joe**

DISTRIBUTION: WHITE - Stays with the Samples; CANARY - Returned to Client with Report; PINK - Field Copy

05/27/09





## TESTAMERICA CONNECTICUT - CHAIN OF CUSTODY ATOMIC SPECTROSCOPY DEPARTMENT

Job Number: 9075 Sample Numbers: 1-3  
Prep Batch Number: 27350

WATER - SOIL - SLUDGE - TCLP/SPLP

I confirm that I have performed the preparation below following SOP guidelines and authorize the transfer of these digestates to the metals instrument lab.:

Sample Prep:

<u>[Signature]</u> Analysts	<u>5/26/09</u> Date(s)	ICP
<u>[Signature]</u> Analysts	<u>5/22/09</u> Date(s)	Mercury

I confirm that I have performed the analysis below following SOP guidelines:

Analysis:

<u>[Signature]</u> Analysts	<u>5/26/09</u> Date(s)	ICP
<u>[Signature]</u> Chemist	<u>5/22/09</u> Date(s)	Mercury

I have reviewed and authorized the release of the job:

Complete: [Signature] 5/26/09  
Supervisor Date

## Login Sample Receipt Check List

Client: Clough Harbour & Associates LLP

Job Number: 220-9075-1

SDG Number: 220-9075

**Login Number: 9075**

**Creator: Teixeira, Maria L**

**List Number: 1**

**List Source: TestAmerica Connecticut**

<b>Question</b>	<b>T / F / NA</b>	<b>Comment</b>
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

## Appendix B-3



**A.V. AGOVINO ASSOCIATES, LLC**

*Consulting Environmental and Wetland Professionals*

*12 Hastings Lane, Hainesport, NJ 08036  
609-518-6714 Fax: 609-518-6715  
avaeci@comcast.net*

**PHASE I**

**ENVIRONMENTAL SITE ASSESSMENT REPORT**

**FOR**

**THE KINGS COLLEGE**

**SECTION 85, BLOCK 1, LOTS 2.2, 2.3, 4.1, 4.2, 5.1, 5.2, & 6**

**TOWN OF WARWICK, ORANGE COUNTY, NJ**

October 31, 2005

Prepared for:

Touro College  
c/o David Weinberg, Esq.  
940 South Avenue  
Westfield, NJ 07090

Prepared by:

A. Vincent Agovino, Ph.D., President  
A.V. Agovino Associates, LLC  
12 Hastings Lane  
Hainesport, NJ 08036  
609-518-6714



## Executive Summary

A. V. Agovino Associates, LLC (AVAA), performed a Phase I Environmental Site Assessment (Phase I ESA) of partially developed land known as Kings College which is located at 1 Kings Drive, Town of Warwick, Orange County, New Jersey, to identify and evaluate potential areas of environmental concern relating to hazardous materials and wastes. This Phase I ESA was conducted in general accordance with the standards established by the American Society for Testing and Materials (ASTM), Standard E 1527-00, and is based on a site reconnaissance, interviews with the authorized representatives of the owner, a review of readily available aerial photographs, Sanborn<sup>TM</sup> fire insurance maps, an environmental database of regulatory agencies' lists of sites in the vicinity, as well as correspondence and telephone interviews with state and local regulatory agencies.

The site encompasses an approximately 252-acre parcel of land on Sterling Mine Road, Kings Drive and Sterling Lake Road. It is identified on the tax maps of Town of Warwick as Section 85, Block 1, Lots 2.2, 2.3, 4.1, 4.2, 5.1, 5.2, & 6. All of the lots are undeveloped with the exception of Lots 4.1, 4.2 and 5.2 which are improved with a currently non-operational sewage and chemical treatment plant, a driveway, and a former office and laboratory facility, respectively. The site is bordered by the Sterling Forest Lake to the west, undeveloped land to the north, east and south, and a residential community to the northeast. Based on a review of the historical information available, the developed portion of the site has been mainly used for industrial purposes since 1962 as a research and development facility owned by the International Nickel Chemical Company (INCO), with a dedicated sewage and chemical treatment plant. A review of historical topographic maps and aerial photographs confirmed the existence of the INCO R&D facility, the sewage and chemical treatment plant and an Orange and Rockland electric sub-station on the subject property. Review of Federal and State database records revealed that the subject property does not appear on any environmental databases, nor were any adjacent sites listed on those databases.

Inspections of the subject property were performed by AVAA in May and September, 2005. The inspections included the interior and exterior of the onsite structures, as well as of the undeveloped land. During the inspections, AVAA observed that the interior of both the former INCO R&D facility as well as the sewage and chemical treatment plant were in poor condition. Due to the size of the undeveloped land, the undeveloped lots were traversed on foot in a grid pattern to attempt to cover the entire property.

Several areas of environmental concern were observed during AVAA's inspection. These are enumerated by lot below:

Lot 2.22

- Possible subsurface contamination resulting from the dumping of mine tailings to construct the Sterling Mine Road was reported in an earlier Phase I ESA. AVAA found no evidence of dumping on this property.
- Possible subsurface contamination resulting from historical activities associated with the former Sterling Mountain Railroad.

Lot 2.3

- Possible impacts (historical and current) to the property resulting from household waste dumping presumably from the residential properties located to the northeast of the property or from the road. No evidence of active dumping was observed.

Lot 4.1

- Possible subsurface contamination resulting from spills associated with the now currently non-operational sewage and chemical treatment plant, the chemicals previously used there and the associated piping connections from the former INCO R&D facility.
- The existence of an unknown pipe/well casing adjacent to the treatment plant that may be a possible pathway to the subsurface.
- Possible negative impacts to the tributary to the Ringwood Creek or to the adjacent wetlands area as a result of potential spills.

Lot 4.2

- There were no recognized environmental conditions observed associated with this lot.

Lot 5.1

- Possible subsurface contamination resulting from spills associated with the drainage piping running from the former INCO R&D facility to the now currently non-operational sewage and chemical treatment plant.
- Possible subsurface contamination resulting from spills associated with the Orange & Rockland Utilities, Inc. Substation #77.
- Possible surface-water and sediment contamination of the Sterling Forest Lake as a result of water discharging from a water outfall pipe.
- Presence of mine shafts in the extreme southeastern corner of this lot.

Lot 5.2

- Possible subsurface contamination resulting from spills associated with the drainage piping running from the former INCO R&D facility to the now currently non-operational sewage and chemical treatment plant.

- The presence of large quantities of Presumed Asbestos Containing Materials (PACMs). The friable suspect PACMs, much of which was damaged enough to result in airborne particulates, included pipe insulation, thermal plasters and acoustical ceiling tiles. The non-friable PACMs included vinyl floor tiles, mastic, roofing materials and cooling tower louvers.
- Possible undetected subsurface contamination resulting from spills associated with the former underground storage tanks (USTs) associated with the former INCO R&D facility (one 550-gallon gasoline UST and its dispenser, one 2,000-gallon diesel fuel UST, two 20,000-gallon fuel oil USTs and one above-ground storage tank (AST) associated with the water storage tank pump house).
- Possible pathways to the subsurface throughout the subject property including an unknown pipe/well casing, exterior drainage manholes and exterior trench grates.
- Possible subsurface contamination resulting from spills which may have been associated with the Orange & Rockland Utilities, Inc. Substation #77.
- Possible subsurface contamination resulting from potentially PCB containing spills associated with the three electric substations present in the facility.
- Possible subsurface contamination resulting from spills associated with labeled and unlabeled containers, cans, buckets or drums of solvents, hydraulic oil, acids, paints and miscellaneous chemicals evident throughout the facility.
- Possible subsurface contamination resulting from spills associated with two 600-HP boilers.
- Possible subsurface contamination resulting from spills and exposure to the soil beneath the facility through covered soil pits and areas where the concrete slab is broken, removed or has been filled in (formerly recessed into the slab).
- Possible subsurface contamination resulting from spills associated with the two hydraulic elevators located in Building A.
- Possible residual contamination associated with past activities in the area of Building D where there was a posted warning placard "RADIATION HAZARD KEEP OUT".
- Possible subsurface contamination resulting from spills associated with the solvent storage room in Building E.
- Possible subsurface contamination resulting from acid or cyanide spills which may have been associated with the metal etching laboratory in the basement of Building C.
- Possible subsurface contamination resulting from spills which may have been associated with the large diesel engine in the basement of Building C.
- Possible subsurface contamination resulting from various locations throughout the facility where staining, abnormal textures or ground penetrations are present.

- Due to the lack of information and the similarity in the address location, the possibility exists that the subject property reported Spill #8600625 on the New York State Leaking Underground Storage Tank (LUST) database that occurred at the former INCO R&D building at the location of the former diesel fuel UST.
- Due to the age of the former INCO R&D building, lead-based paint may have been used. In several locations throughout the former INCO R&D building chipping and flaking paint was observed on walls, ceilings and doors.
- Due to significant water damage to the building, mold was observed throughout the facility and may pose a significant potential health risk.
- Due to the age of the building, the pipes and pipe solder used for the water in the building may contain lead. As such lead may leach into the water at a level above the United States Environmental Protection Agency (USEPA) action level for lead in drinking water.
- Based on the USEPA radon zones, the subject property is listed to have a low to moderate potential for radon exposure.

#### Lot 6

- Possible subsurface contamination resulting from the dumping of mine tailings to make the Sterling Mine Road was reported in an earlier Phase I ESA. AVAA found no evidence of dumping on this property.
- Possible subsurface contamination resulting from historical activities associated with the former Sterling Mountain Railroad.
- Possible roadside waste dumping from Sterling Lake Road down the steep hill to the Ringwood Creek.

## Appendix B-4

# LEGGETTE, BRASHEARS & GRAHAM, INC.

PROFESSIONAL GROUND-WATER CONSULTANTS

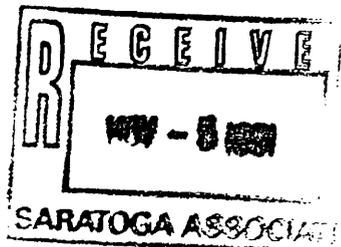
R. G. SLAYBACK  
G. SIDNEY FOX  
FRANK H. CRUM  
MICHAEL R. BURKE  
ROBERT LAMONICA

1123 ROUTE 52  
SUITE 38  
FISHKILL, NY 12524  
914-897-2970

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WILLIAM K. BECKMAN  
DAN C. BUZEA  
JOHN NASO, JR.  
J. KEVIN POWERS  
W. PETER BALLEAU

DAVID SCOTT  
LONNIE D. NORMAN  
JEFFREY B. LENNOX  
KEVIN J. MILLER  
FRANK J. GETCHELL  
JOE K. BUERHOP  
DAVID A. WILEY  
ROBERT N. BRAUNSTEIN



November 4, 1991

Mr. Brian McMahon  
The Saratoga Associates  
Old Saratoga Square  
443 Broadway  
Saratoga Springs, NY 12866

RE: Kings College - Warwick Campus

Dear Mr. McMahon:

Leggette, Brashears & Graham, Inc. (LBG) conducted radon testing at the INCO Blue Lake site located in Warwick, New York. The assessment consisted of analysis of five radon samplers set-up in five designated locations for analyses of radon. The radon samplers were provided by Air Chek, Inc.

The five samplers were located in worse-case positions placing the samplers in the central location of each floor where minimal air circulation occurs. Samplers were located away from exterior walls and at a normal breathing height, five feet from the floor. The temperature, location, and beginning and end hour/day of the exposure period on each sampler were recorded. The location of each test kit is as follows:

kit #1001582	between building C/D
#1001583	building A first floor
#1001584	building B second floor
#1001585	building A second floor
#1001586	building A third floor
#1001587	trip blank

The laboratory report from Air Chek, Inc. is attached. The analysis indicated radon concentrations between 0.6 and 0.9 pCi/l (picocurie per liter). The trip blank indicated

MIDLAND PARK, NEW JERSEY

ST. PAUL, MINNESOTA

ALBUQUERQUE, NEW MEXICO

TAMPA, FLORIDA

SIOUX FALLS, SOUTH DAKOTA

EXTON, PENNSYLVANIA

NASHUA, NEW HAMPSHIRE

WILTON, CONNECTICUT

Mr. Brian McMahon

-2-

November 4, 1991

radon at <0.3 pCi/l. The analyses indicated radon at these five locations is substantially less than maximum contaminant level of the U.S. Environmental Protection Agency of 4 pCi/l. The reported concentration would not pose impediments for development of the site.

Should you have any additional questions please do not hesitate to contact me.

Very truly yours,

LEGGETTE, BRASHEARS & GRAHAM, INC.



Thomas P. Cusack, CPG  
Senior Hydrogeologist

TPC:gmm  
Enclosure  
kingrad.ltr/91D

Oct 28, 1991

\*\* LABORATORY ANALYSIS REPORT \*\*

Pg 1

AIR CHEK INC.

BOX 2000

ARDEN, NORTH CAROLINA

28704

COMPANY: L P G

Kit #	pCi/L	Hours	Started	Ended	Analyzed	NOTES	MST%
1001582	0.6	82	10/22/91	10/25/91	10/26/91		6.7%
1001583	0.9	82	10/22/91	10/25/91	10/26/91		7.8%
1001584	0.9	82	10/22/91	10/25/91	10/26/91		5.5%
1001585	0.6	82	10/22/91	10/25/91	10/26/91		6.1%
1001586	0.6	82	10/22/91	10/25/91	10/26/91		6.7%
1001587	< .3	82	10/22/91	10/25/91	10/26/91		1.9%

RECEIVED

NOV 01 1991